

A Taste of Tufts Nutrition



Good nutrition impacts more than your health.
It's at the heart of economic prosperity, equity, community,
productivity, and sustainability.



Why the Friedman School?

Because we—and you—are the future of food and nutrition.



**Dariush Mozaffarian, dean
and Jean Mayer Professor,
Friedman School of
Nutrition Science and Policy**

The Gerald J. and Dorothy R. Friedman School of Nutrition Science and Policy at Tufts University is one of the leading institutions of its kind in the world. Founded in 1978 by Dr. Jean Mayer, a visionary in nutrition science and translation who led major efforts to successfully advance national food policy, the Friedman School benefits from powerful and unique strengths:

- We are **focused equally** on teaching, research, and public impact. Our core mission is to educate future leaders, generate trusted science, and produce real-world impact in nutrition science and policy.
- We are **truly multidisciplinary**. From the start, our academic divisions and faculty, staff, and graduate students bring together biomedical, socio-behavioral, policy, interventional, agricultural sustainability, and food systems expertise to solve some of the most pressing challenges of our time.
- We are **deeply translational**. Eschewing the typical “ivory tower” perspective, we are committed to and deeply involved in multiple community, national, and global efforts to create healthier, more equitable, and more sustainable food systems.
- We are **highly innovative and entrepreneurial** in our approach to collaborating on new solutions to the problems that plague our food systems today. We work across sectors to ask the big questions that lead to new discoveries.
- **Diversity, equity, and inclusion** are core priorities in all that we do, from our teaching and scholarship to public impact and translation.

With these strengths, our graduates are prepared to advance knowledge and action, stand on the vanguard of scientific discovery, and develop the best science that links to sound policy. Our alumni are leaders in academia, U.S. and international government, policy, advocacy, industry, public health, community service, and entrepreneurship.

Last, but certainly not least, our cutting-edge research and public impact are making a meaningful difference to people throughout the world as we work together to create a more resilient, equitable, and nutritious food system that can withstand shocks like pandemics and climate change.

I invite you to learn more about our community and join us as we continue to generate bold ideas and fresh perspectives that are defining the future of nutrition and food systems.

Sincerely,

DARIUSH MOZAFFARIAN, DEAN



OUR U.S. RANKINGS

#1

in doctoral
programs (National
Research Council)

#2

(#4 globally): in
research (CWUR
World University
Rankings)

#5

in MS programs
(The Best Schools)

Friedman School faculty and alumni are translating research into action to improve the environment and create a resilient food supply chain that can withstand global shocks like pandemics and climate change.

Creating a More Sustainable Food System

Food and nutrition are critical to current and post-COVID-19 responses. Immunity, food insecurity, and aging are just a few of the many issues impacting this crisis. It's time to leverage food as medicine, incentivize and shift to real food, build a strong public health and food infrastructure, and rapidly expand critical nutrition research. It's time to launch a massive campaign on diet to save lives.

The global population is expected to reach nearly 10 billion by 2050. Feeding the world will require doubling our food supply. Our future demands equitable, sustainable, healthy agricultural systems and food environments. A 2019 scientific report on climate change and land published by the United Nations highlighted the risk climate change presents to the world's food security. And conversely, it is recognized that the global food system is a major driver of climate change.

THE FOOD SYSTEM IS "LITERALLY THE FOOTPRINT OF HUMANKIND ON THE PLANET," says **TIM GRIFFIN**, division chair of Agriculture, Food, and Environment, and Teri and Barry Volpert Family Professor of

Nutrition, Agriculture, and Sustainable Food Systems. "In order to continue to feed our growing population, our food system must be sustainable, and it must be respectful of our planet and its resources."

Griffin's research assesses sustainability across environmental, social, and economic metrics—moving to shift the conversation from the weaknesses of the food system to the road forward. He says, "the goal at this point is how to make sure everyone and especially the most vulnerable populations have access to healthy food."



The Farmer Upstairs

Since 1998, the Friedman School's New Entry Sustainable Farming Program has been improving our local and regional food systems by training the next generation of farmers to produce food that is sustainable, nutritious, and culturally preferred, and making this food accessible to individuals regardless of age, mobility, ethnicity, or socioeconomic status. This initiative is helping to move the United States from dependence on destructive industrial farming to a sustainable, environmentally friendly agriculture practiced by small-to-midsized family farmers dedicated to conserving the land and contributing to their communities.

New Entry has also partnered with the nonprofit Boston Area Gleaners to bring fresh produce from local farms to families in need, as part of the USDA-funded Farmers to Families Food Box Program. The program has rapidly expanded efforts to respond to food insecurity created by the pandemic.

How COVID-19 Affects Farmers and the Food Supply Chain

Empty supermarket shelves, farmers dumping milk, restaurants laying off staff—the American foodscape had to change dramatically, thanks to COVID-19. But how are the food supply chain and its workers affected? And what can we expect going forward?

We don't yet have all the answers, according to Friedman School experts Timothy Griffin, William Masters, and Jennifer Hashley. We can start by recognizing the fundamental shift in the way Americans eat, says Griffin—now a 90/10 split of eating at home and away from home.

Grocery stores reacted fairly quickly, keeping pace with demand in most cases. Masters, who teaches food economics, says that reflects a strength of the system. "Our food supply is remarkably resilient precisely because our sources of food are geographically dispersed. The risk is when a whole category of activity fails, such as simultaneous outbreaks at meatpacking plants." The biggest and most important sector affected by this crisis is the food service industry, he points out. Some 13 million food service and hospitality jobs are at risk.

Winners and losers are emerging among small farmers too, says Hashley. "Farmers with a lot of storage crops, if they have the opportunity to sell directly to consumers, are seeing a huge increase in demand." While many are also hesitating about whether they should start planting and how much, one thing is for sure: "People need food and they need farmers."

Our Way Forward

The effectiveness of response is crucially dependent on the speed and quality of data collection and updating predictions with new information. Economic analyses using that information reveal much about where, when, and for whom our food supplies and nutrition are at risk. Key responses include an expanded and more flexible safety net, increased protection for essential workers, and close monitoring of food prices to detect price spikes. These measures would complement existing safety nets for all U.S. households, recognizing the distinctive role of food sector jobs in American life.

FOOD FACTS FROM THE PANDEMIC

- **COVID-19 hit richer cities first, but hits poorer people harder.**
- **Economic impacts of the pandemic are plainly visible in food demand and supply.**
- **Federal aid has targeted farmers and food consumers, but many of the most vulnerable people are food system workers.**
- **Our sudden shift to food at home, as opposed to meals at school, workplaces, institutions, and restaurants, brings a dramatic change in what we eat—and the feeding programs we're missing.**
- **The forecasts used by commodity traders in contracts for future delivery clearly signal that declining demand from lower incomes will outpace any reduction in supply for most kinds of food.**

Since food and nutrition play an important role in preventing or contributing to chronic diseases, it's important to make healthy, affordable foods available and accessible.

10 Foods with Life-or-Death Consequences

A study by Associate Research Professor Renata Micha and colleagues put a shocking number on the cost of a bad diet: eating too much (or too little) of just 10 foods accounts for about 320,000 deaths each year in the United States from heart disease, stroke, and diabetes. As we add a daunting pandemic to our lives, it's important to assess and bring to bear every tool we have in our arsenal to reduce infections, deaths, and suffering from this outbreak. Their recommendations:

EAT MORE OF THESE



NUTS AND SEEDS
SEAFOOD
FRUIT AND VEGETABLES
WHOLE GRAINS
POLYUNSATURATED FATS

EAT LESS OF THESE



SODIUM
PROCESSED MEATS
SUGAR-SWEETENED BEVERAGES
RED MEAT



Obesity has become an epidemic in the United States, and its effects are far-reaching: rising national health-care expenditures, poor work productivity, lack of military readiness, and—most dire—obesity-related medical complications and death. CHRISTINA ECONOMOS, NG96, New Balance Chair in Childhood Nutrition at the Friedman School and director of ChildObesity180, is working on community-based research interventions to reduce childhood obesity rates. Experts and leaders from diverse disciplines are coming together, generating urgency, and finding solutions to the childhood obesity epidemic.

Small Change for Big Gains

FRIEDMAN SCHOOL RESEARCHERS ESTIMATE THAT ADJUSTING THE PRICE OF THESE SEVEN FOODS COULD PREVENT

63,268 DEATHS EVERY YEAR.



From cancer to food scarcity, malnutrition to socioeconomic equality, the research and science driven at the Friedman School will improve health outcomes around the world.

A Preventable Cancer Burden

A new modeling study estimates that diet-related factors may account for 80,110 of the new invasive cancer cases reported in 2015, or 5.2 percent of that year's total among U.S. adults. This is comparable to the cancer burden associated with alcohol, which is 4 to 6 percent. Excessive body weight, meanwhile, is associated with 7 to 8 percent of the cancer burden, and physical inactivity is associated with 2 to 3 percent.

“OUR FINDINGS UNDERSCORE THE OPPORTUNITY TO REDUCE CANCER BURDEN AND DISPARITIES IN THE UNITED STATES BY IMPROVING FOOD INTAKE,”

said first and corresponding author **FANG FANG ZHANG**, Neely Family Professor and cancer and nutrition researcher at the Friedman School.

Zhang has also been researching the importance of diet as it relates to nutrient intake. According to her study, adequate intake of certain nutrients is associated with a reduction in all-cause mortality when the nutrient source is foods, but not supplements. In addition, excess calcium intake was linked to an increased risk of cancer death, which researchers found was associated with supplemental doses of calcium exceeding 1,000 mg/day. It was discovered that dietary supplements had no effect on the risk of death in individuals with low nutrient intake and use of vitamin D supplements by individuals with no sign of vitamin D deficiency may be associated with an increased risk of death.



Inside the Nutrition Innovation Lab

Poor nutrition causes the deaths of about 3 million children worldwide each year, nearly half of all preventable childhood deaths. Due to quicker responses to crises and better access to food and health services, that's a big improvement over the nearly 6 million annual child deaths attributed to poor nutrition a decade ago. **“BUT 3 MILLION IS STILL UNCONSCIONABLE,”** says **PATRICK WEBB**, Alexander McFarlane

Professor of Nutrition and director for USAID's Feed the Future Nutrition Innovation Lab.

With colleagues from the Friedman School and around the world, Webb keeps an eye on the big picture: saving lives and reducing malnutrition. The Nutrition Innovation Lab's research seeks to determine what investments in agriculture are most effective in improving nutrition and how best to integrate health, water, and educational activities with innovations in food production. Since 2009, Webb and his colleagues have also been carrying out a Food Aid Quality Review—an overhaul of the nutritional content of foods distributed to millions of people during times of war, natural disaster, and food scarcity—for USAID's Office of Food for Peace.

The team analyzed every aspect of the distributed foods, which had remained essentially unchanged for 40 years. The new, more nutrient-rich product list are based on trusted science and specifically address the needs of infants, children, and pregnant and breastfeeding women—and are now being distributed and evaluated worldwide.



Patrick Webb, seated at right, discusses food security concerns with elders in Nepal.

BEATRICE ROGERS, professor of economics and food policy, and **JENNIFER COATES**, J94, N00, N06, associate professor of food policy and applied nutrition and a senior researcher at Tufts' Feinstein International Center, conducted a study for the Food and Nutrition Technical Assistance Project, funded through USAID. They examined the exit strategies of 12 USAID projects in Kenya, Bolivia, Honduras, and India, and the legacy of those projects up to three years after they had concluded. Successful projects had three things in common: an ongoing source of resources, trained people within the community to run the activities, and a way to keep the participants motivated. “Projects need to make sure that the people they serve have very clear expectations and that the projects are transparent about what the plan is from the beginning,” says Coates.



Eating Tomatoes to Fight Liver Cancer

In the fight against cancer, there is a surprising tool in the arsenal: the food we eat. Some nutrients in food have been found to play a role in preventing cancer.

THE WORLD CANCER RESEARCH FUND REPORTS THAT 30 TO 50 PERCENT OF CANCER CASES ARE PREVENTABLE.

XIANG-DONG WANG, NG92, Friedman School professor and a senior scientist and associate director of the Jean Mayer USDA Human Nutrition Research Center on Aging (HNRCA), studies how food can help prevent cancer development, particularly lung, liver, and colon cancer. One food of interest: tomatoes and tomato products rich in lycopene, a naturally occurring pigment that gives many fruits and vegetables their reddish hue.

In a research study recently published in the journal *Cancer Prevention Research*, Wang's Nutrition and Cancer Biology

lab examined the cancer-preventive effects of tomatoes as a whole food rich in lycopene. In infancy, mice were infected with a liver carcinogen and then fed an unhealthy high-fat diet, akin to a Western diet, with or without tomato powder containing lycopene.

"We demonstrated for the first time that tomato powder rich in lycopene can effectively reduce fatty liver disease, inflammation, and liver cancer development promoted by the high-fat diet the mice were consuming," Wang said. "Feeding mice tomato powder increased the richness and diversity of beneficial microbiota and prevented the overgrowth of some bacteria related to inflammation."

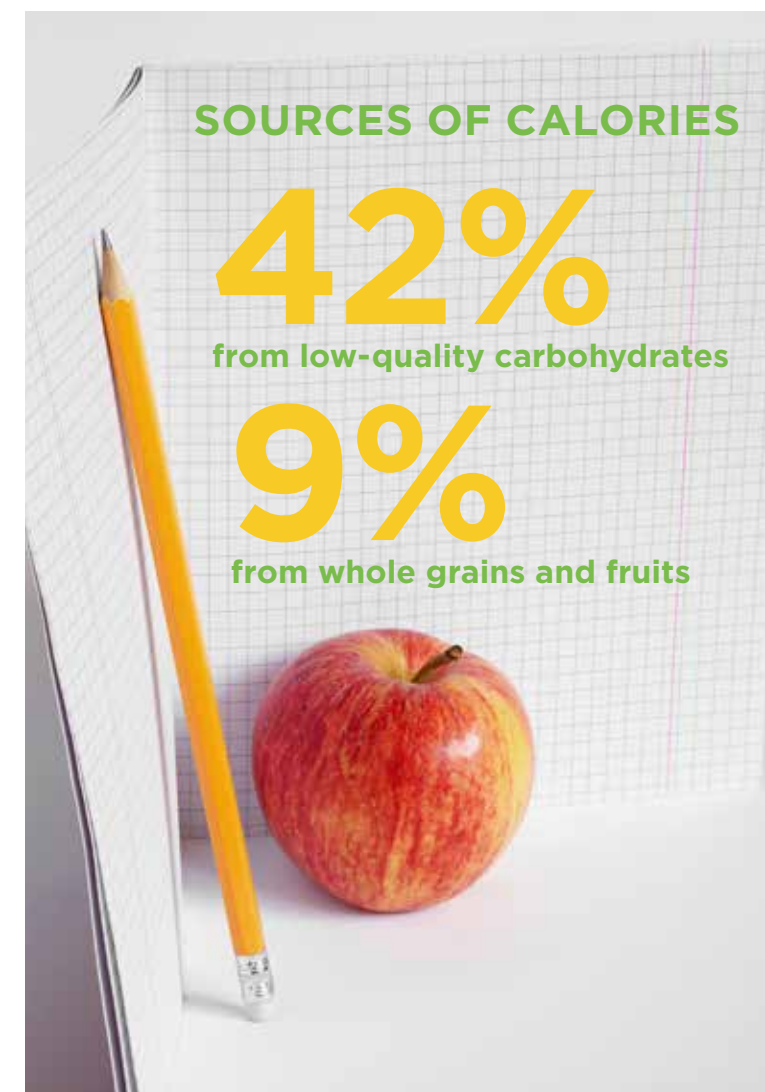
In humans, equivalent supplementation would amount to eating two to three tomatoes a day or a serving of tomato sauce over pasta. The next step, according to Wang, is conducting clinical trials with people to understand more about tomato lycopene's role in lowering the risk of inflammation and liver disease.

America's Diet Report Card

Despite years of guidance on healthy eating, a "report card" on the American diet shows adults are still consuming too many low-quality carbohydrates and more saturated fat than recommended, according to researchers at the Friedman School. The study looked at dietary trends over an 18-year period. Although it identified some improvements, it also found that low-quality carbohydrates from refined grains, starchy vegetables, and added sugars accounted for 42 percent of the typical American's daily calories. High-quality carbs, from whole grains and whole fruits, accounted for only 9 percent.

The study authors note that any dietary improvements were less pronounced for older people and those of lower income or educational attainment.

"WE ARE STILL A LONG WAY FROM GETTING AN 'A,'" said co-senior author Fang Fang Zhang. "These findings also highlight the need for interventions to reduce socioeconomic differences in diet quality so that all Americans can experience the health benefits of an improved diet."



Food-PRICE (Food Policy Review and Intervention Cost-Effectiveness) is a group of collaborative researchers across the United States and Europe working to identify the strategies that can have the greatest impact on improving the health of Americans—and it's based at the Friedman School.

Friedman entrepreneurs are more than innovators. They're working to change the game for a healthy, equitable, and sustainable food system.



Convening a Call for a National Nutrition Research “Moonshot”

How can we improve public health, advance healthy equity, free up federal dollars, and strengthen our military and economy in one fell swoop? According to the experts of the Federal Nutrition Research Advisory Group: Food.

Supported by the Rockefeller Foundation, the council includes Dean Dariush Mozaffarian, former USDA secretary Dan Glickman, former FDA commissioner David Kessler, former senator Tom Harkin, Bipartisan Policy Center Chief Medical Advisor Anand Parekh,

and a number of scientists, scholars, and former National Institutes of Health staffers.

The council's white paper calls for a national conversation on ways to strengthen federal nutrition research, which could include better coordinating the efforts of its many players; stepping up funding for research, which has plateaued or declined in recent decades; and creating a new authority, which could take the form of a new Office of the National Director of Food and Nutrition or a new National Institute of Nutrition. Greater federal coordination

and investment in nutrition research could accelerate discoveries across numerous critical areas and positively impact public health, equity, the economy, national security, and the nation's resilience to new threats, like the novel coronavirus—especially for the most vulnerable populations.

“Over the past 50 years, obesity and diabetes rates have skyrocketed,” says Mozaffarian. “About 40,000 Americans die every month from these diseases... We don't have another 50 years to learn all we need to know. We need to start now.”

A Fresh Take on Food Hubs

The Sacramento Valley Food Hub, a food distribution platform connecting beginning farmers with schools, hospitals, and other institutional customers, received the top prize at this year's Food and Nutrition Entrepreneurship Competition, held on Zoom. Five teams participated in the annual race, which is held in collaboration with the Tufts Gordon Institute and open to Tufts students, alumni, staff, and faculty.

This year, the event was part of an Innovation Week presented by the new Food and Nutrition Innovation Institute at the Friedman School. The winning team included New Entry Sustainable Farming manager Jacob Weiss, N20, and his classmates Cyrena Thibodeau and Emily Moschowits, among others. Weiss created the platform after observing a growing demand for local, sustainable produce; rising rates of food insecurity; and the struggle of small farms to access the larger market. “I want to make sure beginning farmers in marginalized communities don't get left behind,” Weiss says.



Past Winners

Baravena—a frozen dessert made with nutritious and sustainable whole oats, with flavors that celebrate Latin American culture, co-founded by Nayla Bezares, N19, and Silvia Berviano Benitez

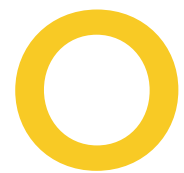
SmartBakery—a low-cost, high-impact program to help Nepalese children, who are often food insecure and far away from a quick and nutritious meal while in school, co-founded by Robin Shrestha, N15, project manager at the Feed the Future Innovation Lab for Nutrition, and Sapana Adhikari

CALL TO ADVANCE FEDERAL NUTRITION RESEARCH

The Food and Nutrition Innovation Council, which includes companies and startups in health care, wellness, food and agriculture, investment funds, nonprofit ventures, and advocacy groups, is leading the creation of a new coordinated federal nutrition research effort. “With the growing evidence for the enormous role diet plays in health, and the many existing challenges and exciting new opportunities it's time for a new national nutrition research ‘moonshot,’” said Dariush Mozaffarian. “Such a new effort should leverage, harmonize, and catalyze—not diminish or replace—the current critical nutrition research and surveillance efforts being led across the NIH, USDA, CDC, FDA, DOD, and other federal agencies.”

Friedman School students and alumni apply their knowledge and skills to advance policy, develop systems for governance, and improve humanitarian efforts—near home and abroad.

Stepping Up to Serve



ur school's mission statement is "Trusted Science. Future Leaders. Real-World Impact," but the Friedman community doesn't wait until the future to lead—we're doing it right now.

In response to the pandemic, students launched the Friedman Food Systems COVID-19 Connector ("Connector"), a service-learning program that matches organizations seeking technical assistance in their responses to COVID-19 to Tufts students with corresponding skills and interests. The win-win: Nonprofit organizations, farms, companies, and governments gain help from students who want to bring what they've learned in the classroom into the world.

Students created food safety guides, local food maps, data visualizations, data management platforms, blog posts, grant proposals, newsletters, and more for 26 organizations in 13 states.

At Farm to Pantry in Sonoma County, California, one student helped the small nonprofit save 50 percent in fees from donations by setting up a new donation platform. This support allowed Farm to Pantry to rescue 60,000 pounds of produce a week, which translates to more than 24,000 servings of food. At Maine Farm to School and Farm to Institution Networks, a Friedman School student shared information about COVID-19 support programs for school nutrition, school gardens, and other farm-to-school programming across New England. "It was impossible to keep up with everything until [this student] came on board and could hone in on COVID-specific news, webinars, and toolkits for Farm to School as they came available," said the organization contact. "She is awesome and has been a great asset."

Moving forward, the Connector will be housed under the Service Scholars program, an organization for service-minded students to work on service projects, volunteer, build relationships, and cultivate opportunities for the entire student body to give back.

ELLIE BLOCK AND FAMILY CAREER SERVICES CENTER

The Friedman School is committed to helping our graduates leverage their outstanding education for impactful and successful careers around the globe. Current and future students will benefit from one of the most innovative graduate career services programs in the country. Students can engage with the school's extensive network of alumni, in addition to our many volunteer leaders representing foundations, and with leaders in the food industry, the media, and governmental and nongovernmental agencies.

Internships and Impact



Improving Health Screenings for People on Probation

Given the high rates of incarceration in the United States, **DONMONIQUE CHAMBLISS**, N19, a student in the Nutrition Interventions, Communication, and Behavior Change program, recognized the need for greater public health research of people in the criminal justice system. She jumped at the opportunity to be a research assistant for the Probation Office Screening and Evaluation Study (PROSE) at Tufts University School of Medicine. The study's central aims are to assess the prevalence of cardiovascular disease and diabetes among people on probation and to determine the feasibility of using the probation office as a site for screening and connecting to care.

Translating Advocacy to Public Policy

For anyone seeking to learn how advocacy organizations influence federal policy, Washington, D.C., is the place to be. **SERENA BALDWIN**, N19, a student in the Food and Nutrition Policy Program, ventured to the nation's capital to work for the Center for Science in the Public Interest, also known as "America's Food and Health Watchdog." Baldwin's main project involved validating a tool to assess the prevalence of sugar-sweetened beverages in grocery stores; she was also tasked with helping coordinate a briefing on Capitol Hill attended by legislators and their staff.



Forecasting Emerging Infections

Under the mentorship of **ELENA NAUMOVA**, professor and chair of the Division of Nutrition Epidemiology and Data Science guidance, **RYAN SIMPSON**, N19, is conducting research aimed at forecasting famine and communicable disease epidemics during humanitarian emergencies. This is work that's both timely and relevant to tackling today's toughest challenges, including mobilizing health resources during global disasters and forecasting emerging infections like SARS-CoV-2.

The Friedman School is at the forefront of research and advocacy. We are a community of scientists, teachers, alumni, students, advocates, and entrepreneurs who are leading change. **JOIN US!**



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