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THE STATE OF NUTRITION IN AMERICA 2021

HEARING

BEFORE THE

SUBCOMMITTEE ON
FOOD AND NUTRITION, SPECIALTY CROPS,
ORGANICS, AND RESEARCH

OF THE

COMMITTEE ON AGRICULTURE, NUTRITION, AND FORESTRY

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C O N T E N T S

Tuesday, November 2, 2021

THE STATE OF NUTRITION IN AMERICA 2021

TUESDAY, NOVEMBER 2, 2021

U.S. SENATE,
COMMITTEE ON AGRICULTURE, NUTRITION, AND FORESTRY,
Subcommittee on Food and Nutrition, Specialty Crops, Organics, and Research,
Washington, DC.

The Subcommittee met, pursuant to notice, at 10:07 a.m., via Webex and in room 216, Hart Senate Office Building, Hon. Cory Booker, Chairman of the Subcommittee, presiding.

Present or submitting a statement: Senators Booker, Leahy, Warnock, Braun, Hoeven, Ernst, Marshall, and Fischer.

STATEMENT OF HON. CORY BOOKER, U.S. SENATOR FROM THE STATE OF NEW JERSEY, U.S. COMMITTEE ON AGRICULTURE, NUTRITION, AND FORESTRY

Senator BOOKER. Good morning, everyone. I am so pleased to call this Subcommittee on Food and Nutrition, Specialty Crops, Organics, and Research to order.

I am privileged to be sitting next to the Ranking Member Braun, and on behalf of him and members of the Subcommittee, I would like to just really welcome our witnesses and say thank you all for coming here. It is a lot of time and energy and effort to come to Washington, DC, but this is so important. You all understand the urgency of this moment in American history and, I would say, human history.

I want to start off by stating the fact that all of our witnesses agree on this reality, this urgency, that today in America we are facing a massive broad-based nutrition crisis, a crisis where diet-related diseases pose a serious threat to the health and well-being of our country. Nearly one out of every three dollars in the Federal budget—I want to say that again. Nearly one out of every three dollars in the Federal budget now goes to healthcare spending, with 80 percent of this money paying for the treatment of preventable diseases, and these costs are rising at a staggering rate.

Currently, in the United States, half—of the U.S. population is pre-diabetic or has type 2 diabetes. In 1960, approximately three percent of the U.S. population was obese. Today, more than 40 percent of Americans are obese, and more than 70 percent of Americans—70 percent of Americans—are either obese or overweight.

Even more shocking, one-quarter of our teenagers today are pre-diabetic or have type 2 diabetes, and obesity is the leading medical reason that 71 percent of young Americans are disqualified for military service.

These data points are staggering, and they need to be fully digested.

Now the numbers are worse in minority communities, dramatically so. The risk of diabetes, for example, is 77 percent higher for Black people in America, and we are twice as likely to die from diabetes. As we will hear in today's testimony, the statistics are equally, if not more so, grim in our indigenous communities.

The deadly nature of our nutrition crisis, which is in some of these diseases at epidemic levels, has been tragically magnified by the pandemic, by COVID–19, where we have seen much higher hospitalization rates and death rates for people with those diet-related diseases.

Now let us be clear about something. The majority of our food system is being now controlled by just a handful of big, multinational corporations. These food companies carefully formulate and market nutrient-poor, addictive, ultra-processed foods, ultra-processed foods which now comprise two-thirds of the calories in children and teens in their diets in the United States. These companies want us to believe that the resultant diet-related disease, such as obesity and diabetes, are somehow a moral failing, that they represent a lack of will power or failure to get enough exercise. That is just a lie. It is a lie.

The problem we have right now is not an individual moral failing. It is our collective policy failure. It is a policy failure because the Federal Government is currently subsidizing easy access to the foods that are high in calories but have minimal nutritional value while at the same time too many communities, rural and urban alike, lack access to the healthy foods they need to thrive.

It is a policy failure because while the Federal Government tells us that our plates should consist largely of fruits and vegetables, currently less than two percent of our Federal agricultural subsidies in the United States go to these healthy foods.

It is a policy failure because while other countries have begun to take on this crisis, focusing on the problems with big food companies and banning the marketing of junk food to children, in the United States, however, we continue to allow big corporations to spend billions of dollars every year to advertise the least nutritious products, such as fast foods, candy, sugary drinks to our children.

In August, the Government Accountability Office (GAO) released a report that analyzed efforts by the Federal Government to address diet-related chronic health conditions that, as I said, are at epidemic levels. The GAO concluded that the Federal Government lacks a coordinated, overarching strategy aimed at reducing Americans' risk of diet-related chronic diseases.

How do we now align our Federal policy with our goal of addressing this nutrition crisis that is causing so much death and disease? We can start by looking at history as a guide. In 1969, the year that I was born actually, President Nixon convened the White House Conference of Food, Nutrition, and Health to address the urgent national concern of widespread hunger in the United States. What resulted was an unprecedented expansion and creation of vital programs dealing with that hunger crisis, programs like WIC that went on to tackle access to food.

Fast-forward 52 years, while we have made progress addressing hunger in America, we are still grappling with food insecurity. Now we face that second food crisis, one of nutrition insecurity, where too many Americans are overfed but undernourished and are seeing these staggering rates of disease and early death.

Despite being the wealthiest nation in the world, we have created a food system that relentlessly encourages the overeating of empty calories, literally making us sick and causing us to spend an ever increasing amount of our taxpayer dollars, literally trillions of dollars a year, on healthcare costs to treat diet-related diseases such as type 2 diabetes, heart disease, stroke, certain types of cancer, and chronic kidney disease, that are among the leading causes of preventable, premature death in our country.

I believe we need to rethink the way we approach food and nutrition policy. Our lives literally depend upon it. That is why last week Senator Braun and I, along with Congressman McGovern and others, introduced legislation to create a second White House Conference on Food, Nutrition, Hunger, and Health that convenes public and private stakeholders to reimagine our Federal food and nutrition policy. The second White House conference needs to hear perspectives from a diverse set of stakeholders and communities such as we have here represented on our panel today.

Let me close with this: This nutrition crisis we face is a threat. In fact, I would say it is the greatest threat to the health and well-being of our country right now. Millions and millions of Americans see this and understand this threat in their communities and their homes and their families and their own lives. It is also a threat to our economic security and our national security. We must act now.

I will now turn to my friend and deeply grateful partner—who I am deeply grateful to have as my partner, the Ranking Member, Senator Braun, for his opening statement.

STATEMENT OF HON. MIKE BRAUN, U.S. SENATOR FROM THE STATE OF INDIANA, U.S. COMMITTEE ON AGRICULTURE, NUTRITION, AND FORESTRY

Senator BRAUN. Thank you, Mr. Chairman, and thank you for the witnesses joining us here today. The State of Nutrition in America, a very important topic.

It has been 52 years since President Nixon convened the White House Conference on Food, Nutrition, and Health and vowed to put an end to hunger in America for all time. That was a lofty goal back in 1969 and one that, as we can see, we are still chasing to some degree five decades later. As such, I hope that our hearing today will address both the successes and shortcomings and it will truly look at nutrition as being maybe the thing that we can use here to avoid entering the healthcare system because you are healthy to be in shape day after day.

Since the White House conference in 1969, America's farmers have answered the call of a growing population and malnutrition among poorer American communities. Through farm-level innovations, agriculture is now able to make more from less and help protect the soils along the way. The U.S. has made great progress to reduce food insecurity, nutritional deficits, food borne illness over the course of the last five decades. However, our work is still far

from over. Until no American goes to sleep hungry or is unsure from where his or her next meal will come from, we have not successfully completed the task.

Our robust food security safety net is support by USDA's nutrition programs, totaling more than $100 billion per year in Federal spending. Following the White House conference, these programs were bolstered and fine-tuned to ensure that caloric deficiencies were on the path to eradication in the U.S.

While the USDA's nutrition programs have helped more Americans during times of need, any discussion about the state of nutrition in America today must include a discussion about the quality . . . the quality of the foods that can be purchased through these programs. We all know that an excess of low quality foods can have negative health outcomes for Americans, empty calories, not ones that are making you stronger and healthier. Since 1969, obesity rates in the U.S. have increased from 12 percent to over 42 percent, clearly not heading in the right direction. Likewise, preventable chronic illnesses, like type 2 diabetes and coronary heart disease, continue to plague more and more Americans.

Federal nutrition policies are still geared strictly to address caloric deficiencies, failing to prioritize the nutritional content of our food. As a result, reports consistently show that programs are even making poorer choices when it comes to Americans' nutrition, worst outcomes. Let me repeat that; our Federal nutrition programs may be making poor nutritional outcomes worse for low-income American families. This is an irresponsible use of taxpayer dollars as Congress's responsibility lies in ensuring that nutrition programs like Supplemental Nutrition Assistance Program (SNAP) are serving the best interests of both the recipients and our Nation as a whole.

Failing to address issues of nutrition have broader spillover effects, like increasing Federal outlays for healthcare, and that is already where we spend way too much money vis-a-vis the rest of the world. Our healthcare expenses run between 18 and 20 percent of our GDP. Most other countries with similar results do it for 11 to 13 percent.

Finally, we cannot have a conversation about the state of nutrition without discussing the harmful effects that unrestrained inflation has on the purchasing power of every American family. The New York Times recently highlighted the damaging impact of inflation, showing that in the last year prices for key staples have risen by more than 10 percent, unsustainable, and that is the cruelest of all taxes when we are trying to head in the other direction.

These rising costs are driven by a multitude of factors not least of which is irresponsible Federal spending, where we have got to get a better bang for our buck. As this Subcommittee considers policies to help address nutrition insecurity, we must remember that simply dumping more money into our economy will only exacerbate the issue of nutrition insecurity for our most vulnerable, not to mention what inflation will do as well.

Nutrition insecurity is a challenging problem that impacts our rural and urban communities alike. That is why I was proud to work with Chairman Booker to introduce legislation to convene a second White House Conference on Food, Nutrition, Hunger, and

Health. Only through a serious bipartisan analysis and effort will we make true headway.

In my own life's experience, I have chosen to live holistically through good nutrition, and when you stick with it, it works. It should be the foundation for every American citizen. In my own company, when I was wrestling with high healthcare costs 13 years ago, I made that as a priority, changed our system into being enabling my employees to become healthcare consumers, giving them tools like free biometric screenings, telling them about good nutrition, putting a little skin in the game to incentivize that you do it.

This is a topic for another day and another conversation. We have not had a premium increase for my employees' companies in 13 years, and they enter into their deductibles less now than they did 13 years ago because we are emphasizing prevention, not remediation, and making my employees—and I think we can do it even in government—to where they invest in their own well being, and we give them the tools to do it.

Thank you, Mr. Chair.

Senator BOOKER. Thank you, Senator Braun. Senator Braun, you should put your placard up there. Somebody might mistake you for a pragmatic-minded businessperson and not a United States Senator.

Senator BRAUN. Thank you.

Senator BOOKER. Senator Leahy.

Senator LEAHY. They will not mistake me for the——

Senator BOOKER. Sir, it is an honor to have you here. I know you have to leave very soon, but we are excited that you would like to come and make an opening statement.

STATEMENT OF HON. PATRICK J. LEAHY, U.S. SENATOR FROM THE STATE OF VERMONT, U.S. COMMITTEE ON AGRICULTURE, NUTRITION, AND FORESTRY

Senator LEAHY. I appreciate the opening statement of both of you. When I became Chairman of the Agriculture Committee quite a few years ago, it was called the Senate Agriculture and Forestry Committee. I changed the name to Agriculture and Nutrition and Forestry, which is what it had been originally. I wanted to bring back the word "nutrition" for exactly the reasons both of you have said.

When we are the wealthiest nation on Earth and we cannot handle our nutrition needs, that is a national security problem as well as anything else. I see in this pandemic that food insecurity has risen, children are left behind. I am proud of the efforts we made to meet the needs of those struggling in our communities, the historic investment in child nutrition programs currently, including the Build Back Better Act, that will increase access to school and summer meals for millions of children.

We need to do more than just get the food on the table. As you both said, it needs to be healthy and nutritious food. Coming from a State like mine, I think it particularly helps if it is grown locally. Unfortunately, in many cases, this is not true. We need a coordinated effort from the Federal Government, down to the local level, that makes sure all Americans have access to nutritious foods but

also bolstering regional supply chains that can best deliver food to these communities, particularly in our schools.

I have looked at some of the statements that are going to be made. I am sure our outstanding witnesses today will tell us about how important it is for the health outcomes and dietary habits of children that school meals include healthy and locally grown foods. My staff will be here following this, and I will be sure—I will actually read all you have said when I get back from my Appropriations meeting.

My State of Vermont has the strong tradition of farmers providing healthy and local choices in our supermarkets, but even with that many of our schools still struggle to include these products in school lunches. In nearly—in fact, nearly 60 percent of the USDA Foods in Schools program spending goes to 15 multinational corporations, not to local producers. These corporations, we know, have been plagued by supply chain disruptions that have caused food shortages in schools across the country. We need more resilient supply chains. We need lower procurement barriers. We have to make it easier for local and small-scale producers to feed their children.

Mr. Chairman, I thank your leadership on this issue, to work with USDA to ensure that more schools have the opportunity to work with their local farmers. All three of us can give a quick list of farmers who would be glad to work with them. I have also long championed the Farm to School program, which strengthens and supports this link between local farmers and students. Schools are effective and currently underutilized settings for nutrition policies, and so I am interested to hear what might be said about how Farm to School can help that.

I look forward to hearing from all of you. I am just so happy you are doing this. I would state to the witnesses and the press who might be here I have heard what Senator Booker said about nutrition. He says that when the cameras are not on. The Ranking Member, we have talked about this, usually in our prayer meetings in the inner sanctum sometimes late in the evening, on the need that we have to do this. Whether we are parents or grandparents or citizens, if we do not get a hold of this, if we do not do something about this issue, what are we leaving our children in the next generation?

Thank you, Mr. Chairman. I am so proud of this hearing.

Senator BOOKER. Thank you very much. Again, we understand you are going to an Appropriations meeting, and we hope that you will remember New Jersey.

I would like to now introduce the witnesses.

I want to acknowledge the presence of Senator Joni Ernst, another person very concerned about these issues. It is so great to see you here.

I would like to start off with introducing Dr. Mozaffarian.

Senator LEAHY. I am sorry. I did not see Senator Ernst come in. She is also from a State that knows how important this is.

Senator BOOKER. Yes. Dr. Mozaffarian is a cardiologist. He has a heart, too. He is the Dean and the Jean Mayer Professor at Tufts Friedman School of Nutrition, Science, and Policy, and Professor of Medicine at Tufts School of Medicine. His work aims to create a

food system that is nutritious, equitable, and sustainable. Dr. Mozaffarian has authored more than 450 scientific publications on dietary priorities for obesity, diabetes, cardiovascular disease, and on evidence-based approaches and innovations to reduce these burdens in the U.S. and globally. He has served in numerous advisory roles, and his work has been featured in a wide array of media outlets. Thomson Reuters has named him as one of the world's most influential scientific minds.

I am grateful that you are here today.

Dr. Odoms-Young is an Associate Professor and Director of the Food and Nutrition Education in Communities Program and New York State Expanded Food and Nutrition Education Program. In 2021, she joined the Cornell faculty after spending 13 years at the University of Illinois at Chicago in the Department of Kinesiology and Nutrition. Dr. Odoms-Young's research explores the social and structural determinants of dietary behaviors and related health outcomes in low-income populations in Black, indigenous, and people of color. Her work also centers on developing culturally responsive programs and policies that promote health equity, food, and community resilience.

I want to thank Dr. Odoms-Young for being here as well, being a part of this hearing as well.

Dr. Donald Warne serves as Associate Dean of Diversity, Equity, and Inclusion. He is Chair of the Department of Indigenous Health, Director of the Indians Into Medicine and Public Health programs and Professor of Family and Community Medicine at the School of Medicine and Health Sciences at the University of North Dakota. The doctor is the Principal Investigator for the Indigenous Trauma and Resilience Research Center at UND, and he also serves as the Senior Policy Advisor to the Great Plains Tribal Leaders Health Board in Rapid City, South Dakota. He also spent several years as a primary care physician. He is a member of the Oglala Lakota tribe from Pine Ridge, South Dakota, and comes from a long line of traditional healers and medicine men.

I want to thank you so much for being a part today.

I want to now recognize Ranking Member Braun who will introduce our next two witnesses.

Senator BRAUN. Thank you, Mr. Chairman. Our next witness is Dr. Patrick Stover, who is Vice Chancellor and Dean for Agriculture and Life Sciences at Texas A&M AgriLife, and Director of Texas A&M AgriLife Research. Earlier in his career, he directed the Division of Nutritional Sciences at Cornell University and has advised policymakers from the Centers for Disease Control and Prevention, World Health Organization, and the United States Food and Drug Administration. A testament to his leadership in biochemistry, nutrition, and food systems, Dr. Stover is an elected member of the National Academy of Sciences and the former President of the American Society of Nutrition.

Our final witness this morning, Dr. Angela Rachidi, is joining us remotely from Wisconsin. Dr. Rachidi is a Senior Fellow and the Rowe Scholar in Poverty Studies at the American Enterprise Institute (AEI), where she studies poverty and the effects of the Federal safety net programs on low-income people in America. She specializes in support programs for low-income families, including the

Temporary Assistance for Needy Families, the Child Care and Development Block Grant, and the Supplemental Nutrition Assistance Program. Before joining AEI, she was a Deputy Commissioner for Policy Research at the New York City Department of Social Services.

Thank you, Dr. Rachidi, and to each of our other witnesses for joining us this morning.

Senator BOOKER. All right, everyone. Fasten your seatbelts. I have read all the testimonies. These are extraordinary declarations of the State of our American nutrition, and I am excited about them.

Dr. Mozaffarian, would you please proceed with your testimony.

STATEMENT OF DARIUSH MOZAFFARIAN, M.D., DEAN, FRIEDMAN SCHOOL OF NUTRITION SCIENCE AND POLICY, TUFTS UNIVERSITY, BOSTON, MASSACHUSETTS

Dr. MOZAFFARIAN. Dear Chairman Booker, Ranking Member Braun, and other distinguished members of the Committee, thank you for convening this critical hearing today and for the opportunity to testify. My testimony reflects my expertise and experiences as a cardiologist, public health expert, and scientist.

As a doctor, I see firsthand people of all ages and backgrounds suffering from diet-related illness. As a public health expert, I see the incredible challenges Americans face every day to obtain and eat nourishing food. As a scientist, I see the exciting advances on which foods help or harm our bodies and on which policy changes can support nutrition security and health.

As has been outlined, we face a national nutrition crisis, one that is cutting lives short, costing us trillions of dollars, and holding us back from achieving our goals as individuals and as a Nation. The situation is dire. Because of nutrition insecurity and diet-related disease, more Americans today are sick than are healthy. One in two adults have diabetes or pre-diabetes, and three in four have overweight or obesity.

The recent GAO report that Senator Booker mentioned puts an exclamation point on this, concluding that diet-related conditions are deadly, costly, and largely preventable. These diseases caused over half of U.S. deaths in 2018, and during COVID–19, Americans with diet-related conditions were 12 times more likely to die following infection. At the same time, nearly 40 million Americans experienced food insecurity in 2018, and in 2020 during the pandemic, food insecurity grew for households with children.

In every State in our Nation, nutrition insecurity and diet-related diseases also disproportionately afflict Americans who have the least advantage, those who are low-income, rural, or racial or ethnic minorities. Poor nutrition is harming our children, creating future suffering, disability, and lost human potential. Among two- to five-year-olds, one in ten are already obese. Among teens, one in five has pre-diabetes, a shocking wakeup call for the future of our country.

These diet-related diseases are also the top drivers of preventable healthcare spending. Healthcare spending now accounts for almost one in five dollars in our economy and nearly one in three dollars in the Federal budget. Eighty percent of this goes to treat pre-

ventable, chronic diseases. This is not a path for balanced government budgets, thriving U.S. businesses or a competitive national economy.

The top cause of poor health and nutrition is largely ignored by the healthcare system. That simple but striking fact explains so much about where we are today, hundreds of millions of sick Americans and spiraling, preventable healthcare costs.

Poor nutrition also threatens our national security. Top military leaders at Mission: Readiness and elsewhere have talked about this. Three in four young Americans are ineligible to serve in the military, and the top medical reason is obesity.

These are daunting challenges, but they are also opportunities. Today our country has no plan, no national strategy to address this, to fix food. The science is now available to create a plan to address this national crisis with practical, evidence-based, and cost-effective solutions. We have in our grasp the ability to create a nourishing, sustainable food system, one that promotes health and well-being for all Americans and economic well-being and national security for our Nation.

As I hope we will discuss more during this hearing, there are specific actions across six priority domains that can catalyze a healthier food system, one that advances nutrition, ends hunger, improves health and health equity, and reduce healthcare spending.

What do we actually need to do? Six priority domains. No. 1, we need to advance nutrition science and research. No. 2, we need to leverage the power of food as medicine in healthcare. No. 3, we need to strengthen and leverage our Federal nutrition programs, in particular, school meals, SNAP, and WIC. No. 4, we have to catalyze business innovation, entrepreneurship, new businesses, jobs in this area. No. 5, we have to expand nutrition education and public health. No. 6, we have to actually coordinate all of this, coordinate Federal food policy, including new leadership structure and authority to do so.

It is time to fix food, but we can only do this if we actually have a plan, a real national strategy. Senators Booker and Braun, the two of you, together with Representatives McGovern and Walorski in the House, have called for the second White House Conference on Food, Nutrition, Hunger, and Health. It has been 52 years since our Nation came together to chart a national strategy around hunger. Much has changed in 52 years. It is time to bring everyone together again to reimagine our national food system for the next 50 years.

We can make America the 21st century breadbasket for nourishing food for our country and for the world, food that heals our bodies, ends hunger, reduces healthcare spending, supports our military, revitalizes rural America, stewards our natural resources, and creates new jobs and businesses.

Thank you for your leadership. I am pleased to answer any questions.

[The prepared statement of Dr. Mozaffarian can be found on page 42 in the appendix.]

Senator BOOKER. Thank you so much, Dr. Mozaffarian.

Before I move to Dr. Odoms-Young, I want to just thank Senator Marshall, someone who has an obvious concern for these issues, and grateful for his leadership and presence here today.

Dr. Odoms-Young, you are recognized for your five minutes.

STATEMENT OF ANGELA ODOMS-YOUNG, PH.D., ASSOCIATE PROFESSOR AND DIRECTOR, FOOD AND NUTRITION EDUCATION IN COMMUNITIES PROGRAM AND NYS EXPANDED FOOD AND NUTRITION EDUCATION PROGRAM (EFNEP), DIVISION OF NUTRITIONAL SCIENCES, CORNELL UNIVERSITY, ITHACA, NEW YORK

Dr. ODOMS-YOUNG. Thank you. Chair Booker, Ranking Member Braun, and members of the Agriculture Subcommittee on Food and Nutrition, Specialty Crops, Organics, and Research, thank you for allowing me the opportunity to speak before you today about the state of nutrition in America with a specific focus on Black communities.

The adverse health, social, and economic consequences of suboptimal diets in the United States are well documented. Extensive evidence indicates that poor nutrition is a major driver of America's high chronic disease burden, leading to sizable rates of death and disability from cardiovascular disease, hypertension, type 2 diabetes, and certain cancers. Further exacerbating the national impact of poor nutrition is the reality that its associated burden is not equally shared across all racial, ethnic, and socioeconomic groups.

People of color overall and Black populations specifically have dietary intakes that fall short of the national recommendations and face higher rates of diet-related chronic diseases. For example, Black Americans are 60 percent more likely to be diagnosed with diabetes by a physician, 2.3 times more likely to be hospitalized for lower limb amputations, and almost four times as likely to develop kidney failure when compared to rates of White Americans.

Unfortunately, in the last year, we have seen racial inequities in health and nutrition worsen as a result of the COVID–19 pandemic, with Black-White gaps in life expectancy widening. This disproportionate toll from COVID can be partially explained by the high prevalence of nutrition-related chronic diseases among Blacks as compared to Whites.

Additionally, economic barriers, including a greater likelihood of living in racially segregated, disinvested areas, higher rates of being uninsured and underinsured, and a wage disparity where Black American households earn almost half that as of White households, also sets the stage for Black communities to be more nutritionally vulnerable. For example, although food security rates in the U.S. generally remained stable from 2019 to 2020, the prevalence of food insecurity for Black households increased from 19.1 percent to 21.7 percent.

Food insecurity not only contributes to higher chronic disease rates but also increases the risk for maternal depression, developmental delays early in life, and lower academic achievement. Consequently, it is likely that this increase will have lingering effects for years to come.

While, traditionally, researchers and practitioners focused attention on individual knowledge and motivation as key drivers of die-

tary behaviors, science generated for more than three decades highlights the importance of social and structural determinants of health. Many studies have shown that being healthy is not just about making smart choices or bad genes. For many Americans, systemic and structural disadvantage moves good health out of their reach.

A common saying in public health is that "your zip code matters more than your genetic code." Black Americans are more likely to live in neighborhoods that are considered obesogenic, environments that promote obesity, specifically characterized by limited access to healthy food options, and high availability and in-store marketing of low-cost, energy-dense foods and drinks of minimal nutritional value. It is particularly striking that these Black-White inequities in healthy food environments exist at every level of income.

The first White House Conference on Food, Nutrition, and Health resulted in landmark legislation that provided the foundation for the Federal food and nutrition infrastructure we know today and raised awareness about widespread malnutrition and hunger being experienced by families and communities throughout America.

Similar to 1969, the events of 2020 amplified our level of consciousness about the ways in which social, structural, and political conditions create different experiences and opportunities for people living in the U.S. We did not get here by chance but through policies, policies over centuries and at every level of government, such as redlining and yellowlining, that restrict access for some but create opportunities for others.

In closing, we need to continue to prioritize nutrition security with the lens of racial equity. The time to leverage new policy and programmatic efforts to decrease food hardship in Black communities and increase opportunities for better access is now.

Thank you for your attention in considering nutrition's pivotal role in promoting our Nation's health. I look forward to answering your questions. Thank you so much.

[The prepared statement of Dr. Odoms-Young can be found on page 54 in the appendix.]

Senator BOOKER. You are very, very welcome. Thank you for your testimony.

Dr. Warne, you are very fortunate because you have one of our more esteemed Senators, the beneficent banker from Bismarck. My colleague from North Dakota would like to introduce you again.

Senator HOEVEN. Thank you, Mr. Chairman. I appreciate, also I admire, your alliteration.

Senator BOOKER. Thank you very much, sir.

Senator HOEVEN. Fantastic. Thank you. I am very pleased that I can take just a minute to introduce Dr. Donald Warne. He is here with us today to share his insight into the health and well-being of American Indians and Alaska Natives, including those of the five federally recognized tribes located in North Dakota.

Dr. Warne is a member of the Oglala Lakota tribe and is Director of the Indians Into Medicine Program and the Public Health Program at the University of North Dakota Medical School. I just have to tell you that this is one of the most amazing programs in the country. It encourages Native Americans to enter the field of medicine as doctors and nurses, med techs, and everything else.

We have such a need in this country to get more young people into medicine, particularly with our aging population, that this is just a model of a fabulous program that does that, not only making a difference in the lives of so many young people, young Native Americans, but think of what they do for all of us who need medical care and attention and when we have such an acute shortage of people in the medical profession. Thank you for your leadership of this incredible program.

I will just finish up by saying, when I chaired the Indian Affairs Committee last Congress, I invited Dr. Warne to participate in a roundtable discussion on advancing tribal public health partners, and I really appreciated the insight you brought to that meeting, and I very much look forward to your testimony here today as well.

With that, again, I would like to thank the Chairman and Ranking Member for that point of privilege.

Senator BOOKER. Thank you very much.

Doctor, there is a bipartisan divide there. Would you correct me, please, with the correct pronunciation of your name? He was saying, "Warne." I think he is usually right.

Dr. WARNE. It is Warne, yes, but you make it sound cooler.

Senator BOOKER. You can call me "Book-air," if you would like.

Senator HOEVEN. That is because Senator Booker is cooler.

STATEMENT OF DONALD WARNE, M.D., ASSOCIATE DEAN AND DIRECTOR, INDIANS INTO MEDICINE (INMED) AND PUBLIC HEALTH PROGRAMS, SCHOOL OF MEDICINE AND HEATH SCIENCES, UNIVERSITY OF NORTH DAKOTA, GRAND FORKS, NORTH DAKOTA

Dr. WARNE. Chairman Booker, Ranking Member Braun, members of the Subcommittee, Hihanni wast'e. Wopila.

Good morning and thank you for the invitation to speak today. Senator Hoeven, thank you so much for the kind words.

In addressing the state of nutrition in America in 2021, we need to recognize that for American Indians we have a crisis of nutritional disparities and subsequent health disparities. Less access to healthy foods and dependence on inexpensive processed foods leads to weight gain. Obesity rates for American Indians and Alaska Natives are at a critical level. According to the CDC, 48 percent of the American Indian and Alaska Native population over age 18 is obese, 48 percent, compared to 30 percent of the non-Hispanic White population.

Obesity is a significant risk factor, as we know, for type 2 diabetes and heart disease, two of the leading causes of death for indigenous people in the United States. Although we have seen some modest improvements in recent years, American Indians and Alaska Natives still have the highest prevalence of type 2 diabetes in the Nation, and American Indian and Alaska Native adults are almost three times more likely than non-Hispanic White adults to be diagnosed with diabetes. Heart disease is the leading cause of death for American Indians and Alaska Natives, and the prevalence of coronary heart disease is about 50 percent greater for indigenous peoples.

In my personal experience, I served as a family physician with the Gila River Indian Community in Arizona for a number of years.

This is a community with among the highest rates of type 2 diabetes in the world. I have seen firsthand the challenges in managing diabetes in a population that has limited access to healthy food sources.

Also, I am originally from Kyle, South Dakota, on the Pine Ridge Indian Reservation, and the nearest supermarket is 90 miles away in Rapid City. As a result, many of my family members contend with significant barriers to accessing healthy foods, and many of them are suffering from diabetes and heart disease.

In many of our tribal communities, substantial expenditures are made to manage the complications of diabetes, such as dialysis for kidney failure, coronary artery bypass grafting, and other surgical procedures for heart disease, amputations for diabetes neuropathy. With kidney failure, people are automatically eligible for Medicare, and in many of our communities, people who are confined to wheelchairs due to amputations utilize social programs that will build a ramp for them to access their homes. Rather than the significant financial expenses and decreases in quality of life associated with addressing just the complications of diabetes and heart disease, would it not make more sense to invest in healthy food in the first place?

One major historical consideration is the forced relocation of American Indian people from their ancestral homelands, thereby severely restricting access to traditional food systems that historically included regionally specific hunting, gathering, fishing, and farming. The loss of traditional food sources also resulted in dependence on Federal Government programs such as the Commodity Food Program, the FDPIR, and that included historically the distribution of food such as lard, canned meats, white flour, salt, and sugar.

According to the North Dakota Department of Health, the average age of death in the decade between 2009 and 2019, so the decade before the pandemic, the average age of death for American Indians was 56.8 years, and average age of death for the White population was over 77 years. Just a tremendous disparity, about 20 years, of average age of death.

Loss of access to traditional food systems, combined with limited financial opportunities in many of our reservation communities, are important social determinants of health. The American Indian and Alaska Native population has significant health challenges. Moving forward, a multi-pronged approach, in collaboration with numerous stakeholders and organizations, is needed to address the upstream social determinants of health and to increase access to healthier foods.

Promising best practices and strategies for American Indian and Alaska Native populations can be considered in several focus areas, including: one, improving existing food programs; two, promoting breastfeeding and early childhood nutrition; three, promoting food sovereignty and increasing access to traditional foods; four, expanding locally cultivated foods; and five, considering taxing unhealthy foods and subsidizing healthier options.

Food programs that work well in cities or suburbs, where there is predominantly nonindigenous populations, may or may not work

effectively in tribal communities. We do have to recognize that one size does not fit all when we are looking for policy solutions.

In closing, we need to recognize that we have a crisis of nutritional disparities among American Indians and Alaska Natives. We need to fundamentally change our approach to nutrition and to develop new strategies to address nutrition and obesity-related health inequities. I applaud the idea of having a second White House Conference on Nutrition to gather more community-based input regarding the potential solutions and to develop action items. We also need a comprehensive policy approach that is well coordinated, and we need to understand the nuances of engaging tribes in these areas. Ideally, we will include stakeholders with lived experience as part of these important discussions moving forward.

Finally, please know that I am deeply honored to be here. Indigenous voices are not always at the table, and I really appreciate this opportunity to address each of you. I look forward to further discussions and questions. Thank you so much.

[The prepared statement of Dr. Warne can be found on page 64 in the appendix.]

Senator BOOKER. No, thank you, Dr. Warne, for your compelling testimony.

I would like to now recognize Dr. Stover for his five minute remarks.

STATEMENT OF PATRICK STOVER, PH.D., DEAN AND VICE CHANCELLOR FOR AGRICULTURE AND LIFE SCIENCES, TEXAS A&M UNIVERSITY, COLLEGE STATION, TEXAS

Mr. STOVER. Chairman Booker, Ranking Member Braun, and members of the Subcommittee, thank you for the opportunity to testify before you today.

My name is Patrick Stover, and I serve as Vice Chancellor, Dean, and Director of Research for the Texas A&M University System and Agriculture and Life Sciences, a Statewide organization known as AgriLife. I am fortunate to lead one of the largest and most comprehensive agriculture programs in the Nation, encompassing 5,000 people and a $400 million budget. AgriLife covers the entire agriculture value chain, from food production and farm inputs to consumer behavior and human nutrition.

Today, I want to provide my perspective on the state of agriculture, the food system, and its connection to hunger. I will provide some context to the enormous challenges we face but, more importantly, give you a sense of the opportunities to reimagine the role of agriculture in transforming our lives.

First, a little context. In 1970, Norman Borlaug won the Nobel Peace Prize for sparking the Green Revolution. His efforts transformed global food systems to be abundant, affordable, and high in caloric density. These successful efforts dramatically reduced hunger.

Today, we face a growing crisis of diet-related chronic disease which costs the U.S. economy over $1 trillion annually and affects nearly half of all adults. We need to buildupon Borlaug's legacy in a revolutionary new way by expanding our mission from simply using food to eliminate hunger and undernutrition to using food to become healthier. This can only be achieved by innovating through-

out the entire agriculture food supply chain and by advancing rigorous science, not merely focusing on what some deem to be healthy foods.

With that said, urbanization, historic underinvestment in agriculture research, gaps in knowledge, competing agendas, and a deficit in public trust all contribute to the growing disconnect between people and the food they eat. To put it bluntly, that disconnect threatens agriculture, the food supply, and the health of our society.

Fortunately, agriculture is uniquely positioned to be the solution. With current and emerging technologies, we can tailor agriculture and food systems to support any and all desired outcomes. To that end, Texas A&M AgriLife is well positioned to lead nationally, in partnership with other land grant universities and the USDA ARS centers.

I am grateful for the new investments from Congress, the State of Texas, and the USDA ARS that enabled Texas A&M AgriLife to launch two long-term innovative efforts. First, the Institute for Advancing Health Through Agriculture will advance research that connects production agriculture with human, environmental, and economic health outcomes. Second, the Agriculture, Food and Nutrition Scientific Evidence Center will be a global resource for policymakers in providing nonbiased, comprehensive, scientific information concerning the human, environmental, and economic effects of any proposed changes to the food system and agriculture system. These efforts are now launching and mark an important first step in our collective efforts to solve some of the most pressing problems facing our Nation and the world.

Equally important, we must bolster education and earn public trust so individuals can make the best informed decisions for themselves. The land grant university system is a network that is an extraordinary resource that should be playing a much more active role in nutrition education across the Nation. These institutions are a national treasure, publicly funded and therefore independent, with the mission of improving the quality of life for all members of society.

Before I conclude, I would be remiss if I did not acknowledge the efforts of the leaders in this room to convene another White House Conference on Food, Nutrition, Hunger, and Health. As a nutrition scientist who has dedicated my entire career to advancing research between nutrition and disease, I know these conversations are vitally important. With that said, agriculture must have a seat at the table if we are going to be successful.

The cost of the current situation cannot be overstated. Diet-related chronic diseases place a huge financial burden on individuals, the healthcare system, the American economy, and are crippling quality of life for most Americans. While historic efforts to eliminate hunger and food insecurity were important and well intentioned, hunger cannot be considered in the absence of agriculture and health.

With that, thank you for the opportunity to testify, and I look forward to your questions.

[The prepared statement of Dr. Stover can be found on page 88 in the appendix.]

Senator BOOKER. Thank you, sir, for that excellent testimony.

I would like to now recognize Dr. Rachidi for her five minutes.

STATEMENT OF ANGELA RACHIDI, PH.D., SENIOR FELLOW AND ROWE SCHOLAR, AMERICAN ENTERPRISE INSTITUTE (AEI), WASHINGTON, D.C.

Dr. RACHIDI. Chairman Booker, Ranking Member Braun, and members of the Subcommittee, thank you for the opportunity to testify on the important issue of nutrition in America and thank you for allowing me to participate in today's hearing remotely.

My name is Angela Rachidi, and I am a Senior Fellow in Poverty Studies at the American Enterprise Institute, where I have spent the past several years researching policy that is aimed at reducing poverty. As Senator Braun mentioned, before I joined AEI, I was a Deputy Commissioner for the New York City Department of Social Services for more than a decade, where I oversaw the agency's policy research. Among other programs that we administered, we oversaw SNAP, which provided benefits to almost two million New Yorkers each month.

My testimony covers three main points. First, poor diet and overconsumption of food have created a major public health crisis in the U.S., with serious health and financial ramifications. Second, our nutrition assistance programs have mixed success in supporting nutrition among low-income households and in many ways contribute to the problem. Third, instead of pursuing bipartisan recommendations to improve our nutrition assistance programs, the Federal Government's actions over the past year have undermined these efforts.

Problems associated with poor diet afflict millions of Americans at a tremendous public cost, as we have already heard today. We know from decades of research that obesity and rates of being overweight in the U.S. are at crisis levels. We know that poor diet is a leading cause of poor health and contributes to very high rates of chronic disease. As we have heard, the associated costs are staggering.

Although the aim of our Federal food assistance programs was originally to reduce hunger, the public health crisis caused by poor diet and overconsumption of food must now take priority. While the Federal Government's nutrition assistance programs cannot solve the problems of poor diet and chronic disease alone, they can play an important role. The USDA operates 15 nutrition assistance programs, with the Federal Government spending more than $100 billion per year on food assistance to U.S. households. Evidence shows that these programs effectively reduce hunger, but they could do much more to support better nutrition and help address poor health outcomes.

One of the main problems with the USDA's nutrition assistance programs is that they lack a cohesive nutrition strategy. SNAP is a prime example. According to my own research, the Federal Government added $50 billion to the program in 2020, a level that I project will remain this high for several years to come. However, as my colleague, AEI colleague, Scott Winship and I showed in October 2020, we knew that hunger among U.S. households held constant during the worst months of the pandemic for the U.S. econ-

omy. Yet, Federal lawmakers continued to expand SNAP benefits into this year and now permanently without addressing any of the underlying nutrition concerns associated with the program.

This is concerning because research shows that SNAP actually contributes to poor diet quality. The USDA recently increased SNAP benefit levels because they determined that SNAP households should consume more calories. This is entirely counterproductive, with research showing that overconsumption of calories is a major contributor to the problem.

Data on what SNAP households purchase add to these concerns. Three of the top five largest expenditure categories among SNAP households are sweetened beverages, frozen prepared foods, and prepared desserts. My point in mentioning this finding is not to judge what SNAP households purchase. Instead, it is to acknowledge the reality that billions of Federal dollars earmarked to improve nutrition among low-income households are primary being used on foods and beverages that are major contributors to poor health.

More than a decade ago, in 2010, I was part of an effort by New York City Mayor Michael Bloomberg to pilot a project restricting sugary beverages from SNAP purchases. The USDA denied our efforts. Since then billions of SNAP dollars have supported the purchase of unhealthy products across the country, and child obesity rates nationally have increased to almost 20 percent. That is one in five children in this country are obese.

In 2017, I was part of a bipartisan policy center task force on leveraging Federal programs to improve nutrition. We developed 15 recommendations that the Federal Government could implement to improve nutrition among program participants. They all remain relevant today.

The main point I want to make is that the Federal nutrition assistance programs have a role to play in improving the diets and health of Americans. The Federal Government spends upwards of $100 billion per year on these programs, the largest of which involves SNAP. The problems of poor diet quality and health consequences in America are bigger than SNAP, but it can play a role in helping to address them. This includes a holistic approach that combines restrictions on purchases, incentives for healthy eating, and nutrition education. This approach has received bipartisan support in the past and should be used as a framework moving forward.

Thank you, and I look forward to answering your questions.

[The prepared statement of Dr. Rachidi can be found on page 95 in the appendix.]

Senator BOOKER. Thank you for that great testimony, and your experiences across the river from the metropolis of Newark, New Jersey, were really helpful to me, watching you.

I want to jump right into question and answering. Votes have been called. The Ranking Member and I have worked out a way that we can both go vote. I am going to read my questions, run to vote, come back, relieve him to do the same.

I want to start off, Dr. Mozaffarian, with some of the staggering data that should appeal to everybody in the Senate about as you look out at healthcare costs. You mentioned that our Nation spends

more on healthcare than any other segment of our economy, as you said, nearly one in every five dollars within our economy but, staggeringly, one in every three government dollars almost. Yet, the top cause of poor health, our food, is largely missing from the healthcare debate. The healthcare debate in Washington seems to be more about access but not why is there so much demand.

Can you speak to the impact of food on our Nation's healthcare spending and the current trajectory we are on with that spending if we do nothing different?

Dr. MOZAFFARIAN. Thank you, Chairman Booker for that question. I mean, we are on a path to disaster. If three in four houses in our country were on fire and all we did was build more firehouses and hire more firemen, right, that would not be sensible; and yet, that is what we are doing with health, right? The majority of Americans are sick, and all we are doing is building systems to treat the downstream causes. With most houses in the country on fire, we need to figure out what is causing the fires and put them out rather than only focusing on the downstream treatment.

A recent analysis by The Rockefeller Foundation found that across the food supply chain we spend about $1.1 trillion each year on food, and at the same time poor diet causes about $1.1 trillion in healthcare spending and lost productivity from diet-related illness. For every dollar we spend on food, our economy loses one dollar due to illness, due to healthcare costs and lost productivity. That is not a winning formula.

As just one example: type 2 diabetes, we keep mentioning this. We will keep talking about this because it is really the canary in the coal mine for the nutritional health of our Nation. It is a devastating disease that is almost entirely preventable and treatable through better nutrition.

The U.S. Government, States and Federal, spends $160 billion each year in direct healthcare spending on diabetes, more than the entire budget of the USDA. Nationally, one in seven healthcare dollars overall is spent on diabetes. Just a single diabetes drug, just one drug, can cost $5,000 to $10,000 per year with out-of-pocket costs of more than $2,000 per year. Diabetes costs for the government have risen 25 percent in five years—25 percent in five years.

This is absolutely not sustainable. Rising healthcare costs are squeezing every other priority out of the Federal budget, States' budgets, and in the balance sheets of U.S. businesses. We have to get these healthcare costs under control, and we are absolutely not going to do it until we address the top cause, which is poor nutrition.

Senator BOOKER. I mean, that is staggering, the fact that we have seen spending go up just for one disease so much, diabetes, and now it is more than the entire Department of Agriculture. As you said, I think that just to absorb that, that in five years alone, the last five years, our spending on diabetes has gone up 25 percent. What could the next five years potentially bring if we do nothing?

I think the point that you made there that I want to ask you about is that we have enough evidence that we know some strategies that could interrupt this and make it better, and they are promising strategies. I am wondering. They are strategies like Food

as Medicine and access. I think some of the other witnesses here testified that providing better access to healthy food, dollars spent there could actually save healthcare dollars, to get the double bonus as opposed to what we are seeing now as currently the dollars spent we get a double loss.

I am wondering if you could maybe speak to some of those strategies that could integrate food and nutrition into our healthcare system and prevent what is the tidal wave, the tsunami, that no one is talking about when they talk about our Federal budget. Again, the debates here are stuck in these debates about, as you said, how many more firehouses do we need as opposed to how do we stop the fire.

Dr. MOZAFFARIAN. Well, this is what is really exciting about where we are today. Some of the most exciting science has been about integrating food and nutrition into healthcare to reduce disease, increase equity, and lower healthcare costs. I call that Food as Medicine: how do we get food into the healthcare system. It is really a simple four-part formula, with every part really clear, easily addressed, and in a bipartisan fashion.

The first is medically tailored meals. We have to have Medicare/Medicaid test, implement, and scale medically tailored meals. These are giving home, nutritionally tailored meals to the sickest patients with severe chronic conditions like kidney failure or heart failure, poorly controlled diabetes, cancer. Research has shown that giving medically tailored meals to these sick patients reduces hospitalizations, reduces ER visits, reduces nursing home visits, and even accounting for the cost of the program, actually saves money: in one analysis up to $10,000 per patient per year.

The second part of the formula is produce prescriptions, for people that have diet-sensitive diseases but are not quite that sick and they can still shop and cook. A doctor should be able to write a prescription for fruits, vegetables, beans, and other healthy foods that is partly or fully covered by insurance. Produce prescriptions seem, from all the evidence, at least as cost effective as other treatments like cholesterol-lowering drugs for primary prevention of heart attacks.

The third part of the formula is to actually leverage dieticians. Today, in Medicare, dieticians can only be reimbursed for counseling of patients for a very small, limited set of diseases like diabetes or kidney disease but not for many, many other major diet-related conditions like overweight or obesity, high blood pressure, heart disease, stroke, cancer or more. In a cardiology clinic, I can get reimbursed for having a genetic counselor on my staff, but I cannot get reimbursed for having a nutritionist on the staff. It is time to fix this.

Part four is nutrition education for doctors. The vast majority of doctors say in polls that they recognize nutrition as so crucial for their patients, they want to learn more, and they are not learning enough in their training. The simple way to fix this is to change the tests. We have to change the U.S. medical licensing exams, the specialty boards tests, and the continuing medical education tests that every physician takes. For the top cause of poor health in our country, should not all of the tests have five or eight percent of

questions on nutrition? If we change the tests, we will change medical education overnight.

Senator BOOKER. Thank you for that. I am going to run and vote and for now turn it over to the Ranking Member to chair.

Senator BRAUN.

[Presiding.] Thank you, Mr. Chairman. We have been talking about healthcare costs, nearly 20 percent of our GDP, and we have started this conversation 50 years ago. What healthcare was as a percentage of our GDP? Seven percent. It has nearly tripled in the 50 years we have been having the discussion.

Then you hear testimony that what we do through SNAP, through some of our nutrition programs here in the government, might actually be adding to the issues of good nutrition because mostly what gets in the diets would be probably highly processed food that may be inexpensive but would have empty calories. What a dilemma we are in.

I have got this question for Dr. Rachidi and Mr. Stover, that, what do we do to get the healthcare system to turn away from remediation to prevention, No. 1? Then what do we do through the USDA, the one or two things that might be most salient, to where we start actually recommending food that is going to help solve the problem, not exacerbate it? Start with Dr. Rachidi.

Dr. RACHIDI. Sure. Thank you for the question. I will address what our Federal nutrition assistance programs can do, namely, SNAP. I think the two main things that could happen in SNAP that could make a big difference is, one, to implement restrictions on what can be purchased with SNAP dollars. I think starting with sugary beverages is a very good step. It will reduce, likely reduce, the amount of those beverages that are purchased by households. I think even more importantly, it will send a very strong message that SNAP is serious about nutrition and serious about households wanting to improve nutrition.

I think the second thing then that the USDA could do within SNAP is to leverage the restrictions with increases in funding for incentives to purchase fruits and vegetables.

I think the combination of those two—so reducing the amount of money available for sweetened beverages, increasing the amount of money available for fruits and vegetables—can start to change the calculus and might actually increase access to those products in neighborhoods that are low-income because there will be more money to purchase them.

Senator BRAUN. Dr. Stover.

Mr. STOVER. Thank you for that question. I think that we have to take a systems approach to really connecting food and health. As I mentioned, there is a disconnect right now, a major disconnect between food production and then our expectations around consumer health.

We have to address this across the entire food system. We heard about obesogenic environments. We talked about the relationship between diet and disease. We talked about incentive programs. We talked about other types of Federal interventions. We need to approach this considering the entire food value chain, from farm inputs all the way to consumer behavior and human nutrition. We saw during COVID–19 that a change in consumer behavior, not

eating at restaurants anymore, eating at home, played havoc on the entire agriculture and food value chain. They are all connected.

If we want to set the goal, the purpose of the food system, to lower healthcare costs, to protect the environment or whatever goals we have, we have to focus on that goal, and we have to take advantage of every opportunity, all the knowledge we have today toward that specific goal. We have to do it in a way that we acknowledge where our research gaps are and be very transparent about how certain we are of the knowledge we have so that we can engender public trust. That is the only way we are going to get true prevention, if we deal with all the causes.

When you talk about prevention, there are two aspects to that. There is what you eat and how much you eat. Francis Collins started the Precision Nutrition Initiative at NIH for the sole purpose of trying to understand how individuals interact with food and the diet-chronic disease relationship. We know we are heterogeneous. The data tells us that. We all interact with food differently in terms of that chronic disease outcome. One size does not fit all. We need to better understand that science and how to better match people to diets and again consider the whole agriculture value chain.

In terms of dose, we need to understand better human behaviors, these obesogenic environments, et cetera. We need to try to work on dose so that people consume less. We have to work on both aspects, both the dose of consumption and what people eat.

Senator BRAUN. Thank you. Real quickly, how important relatively is it that the AMA would lead on this as opposed to trying to force solutions through government? That always is a little trickier.

Why are we not hearing more in credentialing and so forth to where that ounce of prevention being worth a pound of cure? To me, if that happens at where the rubber meets the road, we actually start seeing things cascade in a favorable way. How important is it that the AMA get on board with this?

Mr. STOVER. For years, and as President of the American Society for Nutrition, we spent a lot of time trying to focus on getting more nutrition into medical education. That is a tremendous challenge because every professional society wants more of their type of education in the medical degree.

At Texas A&M—and we have a paper coming out on this—we are encouraging combined programs of nursing and dietetics. It is nurses who are the front-line healthcare workers who see every patient, especially in our disadvantaged communities. We need to have those front-line workers have that nutrition education because there simply are not enough dieticians in these healthcare facilities to educate about nutrition.

At the same time, we need to expand what we do in the land grant system through extension. People trust us. People trust the information that we give them. We have community health programs. They have not kept up in terms of funding with the growth of the population and the diversifying of the population. We need to take advantage of our extension system as well.

Senator BRAUN. Thank you.

Senator Warnock.

Senator WARNOCK. Thank you so very much, Ranking Member and Senator Braun. I am grateful to you and also to Chairman Booker for holding this important hearing.

Families across Georgia's rural communities are facing added barriers to adequate nutrition, including distance to a grocery store, limited transportation options, and the availability of quality fresh products at an affordable price, for example, Second Harvest of south Georgia estimates that one in five people in south Georgia do not know where their next meal will come from. One in five.

Administrative flexibilities provided by USDA have helped provide additional nutrition assistance throughout the pandemic, but I am hearing from the folks back in Georgia that the guidance coming from Washington fails to fully reflect the challenges of administering assistance in rural communities.

Dr. Warne, you have dedicated your career to underserved communities. What unique challenges do individuals in rural communities face regarding nutrition, and how can this Subcommittee better address those challenges as we look ahead to the 2023 Farm Bill?

Dr. WARNE. I appreciate the question very much, Senator Warnock. Where I am from in South Dakota originally and the communities I work with in North Dakota are very rural, particularly the tribal populations. With the rural populations that I have worked with, that are also underserved, we tend to have less access to healthcare but also less access—less easy access to healthy food.

Where I am from originally in Kyle, South Dakota, for example, if we want to purchase healthy food, it costs more than what you would spend in a city or a suburb because it is perishable and it costs money to bring the food out to some of the rural communities. In public health, we call that a poverty tax. Is not a tax per se, where money is being collected by a government, but people have to pay more money for healthier options when they live in rural and underserved populations.

It also links then to the need for health education. One of my challenges that I have seen when I was a full-time clinician I was also a certified diabetes educator, and what I recognized, was all of this awareness of education and theory is really not of value if we cannot implement it. If people do not have access to the things that we are recommending, then we are really not going to improve outcomes for diseases like diabetes.

When I look at the communities that I work with, there are so many challenges. We need to create opportunities and fundamentally rethink how we are doing this because we need more local, easy access to healthier choices. In doing that, we also have to develop community champions. It is not easy to change behaviors just by changing a program or two. We actually have to do a lot of community engagement on the front end to make it more effective.

Senator WARNOCK. Thank you so much. In order to serve our rural communities—and I spend a lot of time in my State being certain to move around these rural communities—it seems to me that we have to center their unique concerns in order to get the policy right. It is great to have folks like you here helping us, helping this Committee to think about how we best tailor the policy to the particular needs of rural communities.

If I may, I want to pivot in my remaining time to another subject. Since my first day in the Senate, I have been laser focused with my colleagues on closing the Medicaid coverage gap. In Georgia, we have got 646,000 Georgians in the Medicaid gap, millions of Americans. This is a matter of life and death for people in my State, all across the country, and Congress must act immediately.

According to the Georgia Food Bank Association, approximately 66 percent of the families they serve have been forced to choose between food and medical care. This issue affects everything, including nutrition.

Dr. Mozaffarian, in your testimony, you discuss how nutrition insecurity and diet-related diseases disproportionately impact those who are low-income, racial minorities or live in rural areas. How would closing the Medicaid coverage gap and expanding access to health insurance reduce health disparities and improve nutrition for the 646,000 Georgians and 2.2 million Americans who currently lack access to free and affordable healthcare?

Dr. MOZAFFARIAN. Well, as a physician, I know and I see the power of the healthcare system when you get sick. If you get sick and have to use the healthcare system and do not have insurance, you can be financially devastated, and so I think having access to healthcare insurance as a financial support system is crucial.

I am not convinced that having health insurance per se makes us healthier, and there is lots of evidence that this is not the case. It is a financial imperative, but to get healthier we also have to have that health insurance focus on prevention. I think that you would get a double win if that policy of addressing the Medicaid gap were paired with real programs and policies in Medicaid like the ones I mentioned—medically tailored meals, produce prescription programs, dieticians that can actually see patients who need them, and physicians who are trained in nutrition—so that those low-income communities, rural communities, communities of color can get their insurance and go and actually get healthier food, get good counseling, get medically tailored meals if they need it and so on.

I think, the healthcare system again is wonderful if you are sick, but it is very expensive, and it does not do a whole lot for prevention. We need to both expand coverage and change the way we think about healthcare so that it actually starts to really have a focus on prevention more than treatment.

Senator WARNOCK. Prevention, affordability, access to good, nutritious food, and access to healthcare are all caught up in a single web, and there is no sort of one prescription for all of these things that are caught up. Thank you so much for your testimony.

Senator BOOKER.

[Presiding.] Mr. Ranking Member, who is up next?

Senator BRAUN. Dr. Marshall.

Senator BOOKER. Dr. Marshall. Thank you, sir.

Senator MARSHALL. Thank you, Chairman Booker, and appreciate you holding this hearing. Ranking Member Braun mentioned the cost of healthcare has went from 7 percent of GDP to 20 percent of GDP, approximately. Often, when I talk about driving the price of healthcare, I talk about, well, we need more transparency, we need more innovation, we need more consumerism, but the

fourth leg of that stool is better nutrition. That is certainly one of the reasons that the cost of healthcare has went up and is something I cannot control as a physician. I cannot prepare the diet for the folks that need it.

The Majority here gives us notes today: Currently, in the United States, nearly half of our adult population is pre diabetic or who has type 2 diabetes. Half of our population. That is an epidemic.

Mr. Chairman, in the spring of 2020, I volunteered in southwest Kansas at an ICU and an ER. The COVID virus was sweeping across Kansas. Our packing plants in southwest Kansas were just getting devastated. We set up testing stations and did everything we could. I went to the ICU in Liberal, Kansas. Eight ICU beds, but there were 11 patients, and I think they were in their 50's. Every one of them had diabetes or probably pre-diabetes.

Immediately I called the CDC and said, oh, my gosh, this virus is going to assault this country. People will ask, why is our morbidity/mortality higher with this virus than, say, the African nations? I assume that would be true for our friends in the Far East who have better American diets as well.

I do not know about you all, but I have been so frustrated that the CDC has not talked more about nutrition and building your own immunity. We have had a year and a half of this virus, and I thought this might be an awakening for this country that if we had a better, healthy immune system that is how you fight viruses.

I think I will start with Dr. Mozaffarian. Forgive me. Are you frustrated that the CDC has not been doing public service announcements on building up your own nutrition and how important nutrition is to building a good immune system?

Dr. MOZAFFARIAN. Well, I think that this has been a lost opportunity this last year and a half. Obviously, we need to have worked on and successfully developed vaccines, looked for treatments——

Senator MARSHALL. Of course.

Dr. MOZAFFARIAN [continuing]. used social distancing, other things. The huge, huge additional foundational effort should have been to improve our overall metabolic health through better nutrition. We published research this year that we estimated 64 percent of COVID hospitalizations could have been prevented if we had a metabolically healthy population.

Every time, not just the CDC, but other leaders in the Federal Government, leaders in the States, every time they talked about social distancing, mask-wearing, getting a vaccine, handwashing——

Senator MARSHALL. Nutrition.

Dr. MOZAFFARIAN [continuing]. why weren't they talking about being healthy?

Senator MARSHALL. Yes. I think that is a great explanation point. I think about my own field of obstetrics, and the morbidity/mortality for this country has went up over the past decade or so, and we have done deep dives down why. How come? I can share with you that the average starting weight of a patient in my practice, from 25 years ago until I left my practice four years ago, is up about 20 pounds. This incidence of diabetes and pre-diabetes, which is exacerbated from the hormones of pregnancy, I think that has to be contributing to it as well. It has been frustrating.

We have been studying this for decades, and I appreciate your comment if we had more education in medical school that would be helpful. I am telling you I learned everything I need to know about nutrition to address this problem from my mother and my grandmother. It is not doctors that give the nutrition education; it is the nurses. Right? I think it is just a matter of how do we use those assets and the time of the nurses to keep teaching that inasmuch as we need doctors learning more about vitamins A, D, and K are fat-soluble and that is why we need to be drinking whole milk as opposed to just general concepts.

I think the bottom line is this: when the economy is bad, when people do not have a job, when you have got some food stamps, whatever it is, carbohydrates are cheaper. Processed food is cheaper, and that is why I have always thought the economy is so important to this issue as well. Give a person a job where they can make these healthy choices.

One big question I have got for anybody that can help me answer this: We pack our food banks with yesterday's donuts and yesterday's breads, and it is expensive. We are making an effort. I think we are doing it better today in our food banks than we were a decade ago, trying to get nutritious food in there.

There is a multi-katrillion-dollar vitamin industry out there. Are you all aware of any research that we should be putting vitamins in our food banks? Are vitamins different than, give me whole fruits and vegetables and give me whole milk and give me good protein sources over a bottle of vitamins? I think that most of us would agree that if Mother Nature made it, it is better. Should we be adding vitamins to those types of situations? I know I am open for anybody who has any thoughts on that.

Mr. STOVER. I can comment on that. What we are talking about today, diet-related chronic disease, is not driven by micronutrient deficiencies that you get out of a vitamin. Certainly, those do occur for those who do not have the best diet. Certainly, they can help fill gaps. What we are talking about today, at least in all of my experience and working on these DRI panels, is not related to vitamins.

This is a broader question related to the food environment. It is related to health behaviors. It is related to public trust. This is another issue where people—Pew Research did a survey last year, and people do not trust nutrition researchers the way they do other areas of the healthcare system.

We have a big challenge. We have the problem with COVID and vaccinations. We have the problem in nutrition.

Senator MARSHALL. If anyone thinks——

Dr. MOZAFFARIAN. Can I just add?

Senator MARSHALL. Go ahead.

Dr. MOZAFFARIAN. Can I just add one comment, Dr. Marshall, on the CDC? The CDC's Division of Nutrition, Physical Activity, and Obesity—Nutrition, Physical Activity, and Obesity—the foundation of health, has a $100 million a year budget. The government spends $160 billion on type 2 diabetes treatment and $100 million on prevention at CDC for physical activity, nutrition, and obesity. Let's get that division up to a billion dollars maybe, one-sixtieth of

the cost of diabetes, so that, I think the CDC can have a progressive——

Senator MARSHALL. I totally, totally understand where you are coming from. My experience is throwing money at it does not solve the problem. I would want to know very specifically, what would they be doing different than they do today—Mr. Chairman, can I have another minute. Nobody else is waiting, so I am going to go ahead and——

Senator BOOKER. Doctor, you can have two minutes.

Senator MARSHALL. Okay. I think my question is for Dr. Rachidi. Again, I feel like we are just throwing money at things. We have tried this. I do not know why we need another conference, to be honest. I think we all know exactly what needs to happen. Much like me trying to convince a patient to stop smoking—they know they need to stop smoking. America knows they need to get on a better diet. America knows that they need to be exercising more.

We certainly know what does not work. What would work? What are we not doing now, that if you were king that you would come in here and say, here is something that we can do to really impact this problem tomorrow.

Dr. Rachidi, you are on the line, I think. If you have any comments, I would love to hear your thoughts on that.

Dr. RACHIDI. Yes, thank you. I could not agree more that just throwing money at the problem has not proven to be effective in the past, and I do not think would necessarily be effective now. For example, we, the Federal Government has increased efforts in spending on nutrition education, for example, in SNAP and various other programs. While I think nutrition education can be useful, it certainly has not had a major impact on any of the problems that we have talked about today. We really need more of a holistic approach that looks at what we are already spending and figures out a better way to spend it.

Again, I think the main point that I really want to emphasize today is that we need a cohesive nutrition strategy across all the Federal agencies that makes it clear to the American public that this is a crisis and we have a strategy to try to fix it, and that includes a whole range of things. I mentioned my area of expertise which is SNAP and what we could do there, but obviously, there are many other ideas just today of what can be done. The main thing is we have to pull it together and we have to develop a strategy and then we have to take action as a country and actually implement these strategies.

Senator MARSHALL. Thank you so much. Mr. Chairman, if I would say, my experience in 25 years of medicine, WIC works. The WIC program is great, and one of the reasons WIC works is the people that are participating in that are teaching and coaching up people. They are not just giving them vitamins. They are not just giving them healthy choices. They are coaching them up, and it is that interaction between the real people and the real WIC programs. Those are what we need to be; people need to be kind of coached up to what a healthy diet looks like.

Thank you so much. I yield back.

Senator BOOKER. Before you leave, because this is a wonderful forum to engage with colleagues, especially, frankly, you are one of

the more informed people in the U.S. Senate. You are actually a medical doctor and have tremendous experience with diverse populations. I agree with you. I am one of these people that has witnessed a lot of knowledge out there, but it is not getting into our practice.

The two things I would say is Dr. Rachidi, in her remarks, she said the words, "cohesive strategy." We have so much accord, but we are not working together to get it done. The hope or the vision for Senator Braun and I—and I would love to talk to you more about it—is the idea if we get all stakeholders around the table in a bipartisan fashion, private sector, farmers, policymakers to begin to talk on those evidence-based strategies.

Why are we not working together? Because the reality is what can create change, it has to be folks like you and I coming together and agreeing on a strategy and executing it because there clearly are, as Dr. Rachidi has been saying, things we know work that we are not investing in and things that are potentially making the situation worse.

You are somebody I really look forward to partnering with. To have your sort of, what I would say, cred on these issues is really great. Maybe before you go I would like to ask this panel, then I want to turn to Dr. Odoms-Young, because there are evidence-based strategies.

My experience in this is the fact that I was a mayor of a city. I cut my city government by 25 percent. I do not know any Governor or mayor that is in the Senate that cut their government size as much as I did, but one of the two costs I could not control was my healthcare cost.

Senator MARSHALL. Yes.

Senator BOOKER. It would go up double-digit percentages every single year.

Senator Braun, who is a businessman extraordinaire, said that he did creative things to bend his cost curve by providing healthier food options to people.

Dr. Mozaffarian, if you could just put an exclamation point perhaps on you were saying earlier that there are—this is not—this is a fiscally conservative approach. Right? We know that if we do nothing wrong we are going to be doubling major increases in government spending. We could actually invest in programs we know drive down government costs because if there is anything we can agree on in a bipartisan way we are about to run government into the ground with one of out of every three dollars now being spent on healthcare costs as opposed to—and if we do nothing, as you said, diabetes alone, costs grew 25 percent, on that one disease more money than the entire Department of Agriculture, and it is going up in a stunning fashion.

Maybe before—I know Senator Marshall is in great demand, has to probably go to another hearing and to the floor to vote.

Senator MARSHALL. Go to vote.

Senator BOOKER. If there is one more thing that you can say that is evidence-based programs and you were talking to a fiscal conservative, what would you say? Hey, these are some of the best dollar investments you can make in changing this nightmare for a lot of families and individuals.

Dr. MOZAFFARIAN. Yes, well, I consider myself a fiscal conservative as well, and I think, we need to invest money where we are going to get a return on investment. I think we need to invest money in nutrition science. There is huge return on investment. We can talk about that more, hopefully.

We need to have healthcare pay for healthier food where we show it to be cost savings or cost-effective, and there are lots of great ways to do that. I absolutely agree we need to strengthen and leverage our Federal nutrition programs, strengthen school lunch. WIC is excellent. Improve SNAP so that SNAP leverages nutrition better.

One thing we have not talked about which I would love to be able to talk about longer is to catalyze business innovation. The Federal Government has a role to play to help nurture and catalyze all of the disruption that is going on now, from agriculture to retail to consumer packaged goods. Tens of billions of dollars are going now into new jobs and new businesses to create healthier products. The Federal Government could catalyze this with modest tax policy, modest other investments, opportunity zones, other areas like that.

I do think we need to expand public health. I think there is a return on investment for that. Then last, I agree with you, Senator Booker, that a low, low-cost thing to do is to convene a White House conference to get Dr. Marshall, yourself, others, along with the leaders in the Biden administration, in the same room to say, look, we are going to fix this, and we are not going to leave the room until we come up with a plan. I think it is all possible.

Senator BOOKER. Thank you.

Senator MARSHALL. I will go vote. Thank you.

Senator BOOKER. Senator Marshall, thank you, sir, for giving a few extra minutes.

I want to jump to Odoms-Young because this is an issue that affects rural areas, suburban areas, urban areas, everywhere, but there are particular issues going on amongst Native communities, Black and Brown communities, that are—make this even more troubling and compound the problems within those communities.

Dr. Odoms-Young, a recent report from the Rudd Center found that Black and Hispanic youth are exposed to more food advertising in the media and their communities compared to White youth and that food companies target Black and Hispanic youth with advertising for their least healthy products. Could you comment on that Rudd conclusion? Are you familiar with these practices, and what impacts do you see them having in those communities?

Dr. ODOMS-YOUNG. Yes. Thank you so much for that question, Senator Booker. I am very familiar with the report, and also, I have been part of several studies that look at food marketing in collaboration with the Council on Black Health. Black Americans, particularly youth, not only experience higher exposure to unhealthy food marketing through television and advertising but also through social media, print media, and in their communities.

The Rudd report that you mentioned found that junk food comprised 86 percent of the spending on Black targeted programming and only one percent of healthy foods were marketed. I think what

is particularly striking is that in 2019 the report found that 23 restaurants spent $99 million to advertise on Black television or television programming that targets predominantly African Americans. As compared to White preschoolers, a Black preschooler saw about 72 percent more fast food ads, and if you look at teens, they saw about 77 more fast food ads.

This has serious implications when you look at dietary preferences and eating behaviors. Several studies have shown that immediately after you see these ads they have a desire for unhealthy food, junk food, and fast food. If you look at Black, indigenous, and Latinx communities, where you have more of that food available, you can actually act on that marketing and that prompting.

I think the other issue that comes up is that when youth are exposed to these ads in early life it creates a lot of brand loyalty and also youth start to associate these foods with experiences. It is not just selling food. It is selling experiences. It is selling value, happiness, socialization. These have major implications for obesity and chronic disease risk in these communities.

Senator BOOKER. It is, I guess, neuro-associative conditioning. It is like you think of a meal, like I may have thought up about my grandmother's cooking, which was very different than often you see in Black communities today, and that was the happiness. Now, as I think the only Senator that lives in a predominantly African American, Latinx, low income area, I am just stunned with the messaging that folks receive.

Maybe, Dr. Odoms-Young, you can comment on this for a second. It is that compounded with the fact of you just do not have the ease and availability of the kind of foods that when I talk to the elders in my community that they used to cook with. I live in a neighborhood with a corner bodega, and you have very limited healthy options. Then because of, I would say, the way we subsidize certain foods and not others, with 98 percent of our ag subsidies going to foods that are hyper-processed, low-nutrition, you see kids walking into bodegas and with—you know, with the kind of change. A Twinkie product, like product, costs less than an apple.

You have that double hit. Right? The advertising and the availability. Would you agree with that?

Dr. ODOMS-YOUNG. Definitely. I have spent much of my career working on the south side of Chicago with several community-based organizations, where we worked alongside corner stores to change the availability. Part of the big issue, as you mentioned, is not only availability but also pricing. Unhealthy food products cost lower.

I was just in a corner store—it is funny that you mention that—this week, and not only were unhealthy products marketed—and this is in a store where we have a partnership. We also found that there is a lot of ultra-processed foods in stores, not only corner stores but also grocery stores. It makes it difficult because the pricing is—the prices are—as compared to healthier food options, make them more desirable, particularly when you have a limited budget to spend on food.

I think that is very important. If we can try to address and look at affordability, as well as accessibility, that is where we can see a reduction in dietary disparities and improve nutrition.

Senator BOOKER. Thank you.

Maybe, Dr. Warne, as the Ranking Member is coming back to the dais, you mentioned in your testimony that for you growing up and for many of the family members still living on the Pine Ridge Indian Reservation in South Dakota, that the nearest supermarket was 90 miles away. Can you speak to that and what Dr. Odoms-Young was just speaking about, that combination of access issues to get healthy foods and how that is a disproportionate reality for native communities?

Dr. WARNE. Yes. In my experience, particularly in the Northern Plains, we see this across multiple reservation communities, so not just my own community in South Dakota. As food deserts, we just do not have local access to healthy choices. If there are some perishable items that are healthier options, again, they are more expensive when we have to purchase those in our communities. We make it untenable for people to make healthier choices, and I think that is where investment really needs to occur is to make the healthier choice the easier choice.

There has been discussion about sugar-sweetened beverages, for example. I have worked with a tribe in Minnesota, where at their wellness center the bottled water is 25 cents and the soda is $1.25. Well, guess what? Water consumption went way up; soda consumption went way down.

There is ways we can try to invest in healthier options but make them easily accessible and inexpensive because right now even if we put the food there and we provide education regarding the value of healthy food, if people cannot afford to purchase it, then we are not going to implement the changes that we need.

Senator BOOKER. Programs like—we have done this in my city, in Newark, giving people access to make their SNAP dollars go further. If you spend it for processed food in a supermarket, it is one thing, but if you spend it at a farmer's market, you get double SNAP benefits. Those are the kind of things that you think would work?

Dr. WARNE. Yes, that would be very important. Then also with engaging tribes, looking at the value of traditional foods and locally cultivated foods. That is one thing that the FDPIR, Food Distribution Program on Indian Reservations, has done better in recent years is to incorporate more culturally appropriate and traditional foods. I would want to work with each community individually, again because the one size does not fit all, but find those local preferences and develop the local champions to do that. That is—I think would be a very important step.

Senator BOOKER. Fantastic. I am going to yield to the Ranking Member to continue questioning.

Senator BRAUN. Thank you, Mr. Chairman. We covered a lot of territory today about the fact that the healthcare system is almost triple what it was 50 years ago when we started the conversation. Prior to becoming a Senator—and it was roughly 13 years ago—as a CEO of a company that just had 300 employees, now 1,200, I could put two and two together quickly that I needed to change my own healthcare system. I always believed in covering preexisting conditions with no caps on coverage, but my main interest was re-

ducing healthcare costs and making my own employees healthcare consumers.

I know we have two doctors, M.D.s on the panel here. When I brought it into the C-suite, that was very unusual because most individuals running companies were paying for remediation when it cost a lot less even 13 years ago.

For the two M.D.s on the panel, how important is it to foster a new paradigm based upon an engaged healthcare consumer, not one that is atrophied, with very little skin in the game, just wants either government to remediate your bad behavior or your illness or your accident, and you have got an industry that is based upon the business of remediation?

To me, knowledge and transparency are the two things that have to drive all markets, and then you have got to have things like competition, full transparency.

From an M.D.'s point of view, what do we do to fix the system from the bottom-up before we maybe turn it into a one payer system out of frustration? Even if the government pays for more, wouldn't it make sense to reform healthcare first regardless of what we do through nutrition through USDA? I would love to hear your thoughts, each, on that.

Dr. WARNE. Okay. I can go ahead and go first. I appreciate the question, and I also appreciated in your opening remarks, again, a holistic approach to doing this work.

I think from a physician's perspective, at least in my own experience working with tribal communities and recognizing that I have all of this knowledge about pathophysiology and the understanding of things like diabetes education, one of my biggest challenges really at that ground level was that even if my patients wanted to make healthier choices they did not have the means to make those choices to purchase the healthier foods. We just have to recognize that each population is different and we will need unique strategies with each population that we are engaging.

One thing I do know is that our population, as diverse as they are, they want to be healthier; they really do. I think that having a community-engaged approach and recognizing that each group of patients and each population will have their own strategies, and we need to be flexible enough within that.

We talk a lot about evidence-based practices, which are wonderful as a physician, but also training in public health. I recognize the need for evidence-based practice, but my question is always, whose evidence is it? I mean, if a program worked very effectively in Boston or New York City, it may or may not work effectively in Pine Ridge, South Dakota. As we are building the evidence base, from a physician's perspective, we need diversity in the groups from which are building the evidence.

Dr. MOZAFFARIAN. I would add, Senator Braun, I think your instinct 13 years ago was spot-on and it is spot-on today. It is really clear that we need to reimagine healthcare as a preventative healthcare system that pays for value and prevention just as much, if not more, as it pays for remediation, as you put it.

This is happening. This is happening, and private healthcare systems across the country are really starting to think about food as

medicine, prevention, social determinants of health. They are doing it in sort of fragmented fashion, piece by piece, bit by bit, learning.

I think the Federal Government has an important role to play to catalyze this. The CMMI is—you know, CMMI's mandate is to test interventions that will improve health and reduce costs. I think Congress asking CMMI to really focus on nutrition and prevention and integrating food and nutrition into the system in a way that empowers educated, knowledgeable consumers, gives them systems, resources to purchase healthy food, is absolutely the way to go.

I will give the example of John Hancock Life Insurance in Boston, one of the great and oldest life insurance companies in the Nation. About five years ago, they launched an insurance program called John Hancock Vitality, which rewarded their life insurance clients for physical activity, for not smoking, and for healthier eating—all kinds of gamification, incentives, rewards for healthier eating, including paying up to $50 a month. Out of pocket, John Hancock pays up to $50 a month to their life insurance clients for purchasing healthier food. Tufts is kind of their science partner to be sure that everything John Hancock is doing is credible science.

John Hancock says, we will spend $600 a year on healthier food for our clients because we will make money. They will live longer. They will be healthier. That is a model of health insurance for the future.

Most of our worksite wellness programs now today will pay for belonging to a gym or even buying equipment, buying tennis shoes or a treadmill. If you get your steps, many programs will give you some kind of rewards and other things. We need to do the same thing for food.

I think your model is exactly right, and again, CMMI is an excellent place to start. I would hope they would be investing heavily in this kind of innovation testing to figure out what works best.

Senator BRAUN. Thank you. One final comment, when you have got a podium like this and for as long as I have been asking the healthcare industry to reform itself. When you have got bad stats like costing three times as much as a part of our economy as it did five decades ago, that soul searching and looking at how you might do a better job for the most important part of our economy, and agriculture and food processing to boot, see what you can do before you are in a pickle to where you are maybe forced by government to do things that you are not happy with. I especially aim that at the healthcare industry. Embrace competition, transparency. Get the healthcare consumer engaged, and maybe less attention will be paid to it through government.

Thank you.

Senator BOOKER. Senator Braun, just for the sake of conversation, I love how you aligned as a businessperson your—the bottom line. You saw that you had to find creative ways to reduce costs. I am wondering, maybe a question for Dr. Mozaffarian but also for you to the extent that you want to engage. Do we have perverse incentives in government as opposed to the clarity that the Senator had, that we could do some changes to our policy that align incentives? Because right now it makes no sense.

If you and I were running this with the goal of lowering costs, which these are the—and I have heard speeches on both sides of the aisle to the untenable skyrocketing cost of healthcare, but again, the debate really has been in providing healthcare and not why do we have such a high demand. That is what I am wondering is how do we get at aligning incentives in government that you had so clearly as a businessperson that resulted in quicker success.

Senator BRAUN. Real quickly, I have talked to Chairmen Wyden, and there, if you are a problem solver, like you have got to be to run a successful company, you are looking ahead rather than being in a cul-de-sac where you are forced to do it.

My belief is that if you reform the system first that even folks on your side of the aisle should be for more transparency, more competition. Make the system better regardless of whether the government pays for the healthcare or it is done through the private sector. Much has evolved to have a broken system, almost like an unregulated utility out there, on the healthcare provision side.

I am asking, as someone that believes in free markets, that maybe we need to pay more attention to creating the paradigm of competition, transparency, changing an atrophied consumer into one that is interested in his or her own well being. Then if it is not moving in a way that we see things evolving in a different direction, then I think it will cascade into the other option that so many on my side of the aisle bemoan. Where were we when we were defending some of the stuff that was not working in the healthcare system and we had no answer like I am trying to provide?

Senator BOOKER. There is so much agreement up here, which I think is a rare thing in Washington. They might rush in soon and stop us from talking to each other, but I want to ask maybe—because I believe in a free market, too.

What I think government is doing right now is picking winners and losers. Ninety-eight percent of our ag subsidies—ninety-eight percent—of our ag subsidies are lowering the cost of the very foods another part of government tells you not to eat. Only two percent of ag subsidies are going to the things that we tell us—I have seen it go from the food pyramid to the food plate, but all along they have said eat mostly these foods. Yet, our ag subsidies are completely aligned, picking winners and losers, and not allowing the free market to decide and—for consumers.

Again, I live surrounded by fast food restaurants, and I am not having it my way, and I am not having happiness in my meals. I am having fast access to foods that when I—when you go in and you see that dollar meal, it is—that is heavily subsidized by the government. Meanwhile, if I want to get a salad, the places that make them available, you walk in, and there is a place down the street. They charge like 20 bucks for a healthy salad with just vegetables.

I guess that is my frustration because I think we are aligned on values. I believe in the free market. I believe that government needs to cut costs. I said to Senator Marshall, I am the only person here who actually ran a government that cut it 25 percent. I could not control my healthcare costs.

I am wondering that—could you speak—and maybe Dr. Stover, Dr. Mozaffarian, can you speak to this problem that I see, where we are not letting the free market rule? We are investing heavily as a government, dramatically, on the things that are making us sick. Those small pilot programs that come in these farm bills. Tiny, tiny amounts to try to incentivize the things that are making us well. It just seems like a misalignment of government. We are not investing and getting returns. We are investing, compounding the problem.

Mr. STOVER. I mean, certainly I understand what you are saying. Let me just first state again that our farmers and ranchers are some of the most devoted, hardest working people in the country. They feed America, and they are very proud of what they do. They respond to what the consumer demands. With all the things that we have heard about influencing, advertisement, all of that, they respond to what the market is telling them to produce.

We have the opportunity to change that, and we have to look at all opportunities to do that, everything from nutrition education, everything from the frameworks we use in terms of what we subsidize, what we grow, how we process, how we then work within the cultural context of food systems and not alienate people from their food but improve those food systems within the cultural context. There is no magic bullet to this. We need to take a systematic approach.

If we knew what do to, if we had the evidence right now, there would be complete consensus on what to do, and we could fix this tomorrow. We know some things work, and they work at the margins. We need to address this systemically again, looking at everything we do from what we grow in the field to what—how we are educating consumers and affecting behavior.

Senator BOOKER. Dr. Mozaffarian?

Dr. MOZAFFARIAN. Yes, no doubt that the, subsidy portion of the farm bill is really important for risk management for, farmers across the country, but it is all going to five crops. If we took all that away, those farmers would go out of business. We would have severe, severe problems. We have to figure out how to shift without hurting those farmers, shift their profits and their productivity toward healthier crops.

I agree with Dr. Stover that the farmers produce what the buyers buy, and so that is—they are producing those crops because that is where the market is. We have to both increase the market opportunities for those farmers and then find ways to help them shift toward healthier crops while still providing risk insurance, crop insurance for increasing, threats from changes in climate and other things.

The way to increase the market side, we have talked about a little bit, right? We need to leverage the power of our nutrition dollars and particularly SNAP to buy healthier food. We need to leverage the power of the healthcare system and dollars to buy healthier food. That will change the market for those farmers. That will give them incentives to make locally grown specialty crops, organic crops, other healthier foods as well.

We also need to catalyze business innovation and entrepreneurship in this area. We work with many startups who are trying to

make healthier foods, and they are actually at a disadvantage compared to their competitors because they are buying more expensive ingredients. They are doing more to make the foods healthier, more authentic, from local sources. That costs them more money. Rather than having them be at a disadvantage, I think the government should really think about a policy to help catalyze small businesses and entrepreneurs who are creating more nutritious foods. That also creates demand for the farmers.

I think Senator Booker, it is complicated, but that $30 billion, if nothing else, is opportunity cost that we could be spending better. I do not know that it actually lowers the price of those products because we have a global commodities market. There is a lot of complexity into commodity prices. It is certainly opportunity cost. We could be doing more with that $30 billion than we are doing now.

I think that is a very serious conversation of how we support our farmers and ranchers who are, again champions in the United States, support them, make sure they are going to be successful while letting them switch to healthier crops and create the markets for those crops.

Senator BOOKER. I do not know if you want to respond. I have some thoughts about what was said.

[No audible response.]

Senator BOOKER. I agree with what both of you have said. I have strange alliances in the Senate. Senator Chuck Grassley and I are partnering, for example, on some challenges within the cattle industry because what cattle farmers are worried about is that they are going to go the way of the dramatic changes in the chicken and pig industry, for example. They are raised so differently than they were just 50 years ago, and the way they are being raised is causing real concern for public health. The overuse of antibiotics is necessary because of the concentration in the industries and the growth of CAFOs.

Frankly, the farmers, if you talk to them, the contract farmers are living in deep debt and in real crisis.

I was stunned in the hearing we had in the Ag Committee on the cattle industry that I was being praised by a guy on conservative radio in Alabama as being this northeast Democrat that was talking to the concerns that the farmers have.

I agree with both of you that the farmers are my hope in America. I have gone out to the Midwest to meet with Republican farmers, as I told Dr. Stover, and was amazed at the concern we have because they know that the system as it is designed right now is benefiting more and more corporate concentration, that farmers, their inputs are going up. Instead of having—one Republican farmer from western Illinois, if I remember correctly, was telling me that they used to have—their father had five people to sell their cattle to, now one person.

It is a system that is no longer working. The farmers' share of that consumer dollar—my folks in my city go to a supermarket from their beef to their broccoli. The farmers' share of that consumer dollar has gone down 50 percent.

It is a food system where everyone is losing. We have talked about the health of our country right now; they are losing. We have

talked about the challenges with farmers right now, the disappearance of family farmers; they are losing. You talk about food workers, what is happening with animals. You talk about the environmental issues that are all going on.

We have a system that is not only making end users healthy—this is a nutrition conversation. We are, as a government, using our tax dollars to incentivize behaviors that are driving pandemic-like conditions and driving unhealth.

I understand what we are talking about, but let us not be fooled. This is not a free market right now. We are investing dramatically in our own death.

Farmers, yes, right now they are being forced to respond to the way we have structured the market. I agree with you. If we are changing—one of my alliances is with one Senator that is an organic farmer, who just says, I am more profitable that I am moving to more regenerative things, but there is no incentives to do that. People are stuck in the five, in the mono-cropping that is producing a lot of the foods that are making us so sick.

Dr. Mozaffarian, I just want you to one more time—I mean, we all—we are an agrarian body. The Senate. We all love farmers. They are not the problem.

I believe in this case the decisions by policymakers—and again, a lot of it—I do not want to vilify people. We were concerned in the 1940's and 1950's about food scarcity. We were really concerned about—the thought back then was make as many low-cost calories possibly available, and we transformed American farm systems to deliver toward that idea. Cheap food, get it to people as much as possible.

When you know better, you should do better. We know America right now. The crisis is not simply food availability. The crisis is that we are getting so sick.

I share the values of a lot of my conservative friends. I actually had to run something, a government. I tell you we have to figure out a way to align incentives with policy decisions because it is so out of whack right now. We have the virtual equivalent, the metaphorical equivalent, of a frog in boiling water right now. We are killing ourselves, but nobody seems to recognize the state and the degree of the crisis.

Senator BRAUN. Mr. Chair?

Senator BOOKER. Yes, sir.

Senator BRAUN. I think we do have a good conversation going here. To me, in running a business, I always looked in terms of where I was going to try to implement the solution on where you are spending the most money.

There is a big distinction between food and healthcare. Food is a bargain. We just need to reconstitute the quality of the calories. It is in a paradigm that has commodity markets. We are the breadbasket of the world. That is going to be easier to do than a system that we have created to remediate healthcare issues when you enter the healthcare system.

I think the task is going to be where we get better return on our investment by changing the healthcare side of it because all of a sudden, when they go from remediation to prevention, part of the strategy will be to eat better and to have a better lifestyle. Until

we change the remediation paradigm, meaning healthcare, we are spending 20 percent of our GDP on that. We are spending probably just one-third of that on food production. I think someone earlier mentioned maybe $1.5 trillion. It is a lot less.

I think that you get a two-fer when you take on the healthcare industry by making them competitive, transparent, and selling wellness and prevention. It is going to bring the food system along with it. Would be my global view of how that works.

Senator BOOKER. All right. Dr. Mozaffarian, I am trying to read your body language. Did you want to—because I wanted to ask Dr. Warne about specific related issues to trauma. You seem to be champing at the bit if I am reading your facial expressions right, that you wanted to comment on something I said that ticked you off.

Dr. MOZAFFARIAN. No, no, no. I agreed with you. My body language has been just thrilled that you guys are holding this hearing. I mean, you are sitting on the legacy of 50 years ago, the Senate Select Committee on Nutrition with George McGovern and Bob Dole, and I think this Committee can have that same transformative impact.

No, I just wanted to agree with you and everything you said. I think you really perfectly summarized the current system.

The point I wanted to just emphasize was that we literally have a legacy food system that was built for 20th century goals, and we have 21st century problems. Our 20th century goals were starchy, inexpensive, shelf-stable calories that did not have foodborne bacteria and that were fortified with a handful of vitamins.

That legacy food system was enormously successful. We do not want to underemphasize the success of those goals. We probably prevented a billion people from starving on the planet in the last century, and we pretty much have eliminated endemic vitamin deficiency diseases like pellagra and scurvy and rickets and other diseases that were very common in the early part of the last century.

Now we have 21st century problems, and we still have this 20th century food system. Then we have legacy players who, of course, have vested interests in keeping that system. We also have a lot of disruption going on, and new players coming in.

I just wanted to agree with you that we have a system set up for 20th century goals, and we need to really sit down together as a nation and say, how do we want to design our food system? Because the food system we have today we consciously created very successfully. It was designed. It was not the free market. We designed the food system to be what it is today.

We can do that again and leverage the power of private innovation, the power of science and academic institutions, public and private, the power of public health, and really redesign this in a pretty short amount of time if we set our minds to it.

Senator BOOKER. To the further indulgence of my Ranking Member, who has been extraordinary in this hearing, I have a question for Dr. Warne and a question for Odoms-Young about minorities and specific strategies. Then my last question, Mr. Ranking Member, was just any advice the panel has for us, for what the White House strategies should be if we have this great summit meeting. Is that okay with you?

Senator BRAUN. That would be fine.

Senator BOOKER. All right. I am going to just start with Dr. Warne because I have read a lot about historic trauma and the impact it has on communities that have endured extraordinary trauma and trauma-associated illnesses. I know that you have studied that a lot and spoken to that a lot. I just think there are many opportunities perhaps through food to bring healing of not just body but also addressing those historic traumas. Based on your work, what do you feel are the most effective solutions to address these larger issues within the indigenous community through nutrition?

Dr. WARNE. I really appreciate the question. At University of North Dakota, I am the Principal Investigator for the Indigenous Trauma and Resilience Research Center funded through NIH, and we are looking at these exact questions and even looking at issues related to nutritional epigenetics.

One of the things that we have seen historically—and we have to recognize that each population is unique. There were policies in the past like the Indian Removal Act, which removed tribal members from their homelands to other parts of the country, and in that process, they lost access to their food sovereignty and lost access to traditional food systems. In a very direct way, we have seen disruption of food systems based on some of those historic policies.

In terms of historical trauma, there is very compelling evidence that looks at how a population that endures a significant amount of psychological and emotional trauma can hand health disparities to the next generation. We do see it an intergenerational impact. That has been studied in the Jewish populations after World War II and certainly been studied in the American Indian populations here. We see very direct impact of loss of territory because of the historical issues.

The other thing that we see when we have unresolved trauma or adverse childhood experiences, we also tend to see more poverty in those populations, which then also has an impact on food access. We also see people who are self-medicating, and it is not always self-medicating with drugs or alcohol. Some people are self-medicating with food as well.

We have to look at this holistically and recognize that each population is different, but the impact from the social determinants of health perspective can have ripple effects that we might not see right away.

Just in terms of next steps, it is just so vitally important to have diverse voices and experiences at the table, and I am really just pleased and honored to be a part of these discussions.

Senator BOOKER. I am honored that you are there. We are honored that you are here.

Very quickly, Dr. Odoms-Young, we talked already about a lot of the challenges unique to lower-income African American and Latinx communities in terms of their—the levels of advertising that is targeted to them that is disproportionate to the population as a whole. I guess the general question I want to end with asking you is: What types of policies do you think would best address the specific nutrition challenges in Black and Latinx communities?

Dr. ODOMS-YOUNG. Thank you so much, Senator Booker. As Dr. Warne mentioned, it is important that we ensure that all efforts

take a comprehensive strategy to improve health outcomes and diets of Black populations and also that focus on increasing economic development as well as community cohesion.

I think, first, if we think about equity in food security, it needs to start in pregnancy and infancy. Black babies die at three times the rate of White babies. If you look at the quote of Kimberly Seals Allers that says, "First Food Justice" is food justice. We need to first think about how do we expand those supports for breast and human milk feeding. I know WIC was mentioned. WIC is a key program. I think we could do more to think about breast and human milk feeding because this is really at the root of the health of our Nation.

I think also policies to support and empower those voices in the center of communities and also leadership among those with the lived experience. Dr. Warne mentioned food sovereignty, which is also an important piece in the Black community as well. I mean, what is particularly striking, if we look at the traditional diet which is rooted in vegetables and legumes and then now we look at the intake where Black Americans have the lowest intake of fiber, we have seen that these environmental exposures have actually shifted the traditional diet. Although we have some negative aspects of diets always highlighted, there were always a lot of positive aspects of those diets.

I am from Chicago, as I mentioned but, of course, by way of Mississippi. I know what it is like to be in a community where you have food that is produced, and I think we need to continue to support that. We need people of color, businesses that are developed, and also policies that help with scale-up of these businesses and creating new market opportunities for Black, indigenous, and Latino businesses.

We also have to tailor our nutrition education to what Dr. Warne mentioned because we have massive nutrition education programs which are doing excellent work, but the need for trauma-informed, culturally specific nutrition education is a place where I think that we could do more within our land grant system because this is really the backbone of educating our communities.

Also, we have the possibility of engaging youth of color through something like a nutrition security corps, where we educate Black, indigenous, and Latinx youth and put them in leadership roles. Then also—and I know that this has been at the center of many of the policies that you had implemented—is that we need to focus on Black farmers. Black farmers and indigenous farmers provide an opportunity for us to expand, produce cultural foods, but we also have to make sure that those farmers are supported.

Senator BOOKER. I am grateful. I have been yelled at by my staff that even though my Ranking Member is kind and generous my staff is not, and they are saying I need to wrap. I am going to do that, and I am going to say that, first of all, thank you for the witnesses. This is an extraordinary group. I think you all have the richest of perspectives and experiences, not to mention more degrees than a thermometer between you all.

I want to say to my fellow members, and their staffs for those members that are not here, we are going to welcome additional statements or questions that you may have for the record to be

submitted to the committee clerk in five business days or by 5 p.m. that we can put to the panel. The one question for the record I will ask is for advice for us as we look toward hopefully having a White House conference.

In the meantime, I want to thank everybody. There is a lot going on in Washington today, a lot that is dominating the headlines of our various 24-hour cable news networks, but in reality, I do not think anybody is dealing with any issue in America right now that is of greater urgency than the one we have been talking about. I am just grateful to my Ranking Member one more time for the common ground that we have found and both of our commitments to do something about the problem.

With that, this hearing is adjourned.

[Whereupon, at 12:17 p.m., the Subcommittee was adjourned.]

A P P E N D I X

NOVEMBER 2, 2021

Testimony
Submitted to The Committee on Agriculture, Nutrition, and Forestry of the United States Senate
Subcommittee on Food and Nutrition, Specialty Crops, Organics, and Research

Hearing
"The State of Nutrition in America 2021"
Tuesday, November 2, 2021
216 Hart Senate Office Building

Statement of Dr. Dariush Mozaffarian
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Dear Chairman Booker, Ranking Member Braun, and distinguished Members of the Subcommittee:

Thank you for the opportunity to testify here today. My testimony reflects my expertise and experiences as a cardiologist, scientist, and public health expert. I am the Dean of the Friedman School of Nutrition Science & Policy at Tufts University; a Professor of Medicine at Tufts School of Medicine; and an Attending Physician in the Division of Cardiology at Tufts Medical Center. My career has focused on the science and practice of what we actually need to eat to keep our bodies healthy and to treat disease; and on which policy and systems changes are most effective and cost-effective to support nutrition security and health. As a doctor, I see firsthand people of all ages and backgrounds suffering from diet-related illnesses. As a public health scientist, I see the incredible challenges Americans face, every day, to obtain and eat nourishing food.

Some ask me: how did a cardiologist become so focused on food and nutrition? My response: why isn't *every* cardiologist focused on food and nutrition? During my years of training in medical school, internal medicine residency, and cardiology fellowship, it was obvious that poor nutrition was the top driver of disease in most of my patients. And yet, we didn't learn anything meaningful on nutrition and health throughout my medical school training.

- Think about that: the top cause of poor health in the United States – nutrition – is largely ignored by our healthcare system. That single fact explains so much about where we are today: tens of millions of sick Americans, and spiraling healthcare costs.
- And nutrition also has no home, no body for focus or leadership, across the federal government. That explains much about our fragmented and inefficient policies around food and nutrition in this country.

Senators Booker and Braun, your leadership of the Subcommittee on Food and Nutrition, Specialty Crops, Organics, and Research recalls powerful echoes of the past – reverberations of the Senate Select Committee on Nutrition and Human Needs, led by Democratic Senator George McGovern and Republican Senator Bob Dole. These two leaders and their Committee, from 50 years ago, accomplished so much in a bipartisan fashion to address the food and nutrition challenges faced by Americans at that time.

Much has changed in 50 years.

- We face remarkable new challenges – a true **national nutrition crisis** that cuts lives short, costs us trillions of dollars, and holds us back from achieving our goals as individuals and a nation.
- You are **the new leaders** to rise up and address this national crisis, coming up with practical, evidence-based, and cost-effective solutions to create a nourishing, sustainable food system that promotes health and well-being for all Americans, and economic well-being and national security for our nation.

Our situation is dire.

Nutrition insecurity and diet-related disease are major problems for the vast majority of Americans:

- Today, 1 in 2 adults have diabetes or prediabetes, and 3 in 4 adults are overweight or obese.
- New research from Tufts finds that, considering diet-related conditions like obesity, blood sugar, blood pressure, blood cholesterol, and cardiovascular disease, only 6.8% of American adults are metabolically healthy.
- Many more Americans, in other words, are sick than are healthy, and the top driver is our food.
- A recent U.S. GAO report, "*Chronic Health Conditions: Federal Strategy Needed to Coordinate Diet-Related Efforts*," concluded that diet-related conditions like heart disease, diabetes, cancer, and obesity are deadly, costly – and largely preventable. These diseases caused over half of U.S. deaths in 2018, and during COVID-19, Americans with such conditions were 12 times more likely to die after infection.
- Nearly 40 million Americans, including 11 million children, experienced food insecurity in 2018. And, food insecurity grew for households with children in 2020.
- And, nutrition insecurity and diet-related diseases also disproportionately affect Americans who have the least advantage in every state in our nation: those who are low-income, rural, or racial or ethnic minorities.
- Poor nutrition is also harming our children, dooming future generations to suffering, disability, and lost human potential. Among 2- to 5-year-olds, 1 in 10 children are already obese, and among teens, 1 in 5 are already obese. And 1 in 5 teens also have prediabetes – a shocking wake up call for the future of our country.

These diet-related diseases are also the top driver of preventable healthcare spending:

- Healthcare spending now accounts for nearly 1 in 5 dollars in our economy, and nearly 1 in 3 dollars in the federal budget.
- 80% of this goes to treatment of preventable chronic diseases.
- As just one example, let's look at type 2 diabetes – the canary-in-the-coal-mine for the nutritional health of a population.
- Our nation spends $237 billion each year in excess health care costs for diabetes, and loses another $90 billion in lost productivity.
- Indeed, the American Diabetes Association found in a report *Economic Costs of Diabetes in the U.S.* that 1 in every 7 health care dollars spent in the U.S. is attributable to diabetes.
- And much of this is related to our food. A recent analysis from The Rockefeller Foundation on *The True Cost of Food* found that, each year, our nation spends $1.1 trillion on food, and loses another $1.1 trillion in healthcare spending and lost productivity attributable to diet-related diseases.
- And these costs are steadily rising. Medical spending on diabetes alone has risen 25% over 5 years.
- This is not a path for balanced government budgets, thriving U.S. businesses, or a competitive national economy.

Poor nutrition is also threatening our national security.

- Mission: Readiness, an organization of nearly 800 retired U.S. generals, admirals, and other military leaders, has released several reports demonstrating that poor nutrition is hampering military readiness.
- Among the millions of young Americans aged 17 to 24, 71% are now ineligible to serve in the military – and the top medical reason is obesity.

These incredible challenges are also each opportunities. But, currently, our nation has no plan, no strategy, to fix food.

- The GAO report described above identified 200 different federal efforts, spread across 21 federal agencies, which aim to improve nutrition.

- And, the GAO found that these diverse investments are fragmented, disjointed, not working together; and that this lack of coordination is keeping the federal government from meeting its goals of improving Americans' diets and health.
- The GAO also made one clear, straightforward recommendation: a federal *strategy* is needed to enable these disparate government efforts to work together and coordinate diet-related efforts to improve health.

It's time for a national strategy to advance nutrition security, end hunger, improve health, and reduce healthcare spending.

There are six priority domains for federal action to achieve these goals:

(1) Advancing nutrition science and research
(2) Incorporating Food as Medicine into healthcare
(3) Leveraging our federal nutrition programs
(4) Catalyzing business innovation and entrepreneurship
(5) Expanding nutrition education
(6) Creating federal leadership, structure, and authority for food and nutrition policy coordination

As one example, the proportion of federal research dollars focused on nutrition has been flat at only 4-5% of total dollars for decades, even though poor diet is estimated to cause at least 20% of all U.S. deaths. Nutrition science has advanced greatly in 20 years, and there is much we now know, on which we can take action. Yet, there is also so much more to learn and discover. At the current pace, we'll get to where we need to be in about 50 years. But we don't have 50 years to wait. It's time for a federal "moonshot" to advance nutrition science, including the creation by Congress of a new National Institute of Nutrition at the National Institutes of Health. We *literally* have sent a man to the moon, but don't have enough science to definitively say whether cheese is good or bad for health.

We can advance nutrition science, Food as Medicine, business innovation, and government efficiency through specific, sensible, practical policy solutions. These solutions are detailed further below.

It's time to fix food. And we can only do this if we have a plan: a harmonized national strategy.

Senators Booker and Braun: the two of you, together with Representatives Jim McGovern and Jackie Walorski in the House, have called for a White House Conference on Food, Nutrition, Hunger, and Health. It's been 52 years since the nation came together to chart a national strategy around food and nutrition. It's time to bring everyone together again – the diverse federal agencies, both houses of Congress, and other diverse stakeholders to re-imagine our national food system for the next 50 years, making America the 21st century breadbasket for nourishing food that heals our bodies, reduces healthcare spending, supports our military, stewards our natural resources, and creates new businesses and jobs.

Thank you for your leadership to make this happen.

The Burden

Poor nutrition is the top driver of obesity, type 2 diabetes, and cardiovascular disease, and a major contributor to certain cancers, poor gut health, and other conditions.[1] Since the 1970s, Americans' diets have shifted significantly. For example, both portion sizes and frequency of snacking have increased, with each linked to greater calorie intake.[2, 3] Among US children, substantial increases in daily calories since the 1970s are entirely attributable to increased foods eaten outside from home, mostly from fast food.[4] Consistent with prior health messaging to reduce total fat, intake of carbohydrates between 1971 and 2004 increased from 42% to 48% of calories in men and 45% to 51% in women, mostly due to higher intakes of refined starches, grains, and sugar-sweetened beverages.[5, 6] Between 1977 and 1994, intake of processed breakfast cereals increased by 60%, intake of pizza by 115%, and intakes of snack foods like crackers, popcorn, pretzels, and corn chips by 200%.[7] Between 1965 and 2002, calories from beverages increased from 12% to 21% of all energy, representing an average increase of 222 calories per day per person.[8] This was due to increased intake of soda, sweetened fruit drinks, and alcohol. At the same time, the average portion size of a sugar-sweetened beverage increased by more than 50%.[9]

In more recent years, with growing public awareness of critical role of nutrition in overall health, some aspects of US diet quality have modestly improved, such as reductions in soda and small increases in whole grains, fruits, and nuts/seeds.[10, 11] Nevertheless, intakes of healthful foods remain far below dietary guidelines. Today, 45.6% of adults and 56.1% of children have poor quality diets; and most of the remainder, intermediate quality diets, with very few Americans having ideal diets.[10, 11] The levels and types of food processing have also changed in the past 50 years. Ultra-processed foods now contribute about 60% of all calories in the US food supply;[12] and among children, nearly 70%. These major shifts in our nutrition and corresponding diet-related illnesses are associated with rising healthcare costs, widening diet-related health disparities, and weakened national security and military readiness.[13]

Poor nutrition also contributes to profound disparities. Prior to COVID-19, food insecurity was a significant challenge for 1 in 8 Americans.[14, 15] A total of 37 million Americans, including 11 million children, experienced food insecurity in 2018.[16, 17] Americans are also experiencing ever-widening disparities in diet quality and diet-related chronic diseases by race/ethnicity, education, and income.[10, 18-22] While social and economic factors like lower education, poverty, bias, and reduced opportunities are major contributors to population disparities, they are likewise major barriers to healthy food access and proper nutrition. Poor diets lead to a harsh cycle of lower academic achievement in school, lost productivity at work, increased chronic disease risk, increased out-of-pocket health costs, and poverty for the most vulnerable Americans.[23]

But poor nutrition spares no segment of our nation. Between 1980 and 2018, the percent of US children with obesity rose from 5.5% to 19.3%, while the percent of adults with obesity rose from 15% to 42.4%.[24-28] Nearly 3 in 4 American adults are now either overweight or obese.[24, 29, 30] Across all preventable risk factors for disease in the US, poor diet is now the leading cause of poor health, associated with more than half a million deaths per year – or more than 40,000 deaths each month.[1] Along with suboptimal diet, adiposity and physical inactivity are shared risk factors for illness and death.[31-35] Over the last 20 years, the number of adults with diabetes has more than doubled;[36] and today, more than 100 million Americans – nearly half of all adults – suffer from diabetes or pre-diabetes.[37] Cardiovascular disease afflicts about 122 million Americans and causes roughly 840,000 deaths each year.[38] Many of these diseases disproportionately affect older Americans, and as our nation's demographics shift toward an aging population, the burden of diet-related ailments on society will accelerate.[39, 40] In short, more Americans are sick or suffer from major medical conditions than are healthy, and much of this is related to diet-related illness.

Consistent with this, the economic burdens of nutrition-related diseases are staggering and ever rising. As a share of our economy, total US health care expenditures have nearly tripled since 1970, from 7% to 18% of gross domestic product (GDP).[41, 42] These increases are harming government budgets, competitiveness of US businesses, workers' wages, and livelihoods of families. Federal healthcare spending has risen from 5% of the total federal budget in 1970 to 28% in 2018, reducing available funds for other priorities. Similarly, average state government spending on healthcare has risen from 11% of state budgets in 1989 to 29% in 2016. For US businesses, healthcare expenditures have increased 15-fold in 50 years, from $79 billion in 1970 to $1,180 billion in 2017 (in constant 2017 dollars).[42] Over this same period, annual per capita healthcare spending in the US increased from $1,797 to $10,739 (in constant 2017 dollars).[42] And, about 85% of total US healthcare expenditures are related to management of diet-related chronic diseases.[43] For example, the total direct

healthcare and indirect economic costs of cardiovascular diseases are estimated at $316 billion per year; of diabetes, at $327 billion per year; and of all obesity-related conditions, at $1.72 trillion per year.[44, 45] These economic costs exceed the annual budget appropriations of most federal departments and agencies, such as (for FY2020) the budgets of the US Department of Agriculture (USDA) ($150 billion)[46], Department of Education (DoE) ($72 billion)[47], Department of Homeland Security (DHS) ($51 billion)[48], Department of Justice (DoJ) ($33 billion)[49], National Institutes of Health (NIH) ($42 billion)[50], Centers for Disease Control and Prevention (CDC) ($12.7 billion)[51], Environmental Protection Agency (EPA) ($9.5 billion)[52], and Food and Drug Administration (FDA) ($5.9 billion).[52] These rising healthcare expenditures are straining government budgets and private business growth, limiting the ability to support other national, state, and business priorities, contributing to stagnating wages, and bankrupting individuals, families, and small businesses.[53, 54]

Our national nutrition challenges also diminish military readiness.[55] For much of human history, governments have prioritized nutrition to enable a high performing, able military. During World War II, for example, recognition of the national security threat of undernutrition produced strong federal actions, such as creation of the first Recommended Dietary Allowances (RDAs) by President Franklin D. Roosevelt in 1941 and of the National School Lunch Program by Congress in 1945.[56] Today, we face very different nutritional challenges: 71% of young people between the ages of 17 and 24 do not qualify for military service, with obesity being the leading medical disqualifier.[13] Since 2010, Mission: Readiness – a group of more than 750 retired US generals, admirals and other top military leaders – have produced several reports documenting the national security threat of childhood obesity.[13, 57, 58] In addition, obesity and other diet-related chronic diseases are common among veterans, with more than one third of veterans seen at the Veterans Health Administration (VHA) being obese.[59] Food insecurity is common among veterans seen at the VHA and is associated with suboptimal control of medical conditions.[60-62] Both obesity and food insecurity are common and often co-exist in active duty military families.[63, 64] Overall, diet-related illnesses are harming the readiness of US military forces and the budgets of the Departments of Defense (DoD) and Veterans Affairs (VA).[59, 65, 66] Better nutrition is a top DoD priority to maximize the performance of active duty forces and their recovery from physical and psychologic injuries.[67]

Our food systems are creating challenges to our climate and natural resources with widespread related health consequences.[68] Emerging science is advancing the understanding of how nutrition security – access to affordable, sufficient, safe, and nutritious food – is interrelated with challenges and opportunities in use of natural resources.[67, 68] Good nutrition and resilient agricultural production and food systems are mutually interdependent.[69] Ongoing market forces, food production, and consumption patterns, among other factors, are creating not only poor health but large and unsustainable environmental impacts.[70] On a global scale, one quarter of greenhouse gases, 70% of water use, and 90% of tropical deforestation are related to food production. Climate change is warming the planet, contributing to lower crop yields and new economic risks for farmers. These issues and corresponding potential solutions are complex: for example, greenhouse emissions have global impact, while water use has more regional impact.[71-75] Food waste worsens resources losses, with at least one-third of food produced in the US wasted during post-harvest and consumer losses.[76] The future productivity of US agriculture faces additional growing environmental challenges such as resource scarcity, loss of biodiversity, and soil degradation.[70] These sustainability issues have direct relevance for human health, increasing risk of infectious diseases, respiratory illness, allergies, cardiovascular diseases, food and waterborne illness, undernutrition, and mental illness.[77, 78]

There is a large and growing appetite among American citizens for healthy food, both for general well-being but also for treating many specific diseases and ailments. Improving what Americans eat would have a significant impact on reducing diet-related chronic diseases, eliminating hunger, lowering healthcare spending, increasing health equity, and creating new opportunities for innovation and jobs.

The Solution

Developing ambitious but achievable goals for nutrition, hunger, and health will require practical and synergistic policy actions across several domains. Six priority domains are discussed below. In addition to federal actions, evidence-based private sector commitments will also be important, as outlined below.

1. **Science and research.** Science is the foundation of advancing human and economic potential. A coordinated new national strategy must accelerate and reshape the way the U.S. government supports and

drives innovation in food and nutrition including at NIH, USDA, FDA, NSF, USAID, DOD, DOC, and others.

a. Advance cross-governmental coordination of nutrition science across the 10+ federal agencies that pursue nutrition research; e.g., via a new US Global Nutrition Research Program, US Task Force on Federal Nutrition Research, and Associate Director for Nutrition Science at OSTP.
b. Establish and fund a National Institute of Nutrition at NIH to pursue foundational science and translational science to provide the strongest foundation for rapid innovation and interventions to achieve the nation's nutrition goals.
c. Robustly fund and staff the newly established (Jan 1, 2021) Office of Nutrition Research in the NIH Director's Office to coordinate and leverage nutrition science across NIH, externally with the other federal agencies performing food and nutrition research, and with the private sector.
d. Leverage the current $3B annual research investment at USDA toward advancing the nexus of production agriculture, nutrition, health, and sustainability.
e. Train future nutrition science leaders from diverse backgrounds, coordinating NIH, USDA, and USAID diversity-focused training grants and initiatives, e.g. RD MS to PhD pathways and linking HBCU/HSI students/faculty to nutrition science graduate programs.

2. **Healthcare.** Our healthcare system largely ignores nutrition, the top cause of poor health. Innovative new strategies can integrate preventive nutrition and healthy eating into Medicare, Medicaid, private insurance, DOD, VA, and IHS to improve health, reduce health disparities, and lower costs.

a. Incorporate and scale Produce Prescription Programs in Medicaid, Medicare, VA, and IHS that provide healthy produce to patients with specific medical conditions, such as type 2 diabetes.
b. Incorporate and scale Medically Tailored Meals in these programs that provide prepared, nutritionally tailored meals to patients with severe, complex diseases and high healthcare utilization.
c. Ensure reimbursement for registered dieticians to see patients with common diet-related diseases.
d. Integrate Medicaid, Medicare, VA, and DOD healthcare goals, assessments, enrollments, and strategies with SNAP, WIC, and senior nutrition programs for individuals being served by both programs.
e. Ensure appropriate nutrition education for doctors and other clinical providers, for example by means of medical school, residency, and fellowship accreditation standards and physician and specialty licensing exams.

3. **Federal nutrition programs.** Advances in technology, behavioral economics, cross-coordination (e.g., with CMS), and more will strengthen, modernize, and leverage our investments in school meals, summer meals, SNAP, WIC, senior nutrition programs, USDA food box programs, and more.

a. Coordinate data analytics and synergies across currently disconnected programs that serve the same individuals and families; e.g., Medicaid (or Medicare or VA healthcare) and SNAP (or WIC); or senior nutrition programs and child nutrition programs for multigenerational families.
b. Develop cross-agency strategies to increase accessibility, availability, and intake of fruits, vegetables, beans/legumes, whole grains, and nuts/seeds, especially from small and mid-sized US farms, in the federal nutrition programs.
c. Leverage technology and behavioral economics to pilot and scale innovative programs to improve nutrition security.
d. Develop the necessary technology infrastructure to modernize service delivery and provide access to federal nutrition programs and program components.
e. Strengthen school meal nutrition standards and school level innovation for nutrition.
f. Improve cross-integration of the federal nutrition assistance programs.

4. **Business innovation and entrepreneurship.** Tremendous new interest and investment is being directed to innovate and transform the food and beverage sector – farmers, supply chains, food manufacturers, supermarkets, restaurants, cafeterias, supplement and wellness companies – toward nutrition and health. And, in rural, low-income, and minority communities around the country, the largest number of new

businesses and jobs are in the food sector, from farm to fork. Yet, these businesses often struggle due to unequal access to science, capital, data, technology, supply chains, and markets. Many businesses remain small, operating month-to-month, limiting individual and community empowerment. Nourishing food is likewise distributed inequitably across our nation, causing large disparities in nutrition security and diet-related diseases and deaths. A coordinated new national strategy can provide the missing elements to catalyze and connect the food business entrepreneurs across our country. This will greatly accelerate and guide innovative approaches toward advancing demand for and access to better nutrition, ending hunger, and improving health and health equity; as well as supporting minority and low-income food entrepreneurs to create wealth and nourishment in their communities.

a. Coordinate agency policies with a new national strategy for tax policy and other incentives for R&D, marketing, and sales of healthier and more equitably accessible foods across food sectors.
b. Create a new Task Force to review and provide recommendations on how to create a national entrepreneurship ecosystem to sustain the U.S. as the 21st century leader for global innovation focused on a healthier, more equitable and sustainable food system.
c. Create opportunity zone incentives for food, nutrition, and wellness capital investments to improve health, reduce hunger, and reduce nutritional disparities.
d. Develop new federal grants and low-interest loans that support BIPOC food entrepreneurs, advancing economic empowerment and nourishment in minority communities.
e. Encourage and guide ESG (Environment, Social, and Governance) investment around food and nutrition to catalyze and quantify new metrics for food-sector companies.
f. Encourage and provide tax benefits for Benefits Corporations that value and integrate social and environmental priorities around nutrition, hunger, and health.
g. Develop new public-private partnerships to advance nutrition science and translation.

5. **Nutrition education and public health.** Innovative approaches can support opportunities to increase public knowledge and reduce consumer confusion, gain from shared community knowledge and learnings, elevate the voices of Americans with lived experiences in poor nutrition, hunger, and diet-related illness, and advance nutrition education for key groups including healthcare providers, seniors, and children.

a. Coordinate dedicated funding for regular updates and dissemination of the Dietary Guidelines for Americans and the Dietary Reference Intakes with HHS, VA, DOD, and IHS healthcare goals and with SNAP, school meal, WIC, and elderly nutrition program goals.
b. Leverage FDA regulatory authority for consumer communication and education including health claims, front of package labeling, nutrition labeling, warning labels, and industry standards for additives like sodium and added sugar.
c. Greatly strengthen and expand CDC public health efforts around nutrition, physical activity, and obesity, integrated with HHS/CMS goals and national food and nutrition surveillance efforts.
d. As described above, ensure appropriate nutrition education for doctors and other clinical providers by means of updates to program accreditation standards and specialty licensing exams.
e. Integrate and leverage SNAP-Ed with healthcare system efforts and goals to reduce both undernutrition and diet-related chronic diseases.

6. **Federal coordination.** The U.S. government invests >$150 billion each year in food and nutrition related areas—plus $100s of billions more in healthcare spending for diet-related diseases—but fragmented across 21 departments and agencies without harmonization or synergy. A new approach is needed for sustained leadership and coordination of cross-governmental action on food and nutrition.

a. As highlighted by the recent GAO report, implement a new, sustained entity, such as a new Office of the National Director of Food and Nutrition (ONDFN), with appropriate structure and authority to coordinate the 200 federal food and nutrition related polices currently fragmented across 21 agencies.
b. Create a coordinated national plan and strategy around food and nutrition, such as analogous to the National Environmental Policy Act of 1969.

c. Appoint a National Nutrition Advisor in the White House to help advise and coordinate federal food and nutrition goals and actions.
d. Create, fund, and provide authority to a new Interagency Task Force on Food and Nutrition, for example co-chaired by the Secretaries of USDA and HHS, that regularly reviews, develops, and reports to the White House and Congress on coordination efforts to advance nutrition, reduce hunger, and improve health.

Private sector commitments will also be important across food sectors, including in agriculture, supply chains, retail, restaurants, food manufacturers, healthcare, and wellness, and investment. Such commitments should include to:

1. **Advance nutrition equity**, including to (a) expand market footprints into low-income and minority communities with outlets that sell a variety of healthy food, including fresh produce, at affordable prices, (b) price healthier options no more than similar less healthy options, and (c) expand affordable e-commerce for healthful foods including options for EBT.
2. **Engage in fair marketing practices**, including to (a) increase the proportion and investment in marketing for healthful foods in their portfolios; and (b) eliminate all food marketing to kids younger than 8 years, in any venue (including games, apps, online, shows, movies) .
3. **Increase the proportion and sales of healthful foods and ingredients** in their portfolios: fruits, vegetables, beans, legumes, nuts, seeds, plant oils, fermented foods, fish and seafood.
4. **Reduce sodium and added sugar,** based on the originally proposed FDA 10-year sodium targets and the NSSRI sugar targets.
5. **Invest in a robust R&D portfolio, including internal research and transparent external collaborations with universities and government**, focused on nutrition, equity, and health. This should include science on maximizing nutrition, population health, ecological sustainability, workforce readiness, health of the warfighter, children, and seniors. R&D should also touch on immunity, mental health, diabetes and other chronic diseases, and vulnerable populations.
6. **Support evidence-based, independent, voluntary investment standards** for companies that advance nutrition, equity, and sustainability. These should include ESG investing metrics for food sector companies, and commitments toward B corporation certification and Benefits corporation legal status.
7. **Support food entrepreneurs who are advancing nutrition, equity, and sustainability, with an emphasis on BIPOC food entrepreneurs,** including to (a) commit to unimpeded supply chain access, (b) launch a common fund (through Dept of Commerce) to finance appropriate food startups and support experts in business, nutrition, and sustainability as startup advisors, and (c) prioritize BIPOC-owned businesses in all their own supply chain decisions.
8. **Create a national fund to support the RDN career pathway for people of color**. With matching government funds and oversight, set a goal to educate and certify 10,000 RDN's of color over the next 10 years to bring lived experiences, fresh insights, and balance to the clinical setting.
9. **Invest in workforce development** to expand nutrition literacy and social equity, expanding and deepening skills among their own management and employees, including farm workers, chefs and restaurant staff, food service workers, public health workers, food entrepreneurs, retail store and restaurant owners and managers, and more.
10. **Commit to employee nutrition security**, including living wages and bold and innovative wellness programs that provide sound nutrition education and directly reward and incentivize healthy eating. These efforts will benefit their own workforce and serve as a model for other employers of all sizes and types.
11. **Support evidence-based, independent, voluntary nutrition standards** to help combat public misinformation, confusion, and lack of trust.
12. **Prioritize corporate philanthropy to support nonprofits and advocacy to end hunger and improve nutrition**, including on the importance of the federal nutrition programs and healthcare systems and the positive impacts for the nation's economy, health, equity, and well-being.

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Testimony of Angela Odoms-Young, PhD

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Before the Committee on Agriculture, Nutrition, and Forestry of the United States Senate Subcommittee on Food and Nutrition, Specialty Crops, Organics, and Research

"The State of Nutrition in America 2021"

November 2, 2021

Chair Booker, Ranking Member Braun and Members of the Agriculture Subcommittee on Food and Nutrition, Specialty Crops, Organics, and Research, thank you for allowing me the opportunity to speak before you today about the state of nutrition in America, with a specific focus on black communities. My name is Dr. Angela Odoms-Young and I am an Associate Professor and Director of the Food and Nutrition Education in Communities Program and New York State Expanded Food and Nutrition Education Program (EFNEP), in the Division of Nutritional Sciences at Cornell University.

The adverse health, social and economic consequences of suboptimal diets in the United States (US) are well documented. [1] Extensive evidence indicates that poor nutrition is a major driver of America's high chronic disease burden, leading to sizeable rates of death and disability from cardiovascular disease (CVD), hypertension, type 2 diabetes, chronic kidney disease, and certain types of cancer. [1,2] Between 2016 and 2030, it is estimated that chronic diseases will cost America on average $2 trillion in medical costs and an extra $794 billion per year in lost employee productivity. [3] For the past several decades, the diets of most American adults and children have fallen short of national dietary recommendations, including higher intakes of saturated fat, sodium, and sugar sweetened beverages and lower consumption of fruits, vegetables, and fiber. [4,5] Moreover, because nutrition is an essential building block of healthy growth and development in infancy and early childhood, research shows that negative dietary patterns early in life prevent children from having a healthy start and contribute to a negative trajectory toward ill health in adulthood.[6,7]

Further exacerbating the national impact of poor nutrition, is the reality that its associated health burden is not shared equally across all racial/ethnic and socioeconomic groups. People of color overall, and black populations specifically, face higher rates of diet-related chronic conditions and have poorer dietary intakes as compared to whites.[8] Non-Hispanic black adults (49.6%) had the highest age-adjusted prevalence of obesity, exceeding rates for most other racial/ethnic groups.[9] Obesity disparities in children closely align to rates in adults with non-Hispanic black (20.8%) children having a higher prevalence of obesity compared to their white (15.9%) and Asian (12.8%) peers.[10] These racial disparities in obesity drive inequitable differences in related health outcomes. For example, Black Americans are 60 percent more likely to be diagnosed with diabetes by a physician, 2.3 times more likely to be hospitalized for lower limb amputations, and

almost four times as likely to develop kidney failure when compared to rates for White Americans.[11]

Most research has found that Black Americans are more likely to have inadequate intakes of nutrients associated with a lower risk of chronic disease and poor overall dietary quality than Hispanic and White Americans.[12-14] These findings persist across all income categories and regardless of food assistance participation.[13-15] Given their traditional dietary pattern, Black Americans' suboptimal intakes of vegetables and legumes and their associated dietary components are particularly concerning.[16] For example, findings from a recent analysis of data from the National Health and Nutrition Examination Survey (NHANES) reported that non-Hispanic blacks had the lowest mean intake of dietary fiber compared to other racial/ethnic groups, far below the levels recommended in national dietary guidance.[17]

The excess nutrition and health burden experienced by Black Americans is notable at birth, with growing research indicating that racial disadvantage may even start preconception. Measured as the death of an infant before their first birthday, black babies die at higher rates than all other racial/ethnic groups and nearly three times higher than white babies.[18] As reported by Dr. David Williams at the Harvard T.H. Chan, School of Public Health, "if blacks and whites had the same mortality rate, nearly 100,000 fewer black people would die each year in the United States."[19] This association is bidirectional. The greater likelihood of Black Americans having chronic illnesses and associated complications also restricts their wealth and financial security, which can further suppress black communities' ability to thrive.

Unfortunately, in the last year, we have seen racial inequities in health and nutrition worsen as a result of the COVID-19 pandemic.[20] Although black and white differences in life expectancy have narrowed over the last 30 years, Covid-19 reversed previous gains. In 2020, Black Americans experienced a 2.9 year decrease in life expectancy, increasing the black-white life expectancy gap from 3.6 years to 5 years.[21] Evidence indicates that policies that create racial inequities in life expectancy not only have implications for black communities, but adversely impact the health and well-being of our nation overall including creating challenges for our economy, workforce, military, and national security.[22]

The disproportionate toll from COVID can be partially explained by the higher prevalence of nutrition-related diseases among blacks compared with whites. Based on the high rates of chronic disease, this burden may be magnified because of family multimorbidity, specifically, family members simultaneously managing multiple chronic conditions at the same time, which more accurately mirrors the lived experience of many black families.[23] Additionally, the systemic, historical, political, and social barriers, including, a greater likelihood of living in racially segregated, disinvested, and impoverished areas, limited access to health care and living wage employment, and a wage disparity where Black American households earn almost half as much as white households, also set the stage for black communities to be more nutritionally vulnerable.[24] For example, although food insecurity rates in the US. generally remained stable from 2019 to 2020, the prevalence of food insecurity for black households increased from 19.1% to 21.7%.[25] Food insecurity is not only associated with higher chronic disease rates, but poorer self-reported health, maternal depression, developmental delays in early life, and lower academic achievement.[26] Consequently, it is likely that this increase will have lingering effects for years to

come. In addition to higher rates of chronic illness, lower wages and insufficient insurance coverage among blacks greatly limits their access to nutrition-related resources and treatment (such as Medical Nutrition Therapy) that can support the prevention and long-term management of chronic disease.[24]

Since the Department of Health and Human Services (DHHS) Report of the Secretary's Task Force on Black and Minority Health was released in 1985, developing effective strategies to address health disparities has been a significant focus of our national agenda.[27] However, despite national attention, racial inequities in nutrition-related health continue to persist. While traditionally, researchers and practitioners focused attention on individual knowledge, attitudes, and motivations as key drivers of dietary and feeding behavior, science generated for more than three decades highlights the importance of the social and structural determinants of health.[28-31] Many studies have demonstrated that being healthy is not just about making smart choices or bad genes, for many Americans systemic and structural disadvantage moves good health out of their reach.[32] Contemporary findings that environmental factors drive disparities in food purchasing and diet parallel the long-standing body of knowledge about the impact of racial segregation on economies, access, and opportunity in black communities. A common saying in public health is that your "ZIP Code Matters More Than Your Genetic Code".

Black Americans are more likely to live in neighborhoods that are considered obesogenic--environments that promote obesity--specifically characterized by limited access to healthy food options and high availability and in-store promotion of low-cost energy dense food and drinks of minimal nutritive value.[33-37] For example, an analysis of census and supermarket location data conducted by the Reinvestment Fund found that, on average, in the 50 largest US metro areas, nearly 18% of predominately black neighborhoods had limited access to supermarkets, compared to 8% of largely white neighborhoods.[38] Americans living in low access food areas travel a further distance to reach a supermarket and spend more time in travel (about 20 minutes more) to shop.[39,40] Neighborhood racial composition and neighborhood poverty are independently associated with food store availability.[41] Regardless of race/ethnicity, as neighborhood poverty increases, supermarket availability decreases and grocery and convenience stores increase. However, most research has shown that at equal levels of poverty, census tracts with predominately black residents have the fewest supermarkets, while tracts with predominately white residents have the most. Nevertheless, poor predominantly black neighborhoods face double jeopardy with the most limited access to quality food.[41] Additionally, a study conducted by Grigsby-Toussaint and colleagues in Chicago, examined availability of fruits and vegetables that are commonly consumed nationally and those specifically consistent with a traditional Black American dietary pattern.[42] The authors found that although culturally specific fruits and vegetables were more likely to be available at stores in predominately black compared to Latinx/Hispanic communities, all stores carried fewer than 50% of either category. Moreover, some evidence indicates that limited access to healthy neighborhood food options not only have serious implications for physical health, but also mental health, by increasing black shoppers' exposure to unfair treatment and discrimination as they seek better grocery options outside their community.[43]

Historically, black populations have lived in, and continue to live in, the most under-resourced communities. In addition to food, these same communities face poor access to transportation, limited access to green space and poor-quality housing, and are located the furthest distance from high quality jobs.[44, 45] Persistent disinvestment, lack of attention to equity in city planning, predatory lending/mortgage discrimination, and limited access to business credit and capital in black communities contribute to disparities in health and economic outcomes. Healthy food retail not only increases access to nutritious foods, but serves as an economic anchor for commercial revitalization and job creation, provides tax revenues, and retains local dollars within the communities. [45] For example, it is estimated that 24 new jobs are created for every 10,000 square feet of retail grocery space. As a result, an estimated 150-200 full and part-time jobs can be generated from the location of a large-scale supermarket. [46]

In addition to having limited access to healthy food options, Black Americans, particularly youth, also experience higher exposure to unhealthy food and beverage marketing within their neighborhoods, as well as, through television, print media, and potentially the internet. Targeted marketing efforts gained momentum during the civil rights movements and have continued to inequitably monetize the sales of unhealthy foods at the expense of black health.[47,48] Many US food companies have identified black and other communities of color in the US as a major business growth opportunity. Evidence indicates that advertisement of high-calorie food products (such as fast food, sugar-sweetened beverages, candy, and unhealthy snack brands), are disproportionately targeted at black populations, relative to more healthful foods, contributing to inequities in obesity and other diet-related chronic conditions.[49-51] Studies show that frequent and widespread exposure to unhealthy food marketing increases children and adolescents' preferences for, and consumption of foods that are high in calories, sugar, fat, and sodium and shapes youth's attitudes about its positive social and economic value.[51] For example, a recent report from the Rudd Center at the University of Connecticut, found that Junk food comprised 86% of ad spending on black-targeted programming. Only 1% of ad dollars went to promoting healthier food options. In 2019, 23 restaurants spent $99 million to advertise on black-targeted TV. On all national TV in 2019, black preschoolers (2-5 years) and black children (6-11 years) saw on average nearly three unhealthy food ads-per-day. Compared to their White peers, black preschoolers viewed 72% more fast food ads, and black children and teens viewed 77% more ads.[52] Similarly, a 2009 study of local food marketing environments conducted by Yancy and colleagues, reported a higher density of outdoor advertisements for high-calorie, low nutrient–dense foods and beverages in black zip codes compared to white zip codes in Los Angeles, California, Philadelphia, Pennsylvania, Austin, Texas and New York City, New York.[53] This is particularly concerning given a National Academy of Sciences, Engineering, and Medicine report concluding that food and beverage marketing influences the preferences and purchase requests of children for junk/fast foods.[54]

The first White House Conference on Food, Nutrition and Health resulted in landmark legislation that provided the foundation for the federal food and nutrition infrastructure we know today and raised awareness about widespread malnutrition and hunger being experienced by families and communities throughout rural and urban America. This seminal event informed the national nutrition agenda for the next several decades. Identifying the need for programs like WIC, emphasized the importance of removing barriers to the health and well-being of our youngest residents. We have the opportunity to expand the impact of these programs and build on a

foundation that was established over 50 years ago. For example, increasing WIC participants access to breastfeeding support and expanding financial incentives to encourage healthy eating provide an opportunity for this program to have an even greater long-term impact on nutrition security. Studies have shown that incentives such as those provided through the WIC Cash Value Benefit and SNAP Healthy Incentives Pilot have the potential to improve dietary intake in economically vulnerable families.[55-57] Additionally, inequities in food access start in infancy. As indicated by researcher, practitioner and advocate, Kimberly Seals Allers, "first food justice is food justice." Consequently, building equitable food systems starting with breast/human milk feeding is critical to young children's health and the health of our nation.[58]

Similar to 1969, the events of 2020 amplified our level of consciousness about the ways in which social, cultural, and political conditions create different experiences and opportunities for people living in the US. The intersection of race and persistent poverty, gender, gender identity, sexual orientation, disability, and rural status further adds a layer of complexity to understanding the impact of social and structural disadvantage on Black Americans 'nutrition and health, and identifying policy and programmatic solutions to reduce barriers to nutrition security. For instance, rural black populations are concentrated in the Southeast, where the legacy of Jim Crow laws has had lasting effects on economic mobility and where poverty persists at rates far higher than for the rest of the country.[59]

We did not get here by chance but through policy. Policies over centuries and at every level of government, such as redlining and yellowlining, that restrict access for some but create opportunities for others to build financial security, collect generational wealth, and experience economic mobility, have significant implications for nutrition security.[60-62] Understanding relationships between nutrition security, racism and other forms of marginalization including occupational segregation, racial and gender unemployment disparities, and barriers to employment for those involved in the criminal justice system, are critical emerging opportunities for funded research. Likewise, given that racial/ethnic inequities in nutrition have continued for decades, the need to fund research that moves beyond just adjusting for race/ethnicity to examining how systemic oppression impact the experiences of both people of color and white populations is warranted.

Over the past two days, I had the pleasure of being engaged in a strategic planning process with Grow Greater Englewood, a local urban agriculture and social justice organization on the south side of Chicago. For me, this reinforced the need to identify and explore approaches that provide communities the opportunity to be at the center of their own healing and liberation. Policies that elevate, support, and empower the voices, agency, and leadership of those with the lived experience are essential. Examples of efforts to improve nutrition security could include providing access to capital for the development and scale up of Black, Indigenous, People of Color businesses and creating systems to connect these businesses to new market opportunities; fostering linkages between black urban and rural food systems; providing debt relief to black farmers, businesses, and families; further supporting a diverse and community-based extension workforce by creating a national Nutrition Security Corps for youth of color; supporting the development of anti-racist, trauma informed nutrition education curricula; investing in fresh food stocking equipment and infrastructure at existing small and medium sized grocery and corner stores; and developing innovative strategies to explore how federal food assistance programs can

be leveraged to reduce racial disparities in diet. Moreover, it is important to ensure that all these efforts are part of a comprehensive strategy to improve overall community cohesion and economic well-being.

In closing, we need to continue prioritizing nutrition security with a lens on racial equity. The time to leverage new policy and programmatic efforts to decrease food-related hardship in black communities and increase opportunities for better access and affordability is now. Included should be funding to support pilot studies to test and evaluate these strategies to ensure that we bring science-based solutions to scale and elevate interventions that consider individuals' and families' real-world circumstances.

For me, this is not only an academic exercise. As an African American researcher, mother, and nutrition educator, I have observed the impact of poor nutrition, lack of adequate culturally responsive nutrition education and breastfeeding supports, economic disinvestment in local food systems, and obesogenic neighborhood food environments on the health of individuals, families, and communities firsthand. At the age of 52, during my lifetime, I have also witnessed the positive results from the first White House convening and understand the need for more work to be done.

Thank you for your attention in considering nutrition's pivotal role in promoting our nation's health. I look forward to working with you to advance innovative solutions for improving the health and well-being of all communities, including addressing the needs of those that historical experiences have made the most socially and economically vulnerable.

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Subcommittee on Food and Nutrition

US Senate Committee on Agriculture, Nutrition, & Forestry

The State of Nutrition in American 2021

November 2, 2021

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Introduction

Chairman Booker, Ranking Member Braun, and Members of the Subcommittee,

Thank you for the invitation to speak with you today. My name is Dr. Donald Warne and I am on faculty at the University of North Dakota School of Medicine & Health Sciences where I serve as the Associate Dean of Diversity, Equity & Inclusion and Director of both the Public Health Program and the Indians Into Medicine (INMED) Program. I am a family physician and have a Master of Public Health, and I am an enrolled member of the Oglala Lakota Nation from South Dakota.

In addressing the state of nutrition in America in 2021, we need to recognize that for American Indians we have a crisis of nutritional disparities and subsequent health disparities. Less access to healthy foods and dependence on inexpensive, processed foods leads to weight gain. Obesity rates for American Indians and Alaska Natives (AI/ANs) are at a critical level. According to the CDC, 48% of the AI/AN population 18 years of age and over are obese as compared to 30% of the Non-Hispanic White population.

Age-adjusted percentage of persons 18 years of age and over who were obese, 2018. (Body Mass Index (BMI) of 30 or greater)		
American Indian/Alaska Native	**Non-Hispanic White**	**American Indian/Alaska Native / Non-Hispanic White Ratio**
48.1	30.0	1.6

Source: CDC 2020. Summary Health Statistics: National Health Interview Survey: 2018. Table A-15a. https://www.cdc.gov/nchs/nhis/shs/tables.htm

Obesity is a significant risk factor for Type 2 diabetes and heart disease—two of the leading causes of death among AI/ANs. Although we have seen some modest improvements in recent years, AI/ANs still have the highest prevalence of diabetes in the nation, and AI/AN adults are almost three times more

likely than non-Hispanic white adults to be diagnosed with diabetes. According to the CDC, 23.5% of AI/AN adults have diabetes as compared to 8% of Non-Hispanic Whites.

Age-adjusted percentage of persons 18 years of age and over with diabetes, 2018		
American Indian/Alaska Native	**Non-Hispanic White**	**American Indian/Alaska Native / Non-Hispanic White Ratio**
23.5	8.0	2.9

Source: CDC 2021. Summary Health Statistics: National Health Interview Survey: 2018. Table A-4a. http://www.cdc.gov/nchs/nhis/shs/tables.htm

Heart disease is the leading cause of death among AI/ANs, and the prevalence of Coronary Heart Disease is about 50% greater for AI/ANs as compared to Non-Hispanic Whites.

Diagnosed Cases of Coronary Heart Disease:

Age-adjusted percentage of coronary heart disease among persons 18 years of age and over, 2018		
American Indian/Alaska Native	**Non-Hispanic White**	**American Indian/Alaska Native / Non-Hispanic White Ratio**
8.6	5.8	1.5

Source: CDC 2021. Summary Health Statistics: National Health Interview Survey: 2018. Table A-1a. http://www.cdc.gov/nchs/nhis/shs/tables.htm

In my personal experience, I served as a family physician with the Gila River Indian Community in Arizona—a community with among the highest rates of diabetes in the world. I have seen first-hand the challenges in managing diabetes in a population that has limited access to healthy food sources. Also, I am from Kyle, SD on the Pine Ridge Indian Reservation, and the nearest supermarket is 90 miles away in Rapid City. As a result, many of my family members contend with significant barriers to accessing healthy foods, and many of them are suffering from diabetes and heart disease. In many of our Tribal communities, substantial expenditures are made to manage the complications of diabetes, such as

dialysis for kidney failure, coronary artery bypass grafting for heart disease, and amputations for diabetic neuropathy. With kidney failure, people are automatically eligible for Medicare, and in many of our communities, people who are confined to wheel chairs due to amputations utilize social programs that will build a ramp for them to access their homes. Rather than the significant financial expenses and decreases in quality of life associated with addressing complications of diabetes and heart disease, would it not make more sense to invest in healthy food in the first place.

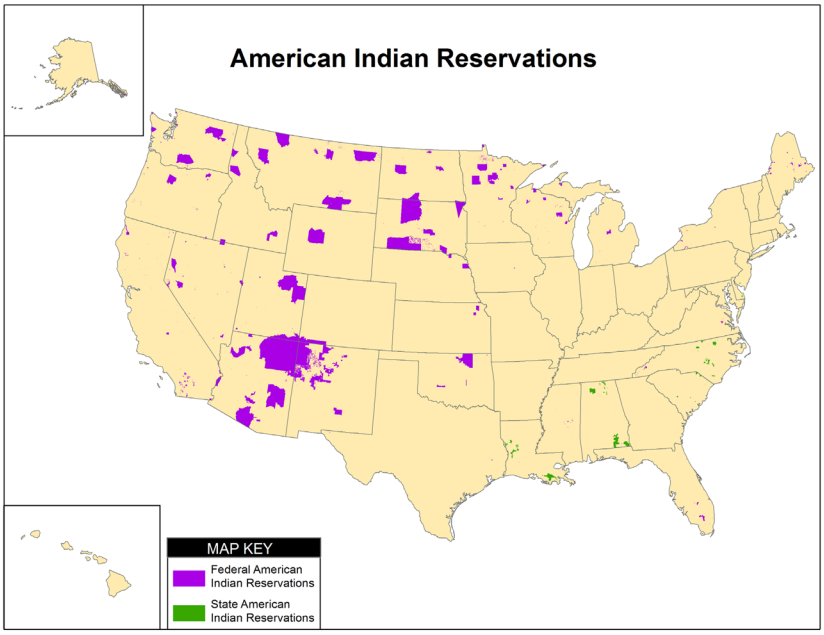
AI/AN populations are diverse in terms of history, culture, disease patterns, and nutritional health. Expanded research and evaluation of individual community health and nutritional status is needed to make informed policy decisions that will appropriately apply to the multitude of AI/AN populations. However, much is known about the broader social determinants of AI/AN health that suggests *nutrition is a significant concern*. The World Health Organization defines the social determinants of health as the conditions in which people are born, grow, live, work and age (1). These factors are influenced by the pattern of resource distribution in a population. The social determinants of health have a significant impact on health inequities, access to healthy food, and preventable disparities in health status seen across populations. We need to improve our understanding of the systemic reasons and policy bases for unhealthy diets observed in many AI/AN populations so the most effective interventions can be crafted. For example, what are the policy and social bases for food deserts that we observe in many Tribal communities?

One major historical consideration is the forced relocation of AI people from their ancestral lands to reservations (2), thereby severely restricting access to traditional food systems that historically included regionally-specific hunting, gathering, fishing, and farming (3, 4). The loss of traditional food sources also resulted in dependence on federal government programs such as the Food Distribution Program on Indian Reservations (FDPIR) that included the distribution of foods such as lard, canned meats, white

flour, salt, sugar, etc. (5, 6). While this testimony focuses on the social determinants affecting the current population and the disparities that ensue, these historic policies and resultant changes in lifestyle are unique to AI people and have led to intergenerational harm to population health.

American Indian Demographics and Health Disparities

Based on the history of colonization, the Indian Removal Act of 1830 (7), and similar policies, the AI/AN population is located primarily in the western half of the United States (Figure 1). As of the 2020 Census, there were approximately 9.7 million people in the U.S. who self-identified as AI/AN, either alone or in combination with other races and ethnicities (8).



The AI/AN population suffers from significant health disparities. Rates of death due to unintentional injuries (9), infant mortality (10), and chronic diseases (11) are consistently higher among AI/ANs than the general U.S. population. According to the North Dakota Department of Health, the average age at death between 2009 and 2019 for AIs was 56.8 years as compared to 76.6 years for the white population (12). AI/ANs in many regions of the U.S. live in conditions that are comparable to developing nations, and a significant national effort is needed to promote collaboration and to solve the AI/AN public health crisis. Social adversity, historical events, and poverty in many communities have led to exacerbations of health disparities resulting from decreased access to healthy foods and subsequent poor nutrition. Described below are common risk factors, social determinants of health, and nutritionally-related chronic diseases disparities among the AI/AN population.

Risk Factors and Social Determinants of Health

Historical Trauma

Historically traumatic events have been described as "cataclysmic" events in a population that result in long-standing and inter-generational adverse outcomes. For AI/ANs, the loss of land, traditional food systems, culture, language, traditional ceremonies, and self-sufficiency over the last several centuries has led to a collective sense of loss and social injustice. For example, prior to colonization, the entire continent was inhabited by Indigenous peoples. As seen in Figure 1, the amount of tribally-controlled territory is minimal. Also, the marginalization of traditional AI/AN cultures and languages can be measured through the Historical Loss Associated Symptoms Scale and demonstrates a negative emotional response associated with perceived

sense of historical loss among AI/ANs (13). Several researchers have examined the impact of historical trauma and its negative impact on health (14, 15). Emerging evidence from epigenetic studies demonstrate the possibility that historical trauma may lead to transgenerational stress inheritance (16, 17). This area of inquiry deserves further study.

Boarding School Experiences

The boarding school era in the 19th and 20th centuries encompassed multiple generations of children being taken away from their homes, communities, and families, and being placed in residential schools that could be more than a thousand miles away (18). Unfortunately, physical, emotional, and sexual abuse was not uncommon in boarding schools, and the negative consequences include subsequent poor health status (18). In addition, the mortality rates among boarding school residents was high, and many of the schools are adjacent to large cemeteries in which dozens of AI/AN children are buried (19). The survivors of the boarding school experience endured abuse, neglect, and the loss of playmates and friends (20). Traditional parenting and nurturing of children from a cultural perspective was disrupted, resulting in harmful impacts of boarding schools across generations (20). In addition, AI/AN children were removed from healthy traditional food systems and were exposed for the first time to institutional nutrition programs that included simple sugars, refined carbohydrates, and less access to natural foods. The boarding school experience is not ancient history—my own mother is a survivor of boarding schools.

Adverse Childhood Experiences

The groundbreaking Adverse Childhood Experiences (ACEs) study showed the cumulative negative health consequences of adverse experiences in childhood (21). ACEs are categorized

into ten domains among the categories of abuse, neglect, and household dysfunction. Adversity in childhood has a negative impact on neurological and social development, and subsequent behavioral challenges are correlated with worse academic, social, and health outcomes. These circumstances ultimately lead to higher prevalence of disease, lower socio-economic status, and early death (22). The total number of ACEs one experiences is correlated with poor adult health outcomes, including depression (21, 23), anxiety, post-traumatic stress (24), substance abuse (21, 25), diabetes (21, 25, 26), cancer (27), and heart disease (21, 23), among other conditions (21). The original ACE study included predominantly caucasian participants, however, data from recent studies show that ACEs are more prevalent in many AI communities (28, 29). Although it is not classified as an ACE based on the original study design, food insecurity is an additional adverse childhood experience for many AI/AN and impoverished children. Hence, the intergenerational patterns of poverty and food insecurity in AI/AN populations may be exacerbated by ACEs.

Poverty

Poverty is correlated with poor health status. Nationally, 2.4 times as many AI/ANs as whites live at or below the federal poverty level (30), and in some areas of the Indian Health Service (IHS), including the Great Plains, disparities in poverty are even more pronounced (31). Some of the programs designed to address the nutritional needs of impoverished communities administered by the U.S. Department of Agriculture (USDA), including the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and school breakfast and lunch programs have had a negative impact on nutritional health over time. Fortunately, these programs have seen improvement in nutritional value in recent decades. Significant

improvements in breast feeding promotion have been made to the WIC program in recent years, however, in many AI/AN and other impoverished communities, the population health outcome of WIC has been higher rates of formula feeding and lower rates of breast feeding (32). It is well established in the scientific literature that children who are breast fed have lower rates of obesity and type 2 diabetes than children who were formula-fed (33). In addition, nutritional profiles of school breakfast and lunch programs historically have contributed to nutritionally-based health disparities with historically higher intake of saturated fat (34).

Obesity

As mentioned in the introduction, obesity rates among AI/ANs are higher than almost all other racial and ethnic groups (35). Poverty combined with the history of federally-sponsored food programs, such as the Food Distribution Program on Indian Reservations (FDPIR) operated by the USDA, led to diets that were high in calories and had poor nutritional value (36). Foods historically available in the FDPIR (also known as the commodity food program) consisted of bleached flour, refined sugar, lard, vegetable shortening, sugar-sweetened beverages, pure corn

syrup, canned meat, and cheese (36). The image above shows a large container of corn syrup with directions to "use in baby formula." Loss of access to traditional food systems combined with limited financial opportunities on many AI reservations are key social determinants that place the AI population at higher risk for obesity and its associated chronic disease outcomes.

Chronic Disease Disparities

Several nutritionally-related chronic diseases occur at disproportionate prevalence among AI/ANs, including diabetes, heart disease, and cancer.

Diabetes

AIs have the highest prevalence of diabetes and the highest diabetes mortality rates in the nation (37). The basis for this disparity is multi-faceted in the field of social policy and social determinants of health, with poverty-related lack of access to healthy foods. Unfortunately, many AI reservation communities are food deserts with limited or no access to a supermarket, less access to school or community based physical activity programs, and possibly genetic predisposition. In terms of population-based nutritional support, federal food programs need to continue to improve their nutritional profiles to reduce the diabetes prevalence in the AI/AN population.

Heart Disease

As is the case in many populations, heart disease is the leading cause of death for AI/ANs (9). This is not surprising given the elevated prevalence of obesity and diabetes nationally, unhealthy diets, and high rates of smoking among Plains Indians and Alaska Natives (9). Nationally, AI/AN men and women have a 21% greater mortality rate from heart disease, and

AIs in the Northern Plains have a 58% greater heart disease mortality rate as compared to the white population (38).

Cancer

Significant regional disparities in cancer mortality exist in the AI population. Not surprisingly, cancer incidence and mortality rates correlate closely with commercial tobacco use (39). Foods commonly consumed in AI/AN and impoverished populations, including processed meat, red meat, and alcohol, as well as excess abdominal body fat are associated with colorectal cancer (CRC) risk. Due to underfunding of the IHS and to lack of access to appropriate screening, AI/ANs are the only population in the U.S. with increasing mortality due to CRC (40). Poverty, lack of insurance, limited IHS resources and cultural factors are key social determinants that have led to lower rates of CRC screening and subsequent increases in mortality among AIs (41).

Future Directions and Potential Solutions

The AI/AN population health challenges are significant. Improvements in primary, secondary, and tertiary prevention are needed to solve the substantial disparities in health and social determinants. To be most effective, expanded collaborations among tribes, nutrition programs, public health programs, medical and academic professionals, IHS and other federal agencies are needed to identify, implement, and evaluate effective solutions to address the AI public health crisis. There is a great need to build the evidence-base of effective health promotion and nutrition programs among AI/ANs. Although little can be done to address the distal determinants of health (e.g. colonization, racism) in terms of changing the past, AI/AN communities have opportunities to positively impact proximal and intermediate determinants

of health (e.g. health behaviors, food insecurity, health systems, etc.) (42). Moving forward, a multi-pronged approach in collaboration with numerous stakeholders and organizations is needed to address the upstream social determinants of health and to increase access to healthier foods. Of note, specific strategies will vary based on the laws and policies at the national level. The approaches for Indigenous populations in the U.S. will be different than those taken in Canada, Australia, and other nations. Promising and best practices and strategies for AI/AN populations in the U.S. can be considered in several focus areas, including:

1. Improving existing food programs;
2. Promoting breast feeding and early childhood nutrition;
3. Promoting food sovereignty and increasing access to traditional foods;
4. Expanding locally-cultivated foods; and
5. Taxing unhealthy foods and subsidizing healthier options.

Improving existing food programs

Many AI/AN communities still depend on and utilize federally-sponsored food programs, including FDPIR, school breakfast and lunch programs, and WIC. While nutritional improvements have been made to these programs in recent decades (e.g. breastfeeding promotion by WIC programs) (43), increases in community engagement, participation, and buy-in are needed to ensure that healthier food offerings are provided and that better food choices are nurtured. Anecdotally, when changes are made to food programs, there can be resistance from the community and reluctance to try new options that might be healthier choices. In these settings, it is important to include a *community-engaged approach* to develop champions from the community who can advocate for improved nutrition. As of January 2018, 276 tribes were

receiving food from the FDPIR (44). The Agricultural Act of 2014 included a feasibility study of tribal management of federal nutrition assistance programs instead of state agency administration. Although many Tribes are impoverished and have limited infrastructure, resources, and personnel, they generally prefer to manage programs locally (45). Further research is needed to determine the best strategies to enhance locally-managed and culturally-appropriate food programs. Community education regarding healthy cooking and food tasting opportunities can be effective in promoting consumption of healthier choices. These programs need to be studied and evaluated for their effectiveness, but initial evidence is promising. Federal resources should be invested in advancing this research agenda.

Promoting breast feeding and early childhood nutrition

Breast feeding is a well-established and natural way to promote health (46). Health experts and stakeholder groups, including the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists, strongly support exclusively breastfeeding (no infant formula, juice, or water) for the first six months of life (47). They also support breastfeeding for a minimum of one year with other foods that can be started at six months of age, including vegetables, grains, fruits, and proteins. Many Tribes have implemented culturally-tailored breastfeeding promotion and early childhood nutrition programs, recognizing the potential long-term impact of good nutrition early in life (48, 49). These programs also need to be studied and evaluated in a culturally-relevant manner to demonstrate the health impact, cost analysis, and community member satisfaction. Unfortunately, there is a scarcity of AI/AN-specific research focused on the impact of culturally-relevant strategies to promote infant and early childhood nutrition (50).

Promoting food sovereignty and increasing access to traditional foods

Many Tribes and Tribal Colleges have expanded their focus on food sovereignty—defined as "the right of peoples to healthy and culturally-appropriate food produced through ecologically-sound and sustainable methods, and their right to define their own food and agriculture systems." (51). Indigenous populations around the globe, including AI/ANs, have seen the detrimental impact of colonization on community health and nutrition. Dietary changes, less access to traditional foods, and subsequent poor health outcomes are well described in the health literature. However, the need exists to promote the scientific study of the impact of food sovereignty programs and related social justice initiatives among Indigenous peoples. Many AI/AN communities are reclaiming their access to traditional foods, including buffalo in the Northern Plains, "three sisters" crops (corn, beans, squash), traditional fishing techniques, and other culturally relevant approaches. This area is ripe for expansion of appropriate research and evaluation, and should include partnerships with Tribal Colleges and other tribally-based stakeholder groups to promote culturally competent approaches.

Expanding locally-cultivated foods

Numerous AI/AN communities are developing farmer's markets, community gardens, and similar food programs to promote access to and utilization of locally-cultivated foods. These programs often include traditional foods, but other "non-traditional" foods have also been shown to be well-received in anecdotal reports. Locally-cultivated foods can include meats as well as gathered and farmed foods. In my experience, many AI children have never tasted specific fruits and vegetables, including various berries, persimmon, and numerous types of squash. Tribal farmer's markets that include tasting opportunities for families and youth have

provided successful opportunities to promote healthy food diversity in some families. This is also a potential area for expanded research to examine the health impact of improved access to local foods.

Taxing unhealthy foods and subsidizing healthier options

Some tribes have started a "junk food tax" to limit poor nutritional choices much in the same manner that tobacco taxes can limit cigarette smoking. Preliminary evidence in other populations show potential reductions in obesity associated with taxing unhealthy foods (52, 53). These programs are novel and relatively new with taxes implemented since 2015 (54), and as a result there are limited peer-reviewed analyses of outcomes to date. The tax programs can be controversial in that some community members are reluctant to change long-standing dietary habits and do not want to pay an additional tax. Additionally, some Tribes are providing healthier food and drink options in vending machines at a lower cost than the less-healthy options. For example, higher protein snacks (nuts, jerky, cheese) and bottled water can be subsidized and sold in vending machines at a fraction of the cost of unhealthier snacks and sugar-sweetened beverages. Health policy research could include assessing the health impact of making healthier choices easier and less expensive.

As these strategies are being implemented in numerous AI/AN communities, it is vital that new ideas are studied and reported, and that existing programs are appropriately evaluated. A challenge in expanding public health programming in AI/AN populations is the dearth of Tribally-specific evidence based practices (EBPs). Public health programs are frequently required to use EBPs to acquire grants and other resources. The challenge that we face in AI/AN

communities related to EBPs is "Whose evidence is it?" Food programs that work well in cities or suburbs with predominantly non-AI/AN populations may or may not be applicable in rural, Tribal populations with significant differences in culture, poverty, food preferences, access, transportation, growing seasons, and numerous other factors that can limit the effectiveness of currently accepted EBPs. The need exists to build the AI/AN-specific evidence base and for Tribes to learn from each other regarding the development and implementation of effective nutritional health programs.

Finally, an AI/AN-specific model to frame social determinants of nutritional health in the U.S. should be developed. This would provide a theoretical framework to understand the impact of the unique history and social factors contributing to nutritionally-influenced health inequities among Indigenous peoples in the U.S. Based on the growing and evolving understanding of AI/AN nutrition and health disparities, this testimony provides initial considerations for this model. Strengthening academic partnerships with Tribal communities could assist in this process and can promote research and programming to produce more data and EBPs. Tribal-academic partnerships can also result in expanded formal program evaluation and peer-reviewed publications of these programs to ensure that the growing list of EBPs is culturally-relevant and includes AI populations.

In closing, we need to recognize that we have a crisis of nutritional disparities among AI/ANs. We need to **fundamentally change** our approach to nutrition and to develop new strategies to address nutrition and obesity-related health inequities. I applaud the idea of hosting a 2nd

White House Conference on Nutrition to gather more community-based input regarding potential solutions and action items. We also need a comprehensive policy approach, and we need to understand the nuances of engaging Tribes in these areas. Ideally, we will include stakeholders with lived experience as part of these important discussions moving forward. Finally, please know that I am honored to be here! Addressing nutritional disparities is challenging and complex, and we will not be successful in promoting the health of all Americans with a one-size fits all approach. It is important to include Indigenous voices and perspectives in these discussions. Thank you.

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U.S. Senate
Committee on Agriculture, Nutrition, and Forestry
Subcommittee on Food and Nutrition, Specialty Crops, Organics, and Research

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Congressional Testimony

Introduction

Chairman Booker, Ranking Member Braun, and members of the subcommittee, thank you for the opportunity to testify before you today and elaborate on the crucial intersection of agriculture and human health. My name is Dr. Patrick Stover, and I serve as vice chancellor of Texas A&M AgriLife, dean of the College of Agriculture and Life Sciences at Texas A&M University and director for Texas A&M AgriLife Research in The Texas A&M University System.

As vice chancellor of Texas A&M AgriLife, I oversee coordination and collaboration of the agricultural and life sciences academic and research programs across the Texas A&M System, one of the largest systems of higher education in the nation. Texas A&M AgriLife is comprised of four state agencies and the College of Agriculture and Life Sciences. It is one of the largest, most comprehensive agriculture programs in the country, encompassing 5,000 people and a $400 million budget, while covering the entire agriculture value chain, from food production and farm inputs all the way to consumer behavior and human nutrition. We focus on areas like health and wellness, emerging technologies such as new crops, pests and invasive plants, land use, water, as well as food, nutrition and community health. Our research agency continues to thrive as the top research institution in agriculture and life sciences for six of the last seven years, and our college this year was named the #2 college nationally by Niche for student success and educational value.

Prior to my appointment with Texas A&M AgriLife, I directed the Division of Nutritional Sciences at Cornell University for more than 10 years. In this position, I worked with the World Health Organization to establish a successful summer training program in evidence-based nutrition policy. Additionally, I have consulted for the Centers for Disease Control and Prevention, World Health Organization, and United States Food and Drug Administration on a variety of nutritional topics such as food fortification and vitamin nutrition policy and related research gaps. I have been an expert member, organizer and/or a report reviewer for several National Academies of Sciences, Engineering and Medicine (NASEM) initiatives

including but not limited to: "Guiding Principles for Developing Dietary Reference Intakes Based on Chronic Disease"[1]; "A Framework for Assessing the Effects of the Food System"[2]; "Redesigning the Process for Establishing the Dietary Guidelines for Americans"[3]; and "Examining Special Nutritional Requirements in Disease States: Proceedings of a Workshop"[4].

I am also an elected member of the National Academy of Sciences. My research program specializes in the connection of folic acid to birth defect prevention, notably spina bifida. I was part of a global team who advanced the fortification of folic acid into the food supply, which has been one of the greatest public health successes in using food as medicine and saving health care costs. Spina bifida, a debilitating birth defect, is now rare thanks to changes in food policy. My research in this area led to the Presidential Early Career Award for Scientists and Engineers awarded by President Bill Clinton, the highest honor bestowed by the U.S. government on outstanding scientists and engineers beginning their independent careers. I have served two terms on the NASEM Food and Nutrition Board, which oversees the academies' nutrition portfolio including the establishment of the Dietary Reference Intakes. I am a Fellow of the American Association for the Advancement of Science (AAAS) and former president of the American Society for Nutrition (ASN). As ASN President, I led a major initiative to understand and address public trust in nutrition science.

Today, I want to provide my perspective on the state of agriculture, the food system, and its connection to hunger, nutrition, and human, environmental and economic health. I will give some context to the enormous challenges and barriers we face, but more importantly, give you a sense of the opportunities to reimagine the role of food and agriculture in transforming our lives and health. Finally, I will update you on efforts we are leading within the state of Texas and Texas A&M AgriLife to position agriculture and our nation's food supply as the solution to the diet-related chronic disease epidemic, environmental sustainability and economic prosperity.

New expectations of the food system

In 1970, Norman Borlaug won a Nobel Peace Prize for developing disease-resistant wheat plants, which sparked the Green Revolution. Borlaug leveraged science and technology to increase agricultural efficiency, generating more food production from the land. His legacy is the race to feed the world and eliminate hunger. A long-time Distinguish Professor of International Agriculture at Texas A&M University, his scientific and humanitarian achievements are legendary.

These efforts led to a national and global food system that was abundant, affordable and high in caloric density—hunger results from a deficit in calories. While this system proved successful in its intended mission, one of the biggest challenges we face today is addressing obesity and related health conditions. Diet-related chronic diseases cost the U.S. economy well over $1 trillion annually and affect 50% of adults. In Texas alone, obesity costs businesses $11 billion

[1] https://www.nap.edu/catalog/24828/guiding-principles-for-developing-dietary-reference-intakes-based-on-chronic-disease
[2] https://www.nap.edu/catalog/18846/a-framework-for-assessing-effects-of-the-food-system
[3] https://www.nap.edu/catalog/24883/redesigning-the-process-for-establishing-the-dietary-guidelines-for-americans
[4] https://www.nap.edu/read/25164/chapter/1

per year, and that is expected to reach $30 billion by 2030. We need to build upon Borlaug's legacy in a revolutionary new way, expanding our mission from simply using food to eliminate hunger and undernutrition to also using food to become healthier. This necessarily involves innovating throughout the food supply chain and not merely focusing on what some deem to be "healthy foods."

But, urbanization, underinvestment in agricultural research, gaps in knowledge and a deficit in public trust all contribute to the growing disconnect between people and their knowledge of food production and the role of agriculture in human, environmental and economic health. This disconnect threatens the very system that puts food on their plate—agriculture.

Food-to-population disconnect

The modernization and mechanization of agriculture made our present-day urbanization possible. However, today, with fewer than two percent of Americans living on farms—compared to nearly half of them a century ago—people have become increasingly disconnected from, and less knowledgeable about, how food is produced.

A number of studies have found that people do not understand very fundamental principles about the food they eat, and they don't understand food technologies. Because of urbanization and the highly efficient agricultural system, too few people have a connection with food production, understand where their food comes from, or grasp fundamental biological principles of food and its effects on health. To put it bluntly, urbanization and the disconnect between the vast majority of the population and their knowledge of food production threaten agriculture and the food supply.

The divide between agricultural production and the new and necessary expectations of agricultural systems—transitioning from hunger to human, environmental and economic nourishment, amounts to one of the greatest challenges facing our society. However, agriculture is positioned uniquely to be the solution—to lead the world in bridging this divide, supporting human, environmental, social and economic health. As such, agriculture must have a seat at the table, engaged in conversations to address these grand challenges where they persist, at the nexus of agriculture, food systems, nutrition and health.

On a related note, I appreciate the efforts to convene another White House Conference on Food, Nutrition, Hunger, and Health. As a nutrition scientist who has dedicated my career to advancing research between nutrition and disease, I know these conversations are vitally important to identifying solutions to some of the world's greatest challenges. Again, agriculture must have a seat at the table for these conversations.

Building public trust in nutrition

A 2019 report from the Pew Research Center, and a publication from the American Society for Nutrition, which I co-authored, indicated trust gaps between the public and nutrition research scientists. The science of nutrition is still in its infancy and today is rife with misunderstanding that leaves consumers confused. Inconclusive, emerging research on the nutrition needs of

individual persons, which has led to flip-flopping dietary recommendations over time, has bred distrust in the science around the food we eat and the way that food is made. That's why another piece to this puzzle is public trust. That is, everyone engaged in research, practice and policy must work even harder to ensure scientific rigor is our highest priority, especially research that underpins our food intake recommendations. We can only earn that trust by not fearing where the science takes us, by being transparent about the state of knowledge and the certainty of our recommendations, and by respecting the tight linkages between cultures and their food systems.

There are major efforts underway to improve the rigor and reproducibility of agriculture and nutrition research. I served as chair of an invited experts workshop to advise the National Institutes of Health on a major initiative in "Precision Nutrition," which seeks to understand the high levels of variability in how individuals react differently to foods in the relationship between diet and chronic disease. Furthermore, over the past two decades, nutrition has been moving from an approach of convening a group of experts to advise on policies and practices, to a two-tiered "evidence-informed" approach that considers and evaluates the totality of the scientific literature and data by agnostic methodologists or data experts, followed by the convening of experts. These advances are focused on removing the many biases we all have based on individual preferences and values around food choice when evaluating scientific data, but there is still much work to be done as discussed in more detail below.

There is an urgent need to bring agriculture, food, nutrition, the environment and human health into better alignment through science. In order to have confidence that our investments and interventions in the food system—whether new policy actions or recommendations—achieve the intended outcome, we must have confidence in the quality of the scientific evidence that serves as the foundation.

Agriculture as the solution

The power of transforming health through food cannot be understated. With current and emerging technologies, we can tailor agriculture and food systems to support any and all desired outcomes. The same can be said about the power of the nation's land-grant institutions. Land-grant universities are, by definition, tasked with being responsive to the needs of the population in education, service, extension and research and they are well-positioned to lead. These institutions are a national treasure, publicly funded and therefore independent, with the mission of improving the quality of life for all members of society. They conduct research, education, and extension across the entire agriculture value chain, from food production to consumer health. They provide a unique synergy in that their agricultural expertise and their focus on developing more nutritious foods and sharing cutting-edge nutrition research is supported by a statewide network of trained professionals who can translate that research into best practices and practical actions to improve individual health and wellness. This statewide network of agents is extremely important in Texas, home to 254 counties, where our Texas A&M AgriLife Extension Service agents help translate the results of our extensive food and nutrition research to the 29 million people of all ages in their respective communities spread across approximately 800 miles both north to south and east to west. Put simply, the extension service is an extraordinary resource that could be playing a much more active role in nutrition education across the nation.

Texas A&M AgriLife is well-positioned to lead the charge and collaborate with other land-grant universities and U.S. Department of Agriculture Agricultural Research Service (USDA-ARS) centers nationally to connect our nation's food supply and the way it is produced to substantially reducing diet-related chronic diseases. We cannot continue to fragment the food system into "production" and "consumer" domains—we must take a connected systems approach as the two are inextricably linked. With generous support from Congress, the State of Texas, and USDA-ARS, Texas A&M AgriLife is launching two innovative efforts to connect agriculture and health: the Institute for Advancing Health Through Agriculture (IHA), which will advance research that connects production agriculture with human, environmental and economic health outcomes and the Agriculture, Food and Nutrition Scientific Evidence Center, which will be a global resource for policy makers in providing nonbiased, expert scientific information concerning the human, environmental and economic health effects of proposed changes to the food system.

Institute for Advancing Health Through Agriculture

As a research accelerator, Texas A&M AgriLife's new Institute for Advancing Health Through Agriculture (IHA) is the world's first research institute to bring together precision nutrition and responsive agriculture research, linking food production to human consumption, to improve public health and lower health care costs. The IHA will also advance research to help agricultural producers harness big data, artificial intelligence and machine learning to produce food that improves public health. A few recent successes include an enhanced variety of spinach that requires far less fertilizer, a modified sorghum variety with a higher micronutrient content for human food and animal feed, and, most impressively, a previously inedible cotton byproduct that can now be a highly nutritious food source worldwide.

The IHA includes a USDA-ARS program called "A Systems Approach to Responsive Agriculture." We define "responsive agriculture" as approaches that increase both the quantity of food produced (to eliminate hunger) and the quality of food produced in that it supports human, environmental and economic health. The program will work with other land-grant universities and USDA-ARS centers to bring big data, state-of-the-art sensors and computational systems approaches to responsive agriculture and precision nutrition. IHA has a strong emphasis on minority food systems and health and respects the importance of all cultures and their connection to food. We have entered into a full collaboration with The Texas A&M University System member Prairie View A&M University, an 1890 institution, which includes three post-docs for collaborative projects.

Development and use of new tools and technologies that are needed to drive transformation and innovation are critical, but there is an additional challenge in making new research accessible to the broadest audience possible. As a majority minority state, working within all Texas communities will also be part of the IHA's mission.

There are three popular and distinct food traditions in Texas: African American, Hispanic and European. Our food preferences are one of the many things that make our state one of the most culturally diverse. In fact, recent reports show an increase in consumers' preference for ethnic foods nationwide. The United States is a melting pot of people with various ethnicities and

heritages, and the current menu landscape at all types of restaurants and food-service operations certainly reflects that. Our Texas A&M AgriLife Extension Service networks have the trust of all communities they serve and do an incredible amount of community-based education to encourage healthy living, and we know, firsthand, how food selections can differ from person to person. Food incorporates our cultural heritage better than anything else and provides a mechanism of communication with others. It is not just a part of culture; it can define culture. Traditional foods are passed down from one generation to the next within families and communities. However, it is important to note that food traditions such as those we have in Texas and in many parts of the country provide different nutritional benefits, as well as challenges to consumers. We must use certain science to work within these cultural contexts to improve lives through food systems and avoid the temptation to simply "tell people what to eat."

Additionally, the IHA will deploy mobile health units to perform community-based scientific research that seeks to understand the connection between food systems and individual health (i.e. precision nutrition) and improve health habits in urban and underserved communities, populations that are not normally accessible to university-based research. These "labs on wheels" will house tools like body composition scanners, biometric recorders and blood pressure monitors and may partner with local farmers markets to deliver healthy food to residents. In collaboration with the NIH "All of Us" project, they will generate data that connects food to an individual's health. Equipped with information about healthy living, the mobile health units will also generate research data by surveying citizens about their current food habits. For many Texans, they will be the IHA's first touchpoint and the first connection residents have with agriculture.

Agriculture, Food and Nutrition Scientific Evidence Center

In a separate but parallel initiative, the Agriculture, Food and Nutrition Scientific Evidence Center will conduct state-of-the-art scientific evidence synthesis studies to address pressing public issues where agriculture, food and health intersect. The center will serve as a place where policymakers can ask questions related to connections among food, agriculture, the environment and the economy, and research specialists will gather and combine existing data on any topic pertaining to diet and health or economic and environmental policy by performing rigorous systematic reviews. And then, they will interpret the data for a non-science audience. The center will be a non-biased source of comprehensive scientific information for decision-makers, akin to evidence centers in the medical science domain.

Conclusion

While historic efforts to eliminate hunger and food insecurity were important and well-intentioned, hunger cannot be considered in the absence of agriculture and health. We need to develop a systems approach to connecting agriculture, food, environment, economic and human health.

The costs of the current situation are hard to overstate. Diet-related chronic diseases place a huge financial burden on individuals, the health care system, and the American economy as a whole—as well as a heavy toll on life expectancy and quality of life. We must ensure our practices across

the entire food and agriculture value chain support environmental and economic health, or future generations will not have reliable sources of food. Our society needs help improving health outcomes and re-establishing trust in the science of nutrition and all of agriculture.

Fortunately, there are solutions on the horizon. Achieving those improvements requires that the bridge between producers and consumers be rebuilt and no longer fragmented. It also requires that policies and practices must be informed by the best available science, and that nutrition and food needs must be based on people's specific biology and physiology, cultural preferences, transparency regarding scientific certainty and current health needs as they change over a lifetime. And, finally, it requires us to bolster citizen education to bring consumers along with the evolving field to earn their trust, ultimately allowing them to make the best decisions for themselves—benefitting the whole population in the aggregate.

It is also critical to restore trust across the entire food value chain, from producers to consumers. To meet these critical expectations of the food system, all actors and players in the food system must have a seat at the table to ensure collaboration and cooperation, while keeping rigorous and transparent science and the goals of eliminating hunger while advancing human, environmental and economic health, as paramount. Land-grant universities were created for this purpose. They are publicly funded with academic freedom to serve the public interests, and they have the capacity, knowledge, relationships and expertise to be responsive to societal needs and solve problems through science.

Thank you for the opportunity to testify. I look forward to your questions.

Statement before the Senate Committee on Agriculture, Nutrition, and Forestry Subcommittee on Food and Nutrition, Specialty Crops, Organics, and Research on the State of Nutrition in America 2021

Federal Programs Can Better Support Nutrition

Angela Rachidi
Senior Fellow and Rowe Scholar in Poverty Studies
American Enterprise Institute

November 2, 2021

Chairman Booker, Ranking Member Braun, and members of the Subcommittee. Thank you for the opportunity to testify on the important issue of nutrition in America. My name is Angela Rachidi and I am a Senior Fellow in poverty studies at the American Enterprise Institute, where I have spent the past several years researching policies aimed at reducing poverty and increasing employment for low-income families. Before I joined AEI, I was a Deputy Commissioner for the New York City Department of Social Services for more than a decade, where I oversaw the agency's policy research. Among other programs, we administered the Supplemental Nutrition Assistance Program, or SNAP, which provided benefits to almost 2 million New Yorkers each month.

My testimony covers three main points. **First,** poor diet and the overconsumption of food have created a major public health crisis in the US with serious health and financial ramifications. Our federal food assistance programs have dramatically reduced the incidence of hunger over the past fifty years to the point that addressing the health consequences of overconsumption and poor diet should take priority. **Second**, our nutrition assistance programs have mixed success in supporting nutrition among low-income households and in many ways contribute to unhealthy diets and the negative health consequences that are so prevalent in America today. **Third**, bipartisan efforts in recent years have produced a series of recommendations aimed at improving nutrition, including ways we can leverage our federal programs – namely SNAP – to address this crisis. Regrettably, instead of pursuing these recommendations, the federal government's actions over the past year have undermined efforts to improve nutrition among low-income households.

Poor Diet and Health

Problems associated with poor diet afflict millions of Americans at a tremendous public cost. According to statistics presented at a 2020 conference honoring the 50th Anniversary of the White House Conference on Food, Nutrition, and Health[1]:

- Poor diet is now the leading cause of poor health in the U.S., causing more than half a million deaths per year.
- The prevalence of obesity has risen sharply from 15% of adults and 5.5% of children in 1980 to 42.4% of adults and 19.3% of children in 2017/18.
- Nearly three in four (71.6%) American adults are either overweight or have obesity.
- More than 100 million Americans – nearly half of all U.S. adults – suffer from diabetes or pre-diabetes, while one in three U.S. children born after 2000 is expected to develop Type 2 diabetes.
- Cardiovascular disease afflicts about 122 million people and causes roughly 840,000 deaths each year, with rates of coronary heart disease and obesity-related cancers increasing among younger adults.
- For the first time in American history, life expectancies are falling, with declines for three consecutive years due in part to significant increases in midlife mortality from diet-related diseases.

I would like to add that recent studies have linked the incidence of dementia to poor nutrition,[2] and dementia-related mortality is up 145 percent since 2000.[3]

The costs associated with these statistics are staggering. Experts estimate that the medical expenses associated with obesity alone amount to almost $150 billion per year in the United States,[4] with billions more associated with lost productivity. According to the CDC, chronic diseases account for 90 percent of the nation's annual $3.8 trillion in healthcare costs.[5] Combined spending on Medicare, Medicaid, and other public health care subsidies topped $1 trillion in 2019, demonstrating the tremendous public cost associated with chronic disease, with poor diet as a main contributor.

For context, four percent or approximately 5 million households in the US experienced very low food security in 2020, which means they reduced their food intake due to a lack of resources. Less than one percent of children experienced very low food security in 2020.[6] This is among the lowest percentages of households and children experiencing this condition since at least 1995 when the government started tracking food insecurity.[7]

Effectiveness of Nutrition Assistance Programs

While the federal government's nutrition assistance programs cannot solve the problems of poor diet and chronic disease alone, they can play an important role. The USDA operates 15 nutrition assistance programs, with the federal government spending more than $100 billion per year on food assistance to US households[8]. SNAP, the National School Lunch Program, and the Special Supplemental Nutrition Program for Women, Infant, and Children or WIC are among the largest of these programs. Evidence shows that these programs effectively reduce hunger among US households, but they could do much more to support better nutrition and help address poor health outcomes. In the case of SNAP, recent actions by the USDA may actually make the problems of poor diet among low-income households even worse.

One of the main problems with the USDA's nutrition assistance programs is that they lack a cohesive nutrition strategy. SNAP is a prime example. According to my research, the federal government doubled the amount of SNAP benefits in fiscal year 2021, adding $50 billion compared to 2019.[9] Granted, we are still in the middle of a pandemic and millions of households lost employment in its immediate aftermath, which required a robust federal response. However, as my AEI colleague Scott Winship and I showed in October 2020,[10] we knew by the summer of 2020 that food insecurity (a proxy for hunger) among US households held constant during the worst months for the 2020 US economy. Yet, federal lawmakers continued to expand SNAP benefits throughout the remainder of 2020 and into 2021 without any consideration for the impact on diet quality. More recently, the USDA used a routine research exercise to increase SNAP benefit permanently by 15 percent more, without addressing any of the underlying nutrition concerns associated with the program.

One reason the current trajectory of SNAP is so concerning is because research shows that SNAP actually contributes to poor diet quality among low-income households. As early as 2013, the USDA's own researchers found that SNAP participants had a lower diet quality than similar non-participants, even while acknowledging that SNAP effectively reduced food insecurity.[11] A 2018 study by researchers from Tufts University found the same – not only was the diet quality of SNAP participants worse than similar adults who did not receive SNAP benefits, the improvement in diet quality among SNAP participants over time lagged behind these adults as well.[12] These researchers warned that poor diet quality was a larger issue than food insecurity.

Let me restate these findings – the nation's largest nutrition assistance program – now accounting for more than $100 billion per year in food assistance to low-income families – was associated with worse diet quality almost a decade ago. And yet, little national attention at a large scale has been given to this problem.

This is why the USDA's recent action to increase SNAP benefits by 25 percent on average should be concerning from a nutrition perspective. In fact, to justify the 25 percent increase in SNAP benefits, USDA researchers assumed American adults and children (including those in SNAP households) need more calories. In other words, the USDA increased SNAP benefit levels so that SNAP households could consume more. This action is entirely counterproductive from the perspective of addressing the obesity and overweight crisis afflicting our country, with research showing that Americans already eat too many calories.[13]

Data on what SNAP households purchase add to these concerns. A 2016 study by the USDA on foods purchased by SNAP households found that sweetened beverages was the second largest expenditure category, only behind meat, poultry, and seafood.[14] The study found that SNAP households spent almost 10 percent of their food budgets on sweetened beverages, which public health experts conclude have no nutritional value and are a main contributor to the obesity epidemic.

Equally concerning was that the fourth and fifth highest expenditure categories among SNAP households were frozen prepared foods and prepared desserts.[15] My point in mentioning this research is not to judge what households purchase. Instead it is to acknowledge the reality that billions of federal dollars earmarked to improve nutrition among low-income households in the US are primarily being used on foods and beverages that are major contributors to poor health. When the USDA increased SNAP benefits by 25 percent earlier this year, it directly contributed to poor diet quality among low-income households. And these SNAP dollars will indirectly increase healthcare expenditures to address the chronic diseases posed by unhealthy food choices.

Leveraging Federal Programs to Address Nutrition

More than a decade ago, in 2010, I was part of an effort by New York City Mayor Michael Bloomberg to pilot a project restricting sugary beverages from SNAP purchases. This was

part of the City's broader efforts to address the crisis of obesity, especially among children, by incentivizing healthy foods and reducing unhealthy ones in low-income households. The USDA denied our attempts to evaluate whether restrictions could work. Since then, billions of SNAP dollars have supported the purchase of sugary beverages across the country and child obesity rates nationally have increased from 16.9 percent in 2010 to 19.3 percent in 2017/18.[16] Reports suggest that the prevalence of obesity among children in the US has increased even more during the pandemic.

In 2017, I was part of a Bipartisan Policy Center taskforce on Leveraging Federal Programs to improve nutrition.[17] We developed 15 recommendations that the federal government could implement to improve nutrition among program participants. They all remain relevant and I will list a few particularly pertinent ones:

- Make improving diet quality a core SNAP objective through legislative action and create a new Deputy Administrator to oversee a nutrition strategy.
- Eliminate sugary beverages from the list of items that can be purchased with SNAP benefits. Consider restricting additional items that have no nutritional value.
- As part of an approach that implements restrictions, increase funding for incentives to purchase fruits and vegetables. Imagine if the 25 percent increase in SNAP benefits in 2021 could only be used on fruits and vegetables.
- Strengthen SNAP retailer standards to increase the availability of fruits and vegetables at SNAP retailers.
- Better align SNAP and Medicaid and focus efforts on nutrition improvement.
- Use technology to increase the sharing of data on food purchases and to better inform SNAP participants about healthy eating.

The main point I want to convey is that federal nutrition assistance programs have a role to play in improving the diets and health of Americans. The federal government spends upwards of $100 billion per year on food assistance programs, the largest of which involves SNAP. Research suggests that SNAP contributes to poor diet quality and data shows that the largest expenditures using SNAP involve sugary beverages, prepared foods, and other nutritionally questionable products. The problems of poor diet quality and the health consequences in America are bigger than the federal government's nutrition assistance programs, but they can play a role in helping to address them. This includes a holistic approach that combines restrictions on purchases in SNAP, incentives for healthy eating, and nutrition education. This approach has received bipartisan support in the past and should be used as a framework moving forward.

Conclusion

In closing, I want to restate the challenges and opportunities that we are presented with today. The pandemic revealed many disparities in our society, but one that received too little attention is the disparity between people without health issues and those with underlying

health issues, often caused by poor diet, that increased their risk for death and hospitalization from COVID-19. Using our federal nutrition assistance programs to send a strong message about the importance of nutrition while also encouraging and sometimes requiring households to eat healthier if they receive government benefits is an important part of a strategy aimed at getting all Americans to improve their diets and get healthier.

Thank you and I look forward to answering your questions.

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DOCUMENTS SUBMITTED FOR THE RECORD

NOVEMBER 2, 2021

Opening Statement
Senate Ag Subcommittee Hearing on the State of Nutrition in America 2021
Senator John Boozman
November 2, 2021

Thank you, Mr. Chairman.

First, I would like to thank each of the witnesses for attending today's Subcommittee hearing. I appreciate that our members can come together and rely on your wisdom as we look to address nutrition issues.

In March, the full committee held an initial hearing exploring the reauthorization of our child nutrition programs. It was a testament to how the Agriculture Committee has operated - with both sides eager to seek a bipartisan reauthorization process.

Since that time, it's been disappointing to watch the Majority continue down the path of a reckless tax and spend bill that includes child nutrition priorities from only one side of the aisle. Taking the partisan path through the reconciliation process does not seem to be paying off—as we have seen through the President's release of a new framework for this reckless agenda.

Establishing programs that only last a few years creates a future benefit cliff. This leaves children, parents, schools, and all the hardworking people who make child nutrition programs work in limbo, with no way to plan and operate these programs into the future.

Under the current draft bill, taxpayers will be footing the bill for millions of children, regardless of need, to eat free breakfast, free lunch, and receive funds for groceries in the summer. Children of millionaires will be eating for free year-round because there is zero check on the financial need of these families.

The school meal programs have broad bipartisan support because we all want to ensure children receive healthy meals at school so they can learn and grow.

However, the Democrats are straying away from the program's purpose of providing free meals to children in need. These programs should be targeted, means tested, and available for those who need the assistance.

This bill does nothing to address the immediate supply chain problems, the labor shortages, and out of control inflation that schools, food companies, and program operators are facing right now.

This is a prime example of why this committee needs to do the hard work of gathering public input through meaningful hearings like this, finding offsets, and making bipartisan changes to permanent law that will provide the certainty families, schools, and stakeholders deserve.

Since the Democrats are trying to take the easy way out, we have now squandered months that we could have been working on a legitimate bipartisan child nutrition bill as was the intention at the beginning of the year.

As I have said before, I had no input into how nearly $100 billion will be spent on programs under the jurisdiction of this committee. I haven't even had the courtesy of being notified of what would be included in the majority's proposal or the revised framework. I find this very troubling and fear it has established a precedent for future congresses.

Our child nutrition programs enjoy bipartisan support. When one political party forces through temporary, partisan changes to these programs it undermines that support and the durability of the programs. American families, schools, and taxpayers deserve better.

With that, I yield back.

ISSUE REPORT

The State of Obesity:

BETTER POLICIES FOR A HEALTHIER AMERICA 2021

Special Feature: COVID-19, Social Determinants of Health, and Obesity

SEPTEMBER 2021

Trust for America's Health
TFAH.ORG

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Trust for America's Health (TFAH) is a nonprofit, nonpartisan public health policy, research, and advocacy organization that promotes optimal health for every person and community, and makes the prevention of illness and injury a national priority.

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View this report online at tfah.org/stateofobesity2021. For more data on childhood obesity, visit stateofobesity.org.

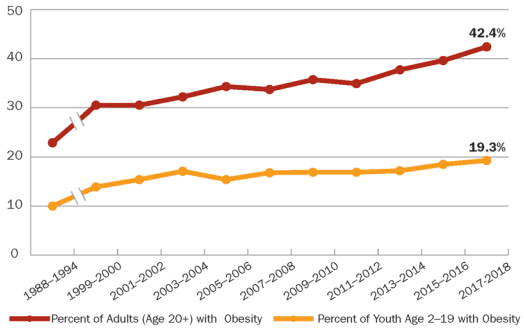
Introduction

The COVID-19 pandemic added new obstacles and exacerbated existing barriers to healthy eating and physical activity in 2020 and 2021, and deepened longstanding racial and economic inequities in the United States. Emerging data suggests eating habits shifted, physical activity declined, stress and anxiety increased, food insecurity worsened, and many Americans gained weight throughout the pandemic, a sharp reminder of the effects that underlying social, economic, and environmental conditions have on the health and well-being of Americans. Many of direct and indirect effects of the pandemic fell disproportionally on certain populations, including low-income communities and communities of color.

These more recent changes are on top of a decades-long rise in obesity rates across the United States, with the adult rate passing 40 percent nationally for the first time in 2017–2018, according to the National Health and Nutrition Examination Survey (NHANES). Since 1999–2000, the adult obesity rate in the United States has increased 39 percent.[1,2]

State-level data from the Behavioral Risk Factor Surveillance System (BRFSS) confirm the trend that adult obesity rates continued to climb in many states in 2020. In 2020, adult obesity rates topped 35 percent in 16 states, up from 12 states in 2019. Between 2015 and 2020, half of states (26) had statistically significant increases in their adult obesity rates.[3]

Percent of U.S. Adults and Youth with Obesity, 1988–2018

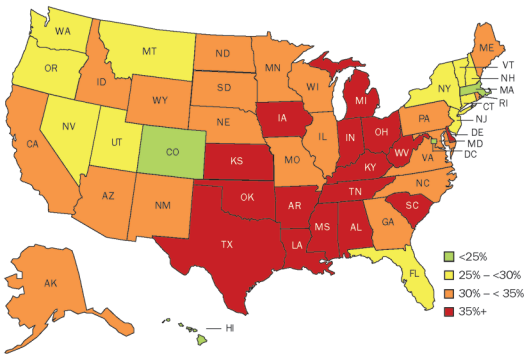


Source: NHANES

In response to long-term increases in obesity plus additional harm from COVID-19, the United States needs bolder policies and more investment in long-term, evidence-based programs that reduce obesity; more collaboration across public and private sectors; more innovation and better solutions to the obesity crisis; and continued attention and more action on addressing the underlying conditions and structural and systemic inequities that undermine many Americans' health.

This is the 18th annual report by Trust for America's Health on the obesity crisis in the United States. This year, our special feature highlights the interaction of the COVID-19 pandemic with social, economic, and environmental conditions that have changed eating habits, food insecurity rates, physical-activity patterns, and obesity levels. This report, as in previous years, also includes a section that reviews the latest data available on adult and childhood obesity rates (page 18), a section that examines key current and emerging policies (page 29), and, finally, a section that outlines recommended policy actions (page 53).

Adult Obesity Rates by State, 2020



Source: TFAH analysis of BRFSS data

CONSEQUENCES OF OBESITY

Obesity is associated with a range of physical and mental diseases; causes additional healthcare costs and productivity losses individually and collectively; and reduces the nation's military readiness. Examples of consequences include:

- **Obesity increases the risk of a range of diseases for adults**—including higher rates of complications and serious illness from COVID-19, as well as type 2 diabetes, high blood pressure, heart disease, stroke, arthritis, depression, sleep apnea, liver disease, kidney disease, gallbladder disease, pregnancy complications, and many types of cancer—and an overall risk of higher mortality.[4,5,6,7,8 9,10,11,12,13,14,15]
- **Children with obesity are also at greater risk for certain diseases,** like type 2 diabetes, high blood pressure, and depression.[16,17,18,19] A 2017 study of new type 2 diabetes diagnoses in children between the years 2001 and 2012 found a 7.1 percent annual increase in cases diagnosed per 100,000 children ages 10 to 19 (versus a 1.4 percent increase annually for type 1 diabetes, which is not associated with obesity).[20]
- **Individuals with obesity had substantially higher medical costs than healthy-weight individuals.**[21] A 2016 study found that obesity increased annual medical expenses in the United States by $149 billion.[22] Indirect, or nonmedical, costs from obesity also run into the billions due to missed time at school and work, lower productivity, premature mortality, and increased transportation costs.[23]
- **Being overweight or having obesity is one of the most common reasons young adults are ineligible for military service.** In addition, the proportion of active-duty service members who have obesity has risen in the past decade—along with healthcare costs and lost work time. According to Mission: Readiness, a nonpartisan group of more than 700 retired admirals and generals, excess weight prevents one in four young adults from qualifying for military service, and the U.S. Department of Defense is spending more than $1 billion each year on obesity-related issues.[24,25]

2021 STATE OF OBESITY RECOMMENDATIONS

Trust for America's Health directs its policy recommendations to government officials and stakeholders at all levels but primarily to national and state officials. TFAH's two guiding principles when making these recommendations are: (1) apply a multisector, multidisciplinary approach (because a single effort in just one sector or discipline is not likely to have a significant impact); and (2) intentionally focus on those populations with a disproportionate risk of obesity. A summary of TFAH's recommendations are below; the full recommendations are on page 53.

1. Increase health equity by strategically dedicating federal resources to efforts that reduce obesity-related disparities by:

- Expanding CDC obesity-prevention programs including the State Physical Activity and Nutrition program and Racial and Ethnic Approaches to Community Health program;
- Expand the Social Determinants of Health program at CDC that supports multisector collaborations;
- Instituting economic policies that reduce poverty at a population level;
- Prioritizing health equity in planning and decision-making at federal agencies; and
- Adapting federal grantmaking practices to ensure that organizations that are best able to conduct obesity-prevention activities also have the tools to successfully apply for grants.

2. Decrease food insecurity while improving nutritional quality of available foods by:

- Making healthy school meals for all permanent, as is current policy through the 2021–2022 school year due to COVID-19 waivers, and, in the interim, encouraging Community Eligibility Program participation;
- Strengthening nutrition standards for school meals and snacks;
- Maintaining eligibility, increasing value of benefit, ensuring there are no new participation barriers, and extending COVID-19 flexibilities in the Supplemental Nutrition Assistance Program (SNAP);
- Improving diet quality in SNAP through voluntary pilot programs, and supporting programs that promote healthy eating, like SNAP-Ed and GusNIP;
- Expanding access to the Special Supplemental Nutrition Program for Women, Infants, and Children for young children and postpartum women and continuing the increase in benefits implemented under the American Rescue Plan through FY 2022;
- Bolstering the Child and Adult Care Food Program by allowing a third meal-service option, increasing reimbursements to support healthier standards, streamlining administrative operations, and continuing funding for nutrition and wellness education;
- Expanding support for programs that promote maternal and child health and breastfeeding support;
- Supporting access to healthy school meals, regardless of school status or setting;
- Designing public land use and incentivizing businesses to increase healthy food options, like adding healthful corner stores, community gardens, and farmers' markets; and
- Boosting outreach efforts to families to apply to school meal programs and other nutrition assistance programs.

3. Change the marketing and pricing strategies that lead to health disparities by:

- Closing tax loopholes and eliminating business-cost deductions related to the advertising of unhealthy food and beverages to children on television, the internet, social media, and places frequented by children;
- Discouraging unhealthy food and drink options by enacting drink taxes—and using the revenue to shrink health and socioeconomic disparities;
- Improving the nutrition of the food that the government agencies' procure to better serve public health and set an example for private sector; and
- Incorporating local wellness policy regulations that include strategies to reduce unhealthy food and beverage marketing and advertising to children and adolescents, like by prohibiting coupons, sales, and advertising around schools;

4. Make physical activity and the built environment safer and more accessible for all by:

- Increasing federal education funding to support health and physical education, as well as programs that promote social-emotional learning and improve health outcomes for children;
- Codifying and funding new evidence-based physical-activity guidelines every 10 years;
- Boosting funding for active transportation projects like pedestrian and biking infrastructure, recreational trails, and Safe Routes to Schools, and adding flexibilities to projects to ensure all communities are able to access funding;

- Making Safe Routes to Schools, Vision Zero, Complete Streets, and non-infrastructure projects eligible under the Highway Safety Improvement Program;
- Identifying innovative methods for conducing physical education and prioritizing physical activity during schooltime during physical distancing schooling;
- Working locally to make community spaces more conducive and safer for physical activity and active transport and encouraging of outdoor play.
- Conditioning federal infrastructure funding on states' adoption of Complete Streets principles; and
- Encouraging outdoor play and activity for children via state and federal programs, and additional park development for communities most in need.

5. Strengthen obesity prevention throughout the healthcare system by:

- Expanding access to health insurance coverage by expanding Medicaid and making marketplace coverage more affordable;
- Clarifying to health insurers that obesity-related preventive health care services must be covered with no patient cost-sharing like all other grade A or B U.S. Preventive Services Task Force recommendations;
- Expanding the capacity of health care providers and payers to screen and refer individuals to social service needs, coordinate care delivered by health and social service programs, sufficiently reimburse social services providers, and better integrate social needs data into medical records;
- Eliminating barriers to healthcare coverage and access for communities of color, rural communities, and other underserved populations;

WHAT IS OBESITY?

"Obesity" means that an individual's body fat and body-fat distribution exceed the level considered healthy.[26,27] There are many methods of measuring body fat. Body-mass index (BMI) is an inexpensive method often used as an approximate measure, although it has its limitations and is not accurate for all individuals (e.g., muscular individuals often have lower body fat than their BMI would suggest).[28] To calculate BMI, divide a person's weight (in kilograms) by his or her height (in meters) squared. The BMI formula for measurements in pounds and inches is:

$$\text{BMI} = \left(\frac{\text{Weight in pounds}}{(\text{Height in inches}) \times (\text{Height in inches})} \right) \times 703$$

For adults, BMI is associated with the following weight classifications:

BMI LEVELS FOR ADULTS AGES 20 AND OVER	
BMI Level	**Weight Classification**
Below 18.5	Underweight
18.5 to < 25	Healthy weight
25 to < 30	Overweight
30 and above	Obesity
40 and above	Severe Obesity

Medical professionals measure childhood obesity differently, comparing a child's BMI to children of the same age and sex since there are fluctuations with growth and development. A child's BMI is expressed as percentile of his or her peer group and obtained from growth charts developed by the Centers for Disease Control and Prevention using height and weight data from American children from 1963 to 1965 and from 1988 to 1994.[29]

BMI LEVELS FOR CHILDREN AGES 2-19	
BMI Level	**Weight Classification**
Below 5th percentile	Underweight
5th to <85th percentile	Healthy weight
85th to < 95th percentile	Overweight
95th percentile and greater	Obesity

- Addressing social determinants of health in communities with high levels of obesity, through community-directed goals and strategies and evidence-based programs;
- Covering evidence-based comprehensive pediatric weight-management programs and services in their Medicaid benefits; and
- Building capacity for community-based organizations, and incentivizing cross-sector collaboration between Medicaid managed care organizations and community-based partners to better support enrollees' health.

SPECIAL FEATURE: COVID-19, Obesity, and Social Determinants of Health

The COVID-19 pandemic has caused widespread illness (more than 36 million Americans with cases) and death (more than 600,000 Americans have died) over the past year and a half.[30,31] The harm from death and acute illness, including extended recoveries and continued morbidity, reverberates to families, friends, caregivers, and colleagues. Indirect effects have extended further—from general stress and anxiety about the virus and social isolation, to the economic impacts and housing insecurity from job losses, to the negative consequences of policies and changing norms. Some of the essential public health interventions aimed at reducing the spread of COVID-19 and saving lives—like changes to socializing, business, schools, and other aspects of daily life—came with substantial consequences for Americans.

COVID-19 cases, hospitalizations, and deaths have disproportionately affected certain populations, particularly some racial/ethnic minority groups, including American Indians, Blacks, and Latinos; older Americans; individuals with certain underlying medical conditions, including obesity; and those living in congregate settings (e.g., nursing homes and prisons).[32,33,34] The indirect consequences of the COVID-19 pandemic also disproportionately hurt some racial/ethnic minority communities in a number of ways: Black and Latino households were more likely to experience job loss during the pandemic's resulting recession, have higher food insecurity, were more likely to have symptoms of anxiety or depression, and had lower rates of full time, in-person schooling as of April 2021.[35,36,37]

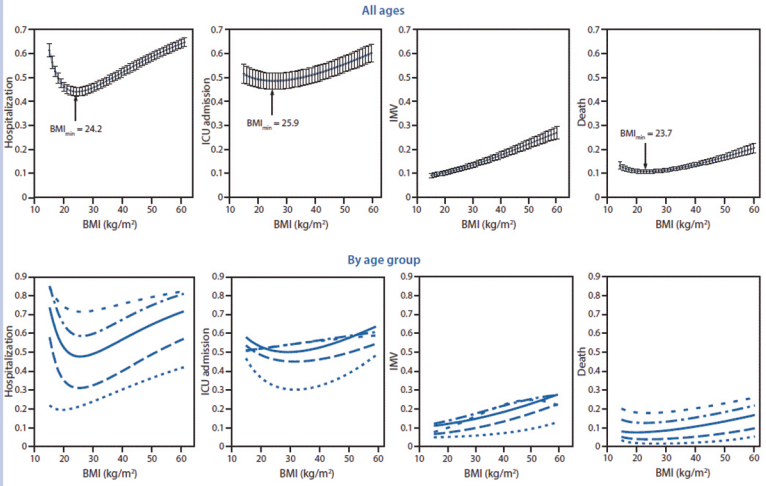
OBESITY'S IMPACT ON COVID-19 DISEASE SEVERITY

Obesity is associated with a range of physical and mental diseases. Many studies from the past year and a half suggest that obesity is a risk factor for more severe disease and complications among individuals with COVID-19.[38,39,40,41] A March 2021 Centers for Disease Control and Prevention study of 148,000 adults found an association between BMI and hospitalization, ICU admission, invasive mechanical ventilation, and death. For all of these outcomes, there are progressively higher risks with higher BMI. Adults with BMI between 18.5 and 30 (considered healthy weight and overweight) have the lowest risk for poor outcomes.[42]

Another recent study from the *Journal of the American Heart Association* estimated 30 percent of the adult COVID-19 hospitalizations through November 2020 were attributable to obesity, and obesity, diabetes, hypertension, and heart failure were together attributable for 64 percent of hospitalizations.[43]

These associations between obesity and more severe COVID-19 disease courses and complications also appears to hold true for youth. A *Journal of the American Medical Association* study from June 2021 found that the highest risk factors for hospitalization from COVID-19 for children and teenagers under 18 were having type 1 diabetes or obesity, and youth with obesity also had higher risk for severe illness.[44]

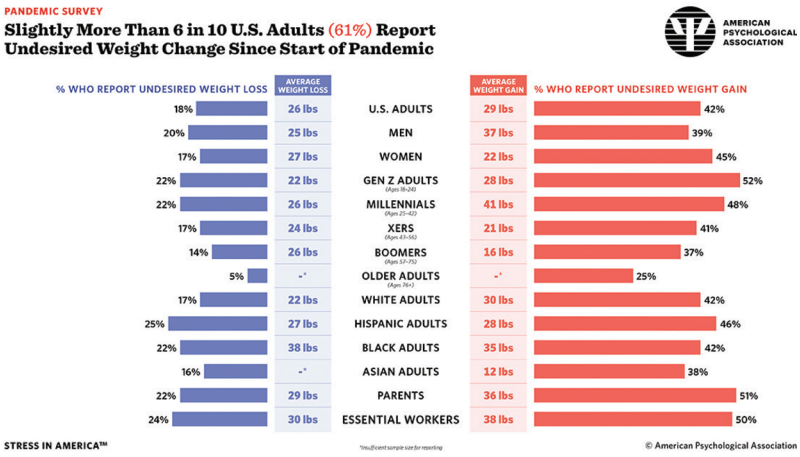
Estimated risk for severe COVID-19–associated illness* among adults aged ≥18 years, by body mass index (BMI) and age group — Premier Healthcare Special COVID-19 Release (PHD-SR), United States, March–December, 2020



Source: CDC, https://www.cdc.gov/mmwr/volumes/70/wr/mm7010e4.htm#F1_down

A. WEIGHT GAIN AND OBESITY RATES DURING THE COVID-19 PANDEMIC

Emerging data suggest that one of the indirect effects of the pandemic was weight gain for many adults and youth in the United States. National self-reported survey data show weight gain was common across the country. An American Psychological Association survey conducted by the Harris Poll from February 2021 found that 42 percent of adults in the United States reported undesired weight gain since the start of the pandemic. The average reported weight gain was 29 pounds. Younger adults ages 18 to 42 (Gen Z and Millennials), parents, essential workers, and Latinos were disproportionately likely to report weight gain (of any amount), while adults age 25 to 42 (Millennials), essential workers, parents, men, and Blacks reported the largest number of pounds gained.[45]



Clinical data support the self-reported survey findings. One study from the *Journal of the American Medical Association* analyzed BMI changes in 11,000 adults in a large health system in Cambridge, Massachusetts who had height and weight measurements both before March 1, 2020 and after May 31, 2020 (spanning the three months at the beginning of the pandemic when Massachusetts had its strictest COVID-19-related closures). The study found 46 percent of women and 41 percent of men gained weight over the time period. Furthermore, nearly 27 percent of men and 30 percent of women gained more than 5 percent of their baseline weight. The rates of obesity and overweight increased significantly among women (but not men). The study also looked at the characteristics associated with patients who gained weight and found that men who gained more than 5 percent of their baseline weight were more likely to be younger, have food and housing insecurity, and use tobacco. Women who gained more than 5 percent of their baseline were also more likely to be younger and use tobacco, as well as more likely to be Spanish and Brazilian Portuguese speakers.[46]

Another study looking at weight gain in youth likewise found increases in obesity in 2020. A *Pediatrics* study examined average obesity rates of patients ages 2 to 17 in the Children's Hospital of Philadelphia Care Network between June and December 2019 (pre-pandemic) compared with June to December 2020 (during the pandemic). The study found that the overall obesity prevalence increased from 13.7 percent

pre-pandemic to 15.4 percent a year later during the pandemic. The increase was highest among elementary school children ages 5 to 9; Latino youth; Black youth; youth who were publicly insured; and youth whose families had lower income.[47] Earlier research found that that obesity rates in young children increased during summer breaks and decreased during the school year, which suggests a possible causal link between weight gain for children and school closures.[48]

B. SHIFTING CONDITIONS DURING THE COVID-19 PANDEMIC

The COVID-19 pandemic led to systemic changes that impacted jobs, sectors, and certain conditions in which people were living, with resultant changes in available choices and behaviors. These underlying social, economic and environmental factors are often called social determinants of health (SDOH) and can have a major impact on well-being and health at the population level.[49] SDOH have always been connected with obesity, and COVID-19's interaction with SDOH has intensified certain effects on choices, behaviors, and health, including obesity. The changes in conditions in 2020 and 2021 have disproportionately affected certain populations—often poorer communities and communities of color—and magnified longstanding racial and health inequities.

Sometimes the pandemic impacted choices that were available to individuals—for example, COVID-19 restrictions led to farmers market closings in 2020 which may have reduced access to fresh produce; job loss or reduced hours meant reduce income available for purchasing food; and child care and school closures reduced children's access to nutritious lunches. Other times the effects stemmed from mediating factors—for example, job loss and financial distress leading to stress, increased alcohol consumption as a coping mechanism, and heightened housing and food insecurity, a critical social determinant of health in its own right that is often linked with obesity and poor health outcomes.[50]

Other examples of the kinds of effects from the pandemic that changed the conditions and lives of Americans in ways that could potentially negatively impact health and well-being, and lead to unhealthy weight gain include:

- Reduction in physical activity due to gym, park, school, community center, and recreation facility closures due to physical-distancing requirements, or reductions in active commuting due to a new work-from-home schedule;
- New challenges in maintaining healthy eating habits due to economic hardship, increased food insecurity, food safety concerns, and closure or reduced access to usual food stores, restaurants, and farmers markets;
- Increased sedentary behavior and disruption in school-based services and supports (e.g., counseling services, breakfast and lunch meal programs, physical education, child abuse reporting) due to school/child care closures; and
- New mental distress from financial strain from business closures or modifications, or employment loss or reduction; social isolation to maintain physical distance and reduce exposure to COVID-19 or added stress and worry about health and COVID-19 exposures, consequences of illnesses, healthcare coverage, school closures, etc.

WHAT ARE SOCIAL DETERMINANTS OF HEALTH?

SDOH are defined by the U.S. Department of Health and Human Services (HHS) as "the conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks," and divides the conditions into five buckets: (1) Economic Stability; (2) Education Access and Quality; (3) Healthcare Access and Quality; (4) Neighborhood and Built Environment; (5) Social and Community Context.[51]

SDOH conditions shape daily life and available choices around healthy food, physical activity, education, jobs, and financial security which, in turn, systematically affect obesity rates and people's health. These conditions are tied closely to equity issues—including structural racism, poverty, and community context. For example, a 2019 study found that racial inequality in income, unemployment, and homeownership—indicators of structural racism—were associated with obesity.[52] The results of that study further suggested that these structural racism indicators tracked with obesity through environmental factors like the number of grocery stores and fast-food restaurants in the community, and social contexts, like stress, which are predictors of poorer health.[53,54,55,56,57]

Altogether, the research suggests that real change in reducing obesity and improving health at the population level requires understanding and action on all the drivers of high obesity rates—from addressing historical to present-day inequities and underinvestment that result in limited resources in communities to ensuring availability and encouraging culturally appropriate, healthy choices for individuals.

Addressing social determinants requires working across sectors and leveraging data and resources to address social, environmental, and economic conditions that affect health and health equity.[58] With appropriate support, public health can play key roles in addressing SDOH: they can provide the evidence base for effective policies and interventions, offer best practices, analyze and share data across sectors, convene different governmental and community-based organizations to identify and address barriers to health, and collaborate across sectors to prioritize and implement evidence-based strategies. The Improving Social Determinants of Health Act of 2021 would authorize a program at CDC to lead the agency's SDOH work and award grants to state, local, territorial, and tribal health agencies and organizations to address SDOHs. The president's FY 2022 budget request for CDC included a $153 million request to support implementation of SDOH work at CDC and across the country.

HOW INEQUITY CONTRIBUTES TO OBESITY: From Living Context to Weight Outcomes

Developed from a presentation at the Roundtable on Obesity Solutions, National Academies of Sciences, Engineering, and Medicine

Source: Kumanyika S. "A Health Equity Approach to Obesity Efforts: A Workshop." Washington, DC: National Academies of Sciences, Engineering, and Medicine , April 1, 2019. http://www.nationalacademies. org/hmd/Activities/Nutrition/ ObesitySolutions/2019-APR-1.aspx (accessed July 21, 2019).

C. INCREASES IN FOOD INSECURITY, CHANGES IN EATING HABITS, AND DECREASES IN PHYSICAL ACTIVITY DURING THE PANDEMIC

As related most directly to obesity, Americans saw increases in food insecurity, shifted eating habits, and reduced their physical activity during 2020.

Food insecurity reached unprecedented levels due to COVID-19. At the beginning of the pandemic, unemployment surged, household food insecurity tripled, food banks across the country reported large spikes in demand, and Supplemental Nutrition Assistance Program (SNAP) enrollment increased by 2 million (14 percent) between February and April 2020 in states that posted such data. [62,63,64] Food insecurity has declined some from 2020, but continues to stay well above 2019 levels. Feeding America projects that 42 million people, including 13 million children, may experience food insecurity in 2021.[65]

Extended school and child care closures worsened food insecurity for many families whose children rely on the school meal programs. Most U.S. schools closed in March 2020, and many remained closed for a year or longer. In June 2021, only 53 percent of American students were back attending school in person five days a week.[66] Most major child nutrition programs saw large declines in meals and food service in 2020. For example, the National School Lunch Program served 3.2 billion lunches in fiscal year (FY) 2020, 34 percent fewer meals than the 4.9 billion in FY 2019.[67] It is also important to note that families of color were disproportionately impacted. A September 2020 survey revealed that 41 percent of Black and Latino families with school-age children had experienced food insecurity that month.[68] For additional information on child nutrition programs, including changes in meals and food served, see pages 35-37, and for a further discussion about the link between food insecurity and obesity, see page 34.

Massimo Giachetti

The International Food Information Council's survey from the beginning of the pandemic in April 2020 found that 85 percent of Americans made some change in the food they eat or how they prepare it because of the COVID-19 pandemic. Key findings include: 60 percent cooking at home more, 32 percent snacking more, and 27 percent thinking about food more than usual. At the time, there was also worry about food safety, with nearly half of consumers at least somewhat concerned about the safety of food that was prepared outside their homes (e.g., takeout).[59] Another study, from the *Journal of the American Medical Association*, looked specifically at alcohol use (a high-calorie beverage that has additional risks as well).[60] Comparing surveys from April 29–June 9, 2019, and May 28–June 16, 2020, the researchers found an increase in overall alcohol consumption for adults, with higher increases among women, adults ages 30 to 59 years, and white people.[61]

Data also show a decrease in physical activity from reduced active transportation, closures of gyms, community centers, parks, child care, and schools, and cancellation of sports and other activities. One study from the Annals of Internal Medicine compared step counts tracked by smartphones from 450,000 users across 187 countries and found a decline in steps between January and March 2020, including in the United States.[69] Another survey—which examined the activity levels of elementary- and middle-school-age children (ages 5–13) in April and May 2020—parents reported decreases in physical activity and increases in sedentary behavior, particularly among older children (ages 9–13).[70, 71]

Behavior and weight changes during the COVID-19 pandemic were not solely found in the United States but internationally as well—with studies finding a decrease in physical activity and an increase in obesity among teenagers and young adults in China; changes in exercise patterns in adults in Belgium; and changes in weight and dietary habits in Italy.[72,73,74] These international changes underscore how changing conditions universally affect people, their habits, and their health.

Shaping societal conditions is essential to improving health and well-being should be a priority as the nation seeks to build back equitably from the pandemic. Every American should have healthy food and physical-activity choices that are available, accessible, and affordable.

D. POLICY CHANGES IN RESPONSE TO COVID-19 PANDEMIC

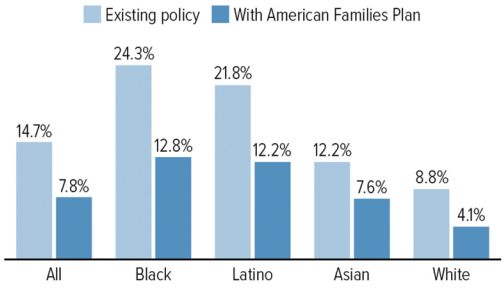
Over the course of the pandemic, a number of measures were taken at the federal level to improve certain conditions, specifically reducing widespread economic hardship and food insecurity by bolstering financial and nutrition assistance programs and adding flexibilities to allow programs to serve individuals and families despite social distancing requirements and facility closures. See page x for more on changes to the safety net programs and reducing food insecurity during the pandemic.

There have been improvements in unemployment and food insecurity in recent months. As of July 2021, the overall unemployment rate had fallen to 5.4 percent, down from an all-time high of 14.4 percent in April 2020 but still substantially higher than the 3.5 percent in February 2020 before the pandemic.[75] The March 17–29, 2021 time period showed a decrease in food insecurity to 18 percent for all households—the first time food insecurity fell below 20 percent during the pandemic—corresponding with the passage of American Rescue Plan Act of 2021 the prior week. The American Rescue Plan Act continued and expanded many social safety-net programs, including extending the emergency increase in SNAP benefits, continuing unemployment benefits, and providing a third economic-impact payment of up to $1,400 per person (payments started March 12, 2021).[76,77]

Despite these efforts, unemployment and food insecurity remains higher than before the pandemic, particularly in the Black and Latino communities, and continued attention is necessary to help these communities and bolster underlying conditions for all Americans.[78,79,80,81] President Biden's proposed American Families Plan would increase income assistance programs, including making permanent many of the American Rescue Plan's tax credit expansions. If enacted, researchers estimate the American Families Plan could cut child poverty nearly in half.[82]

Key Provisions of American Families Plan Would Cut Child Poverty Nearly in Half and Substantially Reduce Racial and Ethnic Gaps in Child Poverty

Percent of children in poverty in 2022



Note: Figures use the Supplemental Poverty Measure. This analysis includes the effects of an expanded and fully refundable Child Tax Credit, expansion of the Earned Income Tax Credit for workers without children, the Child and Dependent Care Tax Credit, the Summer Electronic Benefit Transfer (EBT) Program and Pell Grants. Due to limitations of the Census data, the figures do not reflect program rules that limit eligibility for certain immigrants. This omission likely has little effect on most of the estimates shown here; the poverty reduction for Latino and Asian children, however, may be somewhat overstated.

Source: Sophie Collyer et al., "The Potential Poverty Reduction Effect of the American Families Plan." Columbia University Center on Poverty and Social Policy, April 28, 2021.

Understanding Our Society Will Help Us Understand Obesity

Q&A with Angela Odoms-Young, Ph.D.

Dr. Angela Odoms-Young *is an associate professor in Nutritional Sciences at Cornell University.*

TFAH: Much of your research is focused on diet and health outcomes, particularly in communities of color. What are the major take-aways from that research, and what do they tell us about obesity?

Odoms-Young: My interest is in social, cultural and environmental factors that influence diet and diet related health conditions. Most of my work is mid-stream and I have a growing interest in structural factors. What is meant by mid-stream? Poor food environments; stress and trauma; lack of economic development, including the lack of food retail; and lack of opportunity for active transportation and physical activity.

This work breaks out into three buckets. One is understanding how these factors influence dietary outcomes: what are the linkages between these factors and what happens at the individual level?

The second bucket focuses on what do you do about it? How do you partner with communities? What programs are there that can be co-designed with communities, particularly those communities that have been disproportionally impacted. Food-assistance programs are part of this bucket.

The third bucket focuses on cultural resilience. I'm interested in how reclaiming cultural traditions can help communities to be more resilient.

All three buckets relate to one another. We think about what's outside our community—oppression and racism. I also want to think about what's inside the community to foster resilience. We want racism and structural oppression to be gone overnight, but, unfortunately, they won't be gone overnight. So, we need to work alongside communities to build resilience.

TFAH: How do the environmental and structural factors you study impact rates of obesity in African American communities?

Odoms-Young: We need to think of obesity as an outcome. If you look at the conditions under which Black people live, those conditions over years have created what we see today.

The fact that people of color are disproportionately impacted makes perfect sense because generally society has restricted their access to resources.

I'm trained as a nutritionist, we think backwards. Nutrition-equity, food-equity, food justice— these are outcomes. We need to look at equity through an obesity lens, rather than looking at obesity through an equity lens. When you do that, obesity is just one of many outcomes that burden the Black community. When we look at equity, not health equity or food equity but equity, you need to look at historical and cultural oppression—these factors contribute to what happens today including obesity and poor health. For example, the racial wealth gap. We know that wealth is generally associated with good health, people who have more income have better health outcomes. The historical extraction of wealth out of Black and Indigenous communities has played a role in poor health outcomes, including more obesity.

A second example is cultural dispossession. A lot of this work has been done with Indigenous communities but it's also true for African American communities. Cultural dispossession over time has led to a loss of traditions that were healthier, and, therefore, to more obesity.

I'm ultimately interested in overarching well-being within a community, and not just obesity. Within communities of color, we need to focus both on the structural and the internal. How can we help people accomplish their health goals within the context of the existing structural issues? How can we bring social and structural factors into individual-level interventions? We can't forget our cultural resilience because people are facing oppression. People in communities of color understand the impact of social and structural factors because it's in everything. That's true for obesity, it's also true for high school graduation rates, access to housing—for a whole host of things.

I'm a big supporter of the WIC [Special Supplemental Nutrition Program for Women, Infants, and Children] program and how the program incentivizes fruit and vegetable purchases through the cash-value benefit. We also need to recognize that very few people—including those who

can afford to—are meeting the five servings a day of fruit and vegetable guidelines. We need to learn more about how to incentivize fruit and vegetable intake even among higher income people. What's baked into our society at every level? Understanding that will help us understand obesity.

TFAH: What are the typical assumptions about obesity that are wrong?

Odoms-Young: One assumption is that people think we need to do one thing when we need to do many things. We still have the assumption about individual behavior. We also have assumptions about communities that are disproportionately impacted. We get focused on community and structural factors or on individual factors; that leads to assumptions that we only need one thing. We need solutions from a systems standpoint and to also provide support for individuals. We need a holistic approach that is linked to health. I like first-person language, people with obesity because it puts the focus on people. When you put the focus on people, you are putting the focus on people's needs.

TFAH: What are the right policy solutions?

Odoms-Young: There are several policy areas that should be explored to address systemic injustices (upstream) that all contribute to obesity and obesity-related behaviors (downstream). More research is needed to understand the pathways, but many of these policies have the potential to create racial equity overall which theoretically will reduce gaps in the inequitable burden of obesity.

The first thing we need to do is recognize that since we have such a high prevalence of obesity in all communities, it has to be in the societal structure. The way things are structured within society is how we got here. It's the lack of healthy structures within institutions that could be supportive and inclusive of people's health. Obesity prevention needs to be more upstream. We need to focus not only on the lack of food access but also how to change it, how to develop or attract a grocery store, and build a community food system.

I support increasing the amount for SNAP and increasing the amount for WIC, and I'm for looking at community eligibility for school lunches. I like incentives rather than restrictions. I like holistic policies and policies that look at addressing structural disinvestment. We need overarching policies that look at the conditions that people need to be healthy. We need polices at all levels. Policies for everybody—if 42 percent of the population are people with obesity this is not an individual problem this is a societal structure problem.

Specifically, the policy areas we need to focus on are school meals, the food system, housing policies, city-planning, wealth-equity policies and transportation policies—they all have the potential to impact obesity.

If we look at midstream policy solutions, we need to look at prevention within the healthcare sector. For example, clinical guidelines that focus on health behaviors that link to obesity prevention. A second example is payment, like reimbursement for providers in all of our health channels so they can do obesity-prevention work.

In the context of all other structures—education, workplace, etc.—policies need to be in place to help people be healthier. People that work on a factory line are not experiencing a lot of health and wellness at work. Workplace supports for families, paid family leave, are also critical. I'm not only talking about a gym at work; I'm talking about policies within the design and structure of work that help you lead a healthier lifestyle. Workplaces can be designed to ensure that people have the opportunity for exercise and access to healthy foods. Work hours are also part of the equation.

TFAH: Are there any COVID-19-related policy changes or lessons that we should continue to follow?

Odoms-Young: Yes, the policies put in place to help deal with COVID-19 have been helpful and should remain in place. Pandemic EBT [electronic benefits transfer] has been excellent, the increase in WIC waivers—those kinds of policies need to stay in place. Another take-away from COVID is the need to invest in disadvantaged communities for the long-term. We can't just think we're going to give people SNAP or WIC and all of our problems will be solved. We can't think about the head of the pin anymore when we think about obesity, we have to think in a holistic perspective. Obesity is the result of all of a person's burdens.

TFAH: Any final thoughts?

Odoms-Young: Obesity is a consequence of life and structures that we need to change. We need to think about overarching structures and equity within those structures. Create opportunities for everybody and then add additional supports for people who face extra barriers.

You can't look ahead unless you look backwards to understand the historical factors. In order to intervene you have to understand how we got here. You need to understand the broader context of life. Ultimately, what conditions contribute to obesity? Everything. It's the entire experience that contributes to people being in poor health, both historic and contemporary.

SECTION 2:

The State of Obesity

Obesity-Related Data and Trends

A. TRENDS IN ADULT OBESITY (BMI >30)

The national adult obesity rate has been rising for decades, with the most recent national data, from 2017–2018 NHANES, showing adult obesity rates passing 40 percent.[83,84,85] This subsection provides the most recent data available on adult obesity levels by state and by demographics, using the two primary U.S. surveys that track adult obesity rates: NHANES and BRFSS.

DATA SOURCES FOR ADULT OBESITY MEASURES

1. The National Health and Nutrition Examination Survey is the source for the national obesity data in this report. As a survey, NHANES has two main advantages: (1) it examines a nationally representative sample of Americans ages 2 years and older; and (2) it combines interviews with physical examinations. The downsides of the survey include a time delay from collection to reporting and a small survey size (approximately 5,000 interviews over two years) that is not designed to be used for state or local data.[86]

2. The Behavioral Risk Factor Surveillance System is the source for state-level adult obesity data in this report. As a survey, BRFSS has three major advantages: (1) it is the largest ongoing telephone health survey in the world (approximately 450,000 interviews per year); (2) each state survey is representative of the population of that state; and (3) the survey is conducted annually, so new obesity data are available each year.[87] The limitations of the survey includes use of self-reported weight and height, which result in underestimates of obesity rates due to people's tendency to over-report their height and under-report their weight. Also, the sample sizes in some states are too small to be useful for providing estimates about racial and ethnic groups.

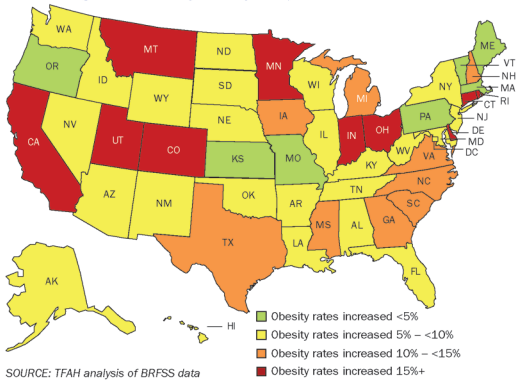
I. State Obesity Rates

State-level obesity rates vary considerably, from a low of 24.2 percent in Colorado to a high of 39.7 percent in Mississippi, according to 2020 BRFSS data.[88] Other key findings from the recently released data include:

- In 2020, the adult obesity rate was at or above 35 percent in 16 states. Delaware, Iowa, Ohio, and Texas had adult obesity rates above 35 percent for the first time in 2020, joining 12 other states.[89]
- Historically, no state was over 25 percent before 2000; and as recently as 2012, no state was at 35 percent.[90]
- Between 2019 and 2020, three states (Alabama, California, and Iowa) had statistically significant increases in their obesity rate and no states had statistically significant decreases. In the prior five years (2015–2020), 26 states had statistically significant increases in their obesity rate.
- More than half of adults in every state were either overweight or had obesity in 2020. The combined rate of adults being overweight and having obesity ranged from 57.3 percent (in DC) to 72.8 percent (in Mississippi).

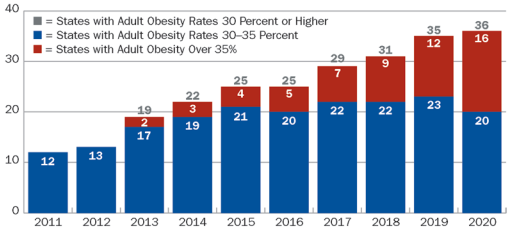
For additional state-level data from BRFSS, see the charts on pages 22-24.

Percent Change in Adult Obesity Rates by State, 2015-2020



SOURCE: TFAH analysis of BRFSS data

Number of States with Adult Obesity Rates At 30 Percent or Higher, 2011–2020

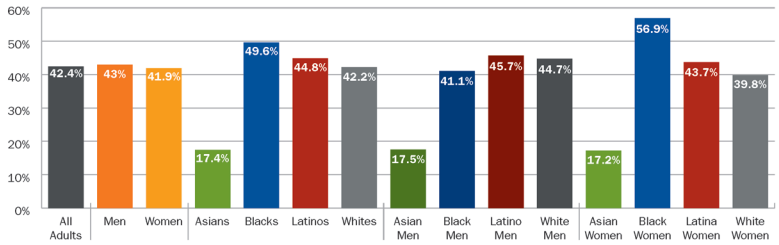


Source: TFAH analysis of BRFSS data

WHY ARE REPORTED NATIONAL OBESITY RATES HIGHER THAN STATE-BY-STATE RATES?

How is it that only 16 states have adult obesity rates exceeding 35 percent, yet the national obesity rate is 42.4 percent? It's because state obesity rates are from the BRFSS, which collects self-reported height and weight. Research has demonstrated that people tend to overestimate their height and underestimate their weight. In fact, one study found that, due to this phenomenon, the BRFSS may underestimate obesity rates by nearly 10 percent.[91] NHANES, from which the national obesity rate is derived, calculates its obesity rate based on measurements obtained at respondents' physical examinations. Accordingly, the higher rates found by NHANES are a more accurate reflection of obesity in the United States.[92]

Percent of U.S. Adults With Obesity by Select Demographics, 2017–2018



SOURCE: NHANES

II. Demographic Trends

Obesity levels vary substantially by race/ethnicity as well as by income level, urbanization, and education, all of which are inexorably linked with the social, economic, and environmental conditions in those communities

- **Income: Generally, adults with lower incomes are more likely to have obesity.**
  - According to a CDC analysis of 2011–2014 NHANES data, there is one exception to this trend: the very poor, who live below the federal poverty line (FPL), had lower obesity rates (39.2 percent) than those with incomes just above the poverty line (42.6 percent). (In 2020, FPL was an annual income of $12,760 for an individual and $26,200 for a family of four.)[93] But both income groups—those below the FPL and those at 100 percent to 199 percent FPL—had higher obesity levels than those with incomes at or above 400 percent FPL (29.7 percent).[94] *Note: Differences among white women mostly drive these trends.*
  - This dynamic holds true for children as well. CDC analysis of 2011–2014 NHANES data for youth ages 2 to 19 found that 18.9 percent of youth in the lowest-income group (≤130 percent FPL) had obesity, 19.9 percent of youth in the middle-income group (>130 percent to ≤350 percent FPL) had obesity, and 10.9 percent of youth in the highest-income group (>350 percent FPL) had obesity.[95] The differences in obesity rates among girls have widened substantially between 1999 and 2014, with girls in the highest-income group having a modest decrease in obesity, while girls in the lowest- and middle-income groups seeing increases. (Boys had more stable obesity levels at all income levels over this time period.)[96]
- **Race/ethnicity: Racial/ethnic disparities in obesity are stark, with Black women having the highest rates of any group.**
  - According to 2017–2018 NHANES data, Blacks had the highest rate of obesity (49.6 percent) for adults ages 20 and higher, followed by Latinos (44.8 percent), whites (42.2 person), and Asians (17.4 percent).
  - The higher obesity rate among Black women drives the higher obesity rate among Black people. More than half—56.9 percent—of Black women have obesity. That is the highest sex and race/ethnicity combination included in NHANES—and 43 percent higher than white women (39.8 percent). In contrast, Black men have an obesity rate of 41.1 percent, which is slightly lower than white men (44.7 percent).
  - Asian adults overall have much lower rates of obesity than any other race/ethnicity reported in NAHNES. Other studies have shown variation on obesity rates among different ethnicities and national origins within the overarching group. For example, the 2014 Native Hawaiian and Pacific Islander National Health Interview Survey found that Native Hawaiian adults ages 18 and older had self-

reported obesity rates of 37.4 percent and Pacific Islander adults had obesity rates of 44.5 percent; in comparison, all Asians had an obesity rate of 11 percent in the 2014 National Health Interview Survey (and whites had a 28.2 percent obesity rate).[97]

- There is also evidence suggesting that Asians should have lower BMI cutoffs for overweight and obesity measures than other races and ethnicities, because they have higher health risks at lower BMIs. This includes a higher risk for type 2 diabetes and other metabolic diseases at lower BMIs. Since a high BMI is a factor in determining whether to test for diabetes, fewer Asians are tested and diagnosed by healthcare providers.[98] An estimated 40 percent of Asians with diabetes have not been diagnosed, which is much higher than the overall population.[99]
- It is also important to note that many national surveys, including NHANES, do not report data on health measures for American Indian and Alaska Native (AI/AN) adults. The surveys that do exist do not gather or present findings by tribal nations. Available data shows that the AI/AN population has high rates of obesity. The 2017 National Health Interview Survey, which is based on self-reported height and weight, finds 38.1 percent of AI/AN adults had obesity, which is roughly the same as Black adults in that survey and substantially higher than white adults.[100] This gap highlights the need to advance data collection for populations of smaller sizes.

- **Rural/urban: Rural areas and counties have higher rates of obesity and severe obesity.**
  - According to 2016 BRFSS data, adult obesity rates were 19 percent higher in rural regions than they were in metro areas. More than one-third (34.2 percent) of adults in rural areas had self-reported obesity compared with 28.7 percent of metro adults.).[101]
  - Similarly, a CDC analysis of NHANES data found that adults (ages 20 and older) who lived in the most urban areas of the country (large "metropolitan statistical areas") had the lowest obesity rates in 2013–2016.[102]
- **Education: Adults with lower education levels are more likely to have obesity.**
  - According to 2017 BRFSS data, 35.6 percent of adults with less than a high school education had obesity compared with 22.7 percent of college graduates—a difference of more than 50 percent.[103]
  - The difference is greater when looking at children and the education level of the head of household. A CDC analysis of 2011–2014 NHANES data found that, in homes where the head of household was a high school graduate or less, 21.6 percent of children ages 2 to 19 had obesity; however, in homes with a head of household who graduated college, only 9.6 percent of children had obesity, more than half the prevalence.[104]

Adult Obesity Rates and Related Health Indicators, 2020

States	Obesity		Overweight & Obesity		Diabetes		Physical Inactivity		Hypertension	
	Percent of Adults Who Have Obesity (95% CI)	Rank	Percent of Adults Who Have Obesity or Are Overweight (95% CI)	Rank	Percent of Adults with Diabetes (95% CI)	Rank	Percent of Adults Who Are Physically Inactive (95% CI)	Rank	Percent of Adults with Hypertension (95% CI)	Rank
Alabama	**39+/-1.8***	3	**72.7+/-1.6***	2	15+/-1.3	2	29.1+/-1.7**	4	42.5 (+/-1.5)	3
Alaska	31.9+/-2.5	26	66.8+/-2.5	30	7.9+/-1.4	48	20.8+/-2.2	31-T	32.8 (+/-2.6)	23-T
Arizona	**30.9+/-1.4**	31-T	66.1+/-1.4	33	11.3+/-0.9	20	22.2+/-1.2	26	32.5 (+/-1.6)	25
Arkansas	36.4+/-2	9-T	67.3+/-2**	24-T	13.2+/-1.2	7	28.9+/-1.8	5	41 (+/-1.8)	4
California	**30.3+/-1.9***	35	**64+/-2**	43-T	10.2+/-1.2	31	20.2+/-1.7	36	27.8 (+/-1)	47
Colorado	**24.2**	51	**59.2**	49	**7.5**	51	15.7**	50	25.8 (+/-1)	49-T
Connecticut	**29.2+/-1.6**	38	**64.4+/-1.7**	39	9.5+/-1	37	19.7+/-1.4**	40	30.9 (+/-1.2)	33-T
Delaware	**36.5+/-2.1**	7-T	68.7+/-2.2	20	12.7+/-1.5	11-T	24.4+/-2	14-T	27.2 (+/-2)	48
D.C.	24.3+/-2.2	50	57.3+/-2.3	51	7.8+/-1.1	49-T	17.2+/-1.9	49	36.4 (+/-2.1)	10
Florida	28.4	42	64.1	42	11.8	17-T	25.7	10	33.5 (+/-1.4)	19-T
Georgia	**34.3+/-1.7**	17	67.3+/-1.8	24-T	11.8+/-1	17-T	24.4+/-1.5**	14-T	34.8 (+/-1.7)	14-T
Hawaii	24.5+/-1.3	48	58.1+/-1.6	50	**11.1+/-1**	23-T	18.8+/-1.3**	42	30.7 (+/-1.4)	36-T
Idaho	**31.1+/-1.8**	28	66.3+/-1.8	32	8.6+/-1**	44	19.8+/-1.5**	39	30.6 (+/-1.8)	38-T
Illinois	32.4+/-2.2	23	68+/-2.1	22	10.3+/-1.4	29-T	24.3+/-2	16	32.2 (+/-1.4)	26
Indiana	36.8+/-1.3	5	**69.1+/-1.3**	18	12+/-0.8	16	25.9+/-1.2**	8-T	34.8 (+/-1.2)	14-T
Iowa	**36.5+/-1.2***	7-T	**71.8+/-1.2***	3	**10.1+/-0.7**	32	22.6+/-1**	23-T	31.8 (+/-1)	27
Kansas	35.3+/-1.2	15	**69.7+/-1.2**	12	**11.2+/-0.7**	21-T	21.7+/-1.1**	29	33.5 (+/-1)	19-T
Kentucky	36.6	6	**70.1**	8	13.1	8	30.1	1	40.9 (+/-1.7)	5
Louisiana	38.1	4	70.6	6	14.3	4	28.7**	6	39.7 (+/-1.7)	6
Maine	31+/-1.5	29-T	65.6+/-1.5	35	10.5+/-0.8	28	21.1+/-1.3**	30	36.2 (+/-1.4)	11
Maryland	31+/-1.2	29-T	66.5+/-1.2	31	10.3+/-0.7	29-T	20.1+/-1**	37-T	34.3 (+/-1)	17
Massachusetts	24.4+/-1.5	49	60.5+/-1.7	48	9+/-1	39-T	19.4+/-1.4**	41	28.1 (+/-1.2)	46
Michigan	**35.2**	16	**69.8**	10-T	**12.1**	15	20.3**	34-T	35.1 (+/-1.2)	12-T
Minnesota	**30.7+/-0.9**	33-T	**67.3+/-1***	24-T	**8.7+/-0.5**	43	18+/-0.8	45	28.7 (+/-0.8)	45
Mississippi	**39.7+/-1.6**	1	**72.8+/-1.5**	1	14.6+/-1.1	3	29.5+/-1.5**	2	43.6 (+/-1.8)	2
Missouri	34+/-1.3	18-T	**69.5+/-1.3**	14-T	10.9+/-0.8	25	25.2+/-1.3**	11	30.9 (+/-1.4)	33-T
Montana	**28.5+/-1.4**	41	**64.6+/-1.5**	36-T	9.1+/-0.8*	38	18.6+/-1.2	44	29.5 (+/-1.3)	44
Nebraska	**34**	18-T	**69.8**	10-T	**9.8**	35	20.8**	31-T	31 (+/-1)	31-T
Nevada	28.7+/-2.6	39	64.3+/-2.8	40-T	11.2+/-1.8	21-T	24.2+/-2.6	17	32.8 (+/-2.4)	23-T
New Hampshire	**29.9+/-1.7**	37	65.7+/-1.8	34	9+/-0.9	39-T	18.7+/-1.5**	43	31.5 (+/-1.6)	30
New Jersey	27.7+/-1.21	45	64.6+/-1.29	36-T	10.04+/-0.83	33	20.4+/-1.13	33	n/a	–
New Mexico	30.9+/-1.9	31-T	67.7+/-1.9	23	12.2+/-1.2	14	22.6+/-1.7**	23-T	31.6 (+/-1.6)	29
New York	26.3+/-1.1	46	63.3+/-1.2	45	10.8+/-0.8	26	24.6+/-1.1**	13	29.6 (+/-1.1)	43
North Carolina	**33.6+/-1.6**	20	69.3+/-1.6	17	**12.7+/-1.1**	11-T	22.1+/-1.4**	27-T	35.1 (+/-1.6)	12-T
North Dakota	33.1+/-2	22	70.7+/-2	5	9.9+/-1.1	34	24.1+/-1.8**	18-T	29.8 (+/-1.6)	42
Ohio	**35.5+/-1.2**	14	**69+/-1.2**	19	**12.5+/-0.8**	13	24.1+/-1**	18-T	34.5 (+/-1.2)	16
Oklahoma	**36.4+/-1.8**	9-T	69.4+/-1.8	16	13+/-1.1	9-T	28.4+/-1.6**	7	37.8 (+/-1.4)	9
Oregon	28.1+/-1.5	43	64.3+/-1.6	40-T	9.7+/-1	36	17.8+/-1.3**	47	30.6 (+/-1.4)	38-T
Pennsylvania	31.5+/-1.7	27	67.1+/-1.8	29	11.4+/-1.2	19	23.6+/-1.7	21	33.3 (+/-1.4)	21
Rhode Island	**30.1+/-2**	36	64.6+/-2.1	36-T	10.6+/-1.1	27	22.9+/-1.8**	22	33 (+/-1.7)	22
South Carolina	**36.2**	11	**69.5**	14-T	**13.6**	6	25.9	8-T	38.3 (+/-1.5)	8
South Dakota	33.2+/-2.6	21	**69.6+/-2.5**	13	7.8+/-1.1**	49-T	22.1+/-2.3**	27-T	30.9 (+/-2.2)	33-T
Tennessee	35.6	13	70.0	9	14.2	5	24**	20	39.3 (+/-1.6)	7
Texas	**35.8**	12	70.2	7	13.0	9-T	25.0	12	31.7 (+/-1.5)	28
Utah	**28.6+/-1.1**	40	**62.4+/-1.2**	46	**8+/-0.6**	46-T	15.3+/-0.9**	51	25.8 (+/-1)	49-T
Vermont	26.3+/-1.6	47	61.9+/-1.9	47	8+/-0.9	46-T	17.9+/-1.5	46	30.2 (+/-1.6)	41
Virginia	**32.2**	25	**67.3+/-1***	24-T	11.1	23-T	20.1**	37-T	33.6 (+/-1.2)	18
Washington	**28**	44	64.0	43-T	8.8	42	17.3	48	30.3	40
West Virginia	**39.1+/-1.6**	2	**71.1+/-1.5***	4	15.7+/-1.1	1	29.2+/-1.5	3	43.8 (+/-1.7)	1
Wisconsin	32.3+/-0	24	68.4	21	9.0	39-T	20.3**	34-T	31 (+/-1.6)	31-T
Wyoming	30.7+/-2	33-T	67.3	28	8.3+/-1	45	22.4+/-1.7	25	30.7 (+/-1.8)	36-T

SOURCE: TFAH analysis of Behavioral Risk Factor Surveillance System data

For rankings, 1 = Highest Rate, and 51 = Lowest Rate; T = Tie. Red and * indicate state rates that significantly increased between 2019 and 2020; Green and ** indicate state rates that significantly decreased between 2019 and 2020; **Bold** indicates state rates that significantly increased between 2015 and 2020. Because data from 2019 are not available for New Jersey, increases/decreases for the state are not available. Hypertension data is collected bi-annually; this data is from 2019.

Adult Obesity Rates by Race/Ethnicity and Sex, 2020

	Asian*		Black*		Latino*		White*		Male		Female	
States	Percent of Asian Adults With Obesity	Rank	Percent of Black Adults With Obesity	Rank	Percent of Latino Adults With Obesity	Rank	Percent of White Adults With Obesity	Rank	Percent of Men With Obesity	Rank	Percent of Women With Obesity	Rank
Alabama	15.6	11	46.2	4	35.3	21	34.3	9	37.7	2	40.3+/-2.3	2
Alaska	25.5	1	41.6	20	34.0	26-T	29.0	33	33.8+/-3.6	17-T	29.6+/-3.5	35
Arizona	12.3	18	35.7	34-T	35.9	14	27.6	39	30.8+/-1.9	33	31+/-2	29
Arkansas	n/a	–	45.0	8	34.0	26-T	36.1	4	33.8+/-2.7	17-T	39.1+/-2.8	5
California	10.5	28-T	41.7	19	36.2	12-T	24.4	47	30.7+/-2.7	34-T	29.8+/-2.8	33
Colorado	6.3	36	31.0	46	30.9	41-T	21.8	48	24.3	50	24.1	49
Connecticut	11.6	24-T	40.3	25	34.5	24-T	26.6	43-T	28.4+/-2.2	43	30+/-2.2	32
Delaware	13.4	14-T	43.0	13-T	34.5	24-T	33.3	16-T	35.4+/-3.3	8-T	37.7+/-3	8
D.C.	7.3	34	39.1	29	25.2	49	11.2	50	19.1+/-2.8	51	29.1+/-3	36
Florida	14.9	12	35.7	34-T	29.7	45-T	27.4	40	28.9	39-T	27.9	43-T
Georgia	11.6	24-T	40.5	23-T	35.7	16-T	30.7	25-T	33.3	20	35.2	17
Hawaii	16.6	10	33.1	43	33.0	32-T	18.8	49	26.7	46	22.3+/-1.8	51
Idaho	19.0	3	30.7	48	33.1	30-T	29.2	32	32+/-2.5	28	30.2+/-2.5	31
Illinois	12.1	20	41.0	21-T	35.4	18-T	31.1	22-T	34.1+/-3	15	30.7+/-3.2	30
Indiana	n/a	–	39.7	27	40.0	2	35.1	6-T	35.4	8-T	38.1+/-1.9	7
Iowa	13.4	14-T	45.4	6	36.4	11	35.3	5	36.8	4	36.2	13-T
Kansas	11.9	21	43.3	12	38.0	8	34.5	8	35.7	7	34.8+/-1.7	18
Kentucky	n/a	–	43.0	13-T	33.2	29	36.5	2	37.0	3	36.1	15-T
Louisiana	16.9	6-T	45.2	7	32.2	37	33.3	16-T	36.4	5-T	39.8+/-2.7	3
Maine	n/a	–	34.8	37-T	28.2	47	31.1	22-T	32.3+/-2.2	26	29.7+/-1.9	34
Maryland	11.8	22-T	39.9	26	31.3	38-T	28.9	34-T	30.3+/-1.7	37	31.6+/-1.6	25
Massachusetts	9.6	31	30.9	47	30.4	43-T	25.3	45	25.4	49	23.4+/-2	50
Michigan	8.8	33	42.3	16	43.1	1	33.9	12-T	33.4	19	37.1	10-T
Minnesota	18.8	4	33.7	42	33.9	28	30.3	27-T	33.1+/-1.3	21	28.2+/-1.3	40-T
Mississippi	n/a	–	46.7	1	33.0	32-T	36.2	3	36.4	5-T	42.8+/-2.2	1
Missouri	n/a	–	42.2	17	39.5	5	33.6	15	31.9	29	36.2+/-1.9	13-T
Montana	n/a	–	n/a	–	29.7	45-T	26.9	42	28.9+/-2	39-T	28.2+/-2.1	40-T
Nebraska	9.3	32	41.1	21-T	35.8	15	33.9	12-T	34.7	11	33.3	21
Nevada	13.4	14-T	37.3	31	33.1	30-T	28.9	34-T	30.4+/-3.8	36	27+/-3.5	45
New Hampshire	13.7	13	31.3	45	25.8	48	30.7	25-T	31.8	30-T	27.9+/-2.2	43-T
New Jersey	n/a	–	n/a	–	n/a	–	n/a	–	28.6+/-1.65	41-T	26.7+/-1.8	46
New Mexico	n/a	–	37.9	30	35.7	16-T	24.8	46	30.7+/-2.7	34-T	31.1+/-2.6	28
New York	11.4	27	34.8	37-T	30.4	43-T	26.6	43-T	26.4+/-1.5	47	26.3+/-1.5	48
North Carolina	16.9	6-T	46.5	2	31.3	38-T	29.9	29	32.8	23	34.4	19
North Dakota	16.7	8-T	25.8	49	37.9	9	33.9	12-T	34.5+/-2.7	12	31.5+/-3	26
Ohio	10.5	28-T	40.5	23-T	39.7	3-T	34.2	10	33.9	16	37.1+/-1.7	10-T
Oklahoma	12.2	19	43.4	11	36.2	12-T	35.1	6-T	34.3+/-2.5	14	38.6+/-2.4	6
Oregon	16.7	8-T	33.0	44	35.4	18-T	28.3	36-T	27.7+/-2.1	45	28.5+/-2.1	38
Pennsylvania	7.2	35	41.8	18	32.9	34	31.3	21	30.9	32	32.1+/-2.5	22
Rhode Island	n/a	–	35.8	33	35.2	22	28.3	36-T	31.8+/-3	30-T	28.4+/-2.6	39
South Carolina	23.7	2	43.9	10	30.9	41-T	32.4	18	33.0	22	39.4	4
South Dakota	n/a	–	34.3	40	37.8	10	30.9	24	32.2	27	34.3	20
Tennessee	n/a	–	44.3	9	35.0	22	34.1	11	34.4	13	36.7	12
Texas	12.5	17	39.2	28	39.7	3-T	32.2	19	35.4	8-T	36.1	15-T
Utah	11.6	24-T	34.7	39	32.3	35-T	28.0	38	28.6	41-T	28.4	37
Vermont	n/a	–	37.2	32	21.7	50	27.1	41	26.1+/-2.3	48	26.8+/-2.3	47
Virginia	11.8	22-T	42.6	15	31.3	38-T	30.3	27-T	32.6	24	31.8	24
Washington	10.0	30	34.2	41	34.8	23	29.3	31	28.0	44	28.0	42
West Virginia	n/a	–	46.3	3	39.3	6	39.4	1	40.6+/-2.4	1	37.6+/-2.1	9
Wisconsin	18.1	5	45.6	5	39.0	7	31.9	20	32.5	25	32+/-2.7	23
Wyoming	n/a	–	35.0	36	32.3	35-T	29.5	30	30.1+/-2.7	38	31.4+/-2.9	27

SOURCE: TFAH analysis of Behavioral Risk Factor Surveillance System data

NOTE: For rankings, 1 = Highest Rate, and 51 = Lowest Rate; T= Tie.

* For race/ethnicity data, three years of data are needed for sufficient sample size; 2018–2020 data were used here. Some data are not available due to an insufficient sample size. Because data from 2019 are not available for New Jersey, race/ethnicity data is not available for the state.

Adult Obesity Rates by Age, 2020

	Ages 18-24		Ages 25-44		Ages 45-64		Ages 65+	
States	Percent With Obesity	Rank	Percent With Obesity	Rank	Percent With Obesity	Rank	Percent With Obesity	Rank
Alabama	27.1	2-T	40.5	3	44.9	3	34.9+/-3.1	4
Alaska	21.0	19	31.8+/-4.5	33	35.9+/-4	32	32.7+/-4.6	9
Arizona	20.5	20	34.4	22	35.4+/-2.4	35	25.8+/-2.3	44
Arkansas	27.1+/-7.8	2-T	39.2+/-4	9	41.7+/-3.1	10	30.5+/-2.4	23
California	18.7	30-T	31.7+/-3.3	34	35.2	36	26.1+/-3.8	41-T
Colorado	14.4	46	24.8	49	27.3	51	23.9	49
Connecticut	18.2	32-T	31.2	36	32.6+/-2.5	42	27.6+/-2.7	35
Delaware	18.2	32-T	37.7	13	40.9+/-3.5	15	37.6+/-3.9	1
D.C.	23.8+/-9.3	9-T	20.3+/-3.2	51	31.8+/-3.4	45	24.2+/-3.3	47
Florida	15.0	44	29.3	42	32.9	40	27.4	36-T
Georgia	24.2	7	34.3	23-T	39.3	19	32.6	10-T
Hawaii	15.8	41-T	27.2	45-T	29.3+/-2.4	49	18.7+/-2.2	51
Idaho	21.1	18	31.4	35	36.8+/-3.3	27	28.9+/-3	28-T
Illinois	20.1	22	32.9+/-4.1	31-T	37+/-3.9	26	31.6+/-3.8	17
Indiana	23.8	9-T	39.4	6-T	41.4+/-2.1	12	34.3+/-2.1	5
Iowa	23.1	11	39.3+/-2.3	8	43.1	7	31.8	15-T
Kansas	21.4	13-T	38.2	11-T	41.3	13	31.2+/-1.9	19
Kentucky	26.4	4	38.2	11-T	44.4	4	28.4	31-T
Louisiana	25.8	5	39.7	5	42.3	9	36.2	2
Maine	18.7	30-T	33.5	28	35.5+/-2.4	34	27.4+/-1.9	36-T
Maryland	14.8	45	33.1+/-2.4	30	36.1+/-1.8	29	28.5+/-1.8	30
Massachusetts	12.7	50	25.0	48	27.9	50	24.9+/-2.7	46
Michigan	19.1	29	36.5	14	39.7	18	35.6	3
Minnesota	16.9	36	30.7	39-T	36+/-1.5	30-T	30.6+/-1.7	21-T
Mississippi	27.5	1	41.3	2	46.4	1	33.6	7
Missouri	19.2	28	36.0	15-T	39.8	17	31.1+/-2.3	20
Montana	14.3+/-3.7	47	31.1	37	32.7+/-2.4	41	27.2+/-2.3	38
Nebraska	19.6	26-T	33.4	29	41.2	14	33.5	8
Nevada	19.8	23-T	24.2	50	36.3+/-4.7	28	28.9+/-5	28-T
New Hampshire	10.9	51	34.9	18-T	35+/-2.6	37	25.9+/-2.3	43
New Jersey	13.6+/-3.41	49	29.2+/-2.3	43	32+/-2.1	44	26.2+/-2.34	40
New Mexico	15.8	41-T	34.0	25	39.2+/-3.3	20-T	24.1+/-2.8	48
New York	16.7	37-T	27.2	45-T	30.8	47	23.6+/-2	50
North Carolina	21.3	15-T	33.9	26	39.2	20-T	31.3+/-3	18
North Dakota	21.4+/-6.1	13-T	34.5	20-T	37.8+/-3.2	24	32.1+/-2.7	14
Ohio	21.3	15-T	38.3	10	40.2+/-1.9	16	32.6+/-1.9	10-T
Oklahoma	24.1	8	39.4	6-T	43.2+/-2.9	6	29.9+/-2.7	25
Oregon	13.9+/-4	48	30.8+/-2.7	38	32.3+/-2.7	43	25.5+/-2.7	45
Pennsylvania	16.7	37-T	32.9	31-T	37.1	25	29.4	27
Rhode Island	16.7	37-T	34.9	18-T	33.4+/-2.9	39	26.4+/-2.8	39
South Carolina	21.2	17	39.8	4	41.5	11	31.8	15-T
South Dakota	18.2	32-T	34.3	23-T	39.1	22	32.4	13
Tennessee	25.3	6	36.0	15-T	42.5	8	30.3	24
Texas	22.5	12	35.2	17	43.9	5	32.6	10-T
Utah	16.3	40	30.1	41	33.7	38	28.4+/-2.2	31-T
Vermont	15.2	43	26.9	47	30.2+/-2.4	48	26.1+/-2.8	41-T
Virginia	19.7	25	33.8	27	38.0	23	28.2	33
Washington	17.3	35	28.7	44	31.2	46	27.9	34
West Virginia	20.4+/-5.8	21	43.7+/-3.3	1	45.4+/-2.6	2	33.9+/-2.4	6
Wisconsin	19.8	23-T	34.5	20-T	36.0	30-T	30.6	21-T
Wyoming	19.6+/-7.1	26-T	30.7+/-3.9	39-T	35.7+/-3.3	33	29.6+/-2.8	26

SOURCE: TFAH analysis of Behavioral Risk Factor Surveillance System data
NOTE: For rankings, 1 = Highest Rate, and 51 = Lowest Rate; T= Tie.

B. TRENDS IN CHILDHOOD OBESITY (95TH PERCENTILE AND GREATER)

As with adults, obesity has been rising among children for decades. Between the 1976–1980 NHANES survey and the 2017–2018 survey, obesity rates for children ages 2 to 19 more than tripled, from 5.5 to 19.3 percent.[105,106,107,108]

This section includes the latest data available on childhood obesity. As with adults, this report relies on multiple surveys to better understand the full picture of childhood obesity.

DATA SOURCES FOR CHILDHOOD OBESITY MEASURES

1) **The National Health and Nutrition Examination Survey** is the primary source for national obesity data on adults and on children ages 2 to 19 in this report. NHANES is particularly valuable in that it combines interviews with physical examinations, including measured heights and weights, while also covering a wide age range of Americans. The downsides of the survey include a time delay from collection to reporting and samples that do not break out local data. The most recent NHANES data are from the 2017–2018 survey.

2) **The WIC Participant and Program Characteristics Report** is a biennial census of families that WIC serves. The USDA collects the data, and CDC analyzes the obesity data. Because the program only includes low-income mothers and young children (under the age of 5), these data are limited.[109] Nevertheless, because obesity disproportionately affects individuals with low incomes, early childhood is a critical time for obesity prevention, and the data provide valuable information for evaluating the effectiveness of programs aimed at reducing obesity rates and health disparities. The most recent public WIC data are from 2018.

3) **The National Survey of Children's Health** surveys parents of children ages 0 to 17 about aspects of their children's health, including height and weight for children ages 6 and over. An advantage of this survey is that it includes state-level data. A disadvantage is that height and weight data are parent-reported, not directly measured. The most recent data are from its 2017–2018 iteration.

4) **The Youth Risk Behavior Survey (YRBS)** measures health behaviors, including eating habits and physical-activity behaviors, as well as body weight status (determined from self-reported height and weight), among students in grades 9 to 12. As in other surveys that use self-reported data to measure obesity, this survey likely underreports the true rates.[110] YRBS officials conduct the survey in odd-numbered years; 2019 is the most recent dataset available. The 2019 survey includes state-level samples for 44 states plus three U.S. territories, two tribal areas, and select large urban school districts, as well as a separate national sample.[111]

i. National Youth Obesity Rates

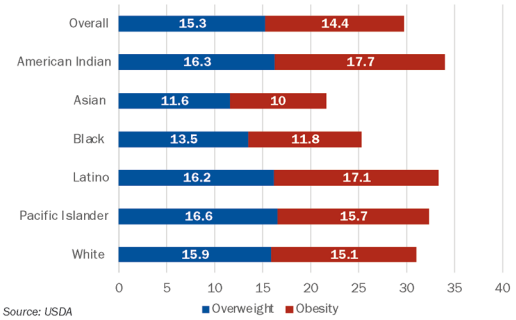
The most recent national data, the 2017–2018 NHANES survey, found that 19.3 percent of youth ages 2 through 19 had obesity. Demographic data show important variation:

- **Race/ethnicity: Black and Latino youth have substantially higher rates of obesity than their Asian and white peers.** Obesity prevalence for Asian youth was 8.7 percent, Black youth 24.2 percent, Latino youth 25.6 percent, and white youth 16.1 percent in 2017-2018.
- **Sex: Boys are slightly more likely to have obesity than girls.** In 2017-2018, 20.5 percent of boys had obesity, and 18.0 percent of girls had obesity.
- **Age: The prevalence of obesity increases with age.** In 2017–2018, 13.4 percent of children ages 2 to 5, 20.3 percent of children ages 6 to 11, and 21.2 percent of children ages 12 to 19 had obesity. Between the 1976–1980 NHANES survey and the 2017–2018 survey, the percentage of children ages 2 to 19 with obesity overall tripled, with the obesity rates of teens ages 12 to 19 quadrupling.[112,113]

ii. Young WIC Participants Ages 2 to 4

In 2018, 14.4 percent of children ages 2 to 4 in the WIC program had obesity and 15.3 percent were overweight. The percentage of children who were overweight or had obesity increased between 1992 and 2008, then decreased between 2010 and 2018 after a 2009 change in the food package provided (see page 32 for more on WIC). The decline was statistically significant among all racial and ethnic groups studied: American Indian/Alaska Native, Asian/Pacific Islander, Black, Latino, and white. As of 2018, American Indian and Latino children were the most likely to be overweight or have obesity compared than other races/ethnicities.[114] See chart on page 28 for state data.

Percent of Children Ages 2–4 in WIC Program Who Are Overweight or Have Obesity, by Race/Ethnicity, 2018



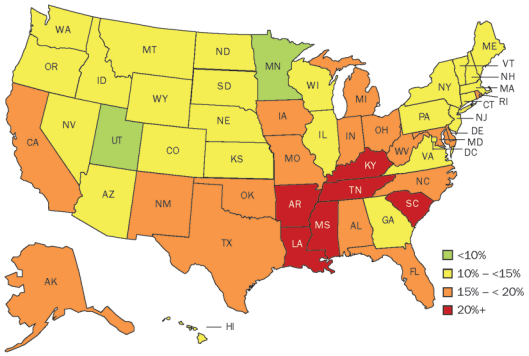
Source: USDA

iii. Obesity Rates in Children and Teenagers, Ages 10 to 17

The National Survey of Children's Health 2018–2019 survey reported that, nationwide, 15.5 percent of children ages 10 to 17 had obesity and another 15.5 percent were overweight. In 2018–2019, Asian children had the lowest obesity rate (5.9 percent) followed by white children (11.7 percent), while obesity rates were significantly higher for Latino (20.7 percent), Black (22.9 percent), American Indian/Alaska Native (28.5 percent), and Native Hawaiian/Other Pacific Islander (39.8 percent) children. The states with the highest rates of obesity for children ages 10 to 17 were Kentucky (23.8 percent), Mississippi (22.3 percent), and South Carolina (22.1 percent); the states with the lowest rates of obesity were Utah (9.6 percent) and Minnesota (9.9 percent).[115]

See chart on page 28 for more state data.

Percent of Children Ages 10–17 with Obesity by State, 2018–2019



Source: National Survey of Children's Health, HRSA

iv. High School Obesity Rates

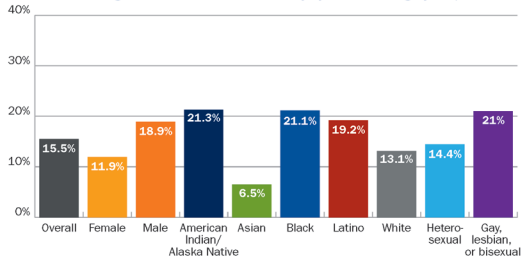
According to 2019 YRBS data, 15.5 percent of high school students (grades 9 to 12) nationwide had obesity and 16.1 percent were overweight. Obesity levels among high school students show an increase in the long-term; in 1999, obesity rates among high schoolers participating in the survey were at 10.6 percent.[116]

Other takeaways:

- The prevalence of obesity among high school students in different states varied considerably, from 9.8 percent in Utah to 23.4 percent in Mississippi.
- There were also stark differences in obesity rates across demographic groups. Male students (18.9 percent) had higher obesity rates than female students (11.9 percent); gay, lesbian, and bisexual students (21.0 percent) had higher obesity rates than heterosexual students (14.4 percent); and American Indians/Alaska Natives, Black, and Latino students (all above 19.0 percent) had higher obesity rates than white (13.1 percent) and Asian (6.5 percent) students.

See page 28 for state-by-state data on obesity, overweight, and physical activity levels among high school students.

Percent of High School Students with Obesity by Select Demographics, 2019



SOURCE: YRBS

Youth Obesity Rates and Related Health Indicators

	Young Children: Obesity, 2018	Children and Teenagers: Obesity and Physical Activity, 2018–2019			High School (HS) Students: Obesity, Overweight, Physical Activity, 2019		
States	Percent of Low-Income Children Ages 2-4 Who Have Obesity	Percent of Children Ages 10-17 Who Have Obesity	Ranking	Percent of Children Ages 6–17 Who Participate in 60 Minutes of Physical Activity Every Day	Percent of HS Students Who Have Obesity	Percent of HS Students Who Are Overweight	Percent of HS Students Who Are Physically Active 60 Minutes Every Day of the Week
Alabama	16.2	17.3	38-T	22.8	17.2	20.1	23.2
Alaska	20.2	15.4	31	32.0	14.8	15	17.9
Arizona	12.5	12.1	12-T	16.8	13.3	17.4	22
Arkansas	13.1	20.2	47	24.8	22.1	19.8	22.7
California	15.8	17.1	37	21.9	15.9	15.2	20.5
Colorado	8.6	10.9	6	27.3	10.3	11.7	25.4
Connecticut	14.5	13.3	20	23.9	14.4	14.9	23.2
Delaware	16.3	16.0	33	22.3	n/a	n/a	n/a
D.C.	12.8	12.5	14	22.6	n/a	n/a	n/a
Florida	13.3	17.8	43	22.8	14	16.1	22.7
Georgia	13.6	14.9	27-T	23.6	18.3	18.1	24
Hawaii	10.7	11.1	7	16.8	16.4	14.4	17.1
Idaho	12.0	12.1	12-T	22.0	12.1	12.4	22.2
Illinois	15.2	14.9	27-T	24.7	15.2	15.5	26
Indiana	13.5	16.7	36	21.2	n/a	n/a	n/a
Iowa	15.6	15.3	30	26.2	17	15.9	25.7
Kansas	13.7	10.6	3-T	27.1	15.1	15.7	26.5
Kentucky	16.3	23.8	51	25.9	18.4	17.8	19
Louisiana	13.1	20.1	46	22.4	16.5	17.8	21
Maine	14.6	13.2	19	29.8	14.9	14.8	20.4
Maryland	16.4	17.6	42	22.9	12.8	15.7	19.4
Massachusetts	16.3	11.8	10	19.0	14.2	14.8	21.7
Michigan	13.7	17.3	38-T	24.4	15.3	16.1	21.8
Minnesota	12.4	9.9	2	22.2	n/a	n/a	n/a
Mississippi	14.8	22.3	50	24.7	23.4	18	23.4
Missouri	13.0	16.3	35	24.5	18.4	16.1	25.3
Montana	11.9	10.6	3-T	24.7	11.5	13	25.3
Nebraska	14.7	11.5	8	22.3	13.3	12.8	27.9
Nevada	11.7	12.9	15-T	15.4	12.3	16.7	21.7
New Hampshire	17.2	13.7	21-T	22.5	12.7	14	22.5
New Jersey	14.8	14.0	23-T	20.8	11.9	14.7	22.7
New Mexico	13.0	15.2	29	24.6	15.2	15.8	26.8
New York	14.0	10.7	5	23.5	13.4	16.3	19.2
North Carolina	15.0	16.1	34	21.8	15.4	16	19.9
North Dakota	15.4	13.1	18	32.4	14	16.5	25.2
Ohio	12.6	15.7	32	23.6	16.8	12.2	23.5
Oklahoma	13.6	18.8	44	21.9	17.6	18.1	29.2
Oregon	14.6	12.9	15-T	22.6	n/a	n/a	n/a
Pennsylvania	12.8	14.5	26	24.9	15.4	14.5	25.4
Rhode Island	17.1	17.5	41	25.0	14.3	14.6	21.1
South Carolina	12.7	22.1	49	22.3	16.6	16.3	19.5
South Dakota	16.0	11.7	9	25.5	14.1	15.6	29.7
Tennessee	15.2	20.4	48	24.1	20.9	18.3	21.6
Texas	15.9	17.3	38-T	17.8	16.9	17.8	22.9
Utah	8.5	9.6	1	16.3	9.8	12.3	21
Vermont	12.9	14.0	23-T	24.0	13.1	13.7	22.1
Virginia	15.8	13.0	17	20.0	14.8	15.8	22
Washington	13.8	11.9	11	22.0	n/a	n/a	n/a
West Virginia	16.5	19.6	45	28.6	22.9	16.5	26.3
Wisconsin	14.4	14.2	25	25.2	14.5	14.6	21.5
Wyoming	10.5	13.7	21-T	30.2	n/a	n/a	n/a

SOURCE: WIC Participants and Program Characteristics Survey, USDA

SOURCE: National Survey of Children's Health, HRSA

NOTE: For rankings, 1 = Highest Rate, and 51 = Lowest Rate. T=Tie.

SOURCE: Youth Risk Behavior Survey, CDC

NOTE: For rankings, 1 = Highest Rate, and 51 = Lowest Rate, T= Tie.

Obesity-Related Policies and Programs

This section serves as a reference on important federal, state, and local policies and programs related to obesity. It includes background context as well as the latest developments, budgetary information, and available research across four subsections: (A) Economics of What We Eat and Drink, (B) Nutrition Education, (C) Community Policies and Programs, and (D) Healthcare Coverage and Programs.

A. ECONOMICS OF WHAT WE EAT AND DRINK

I. Fiscal and Tax Policies that Promote Healthy Eating: Beverage Taxes, Healthy Food Financing Initiative, and the New Markets Tax Credit

The economics of the U.S. food system plays a role in the obesity crisis. Whether nutritious food is accessible, available and affordable, whether taxes incentivize consumers to make healthier choices, whether developers are rewarded for investing in underserved communities —all of these factors contribute to a food environment that shapes Americans' eating habits. These types of SDOH are increasingly recognized as having a significant influence on the health and well-being of Americans.

Beverage Taxes

From taxing cigarettes to subsidizing healthy food, price interventions have historically proved to be effective instruments in the public health toolbox.[117,118] These policies may be particularly effective at narrowing health inequities, as low-income individuals tend to be both less healthy and more price-sensitive.[119]

An increasingly prevalent popular economic intervention aimed at reducing obesity is taxing sugary drinks to discourage their consumption. The World Health Organization (WHO) recommends such taxes,[120] and more than 40 nations have imposed this tax.[121] A national beverage tax has been estimated to be the most cost-effective of leading obesity-prevention interventions, with researchers estimating it could prevent more than half a million cases of childhood obesity in the United States over the course of a decade.[122]

Eight U.S. cities have enacted beverage taxes in recent years and studies of the short-term impacts found that consumption of sugary drinks decreased afterward.[123,124,125,126] While evidence about the long-term effects of these specific city taxes is mixed,[127,128] the weight of the research

on beverage taxes suggest they can be a highly effective tool in reducing the consumption of sugary drinks.[129] Lobbying by the beverage industry has made the widespread adoption of beverage taxes in the United States difficult.[130,131] Four states have even barred their local governments from implementing beverage taxes.[132,133,134,135]

In addition to reducing consumption, beverage taxes have the additional benefit of generating revenue, which can then be used for policy priorities that promote the public's health. For example, the San Francisco and Seattle beverage taxes both helped fund emergency food relief during the COVID-19 pandemic,[136,137] and Philadelphia is using revenue from its sugary drinks tax to direct $2 million to early care and education programs.[138]

Healthy Food Financing Initiative

The Healthy Food Financing Initiative (HFFI) provides grants and technical assistance to retailers and wholesalers working to improve access to healthy food in underserved areas.[139] The program is a public-private partnership established by the 2014 Farm Bill and administered by the Reinvestment Fund, a nonprofit financial institution, on behalf of U.S. Department of Agriculture (USDA) Rural Development.[140] Since its creation in 2014, HFFI has supported nearly 1,000 retail projects in more than 35 states and leveraged an estimated $1 billion in private investment and tax credits.[141]

HFFI's work is more important than ever, as the pandemic has increased food insecurity and disrupted the ability of many people to access healthy food. Job losses, challenges in safely using public transportation, and the shuttering of many small food businesses have all been felt acutely by the same populations that often lack healthy food outlets in their communities.[142]

In 2020, HFFI funded $3 million in grants to support 20 different organizations.[143] For example, HFFI funds are helping:

- Expand a food cooperative in St. Paul, Minnesota, that helps preserve access to cultural foods for low-income African immigrants;
- Develop a mobile market to reach isolated residents in rural Albany County, Wyoming; and
- Sustain a curbside pickup program of locally sourced healthy food in Charles Town, West Virginia, which began during the pandemic to meet local food challenges.[144]

For FY 2021, Congress appropriated $23 million for the HFFI program, a significant increase from the FY 2020 funding level of $5 million.[145,146]

New Markets Tax Credit

The New Markets Tax Credit (NMTC) incentivizes development in underserved communities. While not all NMTC investments relate directly to obesity prevention, all of them aim to revitalize low-income communities, improving a key social determinant of health. Examples of NMTC investments include the building of facilities like supermarkets, gyms, and other places that make it easier for residents to eat a healthy diet, get regular exercise, and obtain medical care.[147]

In 2020, the NMTC supported projects such as:

- The redevelopment of a Brownfield site into a 60,000-square-foot food hub by the nonprofit Farm Fresh Rhode Island;[148]
- The expansion of the Boys and Girls Club of Cabarrus County in Concord, North Carolina, allowing it to serve more children with its programming and build a cafeteria to expand its food service;[149] and
- The construction of a 6,675-square-foot addition for the Monadnock Food Co-op in Keene, New Hampshire, allowing it to increase purchases from local farmers in this rural food desert.[150]

The NMTC has been set to expire several times since it was established in 2000, but Congress has repeatedly extended it.[151] In the FY 2021 appropriations bill, Congress extended the program again—through 2025—and held its funding stable at $5 billion.[152]

II. Food and Beverage Marketing

One major challenge in addressing the obesity crisis is that the food, beverage, and restaurant industry spends nearly $14 billion annually on advertising, 80 percent of which promotes unhealthy choices such as fast food, sugary drinks, and candy.[153] Studies have shown exposure and receptivity to this marketing is associated with increased consumption and obesity.[154,155]

Unfortunately, the racial disparities that exist in other health contexts also apply to the food marketing environment. Black and Latino youth are exposed to more total food advertising than their white counterparts. Even when accounting for differences in television viewing time, Black children saw 40 percent more candy ads than white children, a 2019 report found.[156] Food ads airing on Spanish-language television were almost exclusively promoting fast food and other unhealthy food and beverages.[157] The Latino community has also been a particular target of the industry marketing of "toddler milk," products that have added sugars and are not recommended by the American Academy of Pediatrics or the 2020-2025 U.S. Dietary Guidelines.[158,159] In addition, these drinks are often cross-promoted with infant formula, resulting in consumer confusion and the dangerous practice of feeding these drinks to infants, even though they cannot meet infants' unique nutritional needs.[160]

Public health advocates have recommended a number of proposals aimed at reducing the marketing of unhealthy food and beverages, including changing the tax code to disallow deductions for the cost of advertising unhealthy products to children;[161] and providing the Food and Drug Administration (FDA) regulatory authority over toddler milk to ensure consumers are not confused about the products' purpose.[162]

Digital marketing is also an ever-growing concern, particularly as they are often able to directly reach and engage children. Many large food and beverage companies advertise on many social media and digital spaces that can be accessed by a variety of handheld devices. In particular, these companies are using branded videos and games (called "advergames") to engage children.[163] A meta-analysis of research looking at advergames and food consumption found that "advergames promoting unhealthy foods induced unhealthy eating behavior among children."[164]

B. NUTRITION ASSISTANCE AND EDUCATION

I. Federal Hunger and Nutrition Assistance: WIC, School/Child Nutrition Programs, SNAP, and Nutrition Incentive Programs

Special Supplemental Nutrition Program for Women, Infants, and Children

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) provides nutritious food, education, and other support to low-income pregnant, postpartum, and breastfeeding women and their children up to age 5. The $6 billion program is federally funded and administered by USDA's Food and Nutrition Service (FNS) and local agencies. WIC helps address some SDOH by providing its participants with greater food security, educating them about nutrition, assisting them with breastfeeding, and referring participants to social-service agencies that may help them with housing and other needs.[165]

As part of its mission to improve the health of its participants, the WIC program explicitly promotes breastfeeding,[166] which reduces the risk of childhood obesity and provides a number of other health benefits for babies and mothers.[167,168] The program provides breastfeeding education, support, and counseling, and breastfeeding mothers are eligible to participate in the program longer than women who do not breastfeed.[169] Between 2010 and 2019, WIC increased breastfeeding rates among its participants by 23 percent (from 27 percent to 33 percent).[170,171]

In 2009, USDA revised the WIC food packages to more closely align them with the Dietary Guidelines for Americans by increasing fruits and vegetables, reducing fat levels in milk, adding whole grains, and decreasing juice.[172] Program data show a decline

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in obesity rates for children ages 2 to 4 enrolled in the program between 2010 and 2018 (from 15.9 percent to 14.4 percent).[173] Two 2019 studies also found declines in obesity levels among WIC-enrolled children.[174,175]

WIC is one of the nation's largest nutrition assistance programs and serves more than half of American infants.[176] In January 2021, WIC served 6.3 million people, a slight (2.3 percent) increase from the January 2020 level.[177,178] In November 2020, FNS awarded a $2.5 million grant to the Gretchen Swanson Center for Nutrition in Nebraska to develop and test an online ordering system for WIC, one example of an effort to increase the program's accessibility.[179] The Biden administration has also announced its plans for an outreach campaign to eligible participants and its support for innovative programs to improve the delivery of benefits and increase program participation.[180]

Recognizing that the pandemic would pose challenges to participants applying for and accessing WIC benefits, the Families First Coronavirus Response Act (FFCRA), which became law on March 18, 2020, provided USDA with the authority to relax WIC program requirements during the public health emergency.[181] States can allow participants to re-enroll in the program without visiting a clinic and to postpone certain medical tests. The FFCRA also permits states to issue benefits remotely and substitute certain foods when availability is limited. These flexibilities have since been extended for the duration of the pandemic.[182]

The FY 2021 Consolidated Appropriations bill included $6 billion for WIC, including $90 million for its breastfeeding peer-counselor program and $14 million for infrastructure.[183] The American Rescue Plan (ARP) Act, which President Biden signed into law on March 11, 2021, provided an additional $880 million funding for WIC: $490 million to temporarily increase the amount of the food vouchers and $390 million to modernize the program.[184] ARP also temporarily increased the amount of the cash voucher that WIC recipients can use to purchase fruits and vegetables through September 30, 2021.[185,186]

KEY CHANGES TO SAFETY NET PROGRAMS DURING THE COVID-19 PANDEMIC

Supplemental Nutrition Assistance Program (SNAP)

- In spring 2020, USDA approved flexibilities to the program, including: providing additional allotments to families who did not qualify for the maximum SNAP benefit, extending SNAP certification periods, and suspending work-requirement time limits.[187]
- In spring 2020, USDA expanded its pilot program that allows participants to use their SNAP benefits to purchase groceries online.[188,189]
- The 2021 appropriations bill increased the maximum monthly SNAP benefit by 15 percent (about $28 per person) starting in January 2021,[190] and the American Rescue Plan (ARP) Act extended the increase through September 30, 2021.[191]
- ARP provided an additional $1.1 billion for administrative support for SNAP and $25 million to expand SNAP online purchasing.[192]
- Beginning October 1, 2021, USDA will institute an increase of SNAP benefits based on findings from an evaluation of 2021 prices, dietary guidance and food nutrients, and typical diets in the United States. The increase averages $36 per person per month. (U.S. Department of Agriculture. "USDA Modernizes the Thrifty Food Plan, Updates SNAP Benefits." Press Release No. 0179.21, August 16, 2021. https://www.usda.gov/media/press-releases/2021/08/16/usda-modernizes-thrifty-food-plan-updates-snap-benefits (accessed August 30, 2021)).

Child Nutrition Programs

- The Families First Coronavirus Response Act (FFCRA), signed into law on March 18, 2020, created the Pandemic Electronic Benefit Transfer (P-EBT) program, which provided $5.70 in benefits per school day to children missing school meals.[193] In January 2021, USDA increased the benefit to $6.82, and ARP extended the program for the duration of the pandemic.[194,195,196]
- In spring 2020, USDA relaxed some of the child nutrition program requirements, including: permitting the summer meal programs to operate during the school year, allowing meals to be served outside traditional times and for parents/guardians to pick up meals for their children; permitting meals to be served in non-group settings; and allowing schools to serve meals to all students free of charge.[197] These waivers were subsequently extended through the end of the 2021–2022 school year.[198]

Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)

- In spring 2020, USDA relaxed some program requirements, allowing WIC participants to receive benefits remotely, to re-enroll without visiting a clinic, and to postpone certain medical tests.[199]
- ARP provided $390 million to modernize the program and $490 million to temporarily increased the amount of WIC benefits that participants can spend on fruits and vegetables.[200]

The Emergency Food Assistance Program (TEFAP)

- FFCRA provided $400 million in additional TEFAP funding, a program that helps supplement the diets of low-income Americans by providing emergency food assistance.[201]
- The Coronavirus Aid, Relief, and Economic Security (CARES) Act provided $450 million in additional TEFAP funding.[202]
- The FY 2021 Consolidated Appropriations Act provided $400 million in additional TEFAP funding.[203]

The Commodity Supplemental Food Program (CSFP)

- CSFP provides boxes of nutritious food to low-income seniors.
- The FY 2021 Appropriations Act provided $13 million in additional CSFP funding.[204]
- ARP provided $37 million in additional CSFP funding.[205]

Income Assistance Efforts

- Many Americans received three rounds of stimulus payments: $1,200 for adults and $500 for dependent children under the CARES Act;[206] $600 for adults and dependent children under the 2021 Appropriations Act;[207] and $1,400 for adults and dependent children under ARP.[208]
- Three pandemic unemployment programs created by the CARES Act provided extra relief for the jobless and these programs have now been extended through September 2021.[209,210]
- ARP temporarily expanded the Child Tax Credit, the Earned Income Tax Credit, and the Child and Dependent Care Tax Credit.[211]

THE PARADOX OF HUNGER, FOOD INSECURITY, AND OBESITY

One of the most vexing challenges in addressing the obesity epidemic is understanding the complex relationship between hunger, food insecurity, and obesity. (While connected, food insecurity and hunger are not the same thing. Food insecurity is "the disruption of food intake or eating patterns because of lack of money and other resources," while hunger is "the discomfort, illness, weakness or pain caused by prolonged involuntary lack of food," and can result from food insecurity.[212]) Although the proposition is counterintuitive, food insecurity in higher-income countries is often associated with obesity, particularly in women and some children.[213,214,215,216,217] This raises particular concern today, given the dramatic increases in food insecurity since the start of the COVID-19 pandemic. Feeding America estimates that 42 million Americans—one in eight—may experience food insecurity in 2021, up from 35 million in 2019.[218]

What accounts for the link between food insecurity and obesity—sometimes termed the "hunger-obesity paradox"?[219] Several theories exist, most revolving around the fact that many of the same social, economic, and environmental conditions are underlying drivers of both food insecurity and obesity:

(1) The "insurance hypothesis" posits that the bodies of food insecure people store up extra fat as an insurance policy in the event of famine, based on an evolutionary response to previous episodes of food scarcity;[220]

(2) A SDOH theory attributes obesity among low-incomd household (who are disproportionately likely to be food-insecure) to their financial and physical environments, positing that individuals who lack money to purchase healthy foods and sports equipment, have few safe spaces for physical exercise, and have limited access to supermarkets with affordable, healthy foods—but easy access to inexpensive high calorie processed food—are more likely to have obesity; [221,222]

(3) A similar set of theories assigns responsibility for obesity to a person's social environment, noting that dietary habits are learned behaviors and attributable to local traditions, cultural factors, and one's social network;[223,224]

(4) Another theory connects the high levels of stress, anxiety, and depression stemming from poverty-related financial and emotional pressures to higher levels of obesity via hormonal and metabolic changes as well as unhealthy coping habits around eating and physical activity.[225]

(5) Several studies have suggested that nutrition policy—specifically the SNAP program and its monthly cycle—may encourage participants into a "feast or famine" cycle where they overeat during the first three weeks of the month but then face food insecurity during the month's final week, as cyclical food restriction has been linked to body fat increases.[226,227]

Of course, these theories are not mutually exclusive, and the causes of obesity are likely both numerous and complex. As one group of scholars notes, there are "many individual, socioeconomic, nutritional, and environmental factors that determine the risk of obesity and overweight and shape the [social, ethnic, and environmental] disparities."[228]

Child Nutrition Programs

Federal child nutrition programs—including the National School Lunch Program, the School Breakfast Program, and the summer meals programs—together form the nation's second-largest nutrition-assistance effort. These programs ensure that millions of American schoolchildren are eating healthy meals on a regular basis.[229,230] In fact, a 2021 study that analyzed the diets of more than 50,000 Americans found that meals served at schools were higher in nutritional quality than food from any other source.[231]

The child nutrition programs are federally funded, administered by FNS and state agencies, and operate in public and private schools, daycare centers, after-school programs, and residential child-care centers.[232] Even with many schools closed, the School Lunch Program alone served 3.2 billion meals in FY 2020, with an average of 22.4 million children participating in the program.[233]

For millions of children, the child nutrition programs help address food insecurity, an important SDOH.[234] With school closures limiting access to these programs, many families were at increased risk of lacking consistent access to nutritious food. A new federal program called Pandemic Electronic Benefits Transfer (P-EBT) and temporary changes to the existing child nutrition programs helped address this challenge.

In March 2020, Congress created P-EBT, which provides food benefits to children who qualify for free or reduced-price meals via a debit card that can be used to purchase food at stores that accept SNAP benefits.[235] The benefit levels track school meal program reimbursement rates: $3.50 for lunch and $2.20 for breakfast, for a total of $5.70 per day in the lower 48 states and Washington, DC (Hawaii, Guam, and the Virgin Islands are $6.66 and Alaska is $9.16).[236] In January 2021, USDA increased the program to also include the cost of an after-school snack, bringing the daily total for each participant to $6.82.[237] ARP extended access to the program through the end of the public health emergency, including during summer vacation from school.[238] USDA expects more than 30 million children to benefit from the program during summer 2021.[239]

FNS also introduced a number of temporary flexibilities into the child nutrition programs in 2020 to address pandemic-related challenges. These changes include:

- Allowing meals served through the summer meals programs to be made available to participants during the school year at no cost;[240]
- Allowing parents and guardians to pick up meals for their children, and permitting meal service outside normal school times to make it easier for families to pick up meals; [241,242]
- Allowing meals service in non-group settings to permit social distancing;[243]
- Permitting states to serve meals that do not meet meal-pattern requirements, including permitting them to serve flavored milk and fewer whole grains, in recognition of supply-chain challenges;[244] and
- Delaying many reporting requirements.[245]

Many of these waivers have been extended through September 30, 2021, and some through June 30, 2022.[246,247]

In addition to providing much needed flexibility during the pandemic, these waivers have also allowed states to test new ways to help feed children outside of school settings, which may have applicability even when the public health emergency has ended. While FNS has long had a summer meal program, it has always served only a fraction of eligible participants. Permanently waiving the requirement that meals only be served in a group setting (the "congregate meal requirement"), for example, may be one way to reach many more children during out-of-school times.[248] Some have also suggested that USDA permanently allow the summer programs to operate during the school year and provide meals at no cost to students, though FNS has said that making meals free on a permanent basis would require a legislative change.[249]

Despite these programmatic changes aimed at feeding children in need, surveys have nevertheless revealed high levels of food insecurity during the pandemic, with families of color disproportionately likely to be impacted. One survey found that, in September 2020, 25 percent of families with school-age children had experienced food insecurity within the previous 30 days, and that number increased to 41 percent for Black and Latino families.[250] In addition, despite the flexibilities aimed at increasing participation, nearly two-thirds of families (64 percent) reported in December 2020 that their children were not receiving any school-based meals and only one in three reported familiarity with the P-EBT program.[251]

When children are in school, the meals they receive there are of high nutritional value, as they are required to meet federal standards, which were strengthened after passage of the Healthy, Hunger-Free Kids Act of 2010.[252,253] Following these improvements, program participants ate more fruits, vegetables, whole grains, and milk than nonparticipants, while consuming fewer calories and saturated fat than nonparticipants.[254] A 2020 study found that the risk of obesity among children ages 10 to 17 living in poverty declined substantially following the Healthy, Hunger-Free Kids Act's implementation and that obesity prevalence would have been 47 percent higher in 2018 without its nutrition requirements.[255]

In 2018, the Trump administration attempted to reverse a number of the Healthy, Hunger-Free Kids Act improvements, allowing schools to once again serve chocolate milk, refined grains, and foods with higher sodium levels.[256] While this rule was struck down in federal court in 2020,[257] the pandemic-specific waivers to the meal-pattern requirements that had passed in the meantime, aimed at providing flexibility to program operators in light of pandemic-related food distribution challenges, allowed the same changes.[258] Those waivers have now been extended through June 30, 2022, for the National School Lunch Program and School Breakfast Program.[259] For the Summer Food Service Program, however, the waivers expire on June 30, 2021 and the healthier requirements were back in effect starting July 1, 2021.[260]

For FY 2021, the child nutrition programs were funded at $25 billion,[261] with $13.5 billion for the School Lunch Program, $5 billion for the School Breakfast Program, $4 billion for the Child and Adult Care Food Program, $1.5 billion for the Summer Food Service Program, $203 million for the Fresh Fruit and Vegetable Program, and $7 million for the Special Milk Program.[262]

MAJOR CHILD NUTRITION PROGRAMS

Like so many other aspects of life, these programs were disrupted by the COVID-19 pandemic, resulting in huge changes in the number of meals and food served. Most programs saw large declines—the Summer Food Service Program being the exception.

- The **National School Lunch Program** provides low-cost or free nutritious meals and snacks to more than 22 million students in public and private schools and in residential child-care facilities.[263] In FY 2020, because of school closures, the program served about 3.2 billion lunches, 76.9 percent for free or reduced price, compared with 4.9 billion lunches served in FY 2019.[264]
- The **School Breakfast Program** provides a healthy breakfast to more than 12 million students each school year. In FY 2020, the program served 1.8 billion meals, 87.7 percent for free or reduced price, compared with 2.5 billion breakfasts served in FY 2019.[265]
- The **Summer Food Service Program** provides nutritious daily meals to millions of low-income schoolchildren during summer vacation from school. Pandemic waivers permitting the program to operate during the school year resulted in a nine-fold increase in the program during FY 2020, when it served 1.3 billion meals. In FY 2019, the program served 142 million meals.[266]
- The **Child and Adult Care Food Program** funded 1.6 million healthy meals and snacks for adults in adult daycare centers and children in daycare, preschool, and aftercare programs in FY 2020, compared with 2.1 million meals served in FY 2019.[267]
- The **Special Milk Program for Children** provides free low-fat or skim milk to students who do not participate in the meal programs, such as half-day kindergarten students. It served 17.3 million half-pints of milk in FY 2020, compared with the 35.1 million half-pints it served in FY 2019.[268]
- The **Fresh Fruit and Vegetable Program** provides fresh fruits and vegetables as a healthy snack option in select schools in low-income communities and also promotes nutrition education.[269]
- The **Farm to School Grant Program** helps incorporate fresh, local food into the National School Lunch and School Breakfast Programs, and it facilitates hands-on learning activities, including school gardens, farm visits, and cooking classes. During the 2020–2021 school year, the program funded 159 grants serving 7,610 schools.[270]

SCHOOL MEALS FOR ALL IN CALIFORNIA

In July 2021, California Governor Gavin Newsom signed SB129 into law, a new, universal meal program for all 6.2 million public school students in the state. For the school year 2021-2022, the state will provide free school lunches to all students regardless of family income, and for 2022-2023 will additionally offer free breakfasts. The cost is $54 million for the first year on top of federal funding, and $650 million for the second year.[271]

Lawmakers point to reducing hunger and food insecurity among kids, and eliminating stigma for students getting free meals. In particular in California, there was concern about families failing to apply to prior school meal programs due to immigration concerns, and, in areas with high cost of living, students were ineligible for the previous free meal programs but families still struggled to pay for food.[272,273]

Supplemental Nutrition Assistance Program

The Supplemental Nutrition Assistance Program (SNAP), formerly known as "food stamps," is the nation's largest nutrition assistance program and helps feed 40 million Americans each year.[274] The federal government funds SNAP benefits and shares the cost of administering the program with the states.[275] SNAP recipients receive funds monthly, which are loaded on an electronic benefit transfer card that they can use to purchase food from participating retailers.[276] SNAP serves as a critical piece of the social safety net and has helped ensure that millions of Americans have had food to eat during the pandemic.

With a few exceptions, such as prepared food, households can use SNAP to purchase any food or beverage regardless of its nutritional value.[277] A 2016 study by FNS found that SNAP households spend 20 cents of every SNAP dollar on sweetened drinks, salty snacks, candy, and desserts, with more money spent on soft drinks than any other item. These spending patterns are largely consistent with those of non-SNAP households.[278] Some public health advocates have suggested changes that would incentivize participants to make healthier food choices, such as by prohibiting the purchase of sugary drinks, while others have raised concerns that such changes would be inequitable and could stigmatize participants and reduce participation.[279,280,281] USDA has historically denied requests by states to pilot such strategies, and Congress has resisted similar legislative proposals.[282,283]

SNAP had 39.9 million participants in FY 2020, down from a record high of 45.8 million in FY 2015, but up from 35.7 million in FY 2019.[284] The average monthly benefit in FY 2020 was about $155, an increase from about $130 in FY 2019,[285] reflecting the emergency allotments authorized by FFCRA to help Americans weather the pandemic.[286]

In response to the increased food insecurity during the pandemic, the FY 2021 appropriations bill, which was signed into law on December 27, 2020, increased the maximum SNAP allotment by 15 percent (an average of about $27 per person each month) through June 30, 2021, which was then extended through September 30, 2021.[287,288] In addition, recognizing that many households receiving at or near the maximum SNAP allotment were ineligible for the emergency allotments authorized by the FFCRA, USDA announced in April 2021 that it was changing the formula to permit such households to receive emergency allotments of $95 per month.[289] In August 2021, USDA released a re-evaluation of SNAP benefits based on current food prices, what Americans typically eat, dietary guidance, and the nutrients in food items and found that "the cost of a nutritious, practical, cost effective diet is 21 percent higher than the current [allocation]." As a result, the average SNAP benefit will increase on October 1, 2021 by $36.24 per person, per month, or $1.19 per day.[290] The benefit expansion will be the largest permanent increase in SNAP's history (DeParle J. "Biden Administration Prompts Largest Permanent Increase in Food Stamps." *New York Times,* August 15, 2021. https://www.nytimes.com/2021/08/15/us/politics/biden-food-stamps.html (accessed August 30, 2021)).

Census Bureau data demonstrates the need for these increases: in late March 2021, 18 million Americans reported that their households had not had enough to eat within the past seven days, compared with 8.5 million whose households did not get enough to eat in all of 2019.[291] Families of color in particular had a difficult time affording food, with Black and Latino adults twice as likely to report that their families had not had enough to eat.[292] Families with children were also disproportionately affected, with more than 8 million children living in a home lacking enough food, risking lifetime deleterious effects on their health.[293]

When the pandemic hit and many Americans pivoted to online grocery shopping to avoid COVID-19 exposure, only six states were part of a USDA pilot program that allowed SNAP participants to spend their benefits online.[294] In April 2020, USDA announced it would fast-track interested states for approval,[295] and 47 states and the District of Columbia now participate. SNAP recipients in those states can use their benefits to buy groceries at retailers, including ALDI, Amazon, Food Lion, Price Chopper, Publix, ShopRite and Walmart.[296] In many states, customers can also use their SNAP benefits when shopping at these retailers using the Instacart grocery delivery platform.[297] SNAP benefits can only be used to pay for food, however, and not for delivery fees.[298]

SNAP has an educational sister program called SNAP-Ed that provides grants in all 50 states to bring evidence-based programs on healthy eating and active living to low-income populations.[299] When the pandemic hit, many SNAP-Ed programs pivoted to offer relevant programming. For example:

- 600 teachers in Riverside County California used lessons developed by California's SNAP-Ed program, CalFresh Healthy Living, to give their students "brain breaks"—short physical activity sessions during virtual school.[300]

- Cooking lessons taught by Massachusetts SNAP-Ed partner Share Our Strength moved online in April 2020 and reached even more participants, some of whom had faced barriers to attending in-person classes. More than 400 families joined the classes between April and December 2020, and 93 percent said they would regularly use the food-preparation skills they used in class.[301]
- In Nevada, the SNAP-Ed Healthy Aging team reached out to seniors during the pandemic and encouraged them to attend online exercise classes and distributed grow-your-own herb gardens to provide an alternative to community gardening.

More than 2,700 farmers markets nationwide are authorized by USDA to accept SNAP benefits, increasing opportunities for participants to purchase fresh fruits and vegetables. In 2020, Americans spent nearly $19 million in SNAP benefits at farmers markets and another $14 million at direct-marketing farmers, a 44 percent increase over FY 2019.[302,303]

The FY 2021 appropriations bill provided $114 billion for SNAP,[304,305] an increase of $30 billion over FY 2020,[306,307] including $101 billion for benefits and $448 million for SNAP-Ed.[308,309] The program is an appropriated entitlement, which means Congress is obligated to provide enough funds to cover benefits for all who meet the eligibility criteria, and the appropriated funding level is based on anticipated spending needs and adjusted when necessary.[310] ARP's extension of the 15 percent increase in SNAP benefits provided an additional $3.5 billion in benefits. ARP also included an additional $1.1 billion in administrative resources for SNAP, $1 billion to enhance the

block grants provided to Puerto Rico, the Commonwealth of the Northern Mariana Islands, and American Samoa, and $25 million to improve and expand SNAP online purchasing.[311]

Nutrition Incentive Programs

The Gus Schumacher Nutrition Incentive Program (GusNIP) funds projects that encourage SNAP recipients to purchase more fruits and vegetables,[312] which are consumed less by low-income Americans than those in higher-income groups.[313] Created by the 2018 Farm Bill, GusNIP is the successor to the Food Insecurity Nutrition Incentive grant program, and FNS and the National Institute of Food and Agriculture administrate it collaboratively.[314,315]

In FY 2020, the Food Insecurity Nutrition Incentive (FINI) awarded $41.6 million to support programs in 21 states and the District of Columbia, all of which promote some type of produce matching program to encourage the purchase and consumption of fruits and vegetables.[316,317] In December 2020, FINI requested grant applications for FY 2021, 2022, and 2023, announcing it would have approximately $41.6 million available in FY 2021, $48.7 million in FY 2022, and $51.5 million in FY 2023.[318]

The Emergency Food Assistance Program

The Emergency Food Assistance Program (TEFAP) provides food at no cost to low-income Americans during times of emergency.[319] FNS administers the program and makes food available to states, which provide it to local agencies that in turn distribute it to organizations such as food pantries, soup kitchens, and homeless shelters. These organizations either provide TEFAP food packages for home use directly to recipients or serve it in group settings for low-income communities.[320] States are provided food in proportion to their unemployment rate and the number of residents below the poverty level.

In December 2020, Congress passed an omnibus appropriations bill that contained $342 million for TEFAP food purchases as regular appropriations along with an additional $400 million as a COVID relief effort.[321] States are also permitted to carryover FY 2020 TEFAP funds but must spend them before the end of FY 2021.[322]

ii. Child Care and Education Settings: Head Start, Early Childhood Education State Requirements, K-12 Local Wellness Programs, and Smart Snacks

Head Start

Head Start is a federally funded program that promotes school readiness by providing education, health, and social services to children ages 0 to 5 in families with low income.[323] It includes Early Head Start, which serves infants and toddlers under the age of 3. The Administration for Children and Families, part of the U.S. Department of Health and Human Services (HHS), manages the program on the federal level and provides oversight to local agencies. In FY 2019, Head Start served more than 870,000 children in all 50 states.[324]

Head Start programs provide healthy food to their participants via either the Child and Adult Care Food Program or the National School Lunch Program. Children who participate in Head Start are healthier on a number of scores, and one study found that children who entered Head Start with an unhealthy weight status were significantly more likely to have a healthier BMI when they started kindergarten than a comparison group.[325,326] In addition, a 2019 study of predominantly Black and Latino Head Start students in Harlem found that the 4-year-olds significantly improved their knowledge and attitude of a healthy lifestyle after learning about a healthy diet and physical activity in Head Start.[327]

Head Start directors have identified obesity as one of the major health challenges facing the children and families in the program, and many Head Start programs focus on nutrition, physical activity, and weight-management services.[328] Since 2016, federal standards have required programs to actively engage in obesity prevention both in the classroom and through its family-partnership process.[329]

The vast majority of Head Start centers closed in March 2020 in the wake of COVID-19.[330] As of May 2021, Head Start was serving one-third fewer families than before the pandemic.[331] Even with centers closed, the program continued to support its families by delivering food, connecting them with services, and offering virtual programming. Yet, the program also faced challenges supporting participants, as many Head Start families lack technology to connect virtually. In addition, the devastating impacts felt by all Americans during the pandemic—including illness, job loss, and isolation—fell particularly hard on the low-income families that Head Start serves.[332]

The FY 2021 appropriations bill included $10.7 billion for Head Start, plus an additional $25 million in COVID-relief funds.[333] ARP added an additional $1 billion for the program,[334] and HHS encouraged its grantees to use these extra funds to extend the program a year or to offer summer programs and to help recruit more eligible children and their families to join or rejoin the program.[335]

CDC'S HEALTHY SCHOOLS INITIATIVE

Healthy Schools, an initiative in CDC's National Center for Chronic Disease Prevention and Health Promotion, aims to prevent chronic disease and promote the health and well-being of children and adolescents in schools by promoting:

- Healthy nutrition options and education;
- Physical-activity programs and physical education;
- Improved processes and better training to help students manage chronic conditions;
- Health education that instills life-long healthy habits and health literacy; and
- School health services and links to clinical and community resources.

Healthy Schools uses the Whole School Whole Community Whole Child framework to center student needs and to emphasize the importance of community and policies that support the school and students.[336]

The initiative funds 16 state education agencies via the Improving Student Health and Academic Achievement Through Nutrition, Physical Activity and the Management of Chronic Conditions in Schools (DP18-1801) grants. The grants support implementation and evaluation of evidenced-based strategies and activities with two aims: (1) preventing obesity and reducing the risk of children and adolescents developing chronic disease in adulthood; and (2) managing chronic health conditions prevalent in student populations, including poor health, asthma, food allergies, seizure disorders, diabetes, other diseases, and disabilities or conditions.

Early Childhood Education State Requirements

The Child Care and Development Fund is a block-grant program funded by the federal government and administered by the states that assists low-income families with the cost of high-quality child care.[337] To receive federal funding, child-care providers must meet state-mandated early childhood education health and safety requirements, which often include nutrition and physical-activity benchmarks.[338] In FY2021, Congress appropriated $5.9 billion for the program, an increase of $85 million over FY2020,[339] and approved another $14.9 billion in ARP.[340]

Local School Wellness Policies

The federal government requires that every school district that participates in a federal child nutrition program develop and implement a local school wellness policy that promotes the health of students and addresses childhood obesity.[341] These policies, at a minimum, must:

- Establish nutrition-education, nutrition-promotion and physical-activity goals;
- Include nutrition guidelines for all foods and beverages available on campus; and
- Limit food marketing to those products that meet the Smart Snacks in Schools nutrition standards.[342]

A review of school-district wellness policies during the 2014–2015 school year, however, found that only 57 percent of policies included all federally required topics.[343]

School districts are required to assess their local wellness policies every three years: they must review compliance with the policy, analyze how the policy compares with model policies, and measure progress made attaining the policy's goals.[344] Since wellness policies were required to be updated during the 2016-2017 school year, the triennial assessment due date fell in June 2020. USDA waived the requirement, however, due to pandemic-related school closures.[345]

Smart Snacks

All food sold at schools—including food sold in vending machines, at school stores, and at school fundraisers—must meet the Smart Snacks federal nutrition standards, which are similar to the National School Lunch Program requirements.[346] Snacks sold after school hours, food intended for consumption off school property, or food provided for free—for example, cupcakes brought in for a student's birthday—do not have to comply. States can also exempt infrequent school fundraisers from the standards, although 21 states have policies in place that do not permit such exemptions.[347]

III. Dietary Guidelines, Nutrition Facts, and Menu Labels

Dietary Guidelines for Americans

The *Dietary Guidelines for Americans*, which are issued jointly by USDA and HHS, provide evidence-based guidance about healthy eating, serve as a resource for policymakers and health professionals, and provide the foundation for the federal government's nutrition programs. The guidelines are revised every five years to keep pace with the latest scientific research about nutrition.[348]

MyPlate is a consumer-friendly graphical nutrition guide based on the Dietary Guidelines. It serves as a reminder for Americans to eat healthfully and has a suite of interactive online tools, including the Start Simple with MyPlate app and the myplate.gov website.[349] The app allows users to choose healthy food goals, track their progress, and earn badges, while the website provides recipes, tip sheets on healthy eating, and inspiring videos.[350,351]

The most recent edition, the *2020–2025 Dietary Guidelines for Americans*, was published in December 2020.[352] For the first time, they focus on healthy eating for all life stages, including children ages 0 to 2 and pregnant and breastfeeding women.[353] The guidelines also recognize the influence of social determinants on eating patterns and health: "Although individuals ultimately decide what and how much to consume, their personal relationships; the settings in which they live, learn, work, play, and gather; and other contextual factors—including their ability to consistently access healthy and affordable food—strongly influence their choices."[354]

Nutrition Labels

Since 1993, food manufacturers have been required to include the Nutrition Facts label on most packaged foods revealing their nutritional content.[355] In 2016, HHS and FDA finalized a rule updating the label requirements to better reflect the latest nutritional science. Manufacturers are now required to: (1) print "calories" and "number of servings" in larger and bolder type; (2) report "added sugars"; and (3) include serving sizes that more accurately reflect Americans' eating habits.[356]

Research demonstrates that mandatory food labels can alter consumer and industry behavior. A meta-analysis of 60 studies across 11 countries found that consumers ate fewer calories, less total fat, and more vegetables due to the effect of food labels. The study found that the labeling requirements also spurred manufacturers to decrease sodium levels and artificial trans fats in their products.[357]

Recognizing that restaurants shuttered by the COVID-19 pandemic may want to sell packaged food—food that was meant for restaurant use and lacked nutrition labels directly to the public, the FDA passed guidance in March 2020 permitting such sales during the public health emergency, provided the package does not make any nutrition claims and contains other required information, such as the ingredients.[358]

Calorie Labels on Menus

Menu labels provide information about the calorie information of restaurant food and allow consumers to make more informed choices when they eat out. This is particularly important given that food prepared outside the home tends to have more calories—as well as lower nutritional quality—than food prepared at home, yet consumers tend to underestimate the number of calories and levels of sodium in out-of-home meals.[359,360,361] Beginning in May 2018, chain restaurants with 20 or more locations and vending-machine companies must now provide nutritional information.[362] In April 2020, noting the challenges facing the restaurant industry as many establishments pivoted to take-out only service and dealt with pandemic-related supply chain issues, FDA issued guidance noting that the agency did "not intend to object" if restaurants failed to meet the menu label requirements during the public health emergency.[363]

Several studies have demonstrated that posting calorie information at the point of purchase can result in healthier menu choices, and a 2016 study found that the average BMI fell in jurisdictions in New York that implemented calorie-count laws.[364,365,366,367] Other studies have found that menu labeling leads to significant results only at specific establishments or in certain populations, while other studies have found no changes in consumer behavior.[368,369,370] There is some evidence that the transparency required by menu labeling may lead restaurants to improve the nutritional content of their food.[371]

C. COMMUNITY POLICIES AND PROGRAMS

I. Built Environment: Community Design and Land Use, Housing, and Safe Routes

Public health experts understand that the environments where people are born, live, work, and play have an important impact on their health and well-being. A community's "built environment"—the name for its collective group of buildings and structures including streets, sidewalks parks, stores, and housing—ranks among the major social determinants of health.[372]

With respect to obesity, important aspects of a neighborhood's built environment include the accessibility of outlets where residents can obtain healthy and affordable foods (such as supermarkets and farmers markets) and the number of safe spaces that provide opportunities for physical activity (such as safe sidewalks, parks, recreation centers and facilities, and gyms). Transportation is also a key aspect of the built environment, including whether there are sidewalks, bike lanes, and easily accessible public transportation. Research has found that children who live in neighborhoods with conditions such as unsafe surroundings and limited access to parks, sidewalks, and recreation centers were up to 60 percent more likely to have obesity or be overweight.[373] Even when parks are available, safety issues like traffic and gun violence can undermine access and use.[374]

Many of these positive aspects are not available in all neighborhoods, often depending on the racial/ethnic makeup and income levels of communities. For example, access to parks and green space are unequal across lines of race and class, with fewer and smaller parks available in communities of color than in majority-white communities; it is the result of practices like residential segregation, exclusionary zoning policies, and redlining.[375]

Differences in the built environment may account for some variations in physical-activity levels across the United States and between racial and ethnic groups. In 2020, CDC published state maps of physical-inactivity rates among adults, defined as not participating in any leisure-time physical activities (such as walking, running, or gardening) in the past month. Rates ranged from 17 percent in Colorado to 48 percent in Puerto Rico.[376] There are also racial variations, with 32 percent of Latino adults physically inactive compared with 30 percent of Black and 23 percent of white adults.[377]

Community Design and Land Use

Research demonstrates that thoughtful community design and land-use decisions can encourage physical activity:

- Changing comprehensive plans and zoning laws to encourage mixed-use neighborhoods, which incorporate places to work, shop, learn, and play into residential areas, and an increase in supply and diversity of types housing;[378,379]
- Using Complete Streets policies and design to improve conditions for walking and rolling by installing crosswalks and building sidewalks;[380] and add physically protected bike lanes and other bike-friendly measures;[381]
- Implementing Safe Routes to schools, parks, and other community destinations; and
- Expanding public transportation (which is a type of active transportation because walking or rolling is often needed at the ends of a trip).[382,383]

While it is difficult to accurately predict the long-term effect of the pandemic on community design and land use, early data suggests an "altered future for transit," with many more workers telecommuting even after offices reopen.[384] Even after vaccines had been widely available for months, public transportation use remained significantly lower than pre-pandemic levels. These changes may result in reduced physical activity levels, as a certain number of workers who actively commuted in the past may now commute infrequently or not at all. Indeed, as early data emerge on the pandemic's effect on public health, they show decreases in physical-activity levels and increases in sedentary behavior.[385,386,387] While these patterns will hopefully reverse as the world reopens, it is reasonable to surmise a similar—if less pronounced—effect as more workers telecommute in the future.

In the face of commuting declines, policies that promote active transportation take on added importance. Some places, like the Slow Streets Program in Oakland, California, have shifted more street space to active transportation to create safter spaces and less crowding by discouraging through traffic on certain local streets.[388] Such policies can also stimulate the economy by increasing retail accessibility, promoting tourism, and increasing sales for cycling-related businesses, while saving healthcare costs by reducing traffic accidents and obesity.[389,390,391,392]

All major federal transportation programs can fund walking and biking infrastructure but many focus on highways and major roads. Federal programs that provide funding for active transportation projects include:

- Fixing America's Surface Transportation (FAST) Act funding, which has a specific funding stream for projects that expand travel choices, and it provides most of the federal funding for walking, biking, and trails.
- Formula grant funding, such as the Congestion Mitigation and Air Quality Improvement program, which funds transportation projects that contribute to clean air, and the Surface Transportation Block Grant (STBG) program, which provides flexible funds for different transportation projects, including walking and biking infrastructure.
- Discretionary grant funding, including the U.S. Treasury Department's Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grants, which support road, rail, port, and transit projects.[393] Since 2009, this program (formerly called BUILD and TIGER) has provided $8.9 billion in grants in all 50 states, including projects focused on improving pedestrian or biking infrastructure.[394]

Safe Routes to Schools

Walking or biking to school is one way for a child to incorporate regular exercise into his or her daily routine, though low income, Black, and Latino students face greater dangers while doing so from threats that include traffic, racial profiling, and over-policing.[395] Safe Routes to Schools (SRTS) programs promote active transportation to school and help with infrastructure improvements to ensure that children can walk or bike there safely.[396] Research has found that SRTS initiatives are cost-effective and associated with a significant increase in active transportation to and from school.[397,398]

To implement an SRTS initiative, states, localities, and school districts can compete for Transportation Alternatives Program (TAP) funding, made available to all states under the FAST Act.[399] Each year, $850 million of STBG funding is set aside to fund TAP projects.[400] However, unless Congress reauthorizes the FAST Act, the funding is set to expire in September 2021.[401]

ii. CDC Community Initiatives

CDC supports a number of grant programs that fund community efforts to prevent and reduce obesity. For FY 2021, Congress appropriated $56.9 million for CDC's Division of Nutrition, Physical Activity, and Obesity, consistent with FY 2020 levels.[402,403] CDC's major grant programs that fund obesity prevention are laid out in the following chart and discussed in more detail below.

SELECT OBESITY-RELATED FUNDING OPPORTUNITIES FROM CDC

Grant/Program Name	Grant Number	Grant Goal	Length of Grant	Number of Available Grants	Annual Grant Size	Total Program Funding
State Physical Activity and Nutrition (SPAN) Program	1807	Improve nutrition and physical activity at state and local level	5 years starting in September 2018	16 states	$880,543 average annual award[404]	$70 million over 5 years[405]
High Obesity Program (HOP)	1809	Increase access to healthy foods and safe places for physical activity in high-obesity areas	5 years starting in September 2018	15 land-grant universities	$724,909 average annual award[406]	$56 million over 5 years[407]
Preventive Health and Health Services (PHHS) Block Grant	2102	Provide each state with flexible support to address its most important health needs	Annual	61 including 50 states, DC, two American Indian tribes, five U.S. territories, and three freely associated states	$9.4 million on nutrition and $3.3 million on physical activity in FY 2019[408]	$145 million in FY 2021[409]
Racial and Ethnic Approaches to Community Health (REACH)	1813	Reduce racial and ethnic health disparities in chronic disease	5 years starting in September 2018	40 grants in 25 states and DC[410]	$713,840 average annual award[411]	$63.95 million in FY 2021, including $22 million for Good Health and Wellness in Indian Country[412]
Improving Student Health and Academic Achievement through Nutrition, Physical Activity and the Management of Chronic Conditions in Schools (Healthy Schools)	1801	Increase number of students who consume nutritious food and beverages, who participate in daily physical activity, and who can effectively manage their chronic health conditions	5 years starting in June 2018	State education agencies in 16 states[413]	$350,000 average for Priority 1 awards and $450,000 average for Priority 2 awards during the 2018–2022 funding period[414]	$35 million over 5 years[415]

The FY 2021 appropriations bill also authorized the CDC to develop a guide on evidence-based obesity-control and -reduction strategies for use by state, local, and tribal health departments, a TFAH recommendation from the *2020 State of Obesity*.[416,417]

State Physical Activity and Nutrition Program

CDC's State Physical Activity and Nutrition (SPAN) program supports state and local efforts to improve nutrition and physical activity. Due to budget constraints, it currently funds five-year grants in 16 states to implement evidence-based strategies that:

- Improve food-service guidelines;
- Support breastfeeding;
- Connect activity-friendly routes to everyday destinations through community planning and transportation interventions; and
- Strengthen physical-activity and nutrition standards for early childhood education.[418]

For example, with SPAN funding, California is assisting jurisdictions to implement Safe Routes to Schools programs, Missouri is promoting healthier choices via its Eat Smart in Parks effort, Alaska is helping increase physical activity through Vision Zero and Complete Streets planning, and Ohio is training employers to adopt breastfeeding policies at their worksites.[419]

Annual funding for the SPAN program is $14 million.[420]

High Obesity Program

The High Obesity Program (HOP) funds 15 land-grant universities to work with their local communities to implement policy, systems, and environmental changes that improve access to healthier foods and encourage physical activity in counties where the adult obesity rate exceeds 40 percent.[421]

Funded activities run the gamut of obesity prevention and reduction initiatives, including:

- Working with counties in Kentucky on master plans to support active living and trail development to connect residents to everyday destinations and recreation
- Improving nutrition standards in Oklahoma counties at food banks, recreation programs and other settings while strengthening the food system through farmers markets and farm to school programs.
- Engaging Louisiana parishes in Complete Streets planning and implementation and assessing transportation options to improve accessibility to both healthier food and physical activity options.[422]

The FY 2021 appropriations bill provided $15 million for HOP program.[423]

Preventive Health and Health Services Block Grant

The Preventive Health and Health Services (PHHS) block grant provides states with flexible funding to address important local public health needs. In FY 2019, the most recent year for which CDC has published data, states spent $147 million in PHHS funds, including $9.4 million on nutrition and $3.3 million on physical activity.[424] PHHS funds have helped support a worksite wellness program in Guam,[425] develop walking paths in New Mexico,[426] and create a mobile farmers market in Michigan.[427] For FY 2021, CDC has announced it expects to award a total of $145 million in PHHS funding.[428]

Racial and Ethnic Approaches to Community Health

Racial and Ethnic Approaches to Community Health (REACH) is a $64 million grant program that works to reduce racial and ethnic health disparities by funding culturally relevant interventions to prevent chronic disease, including obesity. The program currently funds 36 grant recipients in 23 states and the District of Columbia.[429] REACH funding supports programs such as:

- The Leadership Council for Healthy Communities, which helps improve access to healthy food for African Americans in Washington, DC;
- The Alaska Native Tribal Health Consortium, which helps train community health workers in breastfeeding support and helps improve food procurement, including traditional and locally sourced items, in Alaska Native communities; and
- The Healthy Corner Store Initiative, which helps provide access to healthier food for Hispanic Americans in Lebanon and Reading, Pennsylvania.[430]

More than one-third of REACH funding ($22 million) is dedicated to Good Health and Wellness in Indian Country, which funds programs to improve health and prevent chronic disease—including obesity—in American Indian and Alaskan Native communities. GHWIC funds 27 recipients: 23 tribes and four Urban Indian Organizations.[431]

CDC Childhood Obesity Research Demonstration

The Childhood Obesity Research Demonstration (CORD) project is a CDC-funded whole-community approach to obesity prevention, now in its third grant cycle. Building on learning from its first two cycles, CORD 3.0 produces consumer-friendly intervention materials that address childhood obesity and can be used by hospitals, community health centers, and healthcare providers that serve low-income families.

COMMIT!

The Childhood Obesity Management with MEND Implementation Teams (COMMIT!) is a joint project of the CDC and the National Association of Community Health Centers to implement the evidence-based childhood weight-management program MEND (Mind, Exercise, Nutrition, Do It!) in community health centers. The program is now in its second year and funds organizations in eight states. Along with CORD, COMMIT! is part of CDC's effort to adapt proven obesity-prevention programs for low-income communities.[432]

Childhood Obesity Data Initiative

CDC leads the Childhood Obesity Data Initiative (CODI), which collects critical data about obesity-prevention programs and how well they work. Using innovative information-technology tools, the effort links the individual health records of children across various systems that collect data—such as healthcare systems, insurers, and the U.S. Census—thereby improving research and evaluation capabilities. The information collected includes clinical health outcomes, weight-management intervention results, and individual and community demographic information. To protect patient privacy, CODI uses privacy-preserving record linkage, which encodes personally identifiable information before it leaves an individual organization's firewall. Between 2018 and 2020, CODI was pilot tested in Denver and will next expand to other locations.[433]

Early Care and Education

Recognizing the unique window that early childhood provides to teach children healthy habits, CDC provides funding, including $4 million in FY 2021, and technical assistance to states, localities, and organizations to support obesity-prevention work in early care and education (ECE) centers, including by promoting breastfeeding, healthy eating, and physical activity for children in these facilities.[434] Many of the programs highlighted above—including SPAN, HOP, and REACH—also fund activities in the ECE sector. Additional ECE-focused obesity-prevention efforts by the CDC include:

- **The Healthy Kids, Healthy Future Technical Assistance Program**, where CDC partners with the Nemours Foundation to fund efforts in 11 states to promote health nutrition and physical activity in ECE facilities.
- **The Physical Activity Learning Session (PALS) Project**, another joint effort with Nemours, to help build capacity among ECE teachers to incorporate physical activity into their programming.
- **The Farm to Early Care and Education Implementation Grant Program**, which funds programs in 10 states and the District of Columbia to strengthen their Farm to ECE programs, in partnership with the Association of State Public Health Nutritionists.[435]

National Diabetes Prevention Program

Obesity is the largest risk factor for developing type 2 diabetes.[436] The National Diabetes Prevention Program (National DPP) is a partnership of public and private organizations working to build a nationwide delivery system for a lifestyle change program proven to prevent or delay onset of type 2 diabetes in the 88 million U.S. adults with prediabetes. The National DPP lifestyle change program is founded on the science of the Diabetes Prevention Program research study, and subsequent translation studies, which showed that making modest behavior changes helped people with prediabetes lose 5 to 7 percent of their body weight and reduce their risk of developing type 2 diabetes by 58 percent (71 percent for people over 60 years old).[437]

The National DPP lifestyle change program is a health benefit covered by many employers and reimbursement by some private insurers. CDC has developed a toolkit that helps employers and other health care payors understand the benefits and cost savings of offering coverage.[438] Medicare offers the Medicare Diabetes Prevention Program (MDPP), a covered benefit for eligible Medicare Part B beneficiaries with prediabetes.[439] Eighteen states have made the decision to include the National DPP lifestyle change program as a covered benefit for Medicaid beneficiaries with prediabetes and are in various stages of implementing the benefit.[440] Congress funded the National DPP at $29.3 million for FY 2021, an increase of $2 million over FY 2020 funding.[441]

Physical-Activity Guidelines

Physical activity helps maintain a healthy weight and is important for overall health. The Physical Activity Guidelines for Americans, published by HHS, provide evidence for the benefits of physical activity, recommendations for the levels of physical activity needed to receive benefits, and suggestions for promoting physical activity. The guidelines serve as a resource for health professionals and policymakers, and The Move Your Way campaign helps raise awareness of the guidelines among the public.[442]

Highlights from the most recent edition of the guidelines include:

- Children ages 3 to 5 should be physically active throughout the day;
- Children ages 6 to 17 need 60 minutes of moderate-to-vigorous physical activity daily; and
- Adults need 150 to 300 minutes of at least moderate-intensity aerobic activity each week and muscle-strengthening activity twice weekly.[443]

As of 2018, however, fewer than one-quarter of American adults or children, were meeting the physical-activity guidelines.[444,445] Early evidence suggests these numbers likely dropped further during the pandemic, as stay-at-home orders and virtual schooling resulted in increased sedentary behaviors.[446,447,448]

Active People, Healthy Nation

Active People, Healthy Nation is a nationwide initiative that was launched by CDC's Division of Nutrition, Physical Activity, and Obesity in 2020 and aims to help 27 million Americans become more physically active by 2027. Active People, Healthy Nation provides a comprehensive approach to improving equitable and inclusive access to physical activity for all people regardless of age, race, education, socioeconomic status, disability status, sexual orientation, or geographic location by promoting strategies that work at the local, tribal, state, and national level in partnership with other federal agencies and national organizations.

Increased physical activity can improve health, quality of life, immunity, and reduce healthcare costs. These improvements can help reduce the risk of at least 20 chronic diseases and conditions and provide effective treatment for many of these conditions. Building active and walkable communities can help support local economies, result in less air pollution, and create more cohesive communities.

Active People, Healthy Nation provides news and resources to partners, including a sample proclamation, supports education and training through a range of national partners to provide technical support to community change-agents and publishes research on the benefits of physical activity and the importance of the built environment to make physical activity safe and enjoyable for people of all ages and abilities.[449]

BENEFITS OF PHYSICAL ACTIVITY

Physical activity—any movement produced by skeletal muscles that expends energy—provides a myriad of short and long-term benefits to the human body. It improves a person's physical health, lowering the risk of heart disease, high blood pressure, type 2 diabetes, dementia, obesity, and many types of cancer.[450,451] Physical activity also provides cognitive benefits, improves sleep, and is associated with lower rates of anxiety and depression.[452,453,454]

Physical activity provides these benefits and is recommended for people of all body weights,[455] including as an intervention for obesity.[456] As a 2019 article in the official clinical journal for the American College of Sports Medicine explains: "There is no doubt that people who are overweight or obese accrue irrefutable and substantial benefits of regular physical activity, and adults who are overweight or obese gain similar benefits from physical activity as do those of healthy weight."[457]

In fact, a particular type of exercise—high-intensity interval training—may provide greater cardiovascular benefits to adults who are overweight or have obesity than adults of normal weight.[458]

Adults who are less physically fit, which puts them at a higher risk of injury, are advised to slowly increase their activity level over time.[459]

Physical activity is recommended at every stage of the lifecycle.[460] The elderly may be concerned that physical activity could result in falls or other injury, but the evidence demonstrates that physical activity reduces physical limitations and the risk of falls.[461,462] For pregnant women who are overweight or have obesity, physical activity lowers the risk of gestational diabetes.[463] Even for people living with a disability or chronic illness—such as cancer, HIV, or type 2 diabetes—the benefits of physical activity generally outweigh the risks.[464,465]

Ideally, all Americans would meet the Physical Activity Guidelines developed by HHS and engage in both aerobic and strength-training activity on a regular basis. However, even small amounts of physical activity are better than none, as physical activity of any duration improves a person's health.[466,467] A recent study of adults in Taiwan found that those who exercised an average of only 15 minutes per day had a three-year longer life expectancy than those who were inactive.[468]

D. HEALTHCARE COVERAGE AND PROGRAMS

I. Medicare and Medicaid

High obesity rates increase costs for both Medicare, which provides healthcare coverage for Americans ages 65 and older and those who receive Social Security Disability benefits, and Medicaid, which provides healthcare coverage for many people with low incomes or who have disabilities. These two programs shoulder approximately half the medical costs of obesity in the United States, with one study projecting that 8.5 percent of Medicare spending and 11.8 percent of Medicaid spending is attributable to obesity.[469]

Medicare

Medicare covers obesity screenings and behavioral counseling for recipients with a BMI of 30 or higher. Few beneficiaries, however, take advantage of this benefit. Between 2012 and 2015, fewer than 1 percent of Medicare beneficiaries with obesity used the service.[470,471]

Medicare covers bariatric surgery in certain circumstances for those with a BMI of 40 or higher.[472,473] One analysis found that 73 percent of beneficiaries who received bariatric surgery between 2011 and 2015 were eligible for Medicare by virtue of disability rather than age.[474] In general, utilization of bariatric surgery among the eligible population of Americans remains fairly low, with an 0.5 percent utilization rate in 2016,[475] despite it being the most efficacious treatment for obesity.[476] A study of bariatric surgery patients in southeastern Pennsylvania, however, found that a patient's type of insurance coverage may affect uptake. Medicare patients had 22 percent smaller odds of undergoing the surgery than patients with private health insurance.[477]

Medicare also covers diabetes self-management training and the MDPP, but not weight-loss medications.[478] In its FY 2021 appropriations bill, Congress urged the Centers for Medicare & Medicaid Services (CMS) to "ensure beneficiary access to the full continuum of care for obesity," including medication and behavioral therapy.[479]

Medicaid

Most state Medicaid programs offer some form of obesity coverage. For children, states must provide coverage for all medically necessary obesity services. For adults, states can choose whether to provide Medicaid coverage for obesity treatment, and most states offer coverage for at least one obesity-related treatment.[480] A 2018 study found that 42 states covered nutritional counseling, 23 states covered pharmacotherapy, and 49 states covered bariatric surgery.[481] As of 2021, 18 states have made the decision to include the National DPP lifestyle change program as a covered benefit for Medicaid beneficiaries with prediabetes and are in various stages of implementing the benefit.[482]

Medicaid offers a higher federal match for states that cover all preventive treatments rated A or B by the U.S. Preventive Services Task Force (USPSTF).[483] For obesity, this requires that adults with obesity be referred to intensive, multicomponent behavioral interventions and that children be screened for obesity and, if necessary, referred for behavioral interventions.[484,485] The USPSTF recently issued two new obesity-related grade B recommendations:

(1) Adults with cardiovascular-disease risk factors, which include being overweight or having obesity, should be referred to behavioral-counseling interventions to promote a healthy diet and physical activity.[486]

(2) Pregnant women should be offered behavioral counseling on healthy weight gain.[487]

II. Healthcare and Hospital Programs

During the pandemic, hospitals and healthcare providers witnessed firsthand the devastating impact of obesity on our nation's health. COVID-19 patients with obesity—particularly those over the age of 65—were more likely to be hospitalized, more likely to be put on a ventilator, and more likely to die.[488] This serves as a tragic reminder of the cost of obesity and hopefully will spur hospitals and other healthcare providers to take measures to improve their obesity-prevention and treatment practices. Specific actions that can be taken by the healthcare sector include training providers, following best practices, sponsoring obesity-prevention community-benefit programs, serving healthy food, and encouraging breast feeding.

Training

Healthcare providers do not receive enough training about nutrition or treating obesity, and physicians themselves desire more obesity training.[489,490,491] For example, a survey of physicians at Massachusetts General Hospital found that 41 percent had received not even one hour of obesity training.[492] In a survey of more than 500 physicians in Wisconsin, more than half reported wanting additional training in obesity management.[493]

One example of the need for more training is physicians' attitudes about bariatric surgery. Many referring practitioners overestimate its risks and underestimate its benefits. The surgery is the most effective available medical treatment for obesity and is now performed almost exclusively laparoscopically and has a 0.04 percent mortality rate.[494]

The Association of American Medical Colleges recommends that medical schools provide obesity education; yet, in practice, many medical schools fail to provide sufficient training in this area. About half of medical students in a 2017 study reported that they did not feel knowledgeable about recommending weight-loss treatments.[495]

Best Practices for Adoption of Science-Based Recommendations

Hospitals and healthcare institutions should ensure their providers are following practices supported by the latest scientific research. These include:

- **Clinical guidelines on obesity treatment** developed by the American College of Cardiology and the American Heart Association in collaboration with the National Heart, Lung and Blood Institute and other stakeholders. The guidelines can help health practitioners decide which patients they should recommend for weight loss, the best diets and lifestyle changes to help patients lose weight and maintain weight loss, and the benefits and risks of bariatric surgery.[496]
- **Clinical preventive-service recommendations** related to obesity issued by USPSTF. As discussed above, USPSTF has issued several grade B recommendations aimed at preventing and treating obesity.[497,498,499,500] The Affordable Care Act requires most health plans to cover preventive services that have received an A or B grade from USPSTF.[501]
- **Screening recommendations** from the American Association of Pediatrics, which recommends that pediatricians assess their patients for obesity risk and provide tiers of care to patients with BMIs exceeding the 85th percentile.[502] The American Association of Pediatrics also recommends that pediatricians screen their patients for food insecurity and connect at-risk patients with nutrition-assistance programs.[503]

Community-Benefit Programs and Addressing Patients' Social Needs

Nonprofit hospitals, which constitute the majority of community hospitals in the United States,[504] must provide benefits to their local communities to qualify for tax-exempt status.[505] The Affordable Care Act built on this longstanding requirement by calling for nonprofit hospitals to assess, implement, and evaluate strategies to address their local community's specific health needs. In 2017, 78 percent of these Community Health Needs Assessments identified obesity.[506] As a result, many hospitals now sponsor programs to encourage healthy eating and physical activity. Examples include:

- Providence St. Vincent Medical Center in Portland, Oregon, which started a summer food program;[507]
- Hegg Health Center in Rock Valley, Iowa, which runs a community health center and sponsors Rock Your Ride, a summer biking program for kids;[508] and
- Connecticut Children's Hospital in Hartford, which sponsors the Kohl's Start Childhood Off Right (SCOR) program promoting healthy nutrition and physical activity.[509,510]

In addition to improving conditions at the population level through community benefits programs, hospitals can help patients at an individual-level by creating systems within the hospital to connect patients who have social needs with community resources to improve their conditions. Currently, the Innovation Center at CMS is testing whether its Accountable Health Communities healthcare payment and service delivery model—which addresses health-related social needs through enhanced clinical-community linkages—can improve health outcomes and reduce costs. The Accountable Health Communities model takes a holistic approach to improving patients' conditions, like resolving housing instability, food insecurity, utility needs, and interpersonal violence. While still a pilot program being tested for efficacy, it may be a useful model for hospitals to consider.

Supporting Breastfeeding

Breastfed children are at a significantly lower risk for childhood obesity,[511] and hospitals are uniquely positioned to support breastfeeding during the critical postpartum period. In 2020, CDC analyzed hospital practices for establishing breastfeeding and, while most U.S. hospitals scored well, it found that institutional support for breastfeeding policies could be improved.[512]

The Baby-Friendly Hospital Initiative, a joint program of the WHO and the United Nations Children's Fund, is a global program to support the implementation of the Ten Steps to Successful Breastfeeding and the International Code of Marketing Breast milk Substitutes. In the U.S., Baby Friendly USA is the accredited body that designates as "Baby Friendly" when they offer the optimal level of care for lactation. Today, nearly 28 percent of children in the United States are born at one of the 590 facilities designated as Baby Friendly, compared with fewer than 3 percent in 2007.[513]

FOOD AS MEDICINE

The burgeoning "food as medicine" movement stresses the importance of a healthy diet in preventive health and is part of a paradigm shift focusing on disease prevention rather than symptom treatment. It is epitomized by a new medical subspecialty: Lifestyle Medicine, which prioritizes lifestyle changes—including improving diet, sleep, and exercise habits; prioritizing relationships; stress reduction; and avoiding risky substance use—as a first course of treatment for chronic disease. The American College of Lifestyle Medicine has a formal stance that "food is medicine" and recommends eating mostly unprocessed and plant-based foods.[514]

Many healthcare providers sponsor programs that exemplify the notion of food as medicine. For example, hospitals are increasingly opening on-site "food pharmacies," where patients can be sent home with prescribed foods, ranging from high-calorie food for cancer patients who need to gain weight to fresh produce for patients who cannot otherwise afford it.[515] In Southern California, a diabetes clinic sponsors a "Shop with Your Doc" program that stations clinicians in grocery stores to help consumers make healthier choices.[516] Produce prescription programs, offered by many states as part of their SNAP-Ed programs, also fit into this model.

Food as medicine also makes abundant sense when considering that food security is a critical SDOH. As noted earlier, the American Academy of Pediatrics and other physician groups recommend screening patients for food insecurity and connecting those in need with services.[517] Having a food pantry on site makes it that much easier to ensure patients have access to healthy food.

Recommendations

Obesity-prevention efforts have been insufficient for decades. Public health infrastructure is under-resourced, and spending for obesity prevention does not align with the size of the problem: a mere 31 cents per person is allocated for CDC obesity-prevention efforts, though obesity accounts for nearly 21 percent of all healthcare spending.[518,519] Longstanding inequities in nutrition and obesity contributed to the disproportionate risk for severe outcomes from COVID-19.[520] In addition, the pandemic has heightened the risk factors for obesity as children and adults had less access to safe physical activity and physical education;[521] job losses increased rates of food insecurity for many; and the social isolation of the pandemic exacerbated mental health concerns and unhealthy eating.[522] Preexisting disparities in obesity rates by race, ethnicity, or socioeconomic status of children also worsened during the pandemic.[523]

Policymakers cannot address obesity without tackling the social, economic, and environmental conditions underlying the crisis. People living in U.S. counties with the most poverty are also most prone to obesity.[524] Historically under-resourced neighborhoods, racially segregated neighborhoods, and rural communities tend to have a greater number of features that promote obesity and fewer resources that support health and wellness.[525, 526] A 2019 study found that racial inequality in income, unemployment, and homeownership—indicators of structural racism—were associated with obesity.[527] The results of that study suggested that structural racism indicators tracked with obesity through factors like the number of grocery stores and fast-food restaurants in the community, as well as through social contexts, like stress, which are predictors of poorer health.[528,529,530,531,532] Food insecurity has also been associated with overweight and obesity, due a lack of access to healthy, affordable foods; cycles of food deprivation and overeating; and higher levels of stress and anxiety.[533] An estimated 42 million people, including 13 million children, are projected to experience food insecurity in 2021, with higher rates of food insecurity among Black, Latino, and Native American individuals compared with white individuals.[534]

Obesity needs a systems approach—because it is a chronic disease with multifaceted causes that are often enmeshed in culture, policy, and society—including public policy changes across key sectors to ensure healthy choices are available and easy for everyone. A systems approach includes reducing longstanding structural and historic inequities that have been intensified by the pandemic; targeting obesity-prevention programs in communities with the highest needs; and scaling and spreading evidence-based initiatives that promote healthy behaviors and outcomes (e.g., within healthcare, transportation, and education sectors).

The remainder of this section focuses on recommendations for federal, state, and local governments in five areas: (1) increase health equity by strategically focusing on efforts that reduce obesity-related disparities; (2) decrease food insecurity while improving nutritional quality of available foods; (3) update marketing and pricing strategies that lead to health disparities; (4) make physical activity and the built environment safer and more accessible for all; and (5) strengthen obesity prevention throughout the healthcare system.

1. Increase Health Equity by Strategically Dedicating Federal Resources to Efforts that Reduce Obesity-Related Disparities and Related Conditions.

Obesity prevention strategies must have an intentional focus on equity. As the main funder of community-based obesity-prevention activities, the federal government is very influential in reinforcing or undoing policies that contribute to obesity. In any policymaking, including the recommendations below, equity should be prioritized by:

1. Empowering communities by providing a foundation of flexible support, funding, and technical assistance tailored to a community's specific needs; and
2. Focusing on communities with the highest rates of obesity first, particularly those with low historic investment and structural inequities related to poverty, racism, adverse childhood experiences, disability, and other social and economic factors.

Recommendations for the federal government:

- **Increase capacity to prevent obesity and related chronic diseases.** Congress should significantly increase funding for CDC's National Center for Chronic Disease Prevention and Health Promotion to improve the nation's prevention of obesity and related chronic diseases. This investment should include at least $125 million in FY2022 for CDC's Division of Nutrition, Physical Activity and Obesity to ensure its SPAN grants have sufficient and equitable funding to reach all 50 states as well as territories and tribal communities. State health departments use SPAN to implement effective multisector campaigns based on the latest research on combating obesity, including breastfeeding support, food service guidelines, physical-activity access strategies, and

integration of nutrition and physical activity into early care and education systems. Yet, CDC's current funding level can only support 16 states (out of 50 approved but unfunded applications) and no territories. Likewise, increased funding for national surveillance systems that collect obesity data should be included to ensure collection and disaggregation by race, ethnicity, and other demographic factors.

- **Increase funding for equitable obesity-related initiatives.** Congress should increase funding for initiatives that center equity, such as CDC's REACH program, which delivers effective, local, culturally appropriate, obesity-related programs to those who bear a disproportionate burden of chronic disease and which only has enough funding to support up to 40 grantees (out of a total 261 approved but unfunded applications), among other CDC initiatives and programs. The Good Health and Wellness in Indian Country program, which is funded out of the REACH funding line, supports tribal organizations to reduce chronic disease health disparities and promote health in American Indian and Alaska Native populations. TFAH recommends $102.5 million for REACH and Good Health and Wellness in Indian Country in FY 2022 to expand these effective approaches to additional communities.
- **Support multisector collaborations that address the social determinants of health.** Research shows a strong connection between the SDOH—such as economic opportunity, housing, transportation, and access to nutritious foods—and risk of

obesity and other health conditions, yet there has been little federal funding for public health approaches to address SDOH .[535,536] Congress should expand funding for the SDOH program at CDC to fund states, local agencies, and nonprofits to promote meaningful partnerships between public health and other sectors, such as healthcare, transportation, housing, business, and education to address upstream factors. Such a program would create community conditions that foster optimal health, including access to healthy foods, safe places to be physically active, and other initiatives that reduce poverty and discrimination. The Improving Social Determinants of Health Act of 2021 (H.R. 379/S. 104) would authorize the creation of such a program at CDC, and the president proposed $153 million for CDC's SDOH work in the FY 2022 budget request.

- **Address economic factors that contribute to obesity.** Poverty is a significant contributor to obesity and chronic disease. Congress and state policymakers should support programs that both reduce poverty and improve health. Multifaceted approaches, including minimum wages, expanding the Earned Income Tax Credit, and access to affordable housing can reduce poverty and improve population health.[537,538,539] For further discussion of TFAH's policy recommendations on economic well-being, see the report *Promoting Health and Cost Control in States*.[540]
- **Prioritize health equity in goals planning.** All relevant divisions at HHS, the U.S. Department of Transportation (DOT), and USDA should establish goals, develop annual related strategies and actions, and publicly report on efforts and progress toward achieving health-equity goals. HHS, DOT, and USDA agencies that work toward obesity and chronic disease prevention should assess and heighten the impact of decisions about policies, programs, and resources to reduce health disparities and advance health equity.
- **Adapt federal grantmaking practices to account for differential needs, resources, and capacity.** Federal agencies that support obesity and chronic disease prevention efforts should consider health impact assessments, disease burden, and social context when determining grantmaking eligibility criteria, so that communities with the greatest health-related needs can benefit from competitive grant mechanisms. Community-based organizations may be well-situated to implement obesity-prevention activities in impacted communities but need technical assistance or flexibility to meet procedural requirements of federal grants.

2. Decrease Food Insecurity While Improving Nutritional Quality of Available Foods.

Food and nutrition insecurity are root causes, or social determinants, of obesity. Before the pandemic, the overall food insecurity rate had reached its lowest point in decades, but COVID-19 related job losses and school closures caused millions to experience food insecurity.[541] Families need support to make the necessary changes in their eating habits. In 2020, SNAP helped 41 million people every month,[542] while WIC served over 1.5 million American infants on average each month between October 2019 and September 2020.[543] The money the federal government spends on food security programs (like SNAP) and nutrition-assistance programs (like WIC) make critical differences in the health of millions of Americans. Special attention is necessary for those communities with the greatest barriers to healthy food access, such as limited incomes and a lack of local stores with healthy food, particularly produce.

Recommendations for the federal government:

- **Make healthy school meals for all permanent.** During the COVID-19 pandemic, USDA extended a series of waivers to provide free, nutritious meals to millions of children through the 2021–2022 school year, regardless of their school setting or household income. USDA estimates up to 12 million children are living in households that may be food insecure, and school meals are one of the healthiest sources of food for children.[544,545] Congress should extend healthy school meals for all students at no cost as a step to ending child hunger and ensure access to healthy foods. Doing so would provide free meals to children regardless of income, eliminate school meal debt and lunch shaming, reduce program financial loss,[546] and incentivize local food procurement. Congress should also improve children's nutrition during summer months by expanding access and eligibility for the Seamless Summer Option, Summer Food Service Program, and Summer EBT, and align the nutrition standards of summer programs with the Dietary Guidelines for Americans and school meals.
- **In the interim, encourage Community Eligibility Provision enrollment and expand eligibility.** The Community Eligibility Provision (CEP) has allowed over 30,000 schools, about one in three of the schools that participate in school meals, to offer them at no charge to all students. CEP provides meals for all enrolled students if 40 percent or more of students are directly certified for free school meals, and schools are reimbursed according to the percentage of directly certified children. Participating schools report that CEP improves children's access to healthy meals, cuts paperwork for parents and schools, and makes school-meal programs more efficient.[547] However, not all eligible schools participate (see Appendix for state data). If the transition to Healthy School Meals must be incremental, Congress and USDA should improve uptake of the CEP. USDA should ease the administrative burden for school food-service programs by making participation in CEP as easy as possible, including by educating schools about CEP and providing technical assistance. Congress should enhance CEP by (1) ensuring schools with highest rates of poverty receive higher school-meals

reimbursement, and (2) lowering the threshold for CEP eligibility for elementary schools to 25 percent of students participating in SNAP.

- **Strengthen school nutrition standards.** USDA should maintain high nutrition standards for school meals and snacks and prevent rules that would weaken school nutrition standards. USDA and schools should strengthen the nutrition of school meals, including lowering sodium to healthy, safe levels, creating an added-sugars standard, and increasing access to nutrient-rich foods. Congress should provide USDA the resources needed to give technical assistance and training, consider performance-based incentives, and work with industry to provide foods that meet the standards.

- **Protect benefits and access to the Supplemental Nutrition Assistance Program.** Congress should oppose any legislative or regulatory efforts that would effectively limit SNAP eligibility, reduce the value of benefits, or create any other barriers to participating, such as imposing additional work requirements or time limits or eliminating broad-based categorical eligibility.

  Note: The USDA announced a change in effect as of October 2021, extending average benefits in SNAP by more than 25 percent from pre-pandemic levels.[548]

- **Improve diet quality in the Supplemental Nutrition Assistance Program.** Without decreasing access or benefit levels in SNAP, USDA and Congress should identify opportunities to improve diet quality, such as piloting voluntary programs that test healthier eating strategies. With its expressed authority, USDA should expand projects to evaluate innovative approaches to optimizing SNAP purchases and disincentivize the purchase of sugary beverages with SNAP benefits. Additionally, Congress should double investments in SNAP-Ed, and USDA should continue to strengthen the highly effective GusNIP, which supports projects that increase fruit and vegetable purchases among SNAP beneficiaries.

- **Enhance benefits and access to the Special Supplemental Nutrition Program for Women, Infants and Children.** WIC has proved effective at reducing obesity and promoting good health,[549,550] in part due to the 2009 changes to the food package to align the nutritional quality of WIC foods with independent scientific recommendations from the National Academies.[551,552] Congress should extend the American Rescue Plan Act's increase in WIC's fruit and vegetable benefit through FY 2022, and Congress and USDA should make permanent reforms that increase the overall value of the WIC benefit. Congress should expand access to WIC for young children up to age 6 (or the beginning of kindergarten) and postpartum women up to two years postpartum, extend certification periods to streamline clinic processes, partner more closely with Head Start to enhance child retention, and implement an online purchasing solution to simplify the shopping experience. These steps will enhance access to WIC's effective interventions by addressing existing nutrition gaps and reducing duplicative paperwork requirements on both participants and service providers.

- **Expand access to the Child and Adult Care Food Program.** Congress should expand the Child and Adult Care Food Program (CACFP) by allowing a third meal-service option, increasing reimbursements to support healthier standards, streamlining administrative operations, and continuing funding for CACFP nutrition and wellness education. CACFP provides reimbursement for nutritious meals and snacks served to children and seniors to Head Start programs, child care centers, afterschool programs, homeless shelters, domestic-violence shelters, and senior day-care centers. Low-income preschoolers attending CACFP-participating child-care centers are less likely to have obesity than similar children attending nonparticipating centers.[553] CACFP providers have been affected exceptionally hard by the pandemic, and while providers are eligible for the child nutrition waivers that USDA has enacted in response to the pandemic, they have not received the same level of financial support as schools and other providers in legislative efforts.

- **Expand support for maternal and child health, including breastfeeding.** Congress should increase funding and access for programs that promote maternal and child health and breastfeeding support, such as CDC's Hospitals Promoting Breastfeeding program, Maternal, Infant, and Early Childhood Home Visiting, and the WIC Breastfeeding Peer Counseling Program.[554] Breastfeeding has been shown to contribute to multiple positive health outcomes, including the prevention of childhood obesity.[555] Congress should increase funding for the Health Resources and Services Administration's Title V Block Grant, which supports state maternal and child health priorities, including breastfeeding, nutrition, and physical activity.[556,557]

Recommendations for state/local government:

- **Support access to healthy school meals.** If a national universal school meals program is not enacted, states should extend healthy school meals for all students and should ensure schools are participating in CEP. States and localities should continue strengthening school nutrition standards by, at minimum, meeting the 2012 federal government standards. Additionally, states and school districts should prepare for alternative schedules by encouraging partnerships with out-of-school time providers, community partners, and food banks to ensure children have access to food and critical enrichment opportunities. For the 2021–2022 school year, schools should prepare to offer nutritious school-meal programs and to expand flexible school breakfast programs, such as second-chance breakfasts, breakfast on-the-go, and breakfasts in classrooms, while following CDC's Whole School, Whole Community, Whole Child framework, which provides information on the components of a school nutrition environment.
- **Community design should encourage healthy food options.** Local communities should incentivize—through land use planning, zoning, and property-tax credits—grocery stores, healthy corner stores, community gardens, food marts and farmers markets to locate or renovate in areas with limited access to nutritious foods and meet certain requirements for the amount of healthy food they provide. Local communities and schools should be incentivized to partner with local farms, as these food producers have been hit especially hard during the pandemic: local farms are expected to experience an estimated $613 million revenue loss due to the pandemic.[558]
- **Allocate resources to increase outreach and awareness.** Schools that do not participate in CEP should distribute school meal applications and actively encourage parents to apply for the National School Lunch Program. Additionally, state agencies responsible for providing other benefits to families, such as Unemployment Insurance, Temporary Assistance for Needy Families, or SNAP, should ensure that parents or guardians are aware of all of the child nutrition programs administered by USDA and available to families in their jurisdiction.

3. Change the Marketing and Pricing Strategies That Lead to Health Disparities.

From infancy through adulthood, Americans are exposed to effective advertising via television, radio, new media, online, and retail ads encouraging the consumption of fast food, soda, and calorie-dense low-nutrient food products. While these messages reach virtually all populations, companies disproportionately market to children of color.[559,560] While the industry has made some modest adjustments to its practices, companies still spent $9.3 billion in 2017 on the marketing of soda, fast food, candy, and unhealthy snacks to children.[561]

Lastly, there is now a substantive and growing body of evidence showing that

increasing the price, through excise taxes, of unhealthy items like sugary drinks reduces consumption (similar to pricing strategies that helped decrease the smoking rates), especially when that revenue goes to programs and services that improve population health.[562,563] Policies in several communities show clear evidence that this approach works to reduce the consumption of sugary drinks.[564,565]

Recommendations for the federal government:

- **End unhealthy food marketing to children.** Congress should close tax loopholes and eliminate business-cost deductions related to the advertising of unhealthy food and beverages to children on television, the internet, social media, and places frequented by children, like movie theaters and youth sporting events. Researchers project that eliminating advertising subsidies for unhealthy foods and beverages would prevent approximately 129,000 cases of obesity over a decade while generating approximately $80 million annually in tax revenue.[566] FDA should establish clear and consistent labeling for "toddler milks," which can confuse parents into buying nutritionally inferior products for their young children.
- **Discourage overconsumption of sugar.** Federal, state, and local governments should increase the price of sugary drinks, through an excise tax, with tax revenue allocated to efforts to reduce health and socioeconomic disparities and obesity prevention programs. A sugary-drink tax to address childhood obesity is a cost-effective strategy, leading to the potential prevention of 575,000 cases of childhood obesity and a healthcare savings of $31 per dollar spent over 10 years.[567] Another strategy to lower sugar consumption is making the tax amount proportional to the sugar amount in drinks, thereby incentivizing companies to reformulate and reduce the sugar content in their products.

Recommendations for state/local governments:

- **Promote healthy food options through procurement policies.** When government agencies establish policies to improve the nutrition of the food they purchase and provide, they can improve public health and serve as an example for the private sector to provide healthy food as well.[568]
- **Reduce unhealthy food marketing to children.** Local education agencies should consider incorporating strategies in their local wellness policies that further reduce unhealthy food and beverage marketing and advertising to children and adolescents, like by prohibiting coupons, sales, and advertising around schools and school buses, as well as by banning sugary drinks as branded sponsors of youth sporting events.[569]

4. Make Physical Activity and the Built Environment Safer and More Accessible for All.

While many individuals can take measures to be active, there are often larger social, economic, and environmental barriers that communities should address, such as modifying community design so it is easier and safer for people to walk, bike, or roll; strengthening public-transportation options; ensuring that children have daily opportunities for physical activity inside and outside of school; and creating accessible recreational options for people of all ages, racial and ethnic backgrounds, abilities, and incomes. While some communities have made progress, obstacles to physical activity are disproportionately greater in those communities where social and economic conditions have resulted in a lack of safe space for physical activity due to a variety of barriers, such as fewer recreational facilities, underfunded school systems, car-dependent transportation, and both overt discrimination and institutionalized racism. The pandemic made physical activity inaccessible for many, with the closure of schools, parks, playgrounds, gyms, and community centers.

What constitutes safe public space for physical activity for someone can vary based on their gender, race, and/or ethnicity. Safety from traffic and crime are vitally important to overcome perceived and real barriers to physical activity. However, systemic racism causes some people of color to face additional, unique challenges to being physically active in public spaces.

All physical-activity recommendations below should prioritize adaptations for the COVID-19 pandemic during the length of the public health emergency in order to ensure that individuals (especially in congregate settings, like schools) can safely be physically active.

Recommendations for the federal government:

- **Fund programs that support physical education and healthier schools.** Congress should increase funding for the Student Support and Academic Enrichment grant program (under Every Student Succeeds Act Title IV, Part A) to $2 billion in FY 2022. The Student Support and Academic Enrichment grant recipients can use the funding to support health and physical education, among other activities. Also, given the interconnectedness of social, emotional, and mental well-being, along with the physical health of children, a positive school climate can promote physical activity, healthy eating, and emotional health as well as academic performance. Congress should expand funding for programs that promote social-emotional learning and improve health outcomes for children, such as CDC's Healthy Schools program.
- **Prioritize evidence-based physical-activity guidelines.** Congress should codify and appropriate funds for HHS to publish Physical Activity Guidelines for Americans at least every 10 years based on the most current scientific and medical knowledge, including information for population subgroups, as needed. Appropriations should also fund communication, dissemination, and support for the guidelines. Since the release of the first Physical Activity Guidelines for

Americans in 2008, the percentage of adults meeting the guidelines increased from 18 percent to 24 percent by 2017.[570] The Guidelines were last updated in 2018.

- **Fund active transportation in all communities, with a focus on equity.** As Congress looks to reauthorize a multiyear transportation package, funding for active transportation projects like pedestrian and biking infrastructure, recreational trails, and Safe Routes to Schools projects should be prioritized. Congress should require that at least 10 percent of the Surface Transportation Block Grant program is set aside for active transportation policies through the Transportation Alternatives Program. Local matching requirements for active transportation projects should be made more flexible to ensure that all communities, regardless of their resource level, are given a fair shot to receive funding. Congress should pass legislation such as the Transportation Alternatives Enhancement Act (H.R. 2991/S. 684), Complete Streets Act (H.R. 1289/S. 425) and Connecting America's Active Transportation System Act, which all include important provisions funding active transportation and assuring that appropriate safety measures are put in place to protect walkers and bikers across communities. Congress should ensure that all federal infrastructure bills mandate state adoption of Complete Streets principles as a condition for the receipt of federal funding for major transportation projects.
- **Make physical activity safer.** The U.S. Department of Transportation should add Safe Routes to Schools, Vision Zero, Complete Streets, and non-infrastructure projects as eligible initiatives of the Highway Safety Improvement Program. The Department of Transportation should conduct national road-safety audits to identify high-risk intersections and other hazards, and states and large cities with higher rates of pedestrian deaths should implement safety-improvement projects.

Recommendations for state/local governments:

- **Prioritize schooltime physical activity.** States and local education agencies should identify innovative methods to deliver physical activity everyday while students are physically distancing, such as partnering with out-of-school time providers for before/after-school activity, providing virtual options for physical education, implementing active recess or class-based activities, and more. States should consider using the Every Student Succeeds Act Title I and/or IV funding for physical education and other physical-activity opportunities.[571]
- **Make local spaces more conducive to physical activity.** Local school districts and states should evaluate schoolyard suitability and enhance schoolyard spaces to account for active play, outdoor classroom space, school gardens, access to nature, and mitigation of urban heat islands. Shared-use agreement should allow for schoolyards and other school recreation facilities to be open to communities outside of school hours.
- **Make communities safer for physical activity and active transportation.** States and cities should enact Complete Streets and other complementary streetscape-design policies to improve active transportation and to increase outdoor physical-activity opportunities.
- **Encourage outdoor play.** States should build on the successful federal Every Kid Outdoors program—which provides fifth graders with a free-entry park pass for themselves and their families to visit federal public lands—to include state-managed lands and/or to expand to other age groups, and the federal government should extend the program to more ages. State and local policymakers and funders should support park development in high-need areas, prioritizing equity and community engagement.[572] The American Academy of Pediatrics states that outdoor play "can serve as a counterbalance to sedentary time and contribute to the recommended 60 minutes of moderate to vigorous activity per day."[573]

5. Strengthen Obesity Prevention Throughout the Healthcare System

While the Affordable Care Act has granted health-insurance coverage to an additional 31 million adults, millions of individuals in the United States still lack coverage, and there are significant disparities in access to care by sex, age, race, ethnicity, education, and family income.[574] After several years of reductions in the numbers of people without health insurance, rates of uninsurance ticked upward in recent years, especially among adults under age 65.[575] Health insurance and access to care are foundational to obesity prevention and treatment as well as to overall health. Any recommendations below are in addition to the assumption that all individuals in the United States, regardless of race, income, immigration status, or any other factor, deserve and should have access to quality healthcare.

All healthcare payors should establish quality measures that prioritize screening and counseling to prevent obesity and, when necessary, to cover obesity-related services that meet the National Academy of Medicine health-equity definition of "providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status."[576]

Recommendations for the federal government:

- **Expand access to healthcare coverage.** Congress, the administration, and state lawmakers should continue to expand access to health insurance, including extending incentives for expansion of Medicaid in remaining states and making marketplace coverage more affordable.[577]
- **Enforce U.S. Preventive Services Task Force recommendations for obesity prevention.** By law, most insurance plans must cover, with no cost-sharing, preventive services with a grade of A or B that the U.S. Preventive Services Task Force (USPSTF) recommends. While there are several grade A or B obesity-related USPSTF recommendations, including referrals to intensive behavioral interventions for adults and children, there is a wide variety of actual implementation or uptake of these recommendations across insurers.[578] HHS, the U.S. Department of Labor, and the U.S. Treasury Department should jointly communicate to insurers that they require coverage of grade A and B recommendations by publishing FAQs, something the departments have previously done on other USPSTF recommendations. Insurance plans should also incorporate quality measures that incentivize screening and counseling for overweight and obesity, with an emphasis on prevention.
- **Expand opportunities for public health and healthcare coordination.** Agencies and Congress should explore opportunities to expand the capacity of healthcare providers and payers to screen and refer individuals to social services by leveraging existing billing-code options, coordinating care delivered by health and social-service programs, sufficiently reimbursing social-services providers, and more fully integrating social needs data into Electronic Medical Record systems. The Social Determinants Accelerator Act of 2021 (H.R. 2503) would expand opportunities for coordination of health and social-service programs by funding acceleration planning grants

to state, local, and tribal governments to create innovative, evidence-based approaches to coordinate services across sectors and improve outcomes and cost-effectiveness.

- **Address root causes of health disparities.** Congress should pass the Health Equity and Accountability Act, a comprehensive bill that broadly addresses healthcare disparities and improves the health and well-being of communities of color, rural communities, and other underserved populations across the United States.[579]

Recommendations for state/local governments:

- **Expand Medicaid eligibility to provide insurance coverage to more people.** States that have not yet expanded Medicaid should leverage the newly established incentives in the American Rescue Plan Act to ensure coverage of as many individuals as possible.
- **Prioritize SDOH strategies.** Public health departments should partner with social-service agencies, healthcare and community entities to address SDOH, including increasing the availability of and participation in obesity-prevention or -control initiatives and connections to nutrition program, with a particular emphasis on communities with high levels of obesity. Such efforts could include promoting evidence-based policies that improve community conditions; supporting processes that center community members' views when setting goals and strategies; providing counsel and referral strategies to better use electronic health records; establishing referrals to and funding for the National Diabetes Prevention Program, ParkRx, and other community-based programming; employing community

health workers and promotoras—in low-resourced areas to provide culturally competent health education and to connect residents with relevant safety-net and social-support resources; and aligning state and local efforts to national initiatives (such as CDC's Million Hearts).

- **Cover adult and pediatric weight-management and obesity-related services.** Medicaid should reimburse providers for evidence-based comprehensive pediatric weight-management programs and services, such as Family-Based Behavioral Treatment programs and Integrated Chronic Care Models.[580] State Medicaid programs should also expand coverage of obesity-related services, such as obesity and nutritional counseling, anti-obesity medications, and bariatric surgery.
- **Build and support capacity of community-based partners.** State Medicaid agencies can provide accommodations to Medicaid managed care organizations, such as by waiving requirements of a Medicaid provider agreement between the managed-care organization and community-based organization, to further incentivize cross-sector collaboration. State Medicaid agencies can also provide targeted technical assistance to further build the capacity of community-based organizations to engage with healthcare entities.

APPENDIX

The State of Obesity

Obesity-Related Indicators and Policies by State

The appendix covers 25 indicators spanning state-level conditions, policies, and performance measures across four themes: COVID-19, Community Conditions, Nutrition Assistance Programs, and K-12 School Nutrition and Physical Activity. Some of the indicators are updated annually and are regularly included in the State of Obesity report, while others are based on one-time reports or were included this year since they particularly relate to the report's special feature (i.e. COVID-19). The data included are the most recently available, although some items have a substantial delay before release.

COVID-19						
	COVID-19 Vulnerability (Jan 2021)	**COVID-19 Food Insecurity (Oct 2020)**	**SNAP Flexibilities During COVID-19 (June 2021)**		**COVID-19 Deaths (Aug 2021)**	**COVID-19 Surveillance Reporting (Feb 2021)**
	What is the state's COVID-19 Community Vulnerability Index score (scores range from lowest to highest vulnerability, 0-1)?[1]	Which states had the most food insecurity during COVID-19 (scores range from least to most food insecurity, 0-50)?[2]	Did the state provide Pandemic EBT in the 2020-2021 school year?[3]	Is the state using new flexibilities in SNAP to pilot an online purchasing program, as of June 2021?[3]	How many COVID-19 deaths per 1,000,000 population has the state experienced as of August 2021?[4]	How well did the state do with respect to reporting COVID-19 cases and deaths by demographics as of June 26, 2020 (scores range 0-10)?[5]
Alabama	0.92	27.0	√[a,b]	√	2,352	8
Alaska	0.60	22.1			538	6
Arizona	0.54	23.3	√[a,b]	√	2,466	7
Arkansas	0.96	23.7		√	2,056	6
California	0.14	25.4	√[c]	√	1,643	8
Colorado	0.10	16.8	√[a]	√	1,199	6
Connecticut	0.30	22.4	√[a,b]	√	2,331	6
Delaware	0.58	31.1	√[b]	√	1,858	6
D.C.	0.64	24.4	√[b]	√	1,612	7
Florida	0.34	28.1	√[a]	√	1,798	7
Georgia	0.68	23.0		√	2,029	10
Hawaii	0.78	21.7	√[b]	√	382	2
Idaho	0.44	15.1	√[a]	√	1,210	6
Illinois	0.52	26.3	√	√	2,058	8
Indiana	0.70	23.3	√[b]	√	2,079	7
Iowa	0.50	12.3	√[a,b]	√	1,958	10
Kansas	0.72	21.1	√[a,b]	√	1,807	6
Kentucky	0.80	26.6	√[b]	√	1,644	6
Louisiana	0.98	30.2	√[a]		2,396	6
Maine	0.04	22.6	√[a,b]	√	667	6
Maryland	0.42	18.2	√[b]	√	1,625	6
Massachusetts	0.38	26.5	√[b]	√	2,624	7
Michigan	0.56	24.2	√[a,b]	√	2,129	8
Minnesota	0.12	17.1	√[a,b]	√	1,375	7
Mississippi	1.00	33.5		√	2,566	9
Missouri	0.74	18.7		√	1,665	6
Montana	0.26	18.3	√		1,592	5
Nebraska	0.36	17.2	√	√	1,179	4
Nevada	0.86	30.8	√[a,b]	√	1,897	6
New Hampshire	0.00	14.6		√	1,017	6
New Jersey	0.46	22.8	√[b]	√	2,998	7
New Mexico	0.88	28.2	√	√	2,097	3
New York	0.62	30.2	√[a]	√	2,776	6
North Carolina	0.84	27.6	√[b]	√	1,295	6
North Dakota	0.06	15.7	√[a]	√	2,037	3
Ohio	0.40	25.1	√[b]	√	1,756	8
Oklahoma	0.94	24.0		√	1,892	7
Oregon	0.66	23.8	√[b]	√	678	6
Pennsylvania	0.28	26.1	√[a,b]	√	2,182	7
Rhode Island	0.24	22.2	√[b]	√	2,595	7
South Carolina	0.82	22.5	√[a]	√	1,903	6
South Dakota	0.20	15.7	√[a]	√	2,299	7
Tennessee	0.76	27.7	√	√	1,855	6
Texas	0.48	22.4	√[a,b]	√	1,821	6
Utah	0.18	14.4	√[a]	√	763	8
Vermont	0.02	14.4	√[a,b]	√	417	6
Virginia	0.22	17.7	√	√	1,344	6
Washington	0.32	19.6	√[a]	√	799	6
West Virginia	0.90	23.4	√[a,b]	√	1,656	4
Wisconsin	0.08	18.9	√[a,b]	√	1,423	6
Wyoming	0.16	19.4		√	1,350	8
Total	**N/A**	**N/A**	**42 states and D.C.**	**47 states and D.C.**	**1,866**	**N/A**

Sources and Notes:
1. Surgo Ventures. "COVID-19 Community Vulnerability Index," 2021. https://docs.google.com/spreadsheets/d/1bPdZz1YCY-ai1I35XL2CWdASOgCjpss0FMiDGWERYPmA/edit#gid=978504636

*The COVID-19 Community Vulnerability Index builds on CDC's Social Vulnerability Index and includes indicators within seven themes. Each theme has its own score, ranging from 0 (lowest vulnerability) to 1 (highest vulnerability), and these scores are aggregated to a single score. CCVI is computed at the census tract level; state level socres are population-weighted averages of their census tract CCVI

2. United Way of the National Capital Area, "Mapping the Effects of COVID-19 on Food Insecurity Across the Country," October 2020. https://unitedwaynca.org/stories/food-insecurity-statistics/

Food insecurity scores were calculated based on eight factors capturing immediate and indirect factors affecting access and ability to receive food, such as SNAP eligibility and funding, supermarket access, unemployment, degree to which public schools were open, and percent of students eligible for free and reduced-price lunches. Each factor was weighted based on importance and scores compiled to create an overall score on a 50 point scale.

3. Center on Budget and Policy Priorities, "State USDA-Approved SNAP Waivers and Options," May 2021. https://www.cbpp.org/research/food-assistance/most-states-are-using-new-flexibility-in-snap-to-respond-to-covid-19

a. These states were approved for P-EBT for the entire 2020-2021 school year after the October 2020 extension of the program, including retroactive benefits for August and/or September 2020.

b. These states were approved to issue P-EBT benefits for children under age 6 in SNAP households in areas where schools or child care centers are closed or operating with reduced hours or capacity due to the pandemic.

c. California was approved to issue benefits for children under age 6 in SNAP households but has not yet been approved to issue P-EBT to school-aged children in the 2020-2021 school year.

4. Kaiser Family Foundation, "Cumulative COVID-19 Cases and Deaths, "August 2021. https://www.kff.org/other/state-indicator/cumulative-covid-19-cases-and-deaths/

5. GenderSci Lab, "US State COVID-19 Report Card," January 2021. https://www.gendersilab.org/blog/us-state-covid-19-data-report-card.

State surveillance reporting of COVID-19 is scored from 0-10. For case reporting, a state can earn 1 point for each category of age, sex/gender, race/ethnicity, and comorbidities reported. Any reporting on the interactions of these first four variables also earned 1 point. Similarly, a state earned 1 point for each of these variables in their reporting of deaths, plus 1 point for reporting any interactions.

Community Conditions

	Social Determinants of Health Index (2019)	Household Food Insecurity (Average 2017-2019)	Poverty (2019)		Health Insurance Coverage (2019)		Neighborhood Sidewalks and Parks (2018-2019)	
	How does the state rank on the Social Determinants of Health Index (SDOHi)?[1]*	What percentage of households experience low or very low food security?[2]	What percentage of residents live below the poverty level?[3]	How much higher is the poverty rate for Black residents as compared with White residents?[3]	What percentage of residents age 0-64 are uninsured?[4]	How much higher are uninsured rates for Black residents (age 0-64) as compared with White residents (age 0-64)?[4]	What percentage of children live in neighborhoods with sidewalks/ walking paths?[5]	What percentage of children live in neighborhoods with parks/ playgrounds?[5]
Alabama	46	14%[a]	16%	105%	12%	24%	50%	52%
Alaska	24	11%	11%	n/a	13%	n/a	66%	74%
Arizona	28	12%	13%	90%	13%	29%	86%	81%
Arkansas	48	14%[a]	17%	116%	11%	-2%	53%	53%
California	6	10%[a]	12%	130%	9%	25%	92%	86%
Colorado	9	10%	9%	181%	9%	26%	90%	87%
Connecticut	7	13%	10%	217%	7%	46%	67%	79%
Delaware	21	10%	11%	137%	8%	25%	73%	69%
D.C.	N/A	10%	14%	359%	4%	293%	98%	88%
Florida	23	11%	13%	115%	16%	30%	76%	73%
Georgia	39	10%	13%	110%	16%	19%	59%	61%
Hawaii	5	8%[a]	10%	n/a	5%	n/a	81%	88%
Idaho	36	10%	11%	n/a	12%	n/a	76%	73%
Illinois	12	10%[a]	11%	205%	9%	73%	88%	89%
Indiana	42	12%	12%	150%	10%	24%	70%	65%
Iowa	33	8%[a]	11%	208%	6%	76%	81%	77%
Kansas	27	13%	12%	134%	11%	124%	73%	75%
Kentucky	47	14%[a]	16%	57%	8%	25%	57%	53%
Louisiana	37	15%[a]	19%	135%	10%	14%	51%	56%
Maine	35	12%	11%	185%	10%	7%	59%	66%
Maryland	4	10%	9%	106%	7%	63%	81%	81%
Massachusetts	1	8%[a]	9%	174%	4%	83%	85%	83%
Michigan	40	12%	13%	170%	7%	11%	71%	74%
Minnesota	17	8%[a]	9%	308%	6%	144%	80%	87%
Mississippi	50	16%[a]	20%	161%	15%	10%	40%	48%
Missouri	32	12%	13%	82%	12%	16%	65%	69%
Montana	29	10%	13%	n/a	10%	n/a	69%	68%
Nebraska	15	11%	10%	80%	9%	195%	88%	80%
Nevada	20	13%	13%	114%	14%	-8%	90%	80%
New Hampshire	22	7%[a]	8%	n/a	8%	126%	61%	74%
New Jersey	3	8%[a]	9%	191%	9%	112%	81%	87%
New Mexico	44	15%[a]	18%	94%	12%	n/a	79%	76%
New York	2	11%	13%	110%	6%	67%	80%	86%
North Carolina	38	13%[a]	14%	122%	14%	30%	55%	58%
North Dakota	19	8%[a]	11%	n/a	9%	n/a	78%	81%
Ohio	34	13%[a]	13%	170%	8%	30%	75%	77%
Oklahoma	45	15%[a]	16%	127%	18%	22%	53%	61%
Oregon	14	10%	12%	170%	9%	29%	82%	81%
Pennsylvania	18	10%	12%	183%	7%	16%	71%	79%
Rhode Island	8	9%[a]	11%	242%	5%	79%	78%	84%
South Carolina	43	11%	14%	152%	13%	21%	52%	55%
South Dakota	30	11%	11%	n/a	12%	n/a	81%	76%
Tennessee	41	13%	14%	90%	12%	23%	52%	57%
Texas	31	13%[a]	14%	133%	21%	26%	74%	73%
Utah	10	11%	9%	492%	11%	239%	91%	89%
Vermont	16	10%[a]	10%	269%	6%	n/a	61%	75%
Virginia	13	9%[a]	10%	109%	9%	43%	74%	73%
Washington	11	10%	10%	94%	8%	64%	79%	78%
West Virginia	49	15%[a]	16%	83%	8%	25%	51%	58%
Wisconsin	26	10%	10%	227%	7%	75%	68%	80%
Wyoming	25	12%	10%	n/a	15%	n/a	79%	81%
Total	**N/A**	**11%**	**12%**	**136%**	**11%**	**46%**	**74%**	**75%**

Sources and Notes:
1. Sharecare and Boston University. "Social Determinants of Health Index," August 2020. https://wellbeingindex.sharecare.com/wp-content/uploads/2020/08/Sharecare-CWBI_2019_State_Rankings_vF.pdf

*The Social Determinants of Health Index includes 17 items across five interrelated domains: healthcare access, food access, resource access, housing and transportation, and economic security. State-level SDOHi scores were created by aggregating county-level SDOHi scores with weights proportional to county population sizes.

2. Coleman-Jensen A, Rabbitt MP, Gregory CA, and Singh A. "Household Food Security in the United States in 2019, ERR-275," U.S. Department of Agriculture, Economic Research Service, 2020. https://www.ers.usda.gov/webdocs/publications/99282/err-275.pdf?v=7082.3.United States Department of Agriculture (USDA)9

a. Difference from U.S. average was statistically significant with 90% confidence.

3. Kaiser Family Foundation, "Poverty Rate by Race/Ethnicity," 2019. https://www.kff.org/state-category/demographics-and-the-economy/

* Kaiser Family Foundation estimates based on U.S. Census Bureau's American Community Survey.

4. Kaiser Family Foundation, "Uninsured Rates for the Nonelderly by Race/Ethnicity," 2019. https://www.kff.org/state-category/demographics-and-the-economy/

* Kaiser Family Foundation estimates based on U.S. Census Bureau's American Community Survey.

5. HRSA Maternal and Child Health Bureau, "2018-2019 National Survey of Children's Health", 2021. www.childhealthdata.org

Nutrition Assistance Programs

	Special Nutrition Assistance Program Participation (2017)	Special Supplemental Nutrition Program for Women, Infant, and Children Participation	Women, Infant, and Children Breastfeeding Performance Measurements (FY 2019)
	What percentage of people eligible participate in SNAP?[1]	What percentage of people eligible participate in WIC?[2]	What is the percentage of breastfed infants (fully or partially breastfed) among WIC participants in the state?[3]
Alabama	84%	59%	12%
Alaska	76%	57%	46%
Arizona	76%	52%[a]	31%
Arkansas	69%	52%[a]	14%
California	71%	67%[a]	38%
Colorado	80%	50%[a]	35%
Connecticut	92%	50%[a]	35%
Delaware	100%	49%[a]	29%
D.C.	96%	45%[a]	44%
Florida	90%	57%	36%
Georgia	86%	49%[a]	28%
Hawaii	84%	57%	47%
Idaho	79%	47%[a]	46%
Illinois	100%	48%[a]	29%
Indiana	74%	59%	28%
Iowa	92%	60%	27%
Kansas	71%	47%[a]	30%
Kentucky	75%	58%	21%
Louisiana	85%	50%[a]	12%
Maine	97%	63%	31%
Maryland	89%	66%[a]	41%
Massachusetts	92%	64%[a]	36%
Michigan	94%	64%[a]	23%
Minnesota	81%	66%[a]	37%
Mississippi	77%	62%[a]	14%
Missouri	85%	54%[a]	23%
Montana	90%	46%[a]	33%
Nebraska	78%	54%	34%
Nevada	86%	53%[a]	30%
New Hampshire	76%	44%[a]	33%
New Jersey	81%	57%	42%
New Mexico	100%	44%[a]	36%
New York	93%	61%[a]	45%
North Carolina	77%	57%	31%
North Dakota	63%	52%	29%
Ohio	81%	53%[a]	17%
Oklahoma	84%	59%	18%
Oregon	100%	63%[a]	39%
Pennsylvania	99%	55%	19%
Rhode Island	100%	57%	24%
South Carolina	80%	47%[a]	21%
South Dakota	82%	59%	28%
Tennessee	92%	46%[a]	22%
Texas	75%	55%	54%
Utah	70%	45%[a]	40%
Vermont	100%	75%[a]	47%
Virginia	76%	47%[a]	22%
Washington	96%	56%	41%
West Virginia	92%	54%	16%
Wisconsin	95%	57%	23%
Wyoming	52%	55%	33%
Total	**84%**	**57%**	**33%**

Sources and Notes:

1. USDA Food and Nutrition Service, "Estimates of State Supplemental Nutrition Assistance Program Participation Rates in 2017, " August 2020. https://fns-prod.azureedge.net/sites/default/files/resource-files/Reaching2017-1.pdf.

*Estimated SNAP participation rates are based on samples of households in each state. While there is substantial uncertainty associated with the estimates and comparisons across states, the estimates do show whether a state's participation rate was probably at the top, at the bottom, or in the middle of states. Estimated participation rates of 100 percent stem from differences of the data used to estimate the number of eligible people and those used to estimate participants, and do not mean that every eligible person participated.

2. USDA Food and Nutrition Service, "National- and State-Level Estimates of WIC Eligibility and WIC Program Reach in 2018 with Updated Estimates for 2016 and 2017," May 2021. https://fns-prod.azureedge.net/sites/default/files/resource-files/WICEligibles2018-Volume1.pdf.

a. Difference from national coverage rate was statistically significant at the 95 percent confidence level.

*These values capture eligibility and participation across all WIC participant categories (infants, children up to age 5, pregnant women, and postpartum women). Note that eligibility can vary across states and localities based on income unit, income period, and income limits. This data excludes territories for states and includes territories in "total".

3. USDA Food and Nutrition Service, "WIC Breastfeeding Data Local Agency Report," August 2020. https://fns-prod.azureedge.net/sites/default/files/resource-files/FY2019-BFDLA-Report.pdf.

K-12 School Nutrition and Physical Activity

	Smart Snacks Standards (2019-2020)	Food Marketing (2019-2020)	School Breakfast Program (2019-2020)		Community Eligibility Provision (2020-2021)
	Do state laws meet Smart Snacks Standards for all grade levels?[1]	Does the state restrict marketing of unhealthy foods/beverages in schools?[1]	What percentage of the children in the School Lunch Program are in the School Breakfast Program?[2]	What percentage of schools in the School Lunch Program are in the School Breakast Program?[2]	What percentage of eligible districts have adopted the community eligibility provision?[2]*
Alabama			61%	98%	62%
Alaska			55%	93%	83%
Arizona			56%	96%	39%
Arkansas	√		68%	99%	44%
California		√[b]	58%	91%	42%
Colorado			57%	86%	33%
Connecticut			52%	88%	71%
Delaware			63%	100%	83%
D.C.	√	√[b]	68%	99%	90%
Florida	√		52%	99%	68%
Georgia	√		62%	100%	82%
Hawaii			40%	97%	92%
Idaho			53%	96%	41%
Illinois	√		53%	85%	41%
Indiana	√		52%	92%	44%
Iowa	√		44%	94%	19%
Kansas			54%	95%	9%
Kentucky	√		68%	98%	95%
Louisiana	√		61%	96%	94%
Maine		√[a]	64%	98%	28%
Maryland			62%	99%	73%
Massachusetts			57%	88%	74%
Michigan			60%	93%	56%
Minnesota			55%	90%	44%
Mississippi	√		61%	96%	47%
Missouri			64%	95%	46%
Montana			63%	93%	86%
Nebraska			45%	85%	22%
Nevada			62%	93%	84%
New Hampshire	√		46%	94%	33%
New Jersey	√	√[a]	58%	84%	52%
New Mexico	√		69%	97%	88%
New York			53%	95%	79%
North Carolina			61%	99%	74%
North Dakota			52%	92%	89%
Ohio			59%	90%	69%
Oklahoma	√		59%	98%	58%
Oregon			55%	97%	66%
Pennsylvania			54%	94%	60%
Rhode Island	√	√[b]	54%	98%	41%
South Carolina	√		63%	100%	76%
South Dakota			46%	87%	63%
Tennessee	√		66%	99%	51%
Texas			64%	100%	54%
Utah	√		40%	90%	93%
Vermont			71%	98%	61%
Virginia		√[b]	63%	99%	74%
Washington			50%	94%	63%
West Virginia	√	√[b]	84%	99%	98%
Wisconsin			54%	86%	48%
Wyoming			52%	96%	89%
Total	**18 states and D.C.**	**6 states and D.C.**	**58%**	**94%**	**56%**

K-12 School Nutrition and Physical Activity (continued)

	National Physical Education Standards (2019-2020)	Physical Activity Throughout the Day (2019-2020)	Recess (2019-2020)
	Does the state address or refer to the National Physical Education Standards within state PE curriculum laws?[4]	Does the state have laws that address providing physical activity throughout the day (e.g., during classroom breaks)?[4]	Does the state have laws that address providing physical activity through recess?[4]
Alabama	√		√[c]
Alaska	√	√[a]	√[c]
Arizona	√	√[b]	
Arkansas		√[a]	√[d]
California			√[c]
Colorado	√	√[a]	√[c]
Connecticut		√[a]	√[d]
Delaware	√		
D.C.	√	√[a]	√[c]
Florida	√		√[d]
Georgia			
Hawaii			
Idaho	√		
Illinois			
Indiana		√[a]	√[c]
Iowa		√[b]	
Kansas			
Kentucky	√	√[a]	
Louisiana	√	√[a]	
Maine			
Maryland	√		
Massachusetts	√		
Michigan			
Minnesota	√	√[a]	√[c]
Mississippi	√	√[a]	√[c]
Missouri		√[a]	√[d]
Montana	√		
Nebraska			
Nevada			
New Hampshire	√	√[a]	√[c]
New Jersey			√[d]
New Mexico	√	√[a]	
New York			
North Carolina			
North Dakota			
Ohio	√		
Oklahoma	√	√[a]	√[c]
Oregon	√		
Pennsylvania			
Rhode Island	√	√[b]	√[d]
South Carolina	√	√[a]	√[c]
South Dakota	√		
Tennessee		√[b]	
Texas	√		√[c]
Utah			
Vermont	√	√[a]	√[c]
Virginia		√[a]	√[d]
Washington	√	√[a]	
West Virginia		√[a]	√[d]
Wisconsin			
Wyoming	√		
Total	**26 states and D.C.**	**23 states and D.C.**	**20 states and D.C.**

Sources and Notes:

1 Temkin D et al." State Polices that Support Healthy Schools, School Year 2019-2020," Child Trends, February 2021. https://www.childtrends.org/wp-content/uploads/2021/01/StatePolicyReport_ChildTrends_February2021.pdf.

a. Recommend marketing be consistent with Smart Snacks standards b. Require marketing be consistent with Smart Snacks standards

2 Food Research and Action Center, "School Breakfast Scorecard, School Year 2019-2020," February 2021. https://frac.org/wp-content/uploads/FRAC_BreakfastScorecard_2021.pdf

3 Food Research and Action Center, "Community Eligibility: The Key to Hunger-Free Schools, School Year 2020-2021," June 2021. https://frac.org/wp-content/uploads/CEP-Report-2021.pdf

*Community eligibility allows high-poverty schools and school districts to offer free meals to all students, and it eliminates the need for household school meal applications.

4 Temkin D et al. "State Polices that Support Healthy Schools, School Year 2019-2020", Child Trends, February 2021. https://www.childtrends.org/wp-content/uploads/2021/01/StatePolicyReport_ChildTrends_February2021.pdf

a. Encourages providing physical activity throughout the day

b. Requires providing physical activity throughout the day

c. Addresses or requires recess less than daily

d. Requires daily recess

Endnotes

1 Fryar CD, Carroll MD, and Ogden CL. *Prevalence of Overweight, Obesity, and Extreme Obesity Among Adults: United States, Trends 1960–1962 Through 2009–2010.* Hyattsville, MD: National Center for Health Statistics, September 2012. https://www.cdc.gov/nchs/data/hestat/obesity_adult_09_10/obesity_adult_09_10.htm (accessed July 18, 2021).

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8 NHLBI Obesity Education Initiative Expert Panel. *Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: The Evidence Report.* Bethesda, MD: National Heart, Lung, and Blood Institute, September 1998. https://www.ncbi.nlm.nih.gov/books/NBK1995/#A136 (accessed July 18, 2021).

9 "Health Risks of Overweight & Obesity." In: *National Institute of Diabetes and Digestive and Kidney Diseases,* updated February 2018. https://www.niddk.nih.gov/health-information/weight-management/adult-overweight-obesity/health-risks (accessed July 18, 2021).

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Academy of Nutrition and Dietetics

Statement for the Record
Senate Committee on Agriculture, Nutrition, & Forestry
Subcommittee on Food and Nutrition, Specialty Crops, Organics, and Research

"**The State of Nutrition in America**"

By
The Academy of Nutrition and Dietetics

The Academy of Nutrition and Dietetics (the "Academy") appreciates the opportunity to submit a statement for the record in response to the Senate's Committee on Agriculture, Nutrition, and Forestry subcommittee on Food and Nutrition, Specialty Crops, Organics, and Research's hearing on "**The State of Nutrition in America**" on Tuesday, November 2, 2021. Representing more than 112,000 registered dietitian nutritionists (RDNs);[1] nutrition and dietetic technicians, registered (NDTRs); and advanced-degree nutritionists, the Academy is the largest association of food and nutrition professionals in the United States and is committed to addressing health disparities experienced by communities of color.

Invest in Federal Nutrition and Nutrition Education Programs to Address Food and Nutrition Insecurity

The Academy supports policies that would address long-standing and ongoing racial and ethnic health disparities, including those heightened by the COVID-19 pandemic. Food insecurity significantly affects the health and well-being of individuals and families, potentially for generations. It is a risk factor for negative psychological and health outcomes, and it increases the risk and severity of diet-related diseases. We often see how those experiencing food insecurity try to stretch their budgets in ways that can damage their health, such as not taking prescription drugs or postponing or forgoing preventive services or medical care. Federal nutrition programs play an important role as the safety net to ensure that all Americans have access to healthy food, while federal nutrition education programs help establish strong, healthful eating habits at an early age and provide support throughout the entire life cycle.

The Academy is calling on Congress to increase the investment in federal nutrition programs, including the Supplemental Nutrition Assistance Program, school meals, the Special Supplemental Nutrition Program for Women, Infants, and Children, the Child and Adult Care Food Program, as well as all federal nutrition education and policy, systems and environmental changes programs.

[1]The Academy approved the optional use of the credential "registered dietitian nutritionist (RDN)" by "registered dietitians (RDs)" to more accurately convey who they are and what they do as the nation's food and nutrition experts. The RD and RDN credentials have identical meanings and legal trademark definitions.

The Importance of Medical Nutrition Therapy Access

Many diet-related chronic conditions are contributing to poor COVID-19 outcomes and the CDC lists obesity, diabetes and heart disease among the conditions that put people at greater risk of severe illness from COVID-19.

The situation is particularly dire for African Americans and other minority groups that have long-faced chronic disease health disparities due to socioeconomic inequalities and reduced access to health care, healthful foods and safe places to be active. These inequalities and disparities are now contributing to disproportionately high COVID-19 morbidity and mortality in these populations.

Access to medical nutrition therapy (MNT) through Medicare is one tool that can help prevent, manage and treat a wide range of chronic conditions. U.S. Reps. Robin Kelly and Fred Upton and U.S. Sens. Susan Collins and Gary Peters introduced the Medical Nutrition Therapy Act, which would expand access through Medicare Part B to include medical nutrition therapy for a range of chronic conditions.

Medical nutrition therapy is a cost-effective component of treatment for obesity, diabetes, hypertension, unintended weight loss and other chronic conditions that are contributing to poor COVID-19 outcomes. Despite the potential benefits, Medicare only covers MNT for patients with diabetes or kidney disease or post-kidney transplant, leaving millions without access to care. The Medical Nutrition Therapy Act gives Medicare beneficiaries access to the care they need by providing coverage through Medicare Part B for MNT for people with prediabetes, obesity, high blood pressure, high cholesterol, malnutrition, eating disorders, cancer, celiac disease, HIV/AIDS and unintentional weight loss.

Need for Diversity in Allied Health Professions, Including Dietetics

We know that cultural humility and relatability is often the touchstone of success for engaging and motivating patients and clients. For these reasons, the Institute of Medicine report *Unequal Treatment Confronting Racial and Ethnic Disparities in Health Care* recommended increasing the proportion of health professionals from underrepresented racial and ethnic minority groups.

The Academy supports the President's Health Professionals of the Future proposal; this Department of Education grant program would provide funds to Historically Black Colleges and Universities, Tribal Colleges and Universities and other Minority-Serving Institutions to develop or expand graduate programs that prepare students for high-skilled health care jobs including dietetics. This proposal would help increase diversity among the nation's health care workforce, which aligns with the Academy's strategic priority to increase the diversity of the nutrition and dietetics workforce and the cultural humility of all practitioners.

Invest in Nutrition Research

The Academy supports the expansion of and investment in nutrition research at the National Institutes of Health, Centers for Disease Control and Prevention and U.S. Department of Agriculture that will help reduce the national burden of diet-related chronic diseases. The departments must finally make funding nutrition research a priority because all Americans eat and a diet of nutritious foods is essential to live a healthy life; as stated above, a healthful diet is more important than ever due to the ongoing COVID-19 health crisis. All Americans can benefit from research aimed at addressing our nation's health. The NIH

and USDA nutrition research budgets have largely remained flat over the last three decades as the rate of chronic disease and health disparities have grown. It is time to make nutrition and health a priority.

Thank you for the opportunity to submit this statement to the committee. We look forward to continuing the necessary and overdue conversation on ways to improve the state of nutrition in America and reduce health disparities among communities of color in this country.

Sincerely,

Jeanne Blankenship, MSN, RDN
Vice President, Policy Initiatives and Advocacy
Academy of Nutrition and Dietetics

defeat malnutrition today

October 29, 2021

Statement for the Record: "The State of Nutrition in America 2021"

The 114-organization Defeat Malnutrition Today coalition commends you, Chairman Booker, for scheduling this hearing on the state of nutrition in America.

We are here to say that with one of every two older Americans either malnourished or at risk for malnutrition; with disease-associated malnutrition costs exceeding $51 billion per year; and with malnutrition leading to earlier deaths, longer hospital stays, higher risks of falls, and exacerbated chronic conditions… the state of nutrition in America is not good.

When a core problem such as malnutrition, simply defined as a lack of proper nutrients in one's diet, continues to negatively impact our population, especially our older adults, it is time for bolder action by Congress and the Administration.

Some actions have already been taken, including the addition of malnutrition screening as a part of the Older Americans Act nutrition programs.

Some actions should have been taken by now, including the adoption of a composite quality measure by the Centers for Medicare and Medicaid Services (CMS) to ensure malnutrition screening, assessment, and care planning in acute care settings. This measure has been pending for five years, and we hope you will use your leadership to communicate your support of this measure to CMS.

There are other actions that need to be taken as well. We call your attention to a 2019 Government Accountability Office (GAO) report initiated by our coalition and formally requested by Sens. Patty Murray and Bob Casey. The title of the report is very relevant to your hearing today: "Nutrition Assistance Programs: Agencies Could Do More to Help Address the Nutritional Needs of Older Adults."

The report focused on nutrition programs for older adults that are run by the Departments of Health and Human Services and Agriculture (HHS and USDA). In USDA's jurisdiction, the GAO focused on the Commodity Supplemental Food Program (CSFP) and the Child and Adult Care Food Program (CACFP).

The report raised several issues worth exploring within this Subcommittee's jurisdiction:

- The report stated that in February 2019, USDA issued new requirements for the CSFP food packages to include more whole grains and canned fruits and vegetables. The programs were to have until November 2019 to fully implement this change. It is worth learning if full implementation was achieved and what benefits this change in policy might have achieved.

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- The report also focused on an important area that needs expansion and updating to improve the state of nutrition in America: nutrition education. The report noted that three of the four selected programs they reviewed that serve older adults (HHS's congregate and home-delivered meals programs and the CSFP) also require nutrition education to support efforts to meet older adults' nutritional needs. We hope the Subcommittee as part of its work will take a close look at the caliber and quality of nutrition education provided, whether it is SNAP-Ed or these three programs serving older adults.
- The report also called on the Administrator of USDA's Food and Nutrition Services to take steps both to improve its oversight of CACFP meals provided in adult day care centers and to better disseminate existing information that could help state and local entities involved in providing CACFP meals meet the varying nutritional needs of older adult participants. We hope the Subcommittee will follow up with oversight on these recommendations, both of which are key to ensuring that CACFP participants receive nutritious meals.

We believe that federal nutrition programs should recognize the varied nutrition needs of the populations served. Further, we need to exert the same level of commitment to combatting malnutrition as we do to combat hunger and food insecurity, since malnutrition is one of the more dire consequences of food insecurity.

We commend the focus of this hearing and your introduction of the White House Conference on Food, Nutrition, Hunger, and Health Act, which we are proud to have endorsed. We need to be honest about the state of nutrition in America. This should be the catalyst to a new national effort to combat poor nutrition and as Dr. Dariush Mozaffarian has previously advocated, to move us to a place where we are achieving nutrition security for all. We pledge to work with you and your staff and help in any way we can.

November 5, 2021

Senator Cory Booker
Chairman
Senate Subcommittee on Food and Nutrition, Specialty Crops, Organics and Research
717 Hart Senate Office Building
Washington, DC 20510

Senator Mike Braun
Ranking Member
Senate Subcommittee on Food and Nutrition, Specialty Crops, Organics and Research
404 Russell Senate Office Building
Washington, DC 20510

Dear Chairman Booker and Ranking Member Braun,

FMI – The Food Industry Association respectfully requests to have this letter included in the record for the hearing on November 2, 2021, entitled, "The State of Nutrition in America 2021." FMI and our members, which include food retailers, wholesalers and manufacturers, are committed to reducing food insecurity and supporting the health and well-being of all consumers.

Over the past year, the entire food supply chain has been challenged like never before, and we are proud to say it has proven to be resilient, efficient and durable. Throughout the pandemic, our members have worked tirelessly to ensure all Americans have access to the safest, most abundant, and affordable food supply in the world. As private sector partners in the Supplemental Nutrition Assistance Program (SNAP) and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), we have a particular interest in ensuring these programs continue to serve participants as efficiently as possible and maintain flexibility during these challenging times.

The food industry is keenly aware of and committed to addressing hunger among America's underserved communities. Last year, food banks experienced a significant increase in demand from families in need of food in the face of layoffs and school

closures. FMI members donated more than 1.5 billion meals to food banks, helping to serve more than 40 million people last year according to Feeding America.

Yet, while it is critically important that we focus on hunger, it's also vitally important that the most vulnerable populations get the nutrition they need. FMI believes it is essential to expand access to and participation in feeding assistance programs such as WIC. WIC is an effective food assistance program that delivers healthier outcomes for women and children with supplemental nutritious foods and nutrition education. FMI participated in the USDA WIC Online Task Force to advise USDA through the development of a report on best practices for implementing online and telephone ordering as well as pickup and delivery of WIC foods. The Task Force's report recommended that existing commercial models should be followed as much as possible so WIC innovation can proceed quickly and efficiently to facilitate increased access.

Another important feeding assistance program, SNAP, was designed to be able to ramp up quickly in times of need and cause almost no disruption in-store, allowing families to redeem their benefits where they normally shop for groceries. In the face of uncertainty and the most challenging of circumstances, the program proved to be flexible and extremely efficient in providing for the diverse needs of participants. Efforts to limit the types of items families can purchase with SNAP could make the program more complex to administer and result in food waste if products offered do not reflect the products that families need. We believe the answer is not in being punitive, but rather in encouraging nutrition education which could form lifelong healthy eating habits. We are doing this within our stores, with more than 80% of our members reporting employing registered dietitian nutritionists (RDNs) to help with personalized health and wellness needs.

SNAP participation increased by over 14%, or six million people, from February 2020 to February 2021 due to the extraordinary economic challenges created by the pandemic, and grocery stores were able to provide customers access to food from their neighborhood grocery store. In partnership with the federal government, our industry rapidly scaled up online SNAP pilot programs allowing participants to also redeem their SNAP benefits online, increasing from five states at the outset of the pandemic to 46 states and Washington, DC today.

A number of FMI members also currently participate in the GUSNIP fruit and vegetable incentives program. GUSNIP is a voluntary program that requires significant investment

by the retailer and is just one of many ways our members serve their customers every day by facilitating easy access to healthful foods.

FMI believes in finding ways to help all consumers eat well and make appropriate choices for their families regardless of how they pay. Food retailers pride themselves on providing meal tips and recipes, accurate nutrition labeling, guidance and support for convenient, healthy and delicious meal solutions. With the majority of FMI members employing registered dietitian nutritionists (RDNs), they are able to assist consumers in making personalized choices to improve health and stay well. RDNs also bring their knowledge and scientific expertise on nutrients, ingredients, allergens and supplements and use it in grocery store aisles to positively impact consumers. Grocery stores are community destinations for health and well-being by providing consumers with science-based, practical programs to encourage healthy dietary patterns and food choices.

The food retail setting provides the ideal opportunity for RDNs to help improve public health by literally meeting customers in the aisles or through the grocery store website as they navigate food choices and make shopping decisions every day. Our members are using a range of outreach tools to deliver critical information to consumers and employees on health and well-being initiatives. They are amplifying traditional channels, such as in-store signage and weekly circulars, with dedicated marketing and education efforts on social media, apps and websites, to meet their cross-generational consumers where they are on digital platforms. Programs focusing on nutrition education and overall health and well-being are also including self-care and preventive care.

Food as Medicine programs in the food retail environment have defined focus areas that connect food and nutrition to improved health and often include the management and treatment of disease. Pharmacists, RDNs and other retail health care practitioners often collaborate to enhance and develop new health and well-being programs and offer trusted guidance to consumers. Grocery stores have made significant investments to expand their role as community destinations for health and well-being across multi-sectors.

Now more than ever, consumers are cooking at home and turning to their supermarket and online retailers for healthful food options. Americans trust their primary food stores as health and well-being allies, with a majority saying they trust their primary food store when it comes to helping people stay healthy. The FMI Foundation delivers vital research, education and resources in health and well-being and is committed to making more family meals happen. Numerous studies have shown with significant, measurable

scientific proof the positive, lifelong benefits of family meals, including that adults and children who eat at home more regularly are less likely to suffer from obesity and that increased family meals are associated with greater intake of fruits and vegetables.

FMI supports the efforts of this subcommittee in the creation of a White House Conference on Food, Nutrition, Hunger and Health to reduce food insecurity and improve nutrition outcomes. It's important that science-based, data driven solutions are employed within a commercially viable model to have the most beneficial impact on consumers' health and well-being. FMI and our members will continue to serve families in need, and we can be a resource and a strong partner in a comprehensive national strategy to fight hunger and improve nutrition in America.

Sincerely,

Jennifer Hatcher
Chief Public Policy Officer & Senior Vice President
FMI – The Food Industry Association

CC: Members of the Senate Subcommittee on Food and Nutrition, Specialty Crops, Organics and Research

October 25, 2021

Dear Members of Congress:

We write as retired admirals and generals who are gravely concerned about the future of our Nation's children and our national security. We believe that in order to ensure the future success of America's youth and safeguard our military readiness, it is essential that you prioritize bipartisan efforts to adapt and modernize federal child nutrition programs. These programs are deeply rooted in efforts to secure America's national defense.

Seventy-five years ago, Congress established the National School Lunch Program "as a measure of national security, to safeguard the health and well-being of the Nation's children." Lawmakers created the program in response to testimony by military leaders detailing how impairments related to malnutrition had been the reason 40 percent of recruits were rejected from military service during World War II. In the years since passage, the NSLP has grown to provide access to free, reduced-priced, or subsidized, nutritious meals to 22 million American children.

Over the years, Congress has utilized the Child Nutrition Reauthorization (CNR) process and other means to build upon the NSLP to ensure children have access to vital nutrition, including through the creation of the Summer Food Service Program (SFSP), and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Despite providing critical nutrition for millions of children, these programs have not been adequately modernized to meet current needs. Malnutrition once again poses a grave threat to our national security in the form of a child obesity crisis that disqualifies one in three young Americans from military service.

We are heartened by strong interest from both parties in evaluating and addressing gaps in our patchwork of federal nutrition programs to ensure they are effectively meeting current program gaps and access challenges.

Earlier this year, the U.S. Senate Committee on Agriculture, Forestry, and Nutrition held a bipartisan hearing on options for a new CNR. In June, the House Civil Rights and Human Services Subcommittee held their own hearing on the topic. President Biden has a number of proposals that would strengthen children's access to fresh and nutritious food, ideas that are rooted in the long-standing bipartisan work in improving child nutrition.

It has been more than a decade since Congress last reauthorized key child nutrition programs; we urge you to build upon this bipartisan momentum and come together to make these programs more modern and effective. Mission: Readiness has released a Nutrition Policy Roadmap whitepaper detailing our priorities for any major child nutrition legislation, which we have enclosed with this letter. As our whitepaper details, many emergency flexibilities authorized by Congress and the U.S. Department of

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Agriculture to sustain nutrition programs during the pandemic provide pathways to more effectively distribute existing program resources.

Child obesity is the leading medical reason that 71 percent of young Americans cannot serve their Nation in uniform. Without meaningful action to address this growing national crisis, current trends pose an existential threat to the future of our Nation and our ability to sustain an all-volunteer force.

Federal nutrition programs alone cannot solve this growing public health and national security crisis, but they are a critical part of the equation. Congress must prioritize action to update and strengthen key nutrition programs created to improve our military readiness. Doing so is critical not only for our national security, but the success of all children, regardless of whether or not they choose to serve in uniform.

Very respectfully,

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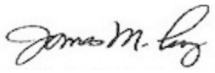

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November 1, 2021

Statement for the Record: "The State of Nutrition in America 2021"

The National Association of Nutrition and Aging Services Programs (NANASP) and our more than 1,000 members commend Chairman Booker for holding this hearing on the state of nutrition in America.

Our members' work primarily involves serving older adults who are participants in the Older Americans Act nutrition program, which is under the jurisdiction of the Department of Health and Human Services. As you are aware, the pandemic caused the most dramatic change in this program in its 49-year history. Whereas before the pandemic two-thirds of program participants were served in congregate settings, within the first few months of the pandemic, more than 95 percent were served in their homes. We hope for a continued swift and safe return to the congregate setting.

We join with you in seeing the need to examine the state of nutrition in America. Our focus is on federal older adult nutrition programs. Here, we see a mixed state. We have a successful Older Americans Act nutrition program which has been chronically underfunded, but in a bipartisan recognition of its value has also received approximately $1.6 billion in emergency funding from four pandemic relief bills to handle dramatically increased enrollment and costs. It will be important to maintain increased funding for this program with so many new older adults enrolled.

However, good nutrition for older Americans is still slowed by lack of coordination between federal nutrition programs serving older adults. They tend to be siloed which can lead to fragmentation and inconsistency of services.

As your work has demonstrated, we have been seeing rising rates of hunger, food insecurity and malnutrition among older adults even before the pandemic. The pandemic has only worsened the crisis. This too is more than a nutrition issue: it is a public health issue. Our national overarching goal should be to ensure access to good nutrition across the lifespan, especially for older adults who have been historically underserved or even denied service. Since nutrition and health are so interrelated, those who have been limited in their access to good nutrition are victims of another form of health disparity which we must address.

For example, we know that malnutrition links to chronic diseases, including type 2 diabetes, heart disease, high blood pressure and other conditions – and that the prevalence of these diseases is higher in older adults of color. Without the presence of malnutrition, could these conditions have been delayed or even prevented?

The priorities going forward must be to reach those most in need first. We must be more aggressive in our outreach work to make sure that all individuals eligible for federal nutrition programs are enrolled. This is especially true as it relates to the Supplemental Nutrition Assistance Program (SNAP). Participation rates by older adults, though improved over the last decade, still show that only 42 percent of eligible older adults are enrolled in SNAP.

Further, the state of nutrition would be greatly enhanced with a fundamental shift in food pricing. It is patently wrong that poor nutritious food is cheaper and easier to get than foods that are higher in needed nutrients. What message does that send?

We appreciate the opportunity to participate in this important hearing. We were also proud to lend our support to your bill, the White House Conference on Food, Nutrition, Hunger, and Health Act.

We look forward to working with you on this important issue and we hope you will see us as a resource on issues related to older adults and nutrition.

PhysiciansCommittee
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Statement for the Record

U.S. Senate Committee on Agriculture, Nutrition, and Forestry Subcommittee on Food and Nutrition, Specialty Crops, Organics, and Research

November 2, 2021

Submitted by: Neal Barnard, MD, FACC, President

On behalf of the Physicians Committee for Responsible Medicine, thank you for the opportunity to submit this statement for the record regarding the need to transition nutrition policies away from meat and dairy consumption and toward supporting plant-based diets. The Physicians Committee is a 501(c)(3) nonprofit organization focused on creating a healthier world through a new emphasis on plant-based diets. Our efforts are dramatically changing the way doctors treat chronic diseases such as diabetes, heart disease, obesity, and cancer. We request this statement be included in the record for the November 2 hearing of the Food and Nutrition, Specialty Crops, Organics, and Research Subcommittee entitled "The State of Nutrition in America 2021."

While obesity rates in the Unites States are on the rise,[1] especially among people of color,[2] nutrition policy in the United States still does not warn against the contribution of meat, dairy products, and fatty foods to obesity risk. Nor does it highlight the benefits of a plant-based diet with regard to obesity and chronic disease prevention.

In 2015, after 22 experts from 10 countries assessed more than 800 epidemiological studies, the World Health Organization's International Agency for Research on Cancer classified consumption of processed meat as "'carcinogenic to humans' (Group 1) on the basis of sufficient evidence for colorectal cancer."[3] Research shows that eating 50 grams of processed meat daily also increases the risk of breast cancer, prostate cancer, pancreatic cancer, and overall cancer mortality.[4]

Consumption of dairy also poses significant health risks. Many Americans, including some vegetarians, still consume substantial amounts of dairy products. Federal policies continue to promote and subsidize these products, despite scientific evidence that questions their health benefits. Milk and other dairy products increase the risk of breast,[5] ovarian,[6] and prostate cancers[7]; and offer little if any protection for bone health.[8] Dairy products also cause bloating, diarrhea, and gas in the tens of millions of Americans who have lactose intolerance, the natural progression of not breaking down sugar in milk. The National Institutes of Health estimates approximately 95% of Asians, 60% to 80% of African Americans, 80% to 100% of American Indians, and 50% to 80% of Hispanics cannot digest lactose.[9] Though once considered a disease, lactose intolerance is actually the norm for most humans; after infancy the majority of people not of European descent—about 70% of the world's population—become physically uncomfortable after consuming dairy products.

With the overwhelming evidence of meat and dairy's role in chronic disease, it is imperative Congress advance policies to not only reduce and eliminate the consumption of these foods but also to encourage the adoption of plant-based diets. A low-fat plant-based diet, rich in fruits, vegetables, whole grains, and legumes, is a great way to achieve good health. These foods are full of fiber, rich in vitamins and minerals, free of cholesterol, and low in calories and saturated fat. Eating a variety of these foods completely provides the protein, calcium, and other essential nutrients Americans need. Plant-based diets have been proven to prevent and reverse heart disease,[10] improve cholesterol,[11] and lower blood pressure.[12] Plant-based diets can also prevent, manage, and reverse type 2 diabetes.[13]

The Physicians Committee applauds this Subcommittee for holding this hearing on the state of nutrition in the United States. However, any discussion of federal nutrition policy must also include a frank and honest discussion about the foods linked to chronic disease and the benefits of a plant-based diet. As the Subcommittee continues its work on this important issue, our organization looks to be a resource. Please do not hesitate to reach out with any questions the Subcommittee may have.

Endnotes:

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QUESTIONS AND ANSWERS

NOVEMBER 2, 2021

Testimony
Responses to additional written questions for the record.
Submitted to The Committee on Agriculture, Nutrition, and Forestry, Subcommittee on Food and Nutrition, Specialty Crops, Organics, and Research, United States Senate

Hearing
"The State of Nutrition in America 2021"
Tuesday, November 2, 2021
216 Hart Senate Office Building

Statement of Dr. Dariush Mozaffarian
Dariush Mozaffarian, MD, DrPH
Dean and Jean Mayer Professor of Nutrition, Friedman School of Nutrition Science & Policy, Tufts University
Professor of Medicine, Tufts School of Medicine
Attending Physician, Division of Cardiology, Tufts Medical Center

Dear Chairman Booker, Ranking Member Braun, and distinguished Members of the Subcommittee:

Thank you for the opportunity to response to the additional written questions from Senators Boozman, Klobuchar, and Ernst. My responses are below.

This testimony reflects my expertise and experiences as a cardiologist, scientist, and public health expert. I am the Dean of the Friedman School of Nutrition Science & Policy at Tufts University; a Professor of Medicine at Tufts School of Medicine; and an Attending Physician in the Division of Cardiology at Tufts Medical Center. My career has focused on the science and practice of what we actually need to eat to keep our bodies healthy and to treat disease; and on which policy and systems changes are most effective and cost-effective to support nutrition security and health. As a doctor, I see firsthand people of all ages and backgrounds suffering from diet-related illnesses. As a public health scientist, I see the incredible challenges Americans face, every day, to obtain and eat nourishing food.

Questions from Senator John Boozman

1) We know that nationwide there are massive supply chain issues and historically high inflation that is plaguing businesses, families, and schools. In every part of the country, schools are struggling to get enough food, a variety of food, even the trays, utensils and products necessary to serve the food to students. Our school nutrition professionals are true heroes and are to be commended for their continual hard work during this difficult time.

I have been pleased that USDA has provided flexibility to schools to serve meals, and now it's even more clear how important the meal pattern flexibilities in particular have been. Yet, I am concerned too many people are not fully understanding the gravity of the situation and want USDA to force schools and food companies to comply with the next phase of rigid nutrition standards. Many food companies halted product reformulation efforts to deal with the pandemic so foods that meet such standards are not available.

How would a school even make this work when they can't get any food – let alone specific whole grain or low sodium foods? Would you agree that now is not the time to be pushing ahead with additional standards in this environment?

Senator Boozman, thank you for this excellent question. School meal providers should be commended for their incredible commitment and efforts during the pandemic.[1] We should all sing their praises, from the rooftops. They do not get enough credit for what they have done, and continue to do.

During the pandemic, several temporary waivers and flexibilities have been important to help school meal providers serve food to students. While major supply chain challenges persist, the USDA should be empowered to provide continued emergency, temporary waivers and flexibilities as necessary.

At the same time, one of the most important pieces of legislation passed by Congress in the last 15 years was the 2010 Healthy, Hunger-Free Kids Act (HHFKA), because of its significant strengthening of nutrition standards for school meals, competitive foods, and early childcare. The HHFKA, passed in a bipartisan fashion and supported by hundreds of top U.S. military leaders including generals and admirals, dramatically improved the nutritional quality of school meals for millions of American children.[2]

Prior to 2010, 55-60% of all school meals consumed by children were of poor nutritional quality. Following the passage of the HHFKA, the nutritional quality of school meals rapidly and markedly improved, so that by 2018, the proportion of school meals of poor nutritional quality was cut by more than half, from 56% to 24%. This improvement was directly related to the standards of the HHFKA, with more consumed whole grains, less sodium, and less sugar-sweetened beverages.

Two points deserve emphasis. First, because of the stronger nutrition standards in the HHFKA, by 2018, school meals were actually the healthiest overall source of food consumed by American children – better than the average food consumed from grocery stores, restaurants, or other sources.[2] Second, these nutritional improvements from school meals were similar by race/ethnicity, household income, and parental education – all segments of American children benefited.

Today, American children are suffering from an onslaught of diet-related illness. About 1 in 4 teens have overweight or obesity, 1 in 5 have prediabetes, and 1 in 4 have fatty liver.[3,4] These statistics are shocking and unacceptable, and will cause devastating health consequences and rising healthcare spending for our nation for years to come.

In 1970, healthcare spending represented about 1 in 20 dollars in the total federal budget. Today, healthcare spending represents nearly 1 in 3 dollars in the total federal budget. The U.S. Government Accountability Office (GAO) recently published a report on federal nutrition policy, based on an comprehensive 3-year audit.[5] The GAO concluded that diet-related diseases are costly, deadly, and largely preventable. The found that 80% of healthcare spending is on chronic diseases, many of which are strongly diet-related. Federal and private healthcare spending continues to rise, with no end in sight. We will never get these healthcare costs under control until we improve the health of our nation's children. And school meals are a critical component for success.

While the pandemic created challenges for school meal service, it also significantly worsened the health of American children. During the pandemic, the rate of unhealthy weight gain among U.S children dramatically increased: compared to pre-pandemic rates, the rate of increase in body mass index doubled overall, and among children who were also obese, increased by more than 5-fold.[6] Thus, the pandemic has greatly amplified, not diminished, the urgent need to improve nutrition for American children.

With Child Nutrition Reauthorization coming up, it's a crucial time to further strengthen school nutrition standards. A recent analysis found that the National School Lunch and Breakfast Program is a net positive economic investment, with an $18.7 billion annual cost returning $39.5 billion each year in improved health outcomes and poverty reduction – a net $21 billion return on investment (ROI).[7] A further strengthening of school meal nutrition standards – for example, more whole grains, fruits, beans, vegetables, and seafood, and less processed meat and added sugars – would create an estimated additional net ROI of at least $1.5 billion per year.[7]

In summary, we cannot afford *not* to further strengthen nutrition standards for school meals, and now is the time to do so. At the same time, the USDA should be empowered to provide emergency, temporary waivers and flexibilities as necessary during the pandemic.

2) I would appreciate hearing more on any evidence-based outcomes from the SNAP Nutrition Education program, the Expanded Food and Nutrition Education Program, and other efforts – including incentive programs - to help SNAP recipients and others buy, prepare and consume healthy foods. Between just SNAP-Ed and EFNEP, Congress spends around $600 million a year, and I know there are other efforts across the federal government. With the continual increases in obesity, diabetes and chronic-diseases, it begs the question of how these programs are helping consumers make healthy choices. Are there evidence-based outcomes to show that nutrition education and incentive programs actually lead to improved health outcomes?

Another excellent set of questions. I will start with incentive programs, then SNAP-Ed, and then EFNEP.

Nutrition incentives

There is strong evidence that economic incentive programs for better nutrition lead to improved diet quality and improved health outcomes. The Healthy Incentive Pilot in SNAP, for example, showed that a 30% incentive to purchase fruits and vegetables led to significant increases in fruit and vegetable consumption among SNAP participants.[8] Tufts faculty at the Friedman School of Nutrition Science & Policy are currently pooling data from 8 completed Produce Prescription programs, each providing financial incentives for healthier eating. Our ongoing evaluation demonstrates that these programs lead to significant improvements in fruit and vegetable consumption as well as health outcomes, including less obesity, lower blood pressure among those with high blood pressure, and lower HbA1c among those with diabetes. A meta-analysis of 13 Produce Prescription programs, which each provided economic incentives in healthcare settings to purchase healthier foods, showed a nearly 1 serving/day increase in fruit and vegetable consumption, a 0.6 kg/m2 reduction in BMI, and a nearly full percentage point improvement in HbA1c.[9] The Vitality health insurance program in South Africa, now extended in the U.S. though a partnership with John Hancock Life Insurance, has also demonstrated that incentive programs for healthier eating and lifestyle work, with improved health and lower healthcare costs.

While expanding incentive programs for purchase of healthier foods in SNAP will increase the overall cost of the program, research shows that in the long-term this is a cost-effective approach to improving health.[10] An alternative approach would combine incentives for purchasing healthier foods with disincentives (rather than absolute restrictions) for purchasing unhealthy foods. Research estimates that this strategy, which has been termed SNAP Plus, would be even more effective at improving health outcomes than incentives alone, and further would lead to immediate cost-savings in the SNAP program as well as reduced healthcare costs.[10] Thus, this combined "SNAP Plus" incentive/disincentive approach would preserve choice, improve nutrition, improve health, and reduce federal government expenditures. I urge Congress to work with USDA and the various states to pilot this and other similar behavioral economic programs in SNAP to improve nutrition and health.

Even more importantly, the healthcare system represents a critical and underutilized venue for incentivizing healthier eating. As outlined in my original written testimony, suboptimal nutrition is the leading cause of poor health in the U.S., and yet is largely ignored by the healthcare system. This is crazy – and fixable. As described above, Produce Prescription programs are a highly promising "Food as Medicine" intervention to cost-effectively improve nutrition and health outcomes. I urge Congress to ask HHS to evaluate and report on produce prescription programs within Medicare and Medicaid, whether directly in the programs or through CMMI. Similar assessments should be performed within the VA and Indian Health Service as well. I encourage you and other members of Congress to meet with the National Produce Prescription Collaborative (NPPC) (https://nationalproduceprescription.org/), of which Tufts is a member. The NPPC brings together organizations across the country experienced in leveraging Produce Prescription programs for prevention and intervention for diet-related disease through federal policy change and further embedding this effective model into healthcare and community food systems.

SNAP-Ed

The impact of SNAP-Ed on diet quality has been assessed in several studies. These generally suggest that Americans who participate in SNAP-Ed have modestly improved nutrition, such as higher intake of fruits and vegetables and less fast food, as well as greater physical activity.[11-13] However, the scale and designs of these

studies tend to be less rigorous than ideal to draw definitive conclusions. And, a review of multiple research studies and reports concluded that there is generally stronger evidence for SNAP-Ed as an effective means of improving food security than for its effects on improving nutrition security or dietary outcomes.[14] This review concluded that challenges for assessing SNAP-Ed include inconsistency in measurement tools and outcomes and a lack of strong study designs focused on nutrition or dietary outcomes. Clearly, more work is needed to assess the impact of SNAP-Ed on nutrition and health.

USDA has recognized some of these challenges. Recently, the USDA released the SNAP-Ed Evaluation Framework as a tool for SNAP-Ed implementing programs to use to measure their success. A recent national study found that of the 51 recommended indicators, SNAP-Ed implementors on average plan to target 19 indicators in their interventions and to assess 12 indicators in their evaluations. Also, more implementors intend to target and assess short- or medium-term indicators, rather with long-term indicators

One of the real missed opportunities in SNAP and SNAP-Ed has been a historical focus on food security, rather than nutrition security. Food security generally emphasizes, through its screening and measurement tools, the availability of sufficient calories; while nutrition security adds an additional core emphasis on diet quality – consistent access, availability, and affordability of foods and beverages that promote well-being and prevent (and if needed, treat) disease.[15] Secretary Tom Vilsack has been a powerful and effective champion for a shift to incorporate nutrition security across all USDA programs. This represents a major advance in USDA policy, which should be further encouraged, supported, and catalyzed.

Specific, actionable recommendations to better leverage SNAP for improved nutrition and health outcomes have been published by the Bipartisan Policy Center.[16] These include, for example, to (1) make nutrition and diet quality a core SNAP objective, including reporting on progress toward this objective, (2) authorize funds for USDA to conduct a range of evidence-based pilots to improve SNAP participants' diets, (3) strengthen SNAP retailer standards to increase healthier food availability for all shoppers, (4) create a robust SNAP-Ed infrastructure to support its implementation and evaluation, while realigning EFNEP and SNAP-Ed to work synergistically while avoiding duplication, (5) coordinate SNAP with Medicaid, Medicare, and VA health services to improve nutrition and diet-related health outcomes, (7) work across Congress' health and agriculture committees to better align SNAP, Medicaid, Medicare, and other federal programs, (8) prioritize nutrition within the Medicaid program, and (9) coordinate federal investments, programs, and data related to food and nutrition across all of the federal agencies.

EFNEP

Collectively, 76 land-grant universities conduct EFNEP to serve low-income adults and youth in rural and urban communities through Cooperative Extension. EFNEP is available in all 50 states, six U.S. territories, and the District of Columbia. In 2020, USDA NIFA received $69 million to conduct EFNEP, employing 1,322 educators who are members of the communities they serve (see the 2020 EFNEP Impact Report from NIFA for full details). In 2020, EFNEP educators worked with 59,853 adults and 204,525 youth, providing tailored lessons on diet quality, physical activity, food resource management, food safety, and food security. This included a shift to remote teaching methods in March of that year.

Evaluating diets among adults after vs. before participation, EFNEP participants increased their consumption of whole grains by 38%; vegetables, by 13%; fruits, by 29%; and dairy, by 6%. 4 in 5 adults also improved their physical activity practices after participation. EFNEP participants also report improved satisfaction with quality of life following participation.[17]

We know from a range of established science that increasing consumption of whole grains, vegetables, and fruits will improve health. A national modeling study also estimated that EFNEP appears most cost effective in its impact on nutrition practices, followed by food resource management practices, and then food safety practices;[18] with an estimated cost-effectiveness that is considered "high value" or a "best buy" compared to highly cost-effective medical interventions to improve health.[19]

A need for greater research

Despite some of the promising evidence above, to my knowledge, a direct evaluation of the impact of EFNEP and SNAP-Ed on health outcomes has not been reported. Such research would be critical to demonstrate the specific health benefits for different participants, as well as which components of the program are more vs. less effective. A large proportion of EFNEP participants will also be on SNAP, and large proportions of participants in each of these programs will also be on Medicaid and Medicare. Yet, the enrollment in, data on, and evaluations of these different federal programs are not coordinated or harmonized. Shouldn't we assess Medicaid, Medicare, and VA health outcomes and costs based on EFNEP and SNAP participation directly? It seems a no-brainer.

The need for greater federal investment in nutrition research to assess these and other important questions was highlighted in a recent white paper,[20] and further supported by the Federal Nutrition Advisory Coalition, a remarkable coalition of nearly 100 U.S. businesses, advocacy groups, and academic organizations.[21] This coalition recognizes that a strengthening of federal nutrition research will provide many benefits for our nation and a significant return on investment. Such research is crucial to lay the foundation for accelerated scientific advances to improve and sustain the health of all Americans, reduce health disparities, lower healthcare spending, strengthen our food system, improve military readiness, and advance innovations and stimulate economic growth. One recommendation from respected academic and former government leaders is to create a new National Institute of Nutrition at the NIH,[20] which can support foundational basic and translational research, such as that outlined by your question, and provide huge ROI for the U.S. economy.

A need for greater coordination

Beyond advancing research, there is an urgent need for greater harmonization and coordination across the multiple federal investments to address nutrition. This was a major conclusion of several recent reports, including the peer-reviewed white paper on *Strengthening national nutrition research: Rationale and options for a new coordinated federal research effort and authority*,[20] the Bipartisan Policy Center report on *Leading with Nutrition: Leveraging Federal Programs for Better Health*,[16] and the GAO report on *Chronic Health Conditions: Federal Strategy Needed to Coordinate Diet-Related Efforts*.[5] The GAO, for example, identified 200 different federal efforts, fragmented across 21 different agencies, aiming to improve nutrition. Several concrete, evidence-based strategies are outlined in these reports for improving harmonization and coordination of federal investments to improve nutrition, advance health, increase health equity, and reduce healthcare spending. These include the need for new structure, authority, and leadership for such coordination.

After Sept 11, Congress recognized the need for greater harmonization and coordination of our federal investments in national intelligence, leading to the creation of the highly successful Office of the Director of National Intelligence. Our federal investments in food and nutrition greatly exceed our federal investments in national intelligence, and are far more fragmented; and the health and economic burdens of poor nutrition for our nation greatly exceed the burdens of terrorism and conflict. In its recent report, the GAO recommended that Congress address this lack of coordination of federal nutrition policy to improve health, reduce diet-related chronic diseases, and reduce healthcare costs.[5] One recommended approach from respected academic and former government leaders is to create a new Office of the National Director of Food & Nutrition, based on the tested and successful model of the Office of the Director of National Intelligence.[20]

3) What do you think is the root cause of poor nutrition and what do you see as the number one strategy to address it?

I see the root cause as our intentional creation of a national and global food system, in the last century, to address 20th century goals of addressing mass starvation and vitamin insufficiency, which achieved these goals but unintentionally created a legacy food system that is now increasing overweight, obesity, diabetes, and other chronic nutrition-related diseases. The important corollary is that these are all relatively new problems, mostly

rising within the past 30-40 years, and accompanied by relatively new science that shows how to fix these problems, mostly within the past 20 years – and so our national attention and policies have not yet caught up.

In brief, we have a 20th century food system built to address 20th century priorities, but we face 21st century problems.

As outlined in my original written testimony as well as in the recent GAO report on federal nutrition policies,[5] poor nutrition, consequent diet-related diseases, and resulting preventable healthcare and other economic burdens are together perhaps the leading overall challenge to our federal budget and our country's overall well-being, resilience, and economic security. This is not small potatoes.

We can fix all this, within 1-2 decades, with a carefully considered, rationally designed, and prudently implemented national plan to improve nutrition and reduce diet-related illness. But only if we have a national strategy – an actual plan.

The science supports specific actions across 6 domains:

(1) Advancing nutrition science and research
(2) Incorporating Food as Medicine into healthcare
(3) Leveraging our federal nutrition programs
(4) Catalyzing business innovation and entrepreneurship
(5) Expanding nutrition education and public health
(6) Creating federal leadership, structure, and authority for food and nutrition policy coordination

The relevant actions in each of these domains are listed in my original written testimony. Each of these can and should be pursued now by appropriate congressional, agency, and private sector actions. At the same time, our nation can harmonize, streamline, and greatly accelerate this process by bringing all the stakeholders together for a 2022 White House Conference on Food, Nutrition, Hunger, and Health. It's been 52 years since the nation came together to address food, in the last 1969 Conference convened by President Nixon. A half century later, we face very different burdens, and incredible positive opportunities. It's time to address these burdens, and grasp these opportunities.

4) With increasing incidences of food allergies, especially in minority communities, it's important that federal feeding programs accommodate participants with allergies. But the WIC food package, for example, has limited options for those who might be allergic to eggs, milk, peanuts, and/or wheat. How can we address these concerns?

The CDC has found that, over the past 20 years, the percentage of children with any food allergy has more than doubled and, for peanut or tree nut allergy, tripled. A combination of underdiagnosis and rising food allergy makes public schools a common site of anaphylactic attacks, with 1 in 4 such attacks occurring in children with no previously known food allergies.[22]

Food Allergy Research & Education (FARE), a leading non-governmental organization engaged in food allergy advocacy and the largest private funder of food allergy research toward treatment and prevention, recommends that Competent Professional Authorities (CPA) assisting WIC families discuss food allergy management, prevention, and infant early introduction to reduce the risk of developing food allergy. In addition, similar education should be a tool for use by nutrition educators in SNAP, as not all SNAP eligible families may qualify for or enroll in the WIC program.

Early introduction is one crucial prevention strategy. In 2015, the Learning Early About Peanut Allergy (LEAP) trial showed that early introduction of peanut in infant diets reduced the risk of peanut allergy. This approach for early introduction of potentially allergenic foods is supported by the NIH National Institute of Allergy and Infectious Disease (NIAID), American Academy of Pediatrics, American Academy of Allergy, Asthma and

Immunology, American College of Allergy, Asthma and Immunology, and the 2020-2025 Dietary Guidelines for Americans (DGA). The DGA states, "Potentially allergenic foods (e.g., peanuts, egg, cow milk products, tree nuts, wheat, crustacean shellfish, fish, and soy [plus sesame given the FASTER Act requirements that adds sesame as the ninth food allergen required to be labeled] should be introduced when other complementary foods are introduced to an infant's diet. Introducing peanut-containing foods in the first year reduces the risk that an infant will develop a food allergy to peanuts …. There is no evidence that delaying introduction of allergenic foods, beyond when other complementary foods are introduced, helps to prevent food allergy."

Based on the DGAs, the WIC program should provide education to all participants on infant feeding that includes early introduction of food allergens to reduce the risk of food allergy. The WIC program should also include the early introduction of food allergens in the WIC food package for infants between 4 and 12 months.

Current WIC food packages do not provide sufficient substitutions for those with food allergy that also deliver target nutrients to achieve WIC's goals for nutrition. A 2017 report from the Food & Nutrition Board of the National Academy of Medicine recommends the need for substitutions for WIC participants with food allergy.

USDA's Food and Nutrition Service has noted plans to issue a proposed rule in 2022 to update WIC food packages. It's important that revised food packages include expanded substitution options for those with food allergy. A few examples: plant- or nut-based milk alternates for those with milk allergy; sunflower butter or other nut butters for those with peanut allergy; healthy whole grain corn, rice, and oat cereal options for those with wheat allergy; and additional substitution options for eggs beyond current WIC guidance.

The upcoming Child Nutrition Reauthorization Act (CNR) provides another opportunity to reduce the harmful impact of food allergies, by incorporating food allergy training for those providing meals to children through school meals, summer meals, and child and adult care food programs.

Questions from Senator Amy Klobuchar

1) In June 2020, I led a letter with Senator Sherrod Brown and a group of 20 Senators urging the Department of Agriculture to prioritize programs intended to minimize food deserts and support local and regional food development projects. I remain concerned about how a lack of access to healthy, affordable food is contributing to food insecurity and hurting low-income communities and leading to adverse health outcomes.

From your perspective, how do food deserts specifically contribute to adverse health outcomes and what can we do to minimize them while improving access to healthy, affordable food?

Senator Klobuchar, thank you for this important question.

Tufts University research has shown that the majority of Americans have poor quality diets, with highest rates among children, racial and ethnic minorities, and those with lower education and income. Thus, I would emphasize that insufficient access to nutritious food is a problem for the majority of Americans, as well as disproportionately harming low-income Americans.

Access can be defined and influenced in many ways, including based on dollar cost, time cost (e.g., the opportunity cost of shopping, prepping, and cooking meals), transportation barriers, and the physical built-food environment (the physical locations of grocery stores, corner stores, farmers markets, fast food and full service restaurants, etc.).

Among these different factors, the physical locations of stores have received a lot of public attention, including popularity of the "food deserts" concept. However, the evidence for major impacts of the built-food environment (the physical locations and types of food outlets) and food deserts on nutrition or health outcomes among Americans is surprisingly limited. We and others have reviewed this evidence systematically.[23] Even cross-sectional studies (a snapshot at one time point) do not consistently support strong linkages between the physical proximity or density of different types of food retail outlets/restaurants and residents' nutrition or health outcomes. And, even when some cross-sectional studies suggest an association, interpretation is strongly hampered by the challenge of directionality of effect: do residents of specific neighborhoods not purchase healthier foods because of lack of retail stores, or are retail stores less common in specific neighborhoods because the residents are less likely to purchase healthier foods? This is not a trivial question. Improving nutrition security for all Americans requires a clear understanding of the directionality of this effect, and the underlying reasons for it.

Prospective studies are a much stronger design for understanding the influence of the built-food environment on nutrition and health. In such studies, the changes over time in locations and types of stores, a person's residence, and nutrition and health outcomes are compared. In these studies, there is little evidence that changing the types of stores or restaurants around a person's residence has a meaningful influence on their nutrition or health outcomes. As one example, under the Obama administration, the Healthy Food Financing initiative invested more than $500 million through one-time financing assistance to bring grocery stores and other healthy food retailers to underserved urban and rural communities across America. Rigorous, independent evaluations of these efforts by the RAND Corporation and others showed that opening supermarkets in a 'food desert' resulted in little improvement in net availability of healthy foods, or improved nutrition among residents, challenging the underlying assumptions of such policies.[24]

The overall evidence suggests that other factors are larger barriers for low-income Americans accessing healthier foods, including food cost, food convenience (the opportunity cost of time spent shopping, prepping, and cooking meals), and knowledge. These barriers reduce demand for more nutritious food, which then results in less supply, creating a harmful vicious cycle of nutrition insecurity.

To increase access to healthier food, food cost and food convenience must be addressed. This will increase demand, and the market will respond to this increased demand by increasing food outlet locations in neighborhoods with increased demand.

It's time for specific actions to normalize the costs of healthier food. I use the term "normalize" because the true costs of food are not currently captured in food prices. A recent analysis by The Rockefeller Foundation[25] found that our nation spends about $1.1 trillion each year on food in direct dollar costs across the supply chain. And, in addition, each year our nation's economy *loses* another $1.1 trillion from health consequences of poor nutrition, specifically preventable healthcare spending and lost productivity due to chronic diseases caused by poor diet. This is not a winning proposition: for every $1 we spend on food, our economy loses another $1 from health consequences of poor nutrition.

A set of evidence-based actions can rapidly normalize the costs of healthier food and increase demand and purchasing power by low-income Americans.

First, we must leverage the power and investments in the healthcare system to support purchasing of healthier food for patients with diet-related conditions. Several evidence-based strategies can integrate preventive nutrition and healthy eating into Medicare, Medicaid, private insurance, DOD, VA, and IHS to improve health, reduce health disparities, and lower costs:

a. Incorporate and scale Produce Prescription programs in Medicaid, Medicare, VA, and IHS that provide healthy produce to patients with specific medical conditions, such as type 2 diabetes.
b. Incorporate and scale Medically Tailored Meals in these programs that provide prepared, nutritionally tailored meals to patients with severe, complex diseases and high healthcare utilization.
c. Ensure reimbursement for registered dieticians to see patients with common diet-related diseases.
d. Integrate Medicaid, Medicare, VA, and DOD healthcare goals, assessments, enrollments, and strategies with SNAP, WIC, and senior nutrition programs for individuals being served by both programs.
e. Ensure appropriate nutrition education for doctors and other clinical providers, for example by updating medical school, residency, and fellowship accreditation standards and physician and specialty licensing exams.

Second, we must leverage the power and investments in the federal nutrition programs to support purchasing of healthier food for low-income Americans. This includes:

a. Leverage technology and behavioral economics to pilot and scale innovative programs to improve nutrition security in SNAP. These should including "SNAP Plus" incentive/disincentive programs that combine incentives for purchasing healthier foods with disincentives (rather than absolute restrictions) for purchasing unhealthy foods. Research estimates that this strategy, which has been termed SNAP Plus, would be even more effective at improving health outcomes than incentives alone, and further would lead to immediate cost-savings in the SNAP program as well as reduced healthcare costs.[10]
b. Strengthen school meal and government office nutrition standards and procurement policies, including an emphasis on nutritious foods from local and regional food systems

Third, we must leverage and catalyze the power and innovation of the private sector, including farms, food manufacturers, retailers, and restaurants, to reward (and lower the cost of) healthier, more convenient foods. The recent Build Back Better legislation passed by the U.S. House provides a example of federal strategy for advancing business innovation in green energy and climate. A similar federal strategy needs to developed and passed to advance business innovation for food that is nourishing, equitable, and sustainable. This can include:

a. Coordinate agency policies with a new national strategy for tax policy and other incentives for R&D, marketing, and sales of healthier and more equitably accessible foods across food sectors.
b. Create a new Task Force to review and provide recommendations on how to create a national entrepreneurship ecosystem to sustain the U.S. as the 21st century leader for global innovation focused on a healthier, more equitable and sustainable food system.

c. Create opportunity zone incentives for food, nutrition, and wellness capital investments to improve health, reduce hunger, and reduce nutritional disparities.
d. Develop new federal grants and low-interest loans that support BIPOC food entrepreneurs, advancing economic empowerment and nourishment in minority communities.
e. Encourage and guide ESG (Environment, Social, and Governance) investment around food and nutrition to catalyze and quantify new metrics for food-sector companies.
f. Encourage and provide tax benefits for Benefits Corporations that value and integrate social and environmental priorities around nutrition, hunger, and health.
g. Develop new public-private partnerships to advance nutrition science and translation.

Fourth, we must leverage the power of consumer demand through smarter investments in nutrition education and public health. Evidence-based approaches can support opportunities to increase public knowledge and reduce consumer confusion and gain from shared community knowledge and learnings.

f. Coordinate dedicated funding for regular updates and dissemination of the Dietary Guidelines for Americans and the Dietary Reference Intakes with HHS, VA, DOD, and IHS healthcare goals and with SNAP, school meal, WIC, and elderly nutrition program goals.
g. Leverage FDA regulatory authority for consumer communication and education including health claims, front of package labeling, nutrition labeling, warning labels, and industry standards for additives like sodium and added sugar.
h. Greatly strengthen and expand CDC public health efforts around nutrition, physical activity, and obesity, integrated with HHS/CMS goals and national food and nutrition surveillance efforts.
i. As described above, ensure reimbursement for RDs for major diet-related conditions; and appropriate nutrition education for doctors and other clinical providers by means of updates to program accreditation standards and specialty licensing exams.
j. Integrate and leverage SNAP-Ed with healthcare system efforts and goals to reduce nutrition insecurity and diet-related chronic diseases.

Questions from Senator Joni Ernst

1) In your testimony, you mentioned the importance of increasing "accessibility, availability, and intake of fruits, vegetables, beans/legumes, whole grains, and nuts/seeds, especially from small and mid-sized US farms…" However, I'm concerned that I do not see you mention meat or dairy products.
a. Why have you not included meat and dairy?
b. Do you believe these nutrient-dense products should be part of a balanced, healthy diet?

Senator Ernst, I appreciate your thoughtful questions.

My testimony focused on the major food groups with strongest evidence for health impacts in the U.S. I and others have reviewed and reported on this evidence in depth.[26-29]

For example, among all U.S. deaths from heart disease, stroke, or diabetes (cardiometabolic deaths), suboptimal intake of just 10 dietary factors is estimated to cause about 45% of all these deaths, or about 320,000 deaths, each year.[29] This can be compared to ~385,000 U.S. deaths from COVID-19 in 2020. Among protective dietary factors, largest numbers of preventable diet-related cardiometabolic deaths are due to low nuts/seeds (~59,000 preventable deaths), low seafood (~55,000 preventable deaths), low vegetables (~53,000 preventable deaths), low fruits (~53,000 preventable deaths), and whole grains (~41,000 preventable deaths). Among harmful dietary factors, largest numbers of preventable diet-related cardiometabolic deaths are due to high sodium (~67,000 preventable deaths), high processed meats (~58,000 preventable deaths), and high sugar sweetened beverages (~52,000 preventable deaths).

Compared with the evidence for health harms of processed meats (meats preserved with sodium, nitrites, and/or other preservatives), unprocessed red meats appear to have relatively neutral health effects, with possible modest

harmful effects on type 2 diabetes (perhaps owing to harms of the heme iron content) and little to no effect on cardiovascular diseases or cancers. There is no meaningful evidence for benefits on health outcomes of unprocessed red meat consumption. Unprocessed red meats can provide some specific nutrients, such as iron, B12, and zinc, that can be more challenging to obtain from plant sources. So, for people who wish to consume red meat, I generally recommend no more than 1-2 servings per week of unprocessed meat, and to minimize processed meats. But, there is no need to increase accessibility, availability, or intake of red meat in Americans' diets.

Dairy is one of the most interesting, and understudied, food groups in science. Dairy products represent ~10% of calories in the United States. Yet, surprisingly, for such a major share of the food supply, their health effects remain remarkably uncertain, insufficiently studied, and controversial. Dietary guidelines on dairy remain largely based on theoretical considerations about isolated nutrients: for example, theorized benefits of calcium and vitamin D, and theorized harms of calories, total fat, and saturated fat, result in current recommendations to consume 3 daily servings of reduced-fat dairy. However, emerging research is studying the actual health effects of dairy consumption on outcomes, rather than theoretical effects.

For example, a systematic review and meta-analysis of 37 randomized controlled trials including 184,802 participants assessed the effects of dairy foods on body weight and body composition.[30] This study found that higher intake of dairy has no major overall effects on body weight. But, higher intake of dairy reduced body fat mass and increased body lean (largely muscle) mass. In addition, there is growing evidence that different dairy foods should not be grouped together, but rather that milk, cheese, yogurt, and butter are distinct foods, with distinct health effects, based on a complex, incompletely understood interplay of various nutrients and processing characteristics (e.g., probiotics, fermentation, milk fat globule membrane, and more).[31,32] Thus, we should be doing research on, and making dietary recommendations on, milk, cheese, yogurt, and butter separately.

Another separate relevant question is on the fat content of dairy. While reduced-fat dairy is recommended in current U.S. dietary guidelines, growing evidence suggests that higher intake of dairy fat may lower the risk of type 2 diabetes.[33] This science calls into question the soundness of conventional dietary recommendations to avoid dairy fat.[34] Dairy fat contains a complex mix of different saturated fats, other unsaturated and conjugated fatty acids, and other constituents, each with varying biological effects. Physiologic effects of dairy fat further vary according to content of milk fat globule membrane, which alters dietary cholesterol absorption and perhaps skeletal muscle responses to exercise.[35,36] Also, cheese, the major source of dairy fat in most diets, is a fermented food and a rich source of bacteria-derived menaquinones (vitamin K2) which may improve insulin secretion and sensitivity through osteocalcin-related pathways.[31] Food rich in dairy fat may be especially beneficial as a replacement for foods rich in other animal fats or refined carbohydrates.[37] Thus, there is currently insufficient scientific evidence to make any strong recommendations for whole-fat vs. reduced-fat dairy.

For major health outcomes, the current (and still not firmly established) evidence suggests that yogurt reduces weight gain and risk of diabetes (and is consumed at too low levels in the U.S.), that fermented dairy including cheese may reduce risk of type 2 diabetes and cardiovascular disease, and that overall dairy consumption increases lean body mass and reduces body fat. Dairy consumption also increases bone mineral density in post-menopausal women,[38] while yogurt and milk consumption in the U.S. are also associated with lower risk of hip fracture.[39] Based on this evidence, I recommend 2-3 daily servings of dairy, including unsweetened yogurt and cheese, for general health.

But, I would like to emphasize that, as a physician and scientist who has been studying foods, nutrition, and health for my entire career, I cannot tell you definitively what are the health effects of different dairy foods, because of insufficient federal investment in the science. This should shock you, your Senate colleagues, and all Americans. We can literally send a man or woman to the moon, but we do not have enough science to say whether cheese is good or bad for you. This is one reason why respected academic leaders and former government leaders have said it is time for Congress to create a new National Institute of Nutrition at the NIH,[20] to support critical foundational, basic, and translational research, such as that outlined by your question. A new

National Institute of Nutrition will also provide a huge return on investment for the U.S. economy. I would draw your attention to the Federal Nutrition Advisory Coalition, a remarkable coalition of nearly 100 U.S. businesses, advocacy groups, and academic organizations,[21] who is calling for a strengthening of federal nutrition research to provide many benefits for our nation and a significant return on investment. Such research is crucial to lay the foundation for accelerated scientific advances to improve and sustain the health of all Americans, reduce health disparities, lower healthcare spending, strengthen our food system, improve military readiness, and advance innovations and stimulate economic growth.

2) To quote Retired U.S. Army Lieutenant General Mark Hertling, "Over the last decade, we have experienced increasing difficulty in recruiting soldiers due to the decline in the health of our nation's youth. Unless we see significant change in physical activity and nutrition in America our national security will be affected." As a combat veteran and former commander, I wholeheartedly agree and just last week, over 300 retired military leaders wrote a letter sounding the alarm on the state of childhood nutrition in this country. The National School Lunch Program was started after many recruits were rejected for WWII due to malnutrition. A strong military demands the importance of good diet and physical activity be instilled at a young age.
a. What can we do to increase physical activity in schools?

Many controlled trials show that physical activity alone is insufficient to address obesity. And, the simple addition of physical education in schools is also insufficient to reduce overweight or obesity among children.

The problem – the elephant in the room – is the food that American kids eat. We will not address overweight, obesity, or other diet-related illness in U.S. children until we improve nutrition. Today, American children are suffering from an onslaught of diet-related illness. About 1 in 4 teens have overweight or obesity, 1 in 5 have prediabetes, and 1 in 4 have fatty liver.[3,4] These statistics are shocking and unacceptable, and not only reduce national security but will cause devastating health consequences and rising healthcare spending for our nation for years to come.

In brief, we are living with a food system created for 20th century goals (preventing mass starvation, providing vitamins), but with 21st century problems.

As outlined in my original written testimony as well as in the recent GAO report on federal nutrition policies,[5] poor nutrition, consequent diet-related diseases, and resulting preventable healthcare and other economic burdens are together perhaps the leading overall challenge to our federal budget and our country's overall well-being, resilience, and economic security. This is not small potatoes.

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The relevant actions in each of these domains are listed in my original written testimony. Each of these can and should be pursued now by appropriate congressional, agency, and private sector actions. At the same time, our nation can harmonize, streamline, and greatly accelerate this process by bringing all the stakeholders together for a 2022 White House Conference on Food, Nutrition, Hunger, and Health. It's been 52 years since the nation came together to address food, in the last 1969 Conference convened by President Nixon. A half century later,

we face very different burdens, and incredible positive opportunities. It's time to address these burdens, and grasp these opportunities.

3) Along these lines, we know the nutritional benefits of protein and yet it's not a requirement that meat be served in the School Breakfast Program. New science is telling us that full fat dairy is actually better for people, too, keeping them fuller for longer and providing them with a great source of protein.
a. Shouldn't protein be prioritized to start a child's day?

There is actually very little evidence that American need more protein, or that there are health benefits to higher protein consumption. Higher intake of protein, especially protein from animal foods, is actually linked to higher risk of type 2 diabetes.[40] This is likely because excess dietary protein, like excess starch and sugar, is quickly converted to fat by the liver, as demonstrated in a recent controlled trial.[41] In short, American are not protein deficient, and we do not need to be encouraging more protein in the diet.

It's also relevant to highlight the outdated and nonsensical way that dietary guidelines continue to group completely different foods – like unprocessed red meats, processed meats, poultry, eggs, milk, cheese, beans, soy, and more – into one category as "protein" foods. This is left over from the 1940s and 1950s, when we were worried about protein deficiency. We should be providing dietary guidance, with supportive government policies, for different foods based on the actual health effects of each food, not based on some theoretical construct organized around a single nutrient. We have learned this lesson for most of the Dietary Guidelines for Americans, which are mostly now based on foods. But, we still have one crazy corner of the USDA plate that is reserved for "protein." Let's drop this and recommend specific foods, based on their health effects.

I agree with you on the lack of convincing science to recommend reduced-fat dairy products. The evidence for this is outlined in my response to your first question. I believe the scientific evidence supports adding back whole-fat plain milk to the school lunch program (and dropping sugar sweetened milk, whatever its fat content, or at least greatly reducing the sugar content).

4) If the legislation were to pass or the White House decided to go ahead and hold a Conference on Food, Nutrition and Health, I am sure many of you might be consulted or have input into how the conference will be structured and who will have a seat at the table.
a. Will all of you commit to us that you would support representation of all the various agriculture stakeholders being at the table and fully engaged in this process?

As described in my oral testimony and original written testimony, it's high time for a second White House Conference. This Conference can be instrumental to create smart food and nutrition policies to improve and sustain the health of all Americans, reduce health disparities, lower healthcare spending, strengthen local and regional food systems, improve military readiness, advance innovation, create new small businesses and jobs, and stimulate economic growth including for farmers. To be successful, it will require a thoughtful and inclusive process, leading up to and following the conference, that brings together all the agencies, both houses of Congress, and a diversity of external stakeholders. I agree with you that various agriculture stakeholders should be included at the table and fully engaged in this process. Success will also require real commitment from the President, Cabinet, and both parties in the Senate and the House to implement the recommendations arising from the conference. I urge you to work with all your colleagues to ensure this happens, for the good of our nation and the American people.

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Senate Committee on Agriculture, Nutrition, and Forestry
Subcommittee on Food and Nutrition, Specialty Crops, Organics, and Research
The State of Nutrition in America 2021
November 2, 2021
Questions for the record
Dr. Angela Odoms-Young

Senator John Boozman

Question 1:
We know that nationwide there are massive supply chain issues and historically high inflation that is plaguing businesses, families, and schools. In every part of the country, schools are struggling to get enough food, a variety of food, even the trays, utensils and products necessary to serve the food to students. Our school nutrition professionals are true heroes and are to be commended for their continual hard work during this difficult time.

I have been pleased that USDA has provided flexibility to schools to serve meals, and now it's even more clear how important the meal pattern flexibilities in particular have been. Yet, I am concerned too many people are not fully understanding the gravity of the situation and want USDA to force schools and food companies to comply with the next phase of rigid nutrition standards. Many food companies halted product reformulation efforts to deal with the pandemic so foods that meet such standards are not available.

How would a school even make this work when they can't get any food – let alone specific whole grain or low sodium foods? Would you agree that now is not the time to be pushing ahead with additional standards in this environment?

Response:
Thank you so much Senator Boozman for your thoughtful questions. As noted, supply chain disruptions have had critical implications for school meal programs nationwide. A survey conducted by the School Nutrition Association May – June 2021 reported that nearly 97% of school meal program directors were concerned about the financial, operational, and participation challenges associated with continued supply chain disruptions resulting from the COVID-19 pandemic[1]

[1] School Nutrition Association Back to School 2021 Report A SUMMARY OF SURVEY RESULTS (https://schoolnutrition.org/uploadedFiles/News_and_Publications/Press_Releases/Press_Releases/Back-to-School-Report-2021.pdf.)
[2] https://coronavirus.jhu.edu/
[3]James PT, Ali Z, Armitage AE, Bonell A, Cerami C, Drakesmith H, Jobe M, Jones KS, Liew Z, Moore SE, Morales-Berstein F, Nabwera HM, Nadjm B, Pasricha SR, Scheelbeek P, Silver MJ, Teh MR, Prentice AM. The Role of

However, during this same time period, COVID-19 had devastating social, economic, and health impacts on the lives of many Americans, resulting in over 700,000 deaths.[1] Current science has emphasized the grave importance of nutritional status and dietary patterns (including overnutrition and micronutrient deficiencies/undernutrition) for susceptibility to COVID-19 infection, progression to symptoms, likelihood of severe disease, and survival.[3,4] Moreover, a Centers for Disease Control and Prevention (CDC) study published in September 2021 showed that children and teens gained weight at an alarming rate during the pandemic emphasizing the need for population supports for healthy eating.[5]

As a result, consistent with the School Nutrition Association (SNA), based on supply change disruptions, I agree with the recommendation that the USDA delay Target 2 sodium mandates until July 2024. However, given the significant impact of sodium consumption on child/adult health and health care costs,[6,7] I do not agree with SNA's recommendation that we should eliminate Final Target sodium limits. Additionally, low intake of fiber and whole grains contribute to increase in cardiometabolic and cancer risk.[7] Given that heart disease and cancer are leading cause of death in the United States, promoting whole grain consumption in school meals can help promote healthy habits and lower the risk for poor health as children move into

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Nutrition in COVID-19 Susceptibility and Severity of Disease: A Systematic Review. J Nutr. 2021 Jul 1;151(7):1854-1878.

[4]Belanger, M. J., Hill, M. A., Angelidi, A. M., Dalamaga, M., Sowers, J. R., & Mantzoros, C. S. (2020). Covid-19 and disparities in nutrition and obesity. New England Journal of Medicine, 383(11), e69.

[5]Lange SJ, Kompaniyets L, Freedman DS, et al. Longitudinal Trends in Body Mass Index Before and During the COVID-19 Pandemic Among Persons Aged 2–19 Years — United States, 2018–2020. MMWR Morb Mortal Wkly Rep 2021;70:1278–1283.

[6]Yang, Q., Zhang, Z., Kuklina, E.V., Fang, J., Ayala, C., Hong, Y., Loustalot, F., Dai, S., Gunn, J.P., Tian, N. and Cogswell, M.E., 2012. Sodium intake and blood pressure among US children and adolescents. Pediatrics, 130(4), pp.611-619.

[7]Hardy ST, Urbina EM. Blood Pressure in Childhood and Adolescence. Am J Hypertens. 2021 Apr 2;34(3):242-249.

[8] Caleigh M Sawicki, Paul F Jacques, Alice H Lichtenstein, Gail T Rogers, Jiantao Ma, Edward Saltzman, Nicola M McKeown, Whole- and Refined-Grain Consumption and Longitudinal Changes in Cardiometabolic Risk Factors in the Framingham Offspring Cohort, The Journal of Nutrition, Volume 151, Issue 9, September 2021, Pages 2790–2799.

[9] Cohen, J.F., Richardson, S., Roberto, C.A. and Rimm, E.B., 2021. Availability of Lower-Sodium School Lunches and the Association with Selection and Consumption among Elementary and Middle School Students. Journal of the Academy of Nutrition and Dietetics, 121(1), pp.105-111.

[10]Kenney E., Barrett J, Bleich S, Ward Z, Cradock A, Gortmaker S. "Impact Of The Healthy, Hunger-Free Kids Act On Obesity Trends: Study examines impact of the Healthy, Hunger-Free Kids Act of 2010 on childhood obesity trends." *Health Affairs* 39, no. 7 (2020): 1122-1129.

[11]Institute for Agriculture and Trade Policy. Using Regionally Grown Grains and Pulses in School Meals Best Practices, Supply Chain Analysis and Case Studies https://www.ag.ndsu.edu/localfood/pulse-crops/documents/2015_02_02_GrainsAndPulses_EMVschoolfoodservicereport.pdf

[12]CSPI. School Meals Corporate Report Card 2021 https://cspinet.org/sites/default/files/attachment/2021_SchoolMealsCorporateReportCard_online_1.pdf

adulthood. As a result, additional technical assistance and financial supports should be provided to schools to help them meet the whole grain requirement. The National School Lunch Program was established as "a measure of national security, to safeguard the health and well-being of the Nation's children and to encourage the domestic consumption of nutritious agricultural commodities." Previous studies show that the nutrition standards implemented as part of the Healthy, Hunger-Free Kids Act had a positive impact on the nutritional quality of school meals.[10] The White House convening is an excellent opportunity to bring together industry/manufacturing, agriculture, government, health/nutrition practitioners, and academia to identify solutions to supply chain and labor challenges using the latest technology and innovation.[11]

As discussed in a personal communication with Juliana Cohen, PhD, Assistant Professor of nutrition at the Harvard T.H. Chan School of Public Health, "at the moment, the challenges faced by food service directors does not appear to be specific to whole grains or sodium. Additionally, prior to the pandemic, our research found that over half of school meals were already in alignment with the Target 2 sodium standards and 1/3 were in alignment with Target 3 sodium standards (and with simple switches, even more would be in alignment).[12] This suggests that we don't need to heavily rely on product reformulation for schools to be successful. While flexibilities have been really important this year, thinking ahead, strong nutrition standards will be more important than ever given the toll that COVID has had on children's health."

In addition, a recent report from the Center for Science in the Public Interest found that the majority of K-12 school food products sold by the largest foodservice companies meet key federal nutrition standards and could meet new goals that further support children's health. The 2021 School Meals Corporate Report Card analyzed nearly 2,000 K-12 products offered by 28 major foodservice companies to see if they met existing whole grain-rich (made with at least 51 percent whole grains) and sodium requirements. The report found that all companies had over 75 percent compliance with the U.S. Department of Agriculture's (USDA) whole grain-rich requirements for the majority of grain food groups. Companies were either close to or at 100 percent compliance for USDA's current sodium targets for lunch, the main source of sodium in school meals.

Question 2. I would appreciate hearing more on any evidence-based outcomes from the SNAP Nutrition Education program, the Expanded Food and Nutrition Education Program, and other efforts – including incentive programs - to help SNAP recipients and others buy, prepare and consume healthy foods. Between just SNAP-Ed and EFNEP, Congress spends around $600 million a year, and I know there are other efforts across the federal government. With the continual increases in obesity, diabetes and chronic-diseases, it begs the question of how these programs are helping consumers make healthy choices. Are there evidence-based outcomes to show that nutrition education and incentive programs actually lead to improved health outcomes?

Response:

There is extensive evidence that SNAP-Ed and EFNEP has an impact on the individuals' who participate in the services offered. Moreover, since the funding is a direct investment into states, SNAP-Ed and EFNEP strengthens the community-based infrastructure and workforce by funding organizations/agencies (also known as SNAP-Ed implementing agencies) and Cooperative Extension that specifically targets nutrition programs toward low-income families and communities.

USDA maintains data on EFNEP's reach and impact. Since 1969, EFNEP has reached more than 33 million low-income families and youth (USDA, 2021). Annual evaluation data has consistently shown that EFNEP graduates improve their diets, improve their nutrition practices, stretch their food dollars farther, handle food more safely, and increase their physical activity levels.

As indicated in the most recent EFNEP impact report (February 2021)[1]

- In 2020, EFNEP employed 1,322 educators who are members of the communities who In turn, worked directly with nearly 60,000 adults and 204,525 youth."
- Additionally last year, 93% of adults served by EFNEP reported improvements in dietary intake including consuming additional fruits and vegetables, 81% improved food resource management practices (such as label reading), and 80% demonstrated improvements in food safety practices (see http://openpublishing.psu.edu/efnep/biblio for additional references).
- Some studies also suggest that EFNEP participants maintain these changes years after completing classes[2]

Additionally, for more than a decade, research has been conducted on the cost benefit and cost effectiveness of EFNEP in achieving its stated objectives.[3]

- Rajgopal and colleagues (2002) were one of the first to conduct a cost benefit analysis of EFNEP for Virginia in 1996. They found that $1.00 spent on the adult EFNEP program produced a benefit equivalent to $10.96.
- Subsequently, other states conducted similar analyses and found $1.00 spent on the program produced a health expenditure savings (benefit) equivalent to $8.34 in California, $12.50 in Iowa, $3.62 in Oregon, and $9.58 in New York (Joy, Pradhan and Goldman, 2006; Dollahite, Kenkel, and Thompson, 2008; Wessman and Jensen, 2002; and Schuster et al., 2003).

The Supplemental Nutrition Assistance Program Education (SNAP-ED) is charged with improving the likelihood that people with incomes at or below 185% of the federal poverty level, especially those residing in communities with a significant low-income population, will make

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[1] https://nifa.usda.gov/resource/efnep-2020-national-reports

[2]Wardlaw, MK and Baker, S. 2012. Long-term evaluation of EFNEP and SNAP-Ed. Forum for Family and Consumer Sciences 17(2).

[3] Baral, R., G. C. Davis, E. Serrano, W. You, and S. Blake. 2013. "What Have We Learned about the Cost and Effectiveness of the Expanded Food and Nutrition Education Program?". Choices. Quarter 4. Available online: http://choicesmagazine.org/choices-magazine/submitted-articles/what-have-we-learned-about-the-cost-and-effectiveness-of-the-expanded-food-and-nutrition-education-program

healthy food choices within a limited budget and choose physically active lifestyles consistent with the Dietary Guidelines for Americans. This includes about 25% of the US population (approximately 80 million people).[1]

The SNAP state agencies in all 50 states, the District of Columbia, Guam, and the US Virgin Islands, participate in SNAP-Ed by contracting with 136 SNAP-Ed state implementing agencies (SIAs) to conduct health promotion programming. Many SNAP-Ed state implementing agencies subcontract with different types of public, nonprofit, and business organizations to provide direct services such as food pantries, community centers, and supermarkets. This results in significant investments in rural, urban, and suburban communities.

To expand its reach and increase the programs' impact, SNAP-Ed was transformed into a formula funded nutrition/education and obesity prevention grants program requiring SIAs to use evidence-based strategies and interventions. Program implementers were also encouraged to utilize a more "balanced" intervention approach with program partners and eligible participants, including:[2]

- Individual or group-based direct nutrition education, health promotion, and intervention strategies.
- Comprehensive, multi-level interventions at multiple complementary organizational and institutional levels; and
- Community and public health approaches to improve nutrition – with increased emphasis of policies, systems, and environmental change to make the healthy choice the easy choice.

In 2018, nationwide, SNAP-Ed Implementing Agencies reported conducting activities in more than 60,000 low-resource community locations and reached 3.8 million people through direct education. SNAP-Ed is second only to WIC in its funding for nutrition education. Although, impact reports have been developed at the state level (*for example https://snaped.fns.usda.gov/library/materials/arkansas-snap-ed-state-impact-reports*),[3,4] the breath and diversity of the educational and PSE approaches used has been a challenge to assessing the full impact of SNAP-Ed nationally. However, the recent development and adaptation of the SNAP-Ed evaluation framework, adoption of the PEARS reporting data system, and the requirement for reporting specific outcome indicator will make it easier to assess the overall impact of the SNAP-Ed program.[5]

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[1] Rivera, Rebecca L., Melissa K. Maulding, and Heather A. Eicher-Miller. "Effect of Supplemental Nutrition Assistance Program–Education (SNAP-Ed) on food security and dietary outcomes." Nutrition reviews 77, no. 12 (2019): 903-921.

[2] https://snaped.fns.usda.gov/sites/default/files/documents/FY%202022%20SNAP-Ed%20Plan%20Guidance.pdf

[3] https://community-nutrition-education.extension.org/category/state-impact-reports/

[4] https://community-nutrition-education.extension.org/wp-content/uploads/2020/09/MPR-Impact-Report_Print-Ready.pdf

[5] Puma, Jini E., Max Young, Susan Foerster, Kimberly Keller, Pamela Bruno, Karen Franck, and Andy Naja-Riese. "The SNAP-Ed Evaluation Framework: Nationwide Uptake and Implications for Nutrition Education Practice, Policy, and Research." Journal of Nutrition Education and Behavior 53, no. 4 (2021): 336-342.

A few reports highlighting the effectiveness of SNAP Ed have been published since 2012 including SNAP Education Evaluation Reports Wave 1 & Wave 2.[1,2]

- SNAP-Ed Evaluation Report Wave 1 evaluated four interventions. Three interventions aimed to increase fruit and vegetable consumption in preschoolers or elementary age children and one a Web-based About Eating program, which focused on increasing eating competency of low-income women. Findings from the process evaluation showed that, the projects were generally implemented as planned. Both intervention site staff and parents of child participants were enthusiastic in their support of, and satisfaction with the programs. Key challenges consisted of limited parent participation and only child exposure in some of the child-focused programs and a high attrition rate and limited exposure time for the About Eating program (2012).
- The findings from SNAP-Ed Evaluation Report Wave 2 were mixed but overall positive. Study finding further demonstrated that multicomponent interventions provide opportunities for the greatest reach and exposure (2013).
- A recent review of the SNAP-Ed literature found that there was stronger evidence for SNAP-Ed as an effective means of improving food security (n=4 reports) than for its effects on nutrition or dietary outcomes (n=10 reports). For example, a randomized, controlled, parallel study was conducted with SNAP-Ed eligible low-income adults in Indiana aged ≥18 living in a household with children over the age of 1 year. Participants received 4 lessons over 4 to 10 weeks. SNAP-Ed improved food security over a longitudinal time frame of households participating in the study.[3] The authors of the review concluded that inconsistencies in measurement tools and outcomes and a lack of strong study designs made it difficult to evaluate the effectiveness of SNAP-Ed at improving nutrition and diet (Rivera et al., 2019).[4]
- A report published in November 2020 presented findings from an evaluation conducted of Land Grant University SNAP-Ed Programs.[5]
    - Program staff reported that over 6,000 PSE changes focused on nutrition were implemented across 2,400 sites, with an estimated reach of nearly three million people. A further 1,700 PSE changes related to physical activity were reported.
    - Direct education activities show consistent improvement in 30 to 50 percent of participants in outcomes across the four domains, including items like decreased consumption of sugar-sweetened beverages (45 percent improvement out of 60,000 youth participants), shopping with a list (42 percent improvement out of

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[1] https://snaped.fns.usda.gov/library/materials/supplemental-nutrition-assistance-program-education-and-evaluation-study-wave-ii

[2] https://www.fns.usda.gov/snap/snap-education-and-evaluation-study-wave-i-final-report

[3] Rivera, Rebecca L., Melissa K. Maulding, Angela R. Abbott, Bruce A. Craig, and Heather A. Eicher-Miller. "SNAP-Ed (Supplemental Nutrition Assistance Program–Education) increases long-term food security among Indiana households with children in a randomized controlled study." The Journal of nutrition 146, no. 11 (2016): 2375-2382.

[4] Rivera, Rebecca L., Melissa K. Maulding, and Heather A. Eicher-Miller. "Effect of Supplemental Nutrition Assistance Program–Education (SNAP-Ed) on food security and dietary outcomes." Nutrition reviews 77, no. 12 (2019): 903-921.

[5] https://nifa.usda.gov/sites/default/files/resource/LGU-SNAP-Ed-FY2019-Impacts-Report-12-16-2020_508.pdf

20,000 adult participants), and increased physical activity and leisure sport (36 percent improvement out of 54,000 youth participants).

However, despite the significant investment, evidence suggests more efforts are needed to create environments and policies that support families (particularly low-income families) in making the healthier choice the easy choice. Research shows that SNAP-Ed and EFNEP participants face multiple challenges to healthy eating including inadequate income and limited access to high quality and affordable healthy food. Despite efforts to manage food resources, many report struggling to afford adequate diets.[1] Consistent with participants' reports, a recent observational study in California found that fruits and vegetables in low-income SNAP-Ed eligible neighborhoods were more expensive than county average prices. [2]Furthermore, the study found produce in convenience stores in these neighborhoods, when available, to be of poor quality and high cost.

Several initiatives providing financial incentives to support fruit/vegetable consumption including FINI/GusNIP have shown very promising results (personal communication with Amy Yaroch, Director of the Nutrition Incentive Program Training, Technical Assistance, Evaluation and Information Center (NTAE).[3] Additionally, a rigorous research design of the initial Health Incentive Pilot (HIP), showed that HIP participants consumed almost a quarter of a cup (26 percent) more targeted fruits and vegetables per day than did nonparticipants. This study used an experimental study design which provides the strongest evidence of causal impact (https://www.fns.usda.gov/snap/hip).

In summary:

- Evidence evaluating EFNEP has shown that adults and youth that participate in the program have improve diets and nutrition related practices.
- Evidence evaluating SNAP-Ed has shown broad reach, some state specific impacts on dietary behaviors, and strong overall impact on food insecurity. However, more efforts are needed to evaluate the program's national impact.
- Although SNAP-Ed and EFNEP program staff have effectively partnered with communities to deliver programs and create policy, system, and environmental changes, keep in mind that compared to WIC for example, participation in SNAP-ED and EFNEP is voluntary and not required which could potentially reduce the national impact and reach.
- Additionally, EFNEP and SNAP-ED only targets low-income families, there is no national direct nutrition education and health promotion program that targets all Americans. Evidence suggests that combining population-based and targeted nutrition intervention

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[1]Gosliner, W., & Shah, H. (2020). Participant voices: Examining issue, program and policy priorities of SNAP-Ed eligible adults in California. Renewable Agriculture and Food Systems, 35(4), 407-415. doi:10.1017/S1742170519000243

[2] Gosliner, W, Brown, DM, Sun, BC and Woodward-Lopez, G (2018) Availability, quality and price of produce in low-income neighbourhood food stores in California raise equity issues. Public Health Nutrition 21, 1639–1648

[3] Nutrition Incentive Hub. https://www.nutritionincentivehub.org/

strategies could be effective at reducing chronic disease risk and outcomes at the national level.

- Multi-level interventions have been found to be the most effective, where individuals and families receive education, financial incentives, and other supports (such as living wage employment); institutions (such as food pantries, schools, faith-based institutions) provide healthy food options that are culturally appropriate and consistent with participants food preferences, lifestyles and experiences; and support is provide for local growers/businesses and neighborhood retailers to increase healthy food access and availability.

Question 3. What do you think is the root cause of poor nutrition and what do you see as the number one strategy to address it?

Although traditionally researchers and practitioners focused on the individual factors (such as nutrition knowledge) that influence dietary behaviors, evidence generated over the last three decades have shown that people's diets are strongly influenced by the social and structural determinants of health including the places where they live and work and the social conditions in which they are born and age. There conditions are influenced by governing processes and economic/social policies that affect income, working conditions, housing, and education, among others.[1]

As defined by Healthy People 2030, "social determinants of health (SDOH) are the conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks." [2] Systemic inequities and socioeconomic factors contribute to higher rates of obesity among certain populations including rural, African American, Latinx/Hispanic, and American Indian populations and people with disabilities.[3]

Consequently, research suggests that the number one strategy to address poor nutrition in the United States is creating a comprehensive, coordinated food and nutrition system and work with other sectors to create lifestyles and living conditions that support healthier behaviors among families including more household resources to purchase healthy foods; provide the home and neighborhood environments that are needed for food preparation such as homes with a working kitchens, refrigeration and adequate access to clean water; neighborhoods with healthy food retail including restaurants, stores, and farmers markets and schools with healthy meals; community resources that create less stress, better mental

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[1] Cockerham, William C et al. "The Social Determinants of Chronic Disease." American journal of preventive medicine vol. 52,1S1 (2017): S5-S12. doi:10.1016/j.amepre.2016.09.010

[2] https://health.gov/healthypeople/objectives-and-data/social-determinants-health

[3] Gómez, Cynthia A. PhD; Kleinman, Dushanka V. DDS, MScD; Pronk, Nico PhD, MA, FASCM, FAWHP; Wrenn Gordon, Glenda L. MD, MSHP, FAPA; Ochiai, Emmeline MPH; Blakey, Carter BS; Johnson, Ayanna MSPH; Brewer, Karen H. MPH Addressing Health Equity and Social Determinants of Health Through Healthy People 2030, Journal of Public Health Management and Practice: November/December 2021 - Volume 27 - Issue - p S249-S257 doi: 10.1097/PHH.0000000000001297

health, and more resilience among families; and a reduced resource burden by intentionally creating a community infrastructure for families to be healthier (e.g. good transportation, green space, etc.) Specific food system recommendations include[1]:

- Creating legislative, regulatory, commercial, and educational environments supportive of dietary recommendations and redesign food production and consumption including shifting agricultural subsidies providing supports for "specialty crops."
- Improving the availability of foods and meals that facilitate implementation of the recommendations in public and private spaces.
- Altering the food acquisition environment-by providing more food choices that help consumers meet dietary recommendations, better information (e.g., more complete and interpretable product labeling), advice at points of purchase (e.g., tags indicating a good nutrition buy in supermarkets or cafeterias), and more options for selecting healthful diets (e.g, better food choices in vending machines and restaurants).
- Altering nutrition education-by changing the message mix (e.g., presenting consistent messages in education programs, advertisements for products, and public service announcements) and by broadening exposure to formal and nonformal nutrition education (e.g., mandating education on dietary recommendations from kindergarten through grade 12, in health-care facilities, and in medical schools).
- Instituting broad population-based support for human milk/breast feeding
- Creating food packaging, marketing, advertising that support healthy and informed consumers.
- Targeting specific incentives and community development resources to improve the nutrition infrastructure in low-income, rural, and communities of color.

Question 4: With increasing incidences of food allergies, especially in minority communities, it's important that federal feeding programs accommodate participants with allergies. But the WIC food package, for example, has limited options for those who might be allergic to eggs, milk, peanuts, and/or wheat. How can we address these concerns?

Response: One way to help support WIC participants with food allergies is adopting many of the recommendations outlined in the 2017 National Academies of Science, Engineering, and Medicine: Review of WIC Food Packages: Improving Balance and Choice.[2]

Recognizing the limited varieties of foods offered, the 2017 NASEM Report made several recommendations to promote full redemption of issued benefits and, therefore, obtain the maximum nutritional benefit of WIC-prescribed foods. The 2017 NASEM Report proposed a series of substitutions within food groups – such as options to substitute whole fruits for juice,

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[1] Institute of Medicine (US) Committee on Dietary Guidelines Implementation; Thomas PR, editor. Improving America's Diet and Health: From Recommendations to Action. Washington (DC): National Academies Press (US); 1991. 1, Summary. Available from: https://www.ncbi.nlm.nih.gov/books/NBK235259/

[2] National Academies of Sciences, Engineering, and Medicine. 2017. Review of WIC Food Packages: Improving Balance and Choice: Final Report. Washington, DC: The National Academies Press.https://doi.org/10.17226/23655.

yogurt for milk, the inclusion of canned seafood and additional whole grain varieties and increasing the Cash Value Benefit (CVB) which provides the most flexibility and greater variety for WIC shoppers.[1]

The 2017 NASEM Report also evaluated package sizes, particularly for whole grains, to ensure that approved items would be more readily accessible at retail grocery store locations. These steps to promote greater choice within the program, without sacrificing the nutritional integrity of the food package, simplify the shopping experience and encourage full redemption of WIC benefits.

Senator Amy Klobuchar

Question 5: Last month, I introduced the *Improving Mental Health and Wellness in Schools Act* (S. 2930) with Senator Cynthia Lummis from Wyoming to better integrate mental health promotion and education in schools because spikes in food insecurity may impact not only the nutritional needs of our students, but also their mental health. Can you talk about the connection between mental health and food insecurity? How can we better support Americans who are dealing with food insecurity and its mental health impacts – like eating disorders?

Response: Thank you so much Senator Klobuchar for your thoughtful question and introducing the Improving Mental Health and Wellness in Schools Act.

Research shows that there is a strong relationship between food insecurity and mental health outcomes. See examples of specific research/studies below:

- Studies show that food insecurity can frequently co-occur with depression, suicidal ideation, disrupted sleep, and substance use in young adulthood. Research also suggests that reductions in food insecurity during this important life period may help prevent mental health problems. It is recommended that policies/interventions aimed at alleviating food insecurity should also provide additional mental health supports and resources to help prevent a lifelong vicious circle of poor mental health and low socioeconomic attainment.[2, 3, 4,5, 1, 2]

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[1] https://thewichub.org/enhancing-the-wic-food-package-impacts-and-recommendations-to-advance-nutrition-security/

[2] Munger, A. L., Hofferth, S. L., & Grutzmacher, S. K. (2016). The role of the Supplemental Nutrition Assistance Program in the relationship between food insecurity and probability of maternal depression. Journal of Hunger and Environmental Nutrition, 11(2), 147–161.

[3] Oddo, V. M., & Mabli, J. (2015). Association of participation in the Supplemental Nutrition Assistance Program and psychological distress. American Journal of Public Health, 105(6), e30–e35.

[4] Kim, K., & Frongillo, E. A. (2007). Participation in food assistance programs modifies the relation of food insecurity with weight and depression in elders. Journal of Nutrition, 137, 1005–1010.

[5] Pryor, L., Lioret, S., van der Waerden, J. et al. Food insecurity and mental health problems among a community sample of young adults. Soc Psychiatry Psychiatr Epidemiol 51, 1073–1081 (2016). https://doi.org/10.1007/s00127-016-1249-9

- A recent review reported among adults, food insecurity is cross-sectionally associated with higher levels of overall Eating Disorder pathology, binge eating, compensatory behaviors, binge-eating disorder, and bulimia nervosa. Evidence for similar relationships among adolescents has been less robust; however, compared to studies of adults, there have been substantially fewer studies conducted in adolescents to date.[3]
- A recent study examined the relationships between food insecurity, mental health, and academic performance among college students in a California public university system (N = 8705). The results showed that food insecurity was related to lower student grade point average directly and indirectly through poor mental health. These findings support the need for future interventions and policy on the importance of providing students with the basic needs to succeed both academically and in the future.[4,5]
- A study conducted by Children's Health Watch using data from Minneapolis and Boston found that mothers of young children in food- insecure households receiving SNAP benefits were less likely to experience maternal depressive symptoms and less likely to be in fair or poor health, compared to mothers in food-insecure households that were not receiving SNAP benefits.[6]
- According to a national study of SNAP households, participation in SNAP for six months was associated with a 38 percent reduction in psychological distress. A separate study found that among mothers who became food insecure, losing SNAP benefits was associated with an increased probability of depression and gaining SNAP benefits was associated with a reduced probability of depression. This evidence suggests that policies to mitigate and prevent food insecurity may also have benefits for mental health by alleviating stress and anxiety about practical concerns related to one's ability to secure sufficient food.[7,8,1]

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[1] Nagata, Jason M., Kartika Palar, Holly C. Gooding, Andrea K. Garber, Henry J. Whittle, Kirsten Bibbins-Domingo, and Sheri D. Weiser. "Food insecurity is associated with poorer mental health and sleep outcomes in young adults." Journal of Adolescent Health 65, no. 6 (2019): 805-811.

[2] Pourmotabbed, A., Moradi, S., Babaei, A., Ghavami, A., Mohammadi, H., Jalili, C., . . . Miraghajani, M. (2020). Food insecurity and mental health: A systematic review and meta-analysis. Public Health Nutrition, 23(10), 1778-1790. doi:10.1017/S136898001900435X

[3] Hazzard, Vivienne M et al. "Food Insecurity and Eating Disorders: a Review of Emerging Evidence." Current psychiatry reports vol. 22,12 74. 30 Oct. 2020, doi:10.1007/s11920-020-01200-0

[4] Martinez, Suzanna M., Edward A. Frongillo, Cindy Leung, and Lorrene Ritchie. "No food for thought: Food insecurity is related to poor mental health and lower academic performance among students in California's public university system." Journal of health psychology 25, no. 12 (2020): 1930-1939.

[5] Meza, A., Altman, E., Martinez, S. and Leung, C.W., 2019. "It'sa feeling that one is not worth food": a qualitative study exploring the psychosocial experience and academic consequences of food insecurity among college students. Journal of the Academy of Nutrition and Dietetics, 119(10), pp.1713-1721.

[6] Goldman, N., Ettinger de Cuba, S., Sheward, R., Cutts, D., &
Coleman, S. (2014). Food Security Protects Minnesota Children's Health. Series – Hunger: A New Vital Sign. Boston, MA: Children's
HealthWatch.

[7] Oddo, Vanessa M., and James Mabli. "Association of participation in the Supplemental Nutrition Assistance Program and psychological distress." American journal of public health 105, no. 6 (2015): e30-e35.

[8] Myers, Candice A. "Food insecurity and psychological distress: A review of the recent literature." Current nutrition reports 9, no. 2 (2020): 107-118.

- The effects of food insecurity on mental health have been further exacerbated during the COVID-19 pandemic. Evidence suggests that psychological distress, including post-traumatic stress disorder, depression, anxiety, and other mental health outcomes, increases after large-scale disasters, including epidemics such as the SARS outbreak in 2003. Results from a recent study indicate that in March 2020, mental health among low-income adults in the United States, and food-insecure adults, was already poor. Stress and anxiety around economic uncertainty and health concerns are common,while necessary social distancing measures perpetuate feelings of loneliness and depression. Consequently, it is critical that the health care system prepares for increased demand for mental health care services in both the short and long term, develops innovative solutions to provide care in the context of the pandemic, and prioritizes equitable access to services for low-income patients. Galea et al. also suggest mobilizing nontraditional resources in communities and organizations to provide preventative mental health services and bolster traditional systems of support and care such as the using of Community Health Workers.[2]

Senator Joni Ernst

Question 6: To quote Retired U.S. Army Lieutenant General Mark Hertling, "Over the last decade, we have experienced increasing difficulty in recruiting soldiers due to the decline in the health of our nation's youth. Unless we see significant change in physical activity and nutrition in America our national security will be affected." As a combat veteran and former commander, I wholeheartedly agree and just last week, over 300 retired military leaders wrote a letter sounding the alarm on the state of childhood nutrition in this country. The National School Lunch Program was started after many recruits were rejected for WWII due to malnutrition. A strong military demands the importance of good diet and physical activity be instilled at a young age. What can we do to increase physical activity in schools?

Response: Thank you so much Senator Ernst for your thoughtful questions. Extensive evidence indicates that increasing physical activity (PA) in youth takes a multi-level, multi-sectorial approach including efforts by schools/school districts, after-school programs, parents, families, and communities. A review published by Nathan and Colleagues (2018), found that the most common barriers/facilitators to PA in schools include environmental context and resources (e.g., availability of equipment, time or staff), goals (e.g., the perceived priority of the policy in the school), social influences (e.g., support from school boards), and skills (e.g., teachers' ability

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[1] Bartfeld, Judith, Craig Gundersen, Timothy Smeeding, and James P. Ziliak, eds. SNAP matters: how food stamps affect health and well-being. Stanford University Press, 2015.

[2] Søvold, L. E., Naslund, J. A., Kousoulis, A. A., Saxena, S., Qoronfleh, M. W., Grobler, C., & Münter, L. (2021). Prioritizing the Mental Health and Well-Being of Healthcare Workers: An Urgent Global Public Health Priority. Frontiers in public health, 9, 679397. https://doi.org/10.3389/fpubh.2021.679397

to implement the policy).[1] Interventions that increase opportunities for students to be physically active during the school day including regular quality physical education (PE), sport, or PA in the classroom, such as energizers, are effective in increasing children's moderate to vigorous physical activity (MVPA). Additionally, research shows that supporting teachers to implement a PA policy improves student PA.[2,3]

Previous reviews including a 2013 National Academies of Sciences, Engineering, and Medicine (NASEM) report makes several recommendations: [4,5]

- All school-related persons should advocate for a whole-school approach to PA.
- All government and school-related agencies should systematically consider access to and provision of PA in all policy decisions.
- Physical education should be designated as a core subject.
- Education and government agencies should develop and deploy data systems to monitor policy implementation and effectiveness.
- College-based teacher education programs should provide preservice and in-service educational experiences for teachers while emphasizing PA experiences.
- Disparities in programs should be eliminated and access to facilities and opportunities should be available to all.

Question 7: Along these lines, we know the nutritional benefits of protein and yet it's not a requirement that meat be served in the School Breakfast Program. New science is telling us that full fat dairy is actually better for people, too, keeping them fuller for longer and providing them with a great source of protein. Shouldn't protein be prioritized to start a child's day?

Response: In children, protein requirements need to simultaneously prevent a protein-related deficiency and support healthy growth and development. Based on current evidence, the Dietary Reference Intakes (DRIs) for protein indicate that children 4–13 years and 14–18 years

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[1] Nathan N, Elton B, Babic M, McCarthy N, Sutherland R, Presseau J, Seward K, Hodder R, Booth D, Yoong SL, Wolfenden L. Barriers and facilitators to the implementation of physical activity policies in schools: A systematic review. Prev Med. 2018 Feb;107:45-53

[2] Nathan, Nicole K., Rachel L. Sutherland, Kirsty Hope, Nicole J. McCarthy, Matthew Pettett, Ben Elton, Rebecca Jackson, Stewart G. Trost, Christophe Lecathelinais, Kathryn Reilly, John H. Wiggers, Alix Hall, Karen Gillham, Vanessa Herrmann, and Luke Wolfenden. " Implementation of a School Physical Activity Policy Improves Student Physical Activity Levels: Outcomes of a Cluster-Randomized Controlled Trial", Journal of Physical Activity and Health 17, 10 (2020): 1009-1018.

[3] McKenzie TL, Sallis JF, Faucette N, Roby JJ, Kolody B. Effects of a curriculum and inservice program on the quantity and quality of elementary physical education classes. Research Quarterly for Exercise and Sport. 1993;64(2):178–187.

[4] Cooper, K.H., Greenberg, J.D., Castelli, D.M., Barton, M., Martin, S.B. and Morrow Jr, J.R., 2016. Implementing policies to enhance physical education and physical activity in schools. Research quarterly for exercise and sport, 87(2), pp.133-140.

[5] Institute of Medicine. (2013). Educating the student body: Taking physical activity and physical education to school. Washington, DC.

require 0.95 and 0.85 g·kg protein/day[1] Although physical activity is a modifier of dietary protein requirements in children, on average, children in the United States consume enough dietary protein to meet the nitrogen balance-derived requirements[2,3] However, schools can actually increase the use of protein rich foods within the existing School Breakfast Program requirements.[4] A recent study examined the implementation of a higher vs. standard-protein ' breakfast in the classroom program on School Breakfast participation, appetite, and mood in middle-school students. Additionally, the Dietary Guidelines for Americans protein group includes a variety of protein foods, including seafood, lean meats and poultry, eggs, legumes (beans and peas), and nuts, seeds, and soy products which provides flexibility for school food service administrators.

In regard to full fat dairy, although additional studies have emerged in recent years about the benefits (or lack of harmful effects) of full fat dairy (particularly yogurt) compared to low-fat dairy the evidence is still evolving. Thus more evidence is needed to support updating current dietary recommendations.

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Question 8: If the legislation were to pass or the White House decided to go ahead and hold a Conference on Food, Nutrition and Health, I am sure many of you might be consulted or have input into how the conference will be structured and who will have a seat at the table. Will all of you commit to us that you would support representation of all the various agriculture stakeholders being at the table and fully engaged in this process?

Response: Various agriculture stakeholders should be at the table to identify solutions to current food and agricultural system challenges that exist in the United States including farmers, farming-related industries, agricultural workers, small farmers and producers, etc.

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[1] Trumbo, P.; Schlicker, S.; Yates, A.A.; Poos, M.; Food and Nutrition Board of the Institute of Medicine; The National Academies. Dietary reference intakes for energy, carbohydrate, fiber, fat, fatty acids, cholesterol, protein and amino acids. J. Am. Diet Assoc. 2002, 102, 1621–1630.

[2] Agricultural Research Service. What We Eat in America; NHANES 2017–2018; Food Surveys Research Group: Beltsville, MD,
USA, 2020.

[3] Hudson, J.L.; Baum, J.I.; Diaz, E.C.; Børsheim, E. Dietary Protein Requirements in Children: Methods for Consideration. Nutrients 2021, 13, 1554.

[4] Braden, M. and Leidy, H., 2020. The Implementation of a Higher vs. Standard-Protein 'Breakfast in the Classroom'Program on School Breakfast Participation, Appetite, and Mood in Middle-School Students. Current Developments in Nutrition, 4(Supplement_2), pp.1291-1291.

Senate Committee on Agriculture, Nutrition, and Forestry
Subcommittee on Food and Nutrition, Specialty Crops, Organics, and Research
The State of Nutrition in America 2021
November 2, 2021
Questions for the record
Dr. Donald Warne

Senator John Boozman

1) We know that nationwide there are massive supply chain issues and historically high inflation that is plaguing businesses, families, and schools. In every part of the country, schools are struggling to get enough food, a variety of food, even the trays, utensils and products necessary to serve the food to students. Our school nutrition professionals are true heroes and are to be commended for their continual hard work during this difficult time.

   I have been pleased that USDA has provided flexibility to schools to serve meals, and now it's even more clear how important the meal pattern flexibilities in particular have been. Yet, I am concerned too many people are not fully understanding the gravity of the situation and want USDA to force schools and food companies to comply with the next phase of rigid nutrition standards. Many food companies halted product reformulation efforts to deal with the pandemic so foods that meet such standards are not available.

   How would a school even make this work when they can't get any food – let alone specific whole grain or low sodium foods? Would you agree that now is not the time to be pushing ahead with additional standards in this environment?

   Labor shortages and other factors such as industry standards contribute to diminishing access to healthy foods particularly for school children. Rigid responses that are overly complex can be harmful during the pandemic as our resources are already limited and our ability to cope is challenged on a daily basis. We are not alone globally with regard to food shortages, and these shortages are only fueled by the changing climate with increased drought and less reliable weather. Post-contact industrial farming practices have contributed to erosion and decreasing agricultural yields. Additionally, large monocultures of pest vulnerable crops, and disease vulnerable herds and flocks leaves us vulnerable to zoonotic disease and a multitude of other ethical issues. Indigenous farming and animal husbandry practices such as those utilized by indigenous peoples, have allowed for sustainable models that involved no- till and other technologies such as paired planting and reducing erosion to further enhance yields longitudinally. Obviously, we have huge systemic changes that need to occur in our approach globally to food production, systems and distribution. However, during this pandemic our

approach should be on the pandemic and mitigating the effects of the pandemic, rather than changing our food systems beyond our capacity during this challenging time.

Although national approaches have benefit, it seems that to feed students safely and reliably would require both a federal and local approach. In that local resources of food stuffs differ between regions and sites in need, it would require real-time evaluation and assessment of resources on hand. This would also require coordinating and facilitating food distribution of acceptable and available local foods combined with assessment of the most nutritious options available to procure, store, prepare and serve. The agriculture department has issued waivers that allow flexibility and should continue, though overall there is a serious health crisis that has grown out of industrialized food that lacks nutritional and exceeds caloric requirements. Consider simplifying the process to allow for waivers and addend the process for more stringent nutritional requirements so that it is deferred by 2-3 years (or as otherwise agreeable to involved parties).

We should also consider other limitations beyond food, such as cutlery. Perhaps this is an opportunity to partner with local and national organizations to help create, fund, supply and distribute cutlery to students that could be washed and re-used contributing to our ecological stewardship. Food security is a systemic global problem that does require flexibility, cooperation, patience and follow-through. With so many pressing priorities during a global SARS-Cov-2 pandemic, I would hope we could defer implementing standards and rather that we can continue to define those standards while we find solutions to our daily dietary challenges.

https://www.nytimes.com/2021/09/27/us/politics/schools-labor-supply-shortages.html references:

https://www.fns.usda.gov/cn/covid-19-child-nutrition-response-90

"Therefore, for all states, FNS is establishing a waiver of the NSLP and SBP requirements below. FNS also extends these flexibilities to SSO for the duration of this waiver.

- That menus meet the dietary specification for sodium, at 7 CFR 210.10(b), (c), and (f); and 220.8(b), (c), and (f);
- That all grains offered be whole grain-rich, at 7 CFR 210.10(c); and 220.8(c);
- That, for pre-schoolers, at least one serving per day, across all eating occasions, must be whole grain-rich, at 7 CFR 210.10(o)(3) and (p); and 220.8(o);
- To offer a variety of vegetables from the vegetable subgroups, at 7 CFR 210.10 (c) and 220.8(c);
- To offer a variety (at least two different options) of fluid milk, at 7 CFR 210.10(d)(1)(i) and 220.8(d);
- That low-fat milk must be unflavored, at 7 CFR 210.10(c) and (d)(1)(i), and 220.8(c) and (d); and

- To plan menus and offer food components for specified age/grade groups in the stated combinations, at 7 CFR 210.10(c), (o)(3) and (p), and 220.8(c) and (o).

All other meal pattern requirements remain in effect. This waiver is effective Oct. 1, 2021, and remains in effect until June 30, 2022. State agencies must elect to be subject to the School Year 2021-2022 meal pattern flexibilities in order to use them. State agencies should inform local program operators of the availability of this waiver as quickly as possible, and work in partnership with them to determine if this waiver is necessary to ensure access to nutritious meals.

In order to participate under the flexibilities for sodium, whole grains, vegetable subgroups, milk variety, low-fat flavored milk, and the age/grade groups, local program operators must contact the state agency for approval to use this waiver and provide the state agency any necessary information to complete the report requirements discussed below. "

2) I would appreciate hearing more on any evidence-based outcomes from the SNAP Nutrition Education program, the Expanded Food and Nutrition Education Program, and other efforts – including incentive programs - to help SNAP recipients and others buy, prepare and consume healthy foods. Between just SNAP-Ed and EFNEP, Congress spends around $600 million a year, and I know there are other efforts across the federal government. With the continual increases in obesity, diabetes and chronic-diseases, it begs the question of how these programs are helping consumers make healthy choices. Are there evidence-based outcomes to show that nutrition education and incentive programs actually lead to improved health outcomes?

   Fortunately, there has been a review of the SNAP programs showing improved food security, as well as improved concurrent and long-term health. This results in less overall health care costs and diminished chronic disease burden (including diabetes and obesity as you mentioned). Some studies have shown that a burden of food insecurity can increase likelihood of chronic disease by as much as 40%. Additionally, per the CBPP website, low-income adults participating in SNAP incur nearly 25 % less in medical care costs in a year than low-income non-participants. We should continue to evaluate these programs and work toward improving good access to our vulnerable populations and individuals.

https://www.cbpp.org/research/food-assistance/snap-is-linked-with-improved-nutritional-outcomes-and-lower-health-care

3) What do you think is the root cause of poor nutrition and what do you see as the number one strategy to address it?

The industrialized food and agriculture industries leads to diminished access to nutritious and high-quality food that is easily available to the consumer. Current easily-accessible foods have a longer shelf life, but generally less nutritional value. Thus, processed foods continue to be marketed as healthy alternatives, when they typically fall short of regular whole foods that have healthy and nutritious constituents (e.g. broccoli, beans, etc.). As a nation, we need to invest in promoting easy access to healthier food choices.

4) With increasing incidences of food allergies, especially in minority communities, it's important that federal feeding programs accommodate participants with allergies. But the WIC food package, for example, has limited options for those who might be allergic to eggs, milk, peanuts, and/or wheat. How can we address these concerns?

I would recommend considering allergen free foods and alternatives. Due to the severity of peanut allergies, we might consider eliminating peanuts from schools. A hypoallergenic menu might include the following: beans, soy other nut and seed butters, as well as almond-milk or another dairy alternatives. Often wheat can be excluded from recipes, and or substitutes such as arrowroot powder or corn starch can be added. Corn tortillas or lettuce or gluten-free bread can be substituted for buns when necessary.

Senator John Hoeven

1) In your testimony, you lay out suggestions regarding how to improve federal nutrition programs, including the Food Distribution Program on Indian Reservations (FDPIR), which helps make food more accessible for lower income Native Americans. As a member of the Appropriations Committee, I have supported FDIPR through the appropriations process.

Additionally, I introduced the CROPS for Indian Country Act and worked to get it signed into law as part of the 2018 Farm Bill. Among other provisions, the CROPS for Indian Country Act authorized a Tribal Self-Determination Project for FDPIR Food Procurement to expand direct tribal access to USDA funds and to encourage more access to traditional Native foods.

In your view, how can promoting tribal self-determination through programs like FDPIR improve health outcomes for American Indians and Alaska Natives?

Supporting tribal self-determination empowers local experts and institutions to be involved in making informed decisions for the greatest good. Programs such as FDPIR will help facilitate access to nutritious whole foods, that are culturally appropriate traditional foods. Improved access to whole foods has the potential to diminish the risk

developing chronic diseases (ie. Obesity, Diabetes Mellitus Type 2, Cardiovascular Disease and Hypertension).

Senator Joni Ernst

1) To quote Retired U.S. Army Lieutenant General Mark Hertling, "Over the last decade, we have experienced increasing difficulty in recruiting soldiers due to the decline in the health of our nation's youth. Unless we see significant change in physical activity and nutrition in America our national security will be affected." As a combat veteran and former commander, I wholeheartedly agree and just last week, over 300 retired military leaders wrote a letter sounding the alarm on the state of childhood nutrition in this country. The National School Lunch Program was started after many recruits were rejected for WWII due to malnutrition. A strong military demands the importance of good diet and physical activity be instilled at a young age.
    a. What can we do to increase physical activity in schools?

A multidisciplinary approach should be used when considering options for physical activity. This should include administrators, teachers, PE teachers, and as well as physiologists, behaviorists and nutritionists. It would be ideal if we created a healthy online curriculum and guidance to educate about the importance ***body movement*** (not just sports) in general. Also shifting awareness to the importance of balance, and that sitting much of our day contributes more than our lack of exercise. Increased awareness of options for students to access physical activity is paramount. If we consider that we can "only" recreate at the gym, or on the playground, then we eliminate all the other space during the day when we can bring in balance and awareness of fitness. Perhaps lunges on the way to the bathroom or water break are in order. With new studies showing that micro-movements, and an active lifestyle overall being important, we should aim to reduce sedentary time. Considering cohorts of groups to participate in different types of physical activity throughout the day, consider standing and stretching as okay during the school day, and always having time outdoors, where play and place-based learning occur.

2) Along these lines, we know the nutritional benefits of protein and yet it's not a requirement that meat be served in the School Breakfast Program. New science is telling us that full fat dairy is actually better for people, too, keeping them fuller for longer and providing them with a great source of protein.
    a. Shouldn't protein be prioritized to start a child's day?

Yes, I strongly agree that protein should be a part of breakfast. Healthy options for this include yogurt, nuts, beans, eggs and dairy as mentioned. I would be also mindful that there is some evidence showing that red meat and saturated fats (particularly with added sugar) may not be the healthiest choices. Though animals that are free range, and have access to a variety of grains with movement in their day, have healthier fat profiles.

3) If the legislation were to pass or the White House decided to go ahead and hold a Conference on Food, Nutrition and Health, I am sure many of you might be consulted or have input into how the conference will be structured and who will have a seat at the table.
    a. Will all of you commit to us that you would support representation of all the various agriculture stakeholders being at the table and fully engaged in this process?

Yes, I would support representation of all the various stakeholders being at the table and fully engaged.

Senate Committee on Agriculture, Nutrition, and Forestry
Subcommittee on Food and Nutrition, Specialty Crops, Organics, and Research
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Questions for the record
Dr. Patrick Stover

At the conclusion of the hearing, Chairman Booker

1) originally included $5.75 billion for certain agriculture research priorities, and now it's down to $2 billion. These provisions reflect the priorities from only one side of the aisle. Dr. Stover, if you had been consulted, where would you have recommended we utilize $2 billion for research priorities?

   Our country desperately needs an open and transparent conversation about the future of agricultural research. So much of the progress we have made as a country has been the result of investment in agricultural research, but we are falling behind. The challenges to the future production of food are many, from climate variability to water availability, from producing more to feed a growing world population to growing better to support human and environmental health.

   The COVID-19 pandemic has highlighted vulnerabilities across the entire agriculture and food value chain. Those with metabolic disease were most vulnerable to morbidity and mortality from the virus, with high rates in our underserved communities. Additional research is needed to address these vulnerabilities and better align agriculture with human, environmental and economic health. While the need reaches far beyond an additional $2 billion, the top priorities I'd highlight are:

   1. *Invest in precision nutrition research. In the past, nutrient- and food-based recommendations were based on preventing diseases of nutrient deficiency. In 2017, the National Academies of Sciences, Engineering, and Medicine (NASEM) published a framework to establish nutrient-based recommendations based on chronic disease reduction, because diet is a major driver of chronic disease and associated skyrocketing health care costs. We now understand that "one size does not fit all" in the diet-disease relationship – people react differently to foods with respect to their health based on biological and behavioral differences. The National Institutes of Health (NIH) Director's office recently published the 2020-2030 strategic plan for nutrition (for which I served as Chair of the Thought Leader Panel[1]) and started a precision nutrition research initiative to promote technologies that give consumers direct information regarding their diet and its effects on their health. In my view, the commitment to this research area should be expanded markedly within NIH and a*

[1] https://dpcpsi.nih.gov/sites/default/files/2020NutritionAppendix_508.pdf

parallel effort with a focus on food and food systems should be initiated through the USDA. This research is critical to using agriculture as the solution to human health.

2. *Invest in Responsive Agriculture Research. Because individuals respond differently to diets with respect to health outcomes, it is critical that we maintain a highly diversified and robust food system. However, in addition to focusing on producing more to feed a growing population, we also must make agriculture more responsive to human, environmental and economic health. We now have the technologies to engineer production agriculture to achieve any outcome we can imagine. We can generate plants and animals with higher nutrient densities and fewer allergens that are drought resistant and require less fertilizer and other inputs. Likewise, agriculture can be used to create petroleum replacements that remove CO_2 from the atmosphere while improving soil health. Major investments are needed in research and modern technologies to realize the potential of agriculture as the solution to human, environmental and economic health.*

3. *Healthy Living Research. We must deploy precision nutrition research in the communities most at risk through community-based participatory research and citizen science approaches. By combining nutrition and behavioral research in free-living populations, we can empower those most at risk to understand the foods that promote their health within their own cultural context and have them trust the science that motivates positive health behaviors specific to them.*

Underpinning that research is infrastructure that is falling behind. A recent study by Gordian shows that 69% of the buildings at nearly 100 institutions with colleges of agriculture are at the end of their useful life.[2] The cost of upgrading deferred maintenance for these facilities is $11.5 billion, with a replacement value of $38.1 billion.

2) Dr. Stover, I appreciate your passion for the role that agriculture plays in providing nutritious food. The research efforts you made in foods that contain folic acid is a prime example. As you point out, consumers often do not appreciate the link between agriculture and the food on their table. How can we help society understand the benefit of such progress in food technology so they embrace it and aren't fearful?

One reason for the disconnect is that the science of nutrition is still in its infancy and today is rife with misunderstanding that leaves consumers confused. Inconclusive, emerging research on the nutrition needs of individual persons, which has led to flip-flopping dietary recommendations over time, has bred distrust in the science around the food we eat and the way that food is made. We also now understand that one-size does

[2] For more information, see: https://www.aplu.org/library/a-national-study-of-capital-infrastructure-at-colleges-and-schools-of-agriculture-an-update/file.

not fit all in the diet-disease relationship. That's why it is important for everyone engaged in research, practice, and policy to work even harder to ensure scientific rigor is our highest priority, especially research that underpins our food and nutrient intake recommendations. We can only earn that trust by not fearing where the science takes us, by being transparent about the state of knowledge and the certainty of our recommendations, and by respecting the tight linkages between cultures and their food systems. On this particular point, Texas A&M AgriLife is leading by example. We are creating the Agriculture, Food and Nutrition Scientific Evidence Center in Fort Worth, Texas, which will be a global resource for policy makers in providing non-biased, expert scientific information concerning the human, environmental and economic health effects of proposed changes to the food system.

As I noted in my written testimony, the divide between agricultural production and the new and necessary expectations of agricultural systems—transitioning from hunger to human, environmental and economic nourishment, amounts to one of the greatest challenges facing our society. However, agriculture is positioned uniquely to be the solution—to lead the world in bridging this divide, supporting human, environmental, social and economic health. As such, agriculture must have a seat at the table, engaged in conversations to address these grand challenges where they persist, at the nexus of agriculture, food systems, nutrition and health.

3) Americans take for granted the abundant, safe food supply, as well as the numerous choices they have when buying food. I appreciate all producers and we should applaud and support anyone who makes the decision to be a farmer or rancher and help feed the world. But too often larger producers, those employing technology, are demonized. Do you think we can feed Americans and the world if we put more regulations and taxes on larger farms, or limit the size of operations, or limit the use of technology? Can small and mid-sized farmers alone feed the world?

I am fortunate to lead one of the largest and most comprehensive agriculture programs in the nation in one of the largest and most diverse agricultural states in the nation. Our farmers and ranchers answer the call each day in putting food on our tables and in stewarding our nation's natural resources. Farming and ranching is hard work that involves a tremendous amount of risk. We have a hard enough time attracting individuals to production agriculture; I would argue our focus should be on providing the resources all farmers and ranchers need to be successful rather than pitting large and small farmers against one another or demonizing particular types of technology that have been extraordinarily effective in feeding the world. Furthermore, we are increasingly losing our precious farmland to more profitable enterprises which threatens our future ability to feed our nation.

4) We know that nationwide there are massive supply chain issues and historically high inflation that is plaguing businesses, families, and schools. In every part of the country, schools are struggling to get enough food, a variety of food, even the trays, utensils and

products necessary to serve the food to students. Our school nutrition professionals are true heroes and are to be commended for their continual hard work during this difficult time.

I have been pleased that USDA has provided flexibility to schools to serve meals, and now it's even more clear how important the meal pattern flexibilities in particular have been. Yet, I am concerned too many people are not fully understanding the gravity of the situation and want USDA to force schools and food companies to comply with the next phase of rigid nutrition standards. Many food companies halted product reformulation efforts to deal with the pandemic so foods that meet such standards are not available.

How would a school even make this work when they can't get any food – let alone specific whole grain or low sodium foods? Would you agree that now is not the time to be pushing ahead with additional standards in this environment?

This question illustrates the urgent need to create an Agriculture, Food and Nutrition Evidence Center that can provide a synthesis of the current data and knowledge related to the human health, environmental health and economic effects of new policies and practices. Decisionmakers need to be informed by the current knowledge regarding human, environmental and economic health outcomes around a particular policy change so that they can weigh the costs. There are numerous benefits and tradeoffs across these three domains. Medical evidence centers have brough rigor and consistency to evidentiary standards in medicine; we need the same for agriculture, food and nutrition. We are proud that Texas A&M AgriLife is establishing such a resource for policymakers.

It is also important to understand that nutrition research, especially for children, has not been a funding priority, and there are major gaps in knowledge that need to be addressed.

5) I would appreciate hearing more on any evidence-based outcomes from the SNAP Nutrition Education program, the Expanded Food and Nutrition Education Program, and other efforts – including incentive programs – to help SNAP recipients and others buy, prepare and consume healthy foods. Between just SNAP-Ed and EFNEP, Congress spends around $600 million a year, and I know there are other efforts across the federal government. With the continual increases in obesity, diabetes and chronic-diseases, it begs the question of how these programs are helping consumers make healthy choices. Are there evidence-based outcomes to show that nutrition education and incentive programs actually lead to improved health outcomes?

A number of studies have shown that nutrition education efforts can help individuals make healthier purchases.[3] *With that said, there are also a number of ways in which nutrition education could be improved. As noted, obesity and chronic disease is increasing in our low-income communities. As I noted in my testimony, the Extension Service – which already plays an active role in nutrition education via the Expanded Food and Nutrition Education Program (EFNEP) – could be playing a much more active role. To the point of your question, the Extension Service has the reach to provide consistent education across the nation and it has the tools necessary to monitor and evaluate those efforts to ensure they are successful. They also are embedded in the communities they serve and are trusted. The commitment by the federal government to Land Grant Extension programs should be strengthened, and greater flexibility given in these programs to stimulate innovation and continuous improvement.*

6) What do you think is the root cause of poor nutrition and what do you see as the number one strategy to address it?

As I noted in my testimony, we have a national and global food system that provides abundant and affordable food that is high in caloric density. Importantly, this system proved successful in its intended mission of reducing hunger. Today, one of the biggest challenges we face is addressing obesity and related health conditions. The Green Revolution rose to the challenge of addressing global hunger. I'm convinced we can do the same today in tackling diet-related chronic disease, but only if agriculture is seen as part of the solution and has a seat at the table. This is a systemic problem with improvements required across the value chain, from production to consumption, including consumer behavior and local food environments. We need to unleash the power of new technologies to better understand the diet-disease relationship for individuals and promote positive behavior changes by empowering individuals with real-time personalized health and diet data.

7) With increasing incidences of food allergies, especially in minority communities, it's important that federal feeding programs accommodate participants with allergies. But the WIC food package, for example, has limited options for those who might be allergic to eggs, milk, peanuts, and/or wheat. How can we address these concerns?

Precision Nutrition, a major research emphasis at the NIH, stresses that "one-size does not fit all" in the diet-chronic disease relationship. This includes variation among individuals in food intolerances and food allergies. As such, it is critical that we maintain a highly diversified and accessible food system that meets the nutrient needs of mothers, infants and children.

Senator John Hoeven

[3] For example, see: https://www.fns.usda.gov/pressrelease/2013/fns-001313.

1) In your testimony, you mention how the modernization and innovation of agriculture has led to a situation in which many Americans are disconnected from how food is produced.

   As this committee works on future farm bills and other Ag-related legislation, how important is it that we include farmers and ranchers when considering any proposed changes to federal food programs?

   It is vital that farmers and ranchers – indeed every segment of the agricultural value chain – have a seat at the table when considering any changes to federal food programs. We need a nutritious and diversified food system to meet the needs of our diverse population. We cannot create silos across our highly integrated agriculture and food value chain, or we will not generate meaningful solutions and will be vulnerable to unintended consequences as has occurred in the past. If we are going to solve the nutrition problems facing our country, it must be comprehensive and consider the whole food system from farm to consumer.

Senator Joni Ernst

1) To quote Retired U.S. Army Lieutenant General Mark Hertling, "Over the last decade, we have experienced increasing difficulty in recruiting soldiers due to the decline in the health of our nation's youth. Unless we see significant change in physical activity and nutrition in America our national security will be affected." As a combat veteran and former commander, I wholeheartedly agree and just last week, over 300 retired military leaders wrote a letter sounding the alarm on the state of childhood nutrition in this country. The National School Lunch Program was started after many recruits were rejected for WWII due to malnutrition. A strong military demands the importance of good diet and physical activity be instilled at a young age.
   a. What can we do to increase physical activity in schools?

      This is a policy question, and I believe strongly that the role of scientists is to provide sound data, or indicate uncertainty in the current data, to help policymakers arrive at the best decisions.

      At Texas A&M AgriLife, we support many community-based participatory research initiatives that use rigorous randomized control trial designs to improve community health in urban and rural settings that lead to self-sustaining, cost-effective, community-based programs. Included in this portfolio are youth development programs, including 4-H, that promote positive health behaviors including physical activity, noting that nutrition and physical activity are linked to chronic disease prevention. As a Land Grant Institution that plays an important role in youth development through Extension Service, we can provide important

research to evaluate the effectiveness of youth programs and implement evidence-based physical activity programs in partnership with local schools and community centers.

2) Along these lines, we know the nutritional benefits of protein and yet it's not a requirement that meat be served in the School Breakfast Program. New science is telling us that full fat dairy is actually better for people, too, keeping them fuller for longer and providing them with a great source of protein.
    a. Shouldn't protein be prioritized to start a child's day?

    Precision Nutrition, a major research emphasis at the NIH, stresses that "one-size does not fit all" in the diet-chronic disease relationship. This includes variation among individuals in diets that support life-long health and function. As such, it is critical that we maintain a highly diversified and accessible food system that meets the nutrient needs of school-aged children.

3) If the legislation were to pass or the White House decided to go ahead and hold a Conference on Food, Nutrition and Health, I am sure many of you might be consulted or have input into how the conference will be structured and who will have a seat at the table.
    a. Will all of you commit to us that you would support representation of all the various agriculture stakeholders being at the table and fully engaged in this process?

    Not only do I support that message, I think it is absolutely vital that agriculture be at the table and fully engaged in these discussions if we are to have any hope of solving the diet-related chronic diseases that are plaguing our nation. Diet-related chronic disease is a food-system concern. We must take a systems approach and not silo the food and agriculture value chain.

Senate Committee on Agriculture, Nutrition, and Forestry
Subcommittee on Food and Nutrition, Specialty Crops, Organics, and Research
The State of Nutrition in America 2021
November 2, 2021
Questions for the record
Dr. Angela Rachidi

Senator John Boozman

1) Dr. Rachidi, I know the pandemic has left families reeling, and one government response was to provide billions of dollars in additional nutrition assistance benefits. According to USDA's Economic Research Service, spending on nutrition programs in Fiscal Year 2020 reached a historical high of more than $122 billion, 32 percent greater than the previous year. And with the re-evaluation of the Thrifty Food Plan, USDA unilaterally added more than $20 billion each year to SNAP benefits, or $254 billion over 10 years. It seems to me that continuing to add more money to these programs is not solving the chronic disease problems all of you have discussed. More money doesn't mean better outcomes. Is there any concrete research or evidence that providing more money for nutrition programs equates to people buying and consuming healthier foods and reducing chronic disease?

   The introduction of the Food Stamp Program in the 1970s did show that spending more money on nutrition programs led to positive outcomes, but those findings are irrelevant to this question because no policymaker is proposing to eliminate nutrition assistance programs completely. I believe this question relates to whether adding more money to today's programs would lead to better outcomes. The research to answer this question is mixed. The few studies that find an association between more SNAP spending and healthier food purchases reflect small increases in purchases of fruits and vegetables for example when assistance payments increased, and do not find a reduction in unhealthy purchases. Researchers Alyssa Moran and colleagues summarized the literature and published their results in a 2020 review.[1] They concluded: "The evidence for improving dietary behaviors and obesity is mixed. Most studies have found null or limited effects of a SNAP benefit increase on adult dietary quality". One of the few examples of positive effects comes from the Summer EBT program where families received $60 additional dollars per month.[2] Researchers found a statistically significant increase in child consumption of fruits and vegetables, but no other dietary changes.

[1] Moran, Alyssa J., Yuxuan Gu, Sasha Clynes, Attia Goheer, Christina A. Roberto, and Anne Palmer. "Associations between governmental policies to improve the nutritional quality of supermarket purchases and individual, retailer, and community health outcomes: An integrative review." *International journal of environmental research and public health* 17, no. 20 (2020): 7493.
[2] Collins, Ann M., and Jacob A. Klerman. "Improving nutrition by increasing supplemental nutrition assistance program benefits." *American journal of preventive medicine* 52, no. 2 (2017): S179-S185.

There is no direct evidence that more SNAP money leads to a reduction in chronic disease at the population level. We must extrapolate findings from research on purchases and consumption to make assumptions about how more spending might affect chronic disease. Based on the mixed effects from the existing literature, there is little evidence to suggest that increasing SNAP benefits would reduce chronic disease. There is some evidence to suggest, however, that increasing targeted subsidies, such as more money only for fruits and vegetables will increase consumption of those foods and therefore would likely be more effective at reducing chronic disease than across-the-board benefit increases. The review by Moran et al. concluded: "Results from randomized trials and natural experiments consistently demonstrate increases in household fruit and vegetable purchases or adult fruit and vegetable intake when incentives are targeted towards SNAP participants.[3]

2) We know that nationwide there are massive supply chain issues and historically high inflation that is plaguing businesses, families, and schools. In every part of the country, schools are struggling to get enough food, a variety of food, even the trays, utensils and products necessary to serve the food to students. Our school nutrition professionals are true heroes and are to be commended for their continual hard work during this difficult time.

   I have been pleased that USDA has provided flexibility to schools to serve meals, and now it's even more clear how important the meal pattern flexibilities in particular have been. Yet, I am concerned too many people are not fully understanding the gravity of the situation and want USDA to force schools and food companies to comply with the next phase of rigid nutrition standards. Many food companies halted product reformulation efforts to deal with the pandemic so foods that meet such standards are not available.

   How would a school even make this work when they can't get any food – let alone specific whole grain or low sodium foods? Would you agree that now is not the time to be pushing ahead with additional standards in this environment?

   I agree that now is not the time to advocate for additional standards. More broadly, the federal government should review the effectiveness of the existing standards.

3) I would appreciate hearing more on any evidence-based outcomes from the SNAP Nutrition Education program, the Expanded Food and Nutrition Education Program, and other efforts – including incentive programs - to help SNAP recipients and others buy, prepare and consume healthy foods. Between just SNAP-Ed and EFNEP, Congress spends around $600 million a year, and I know there are other efforts across the federal

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government. With the continual increases in obesity, diabetes and chronic-diseases, it begs the question of how these programs are helping consumers make healthy choices. Are there evidence-based outcomes to show that nutrition education and incentive programs actually lead to improved health outcomes?

The evidence of effectiveness of SNAP-Ed programs is quite limited. The USDA Food and Nutrition Service evaluated SNAP-Ed programs in two waves with published studies in 2012 and 2013.[4] *There was another study of six SNAP-Ed programs in childcare centers. The most rigorous of these studies found no statistically significant effects on fruit and vegetable consumption associated with SNAP-Ed programs, with some small positive effects found in the quasi-experimental studies (that is, not involving random assignment).*[5] *Research has identified some components of SNAP-Ed that are more likely to have positive results, but overall the evidence is underwhelming that SNAP-Ed has positive health effects. This is especially concerning because the federal government continues to spend money on these efforts when they have limited effectiveness.*

The evidence is stronger for incentive programs. The USDA's Healthy Incentives pilot found that rebates for the purchase of fruits and vegetables led to increased fruit and vegetable purchase and consumption.[6] *However, simply increasing the purchase of fruits and vegetables should not be the answer to poor diet and health among SNAP recipients. In the Healthy Incentives pilot, the consumption of unhealthy products did not change, suggesting that the answer is a holistic approach that combines incentives with other measures such as restrictions.*

4) What do you think is the root cause of poor nutrition and what do you see as the number one strategy to address it?

The root cause of poor nutrition is multi-faceted but can be summed up by a few key problems: easy and cheap access to highly-processed, high-sugar and sodium content foods that are heavily marketed for ease and convenience. The strategy to address it must also be multi-faceted, involving public and private efforts. From the public sector, a winning strategy must include education to warn the public of the negative health effects of these highly processed and overly-sugared products, changes to government policies that favor

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[4] See Long, Valerie, Sheryl Cates, Jonathan Blitstein, Karen Deehy, Pamela Williams, Ruth Morgan, Julia Fantacone, Katherine Kosa, Loren Bell, and James Hersey. Supplemental Nutrition Assistance Program Education and Evaluation Study (Wave II). Prepared by Altarum Institute for the U.S. Department of Agriculture, Food and Nutrition Service, December 2013; and Gabor, Vivian, Sheryl Cates, Stacy Gleason, Valerie Long, Gloria Aponte Clarke, Jonathan Blitstein, Pamela Williams, Loren Bell, James Hersey, and Melanie Ball. "SNAP Education and evaluation study (Wave I): Final report." *US Department of Agriculture, Food and Nutrition Service, Office of Policy Support, January* (2012).

[5] Williams PA, Cates SC, Blitstein JL, Hersey JC, Kosa KM, Long VA, Singh A, Berman D. Evaluating the Impact of Six Supplemental Nutrition Assistance Program Education Interventions on Children's At-Home Diets. Health Educ Behav. 2015 Jun;42(3):329-38. doi: 10.1177/1090198114558589. Epub 2014 Dec 15. PMID: 25512074.

[6] Lauren EW Olsho, Jacob A Klerman, Parke E Wilde, Susan Bartlett, Financial incentives increase fruit and vegetable intake among Supplemental Nutrition Assistance Program participants: a randomized controlled trial of the USDA Healthy Incentives Pilot, *The American Journal of Clinical Nutrition*, Volume 104, Issue 2, August 2016, Pages 423–435, https://doi.org/10.3945/ajcn.115.129320

processed foods over locally grown and sold foods, and changes to public health insurance programs so that they incentivize prevention over disease treatment.

5) With increasing incidences of food allergies, especially in minority communities, it's important that federal feeding programs accommodate participants with allergies. But the WIC food package, for example, has limited options for those who might be allergic to eggs, milk, peanuts, and/or wheat. How can we address these concerns?

WIC should provide exceptions for people with allergies.

Senator Joni Ernst

1) To quote Retired U.S. Army Lieutenant General Mark Hertling, "Over the last decade, we have experienced increasing difficulty in recruiting soldiers due to the decline in the health of our nation's youth. Unless we see significant change in physical activity and nutrition in America our national security will be affected." As a combat veteran and former commander, I wholeheartedly agree and just last week, over 300 retired military leaders wrote a letter sounding the alarm on the state of childhood nutrition in this country. The National School Lunch Program was started after many recruits were rejected for WWII due to malnutrition. A strong military demands the importance of good diet and physical activity be instilled at a young age.
    a. What can we do to increase physical activity in schools?

    The federal government is limited in what it can do to increase physical activity in schools, which is preferable in my opinion given that local areas and parents are better equipped to make decisions about the structure of the school day than federal policymakers. However, the federal government can be an important source of information. Already, the federal government through agencies like the Centers for Disease Control and Prevention, provides information about the importance of physical activity. It could go further by establishing a campaign that incorporates reporting of rates of obesity and overweight among children with data on physical activity. The federal government could also target local school boards and administrators with information about the importance of physical activity to the learning and health of children.

2) Along these lines, we know the nutritional benefits of protein and yet it's not a requirement that meat be served in the School Breakfast Program. New science is telling us that full fat dairy is actually better for people, too, keeping them fuller for longer and providing them with a great source of protein.
    a. Shouldn't protein be prioritized to start a child's day?

    Yes, protein should be part of the School Breakfast Program, but even more importantly, real food – not processed food - should be prioritized. Full fat dairy, including milk and cheeses, when combined with raw fruits and vegetables offer school children a much

better breakfast option than overly processed breakfast foods, such as muffins and waffles.

3) If the legislation were to pass or the White House decided to go ahead and hold a Conference on Food, Nutrition and Health, I am sure many of you might be consulted or have input into how the conference will be structured and who will have a seat at the table.
    a. Will all of you commit to us that you would support representation of all the various agriculture stakeholders being at the table and fully engaged in this process?

Yes.

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