



The U.S. Food System, Diet-Related Diseases, and Needed Actions for a Healthier America

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President's Council of Advisors on
Science and Technology (PCAST)

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Our Food: The #1 Cause of Poor Health

Risk factors

Dietary risks

Tobacco use

High systolic blood pressure

High body mass index

High fasting plasma glucose

High total cholesterol

Impaired kidney function

Alcohol and drug use

Air pollution

Low physical activity

Occupational risks

Low bone mineral density

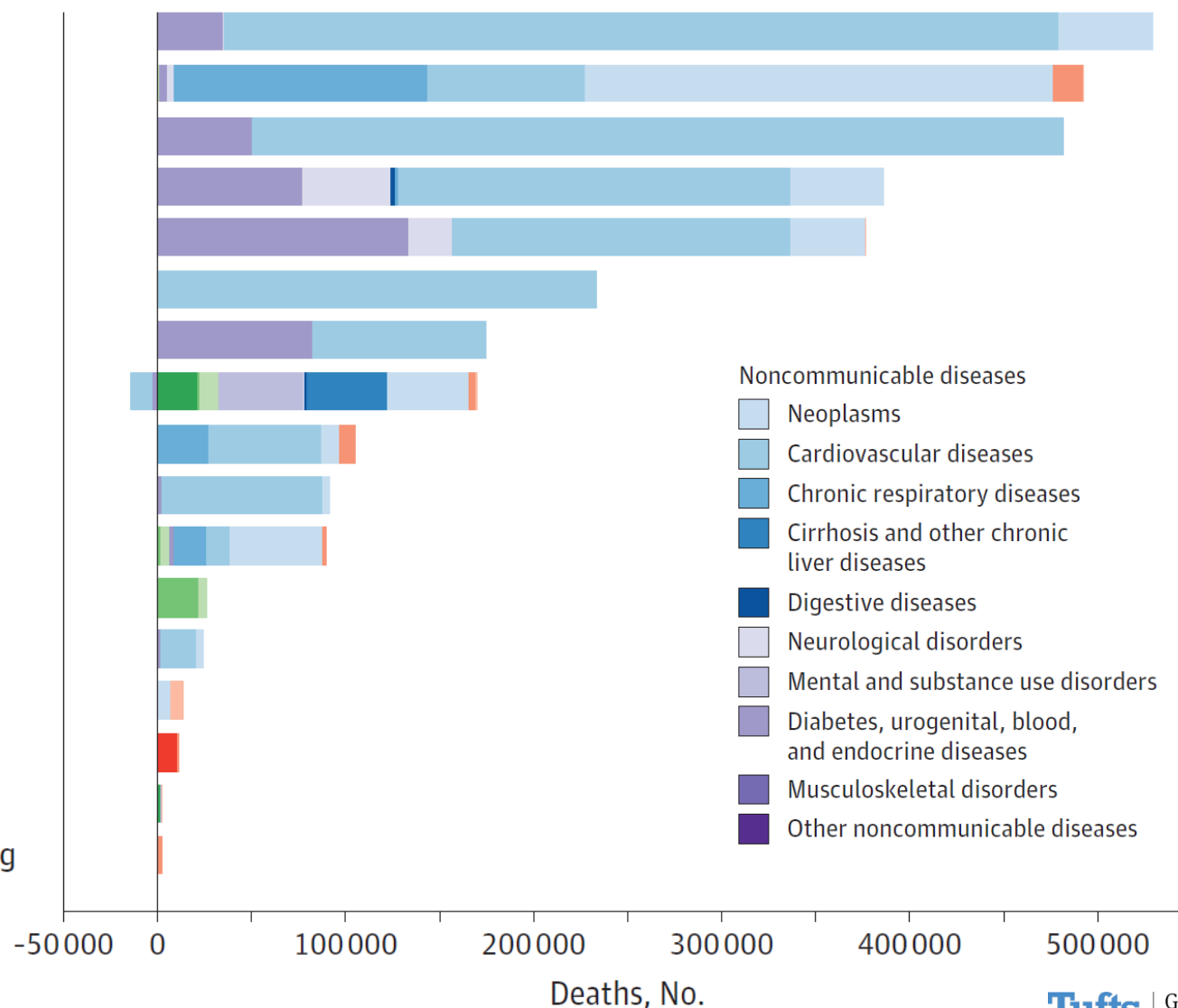
Residential radon and lead exposure

Unsafe sex

Child and maternal malnutrition

Sexual abuse and violence

Unsafe water, sanitation, and handwashing



US Burden of Disease
Collaborators, JAMA 2018

Diet-Related Disease in the U.S.

- More American adults are **sick** than are healthy:
 - **1 in 2** have **diabetes or prediabetes**
 - **3 in 4** have **overweight or obesity**
 - Only **1 in 15** (6.8%) are **metabolically healthy**
- Among American teenagers:
 - **1 in 4** have **prediabetes**
 - **1 in 4** have **overweight or obesity**
 - **1 in 6** have **fatty liver disease**

Centers for Medicare & Medicaid Services, 2018

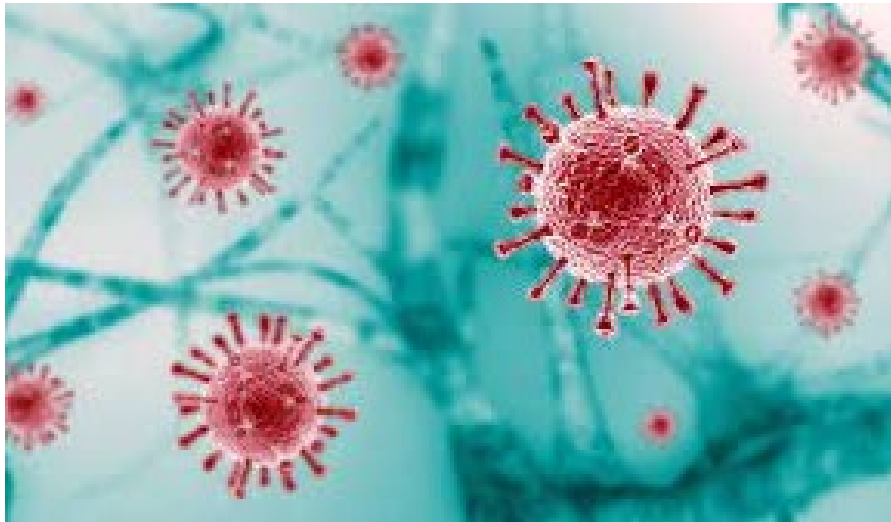
American Heart Association, *Heart Disease and Stroke Statistics*, 2018

The Milken Institute, *America's Obesity Crisis*, 2018

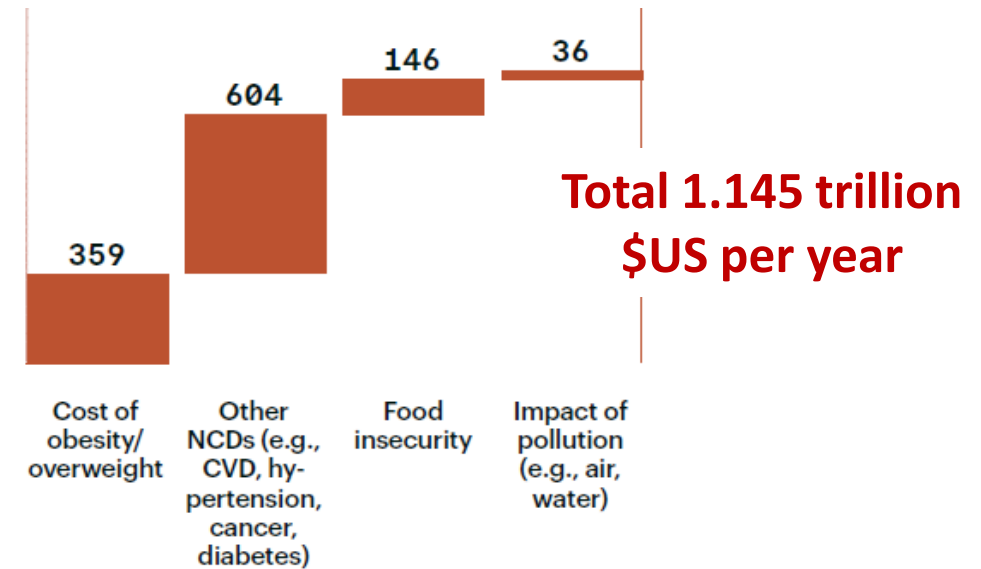
O'Hearn M et al., JACC 2022

Poor Nutrition: True Societal Costs

Diet-related diseases like diabetes, obesity, and hypertension have contributed to an estimated **723,000 excess U.S. deaths from COVID-19**



Poor nutrition causes an estimated **\$1.1 trillion in economic losses each year** due to excess healthcare spending and lost productivity



O'Hearn et al., JAMA 2021;

True Cost of Food: Measuring What Matters to Transform the U.S. Food System, 2021

Potential to Unlock Business Innovation

- **1 in 10 U.S. jobs** – 20 million jobs – are directly supported by the food and agriculture sector
- The food and agriculture sector contributes **\$1.1 trillion** to the nation's economic output
- Food and agriculture **exports total \$183 billion** each year
- Food sector businesses are the **#1 source of new small businesses and new jobs** in racial and ethnic minority communities
- Consumers demanding **healthier, more authentic, more nourishing foods**
- Rapid growth of Environment, Social, Governance (**ESG**) investing



Our Modern Food System: A 20th Century Legacy

Discovery of Vitamins

World War II Famine

Era of vitamin discovery

1920

Isolation and synthesis of all known vitamins

A

B₁ — B₁₂

C

D

E

K

1940

Commodity crops, fortification

Food as a delivery system

Single nutrient is born

Identification of vitamins proved the nutritional basis of serious epidemic deficiency diseases, which could be treated with food based dietary strategies, and synthetic vitamins

Beriberi: B₁

Pellagra: B₃

Scurvy: C

Rickets: D

1910

1930

Recommended daily allowances

During the Great Depression and World War II, guidelines were prepared for total calorie intake and selected nutrients

Protein

Calcium

Phosphorus

Iron

Vitamins

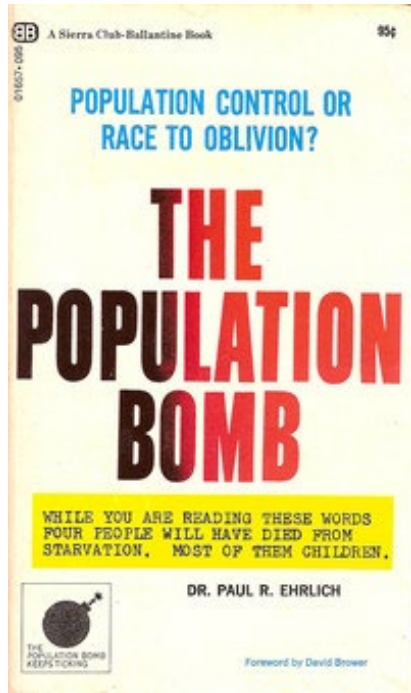
1950

Soviet Union	7 to 9 million
– Of which, under German control	6 to 7 million
– Under Soviet control	1 to 2 million
Bengal province, India	2.1 million
Henan province, China	2 million
Java	1.3 to 2.4 million
Vietnam	1 million
Greece	300,000
Austria	100,000
Netherlands	15,000 to 25,000

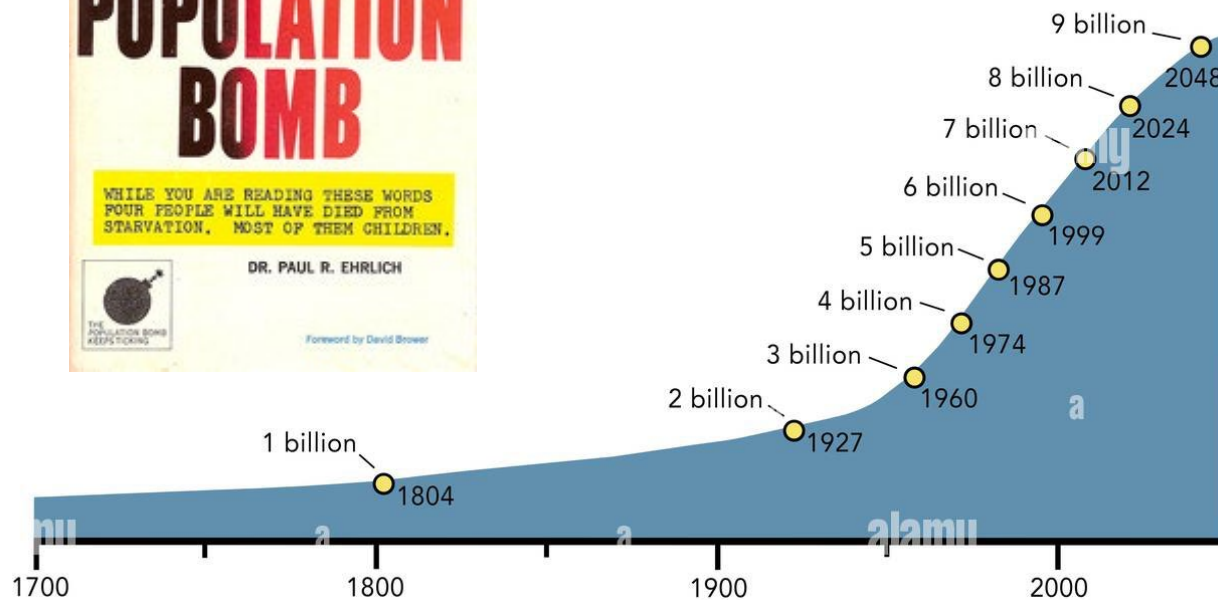


Mozaffarian D, et al. *History of Modern Nutrition Science—Implications for Current Research, Dietary Guidelines, and Food Policy*. BMJ 2018

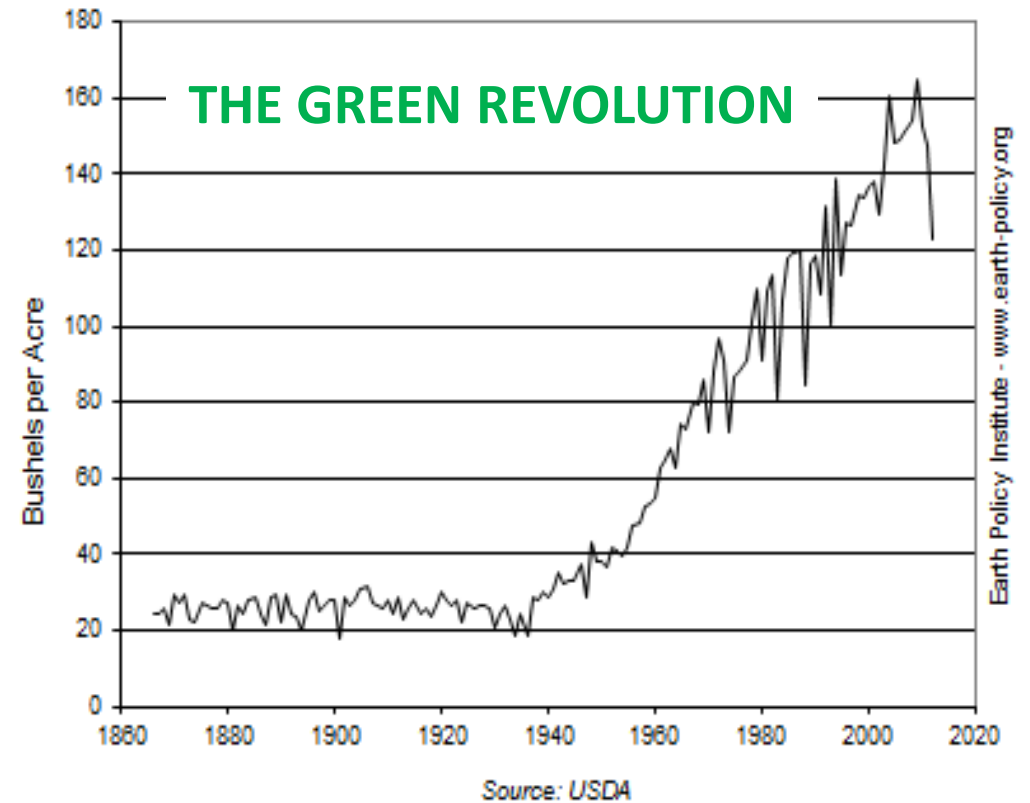
Population Explosion and Green Revolution



GLOBAL POPULATION EXPLOSION



Corn Yields in the United States, 1866-2012

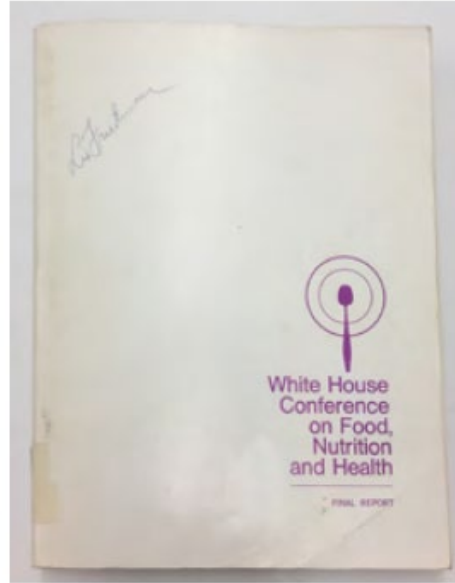


Mozaffarian D, et al. *History of Modern Nutrition Science—Implications for Current Research, Dietary Guidelines, and Food Policy.* BMJ 2018

1969 White House Conference on Food, Nutrition, & Health



Dr. Jean Mayer presents President Nixon with the 1969 Conference Report



- Major expansion of the Food Stamp Program
 - ↑ from 2 million in 1968 to 11 million by 1971
- Major expansion of the School Lunch program
 - ↑ from 2 million in 1968 to 8 million by 1971
- Creation of the Supplemental Feeding Program for Women, Infants, and Children (WIC) in 1972
- Creation of the School Breakfast Program in 1975
- Creation of the Nutrition Facts Panel
- Creation of the modern DGA process



Senators George McGovern and Bob Dole

<https://sites.tufts.edu/nutritionadvisory/white-house-conference/>

<https://sites.tufts.edu/foodnutritionandhealth2019/>



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A 20th Century Food System, with 21st Century Problems



INFORMING THE WHITE HOUSE CONFERENCE:

Ambitious, Actionable Recommendations to End Hunger, Advance Nutrition, and Improve Health in the United States



Chef José
Andrés

Amb. Ertharin
Cousin

Senator
Bill Frist

Secretary
Dan Glickman

Dr. Dariush
Mozaffarian

A REPORT OF THE

Task Force on Hunger, Nutrition, and Health

CONVENED BY



<https://informingwhc.org/>

BIDEN-HARRIS ADMINISTRATION NATIONAL STRATEGY ON HUNGER, NUTRITION, AND HEALTH

SEPTEMBER 2022



THE WHITE HOUSE
WASHINGTON

<https://www.whitehouse.gov/wp-content/uploads/2022/09/White-House-National-Strategy-on-Hunger-Nutrition-and-Health-FINAL.pdf>

30 Priority Recommendations Across 6 Domains



GOVT. NUTRITION PROGRAMS

- Nutrition in School Meals, SNAP, WIC
- Summer EBT
- Fresh F&V Programs
- School Garden Programs
- Federal, State, & Local Food Procurement Standards



HEALTHCARE SYSTEMS

- Medically Tailored Meals
- Produce Prescriptions
- RD Counseling
- MD Nutrition Education
- EHR Screening for Food & Nutrition Security
- Billing & Quality Metrics



SCIENCE & RESEARCH

- NIH: New National Institute of Nutrition
- USDA: Focus on the Nexus of Production, Health, & Sustainability
- Public-Private Partnerships
- Nutrition Science Coordination: ONR, OSTP, PCAST, ICHNR



BUSINESS INNOVATION

- Market Expansion for Healthier Products
- Tax Policy for Food/Nutrition Innovation
- ESG Investor Metrics
- Support for BIPOC Food Entrepreneurs
- Expand B Corp Status
- Opportunity Zones



PUBLIC HEALTH & EDUCATION

- Limits on Salt, Added Sugar
- Front-of-Pack Labels
- Warning Labels
- U.S. Dietary Guidelines
- Marketing to Children
- Qualified Health Claims
- CDC DNPAO Surveillance



NATIONAL COORDINATION

- National Director of Food & Nutrition
- National Policy Strategy (e.g. NEPA)
- Interagency Task Force
- White House Conference

<https://informingwhc.org/2022-task-force-report/>



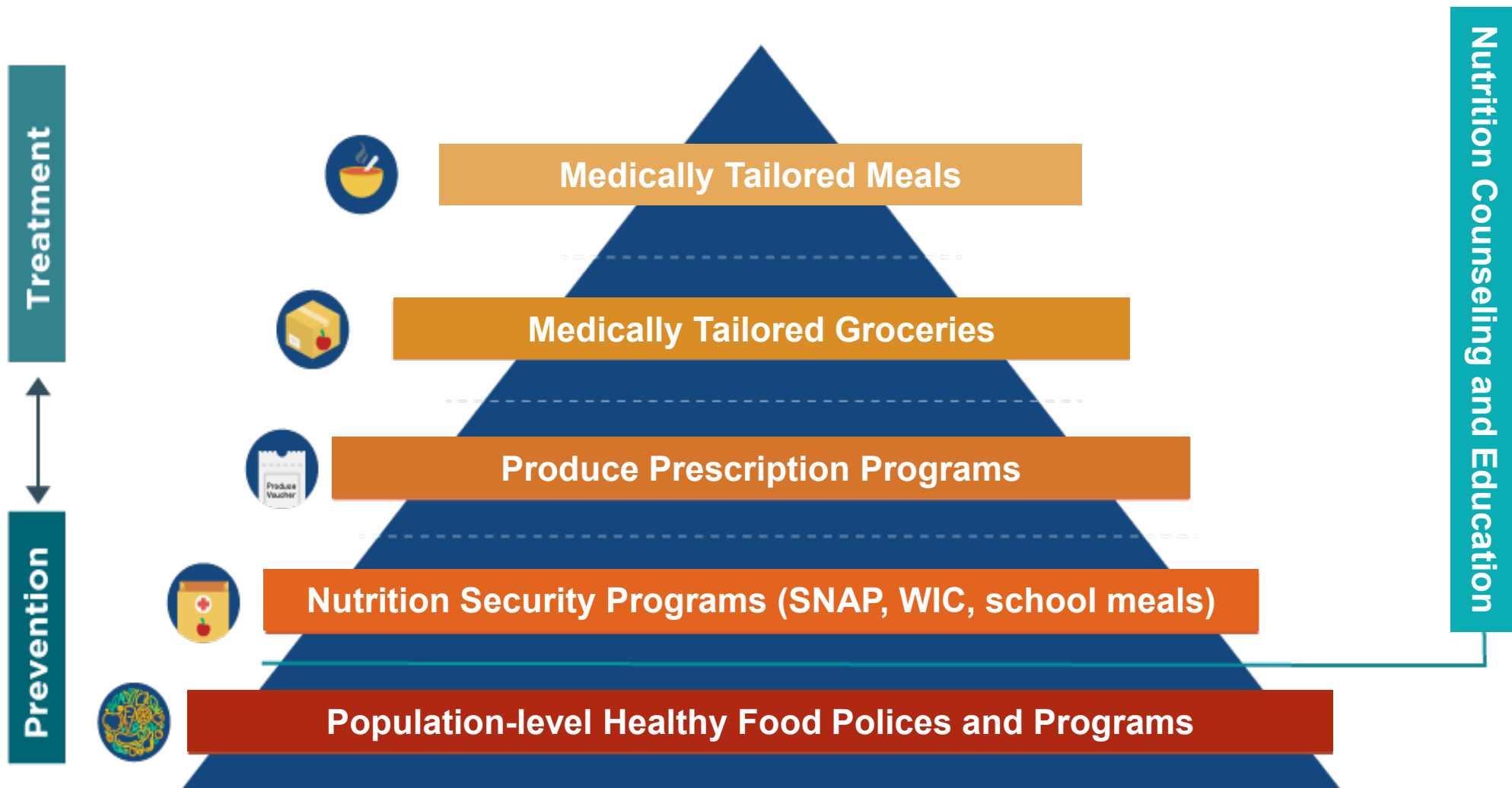
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Enabling a Healthier Food System for a Healthier America

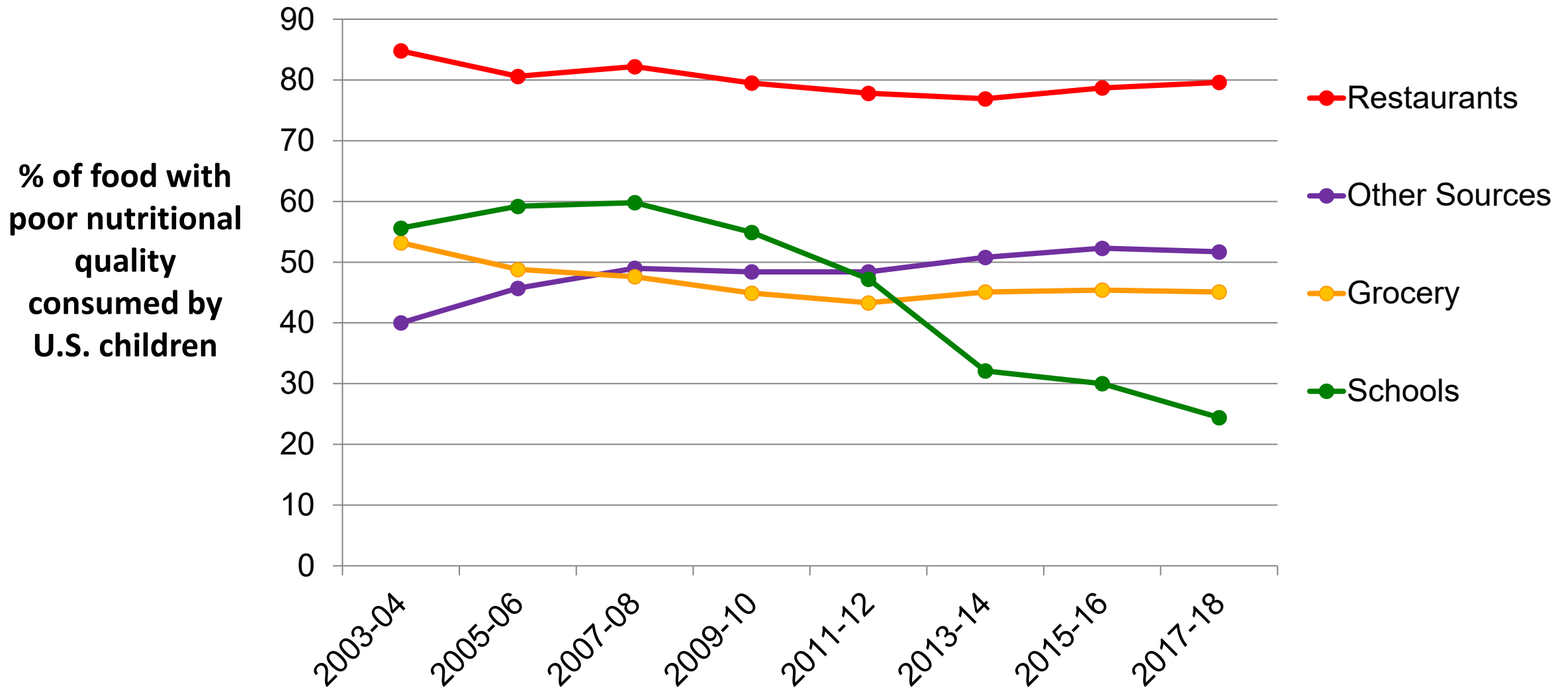
- **Food is Medicine** interventions in healthcare
- **Nutrition Security** in the federal nutrition programs
- **Nutrition Science** at NIH, USDA, DOD, CDC, FDA, and more
- **Business Innovation** and entrepreneurship
- **Federal Policy Coordination** with structure and authority

<https://informingwhc.org/>

Food is Medicine: Integrating Nutrition and Health



Nutrition Security in the Federal Nutrition Programs



Nutrition Science: Accelerating Discovery



Introducing the New NIH Office of Nutrition Research (ONR)



NIH National Institutes of Health
Turning Discovery Into Health

2020-2030 Strategic Plan for NIH Nutrition Research

A Report of the NIH Nutrition Research Task Force



Nutrition for Precision Health

Powered by the All of Us Research Program,
part of the National Institutes of Health

NEW NATIONAL INSTITUTE OF NUTRITION (NIN)

KEY CHARACTERISTICS

- ✓ Leads research, coordination, training, outreach on foundational and cross-cutting topics in nutrition and health
- ✓ Additive funding and focus areas to existing NIH and other federal nutrition research efforts
- ✓ Harmonizes and leverages other nutrition and related research at NIH and other agencies and departments
- ✓ Strong partner to inform, collaborate on, and help address joint research needs of other agencies and departments
- ✓ Promotes and supports training of a diverse 21st century nutrition research workforce
- ✓ Guides and supports training of healthcare professionals for clinical care and basic and translational science in nutrition
- ✓ Translates and disseminates sound nutrition science findings to the public
- ✓ Fosters innovative external collaborations and partnerships

ADVANTAGES

- ✓ Strong leadership, robust infrastructure, and investment
- ✓ Can better address nutrition science that is cross-cutting rather than disease specific
- ✓ Includes extramural and intramural research, training, and outreach activities
- ✓ Long-term, leading to unforeseeable positive returns and evolving appropriately with changing science and needs of the population
- ✓ Meaningful external advisory mechanism to solicit diverse relevant insights and input
- ✓ Strong return on investment, in line with or exceeding other NIH research investments

Catalyzing Private Sector Innovation

- **Market expansion:** New efforts for greater public knowledge and understanding of the benefits and value of healthier foods.
- **Tax policy:** Tax strategies and other economic incentives across sectors (agriculture, retail, manufacturing, restaurant, healthcare, wellness) for R&D, marketing, and sales of healthier, more accessible foods.
- **Healthcare, life insurance, nutrition assistance:** Leverage healthcare, insurance, food assistance dollars to support effective nutrition products and interventions.
- **ESG, mission-driven investment:** Encourage and convene investment standards and vehicles for food-related companies centered on health and equity.
- **Catalyze entrepreneurship:** Develop and support a national strategy to build an ecosystem of evidence-driven innovation for a healthier food system.
- **B-corporations:** Encourage and highlight B corporation status across sectors to recognize and reward integration of social and environmental priorities.
- **Opportunity zones:** Expand and encourage opportunity zone incentives for food, nutrition, and wellness investments to improve equity and reduce disparities.

2021 Government Accountability Office (GAO) report: “Chronic Health Conditions: Federal Strategy Needed to Coordinate Diet-Related Efforts”

- Chronic diet-related health conditions are **costly, deadly, and preventable**
- **200 different federal efforts, spread across 21 agencies**, to improve Americans' diets. But, efforts are **fragmented**, keeping the government from meeting its goals.
- Conclusion: “**A federal strategy for diet-related efforts could provide sustained leadership and result in improved, cost-effective outcomes for reducing Americans’ risk of diet related chronic health conditions.**”
- Recommendation: “**Congress should consider identifying and directing a federal entity to lead development and implementation of a federal strategy for diet-related efforts aimed at reducing Americans' risk of chronic health conditions.**”

U.S. Government Accountability Office (GAO)
<https://www.gao.gov/products/gao-21-593>

Federal Policy Coordination

NEW OFFICE OF THE NATIONAL DIRECTOR OF FOOD AND NUTRITION (ONDFN)

KEY CHARACTERISTICS

- ✓ President-appointed, Senate-confirmed Director of National Nutrition, serving as the Principal Nutrition Advisor to the White House, heads of executive branch departments and agencies, senior military, and Congress
- ✓ Modeled after the Office of the Director of National Intelligence, created after September 11 to coordinate fragmented national intelligence efforts
- ✓ Coordinate and harmonize the work of the 10+ US departments and agencies that comprise the federal food and nutrition community, including NIH, USDA, USAID, DoD, VA, CDC, FDA, DoE, CMS, CMMI, NASA, and more
- ✓ Assess and improve effectiveness and synergies of federal food and nutrition research and policy
- ✓ Ensure that timely and objective national nutrition information is provided to the White House, federal agency leaders, military commanders, and Congress

ADVANTAGES

- ✓ Tested, effective model
- ✓ Dedicated leadership, staff, and funding
- ✓ Builds on the ICHNR, with much stronger coordination and synergies across departments and agencies and a stronger dissemination platform
- ✓ Can be mobilized to advise on urgent situations (e.g., COVID-19) which require pre-existing robust leadership and coordination across agencies and departments
- ✓ Broader than solely nutrition research, intersects with food assistance

Fleischhacker et al. AJCN 2020
sites.tufts.edu/nutritionadvisory

Enabling a Healthier Food System for a Healthier America

- **Food is Medicine** interventions in healthcare
- **Nutrition Security** in the federal nutrition programs
- **Nutrition Science** at NIH, USDA, DOD, CDC, FDA, and more
- **Business Innovation** and entrepreneurship
- **Federal Policy Coordination** with structure and authority

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Federal Nutrition Advisory Council (FNAC): 100+ Organizations

Academy of Nutrition and Dietetics
Acasti Pharma
American Academy of Pediatrics
American Cancer Society
American Cancer Society Cancer Action Network
American College of Lifestyle Medicine
American Diabetes Association
American Heart Association
American Public Health Association
American Society for Nutrition
American Society for Parenteral and Enteral Nutrition
Angiogenesis Foundation
Association of Public and Land-Grant Universities
Association of State Public Health Nutritionists
Azuluna
Balanced
Brightseed
Center for Good Food Purchasing
Center for Health Law and Policy Innovation, Harvard
Center for Science in the Public Interest
Ceres Community Project
Community Servings
DayTwo

Defeat Malnutrition Today
The diaTribe Foundation
84.51 Health
Elysium Health
End Allergies Together
Feed the Truth
Filtricine
FARE
Food & Nutrition Innovation Institute, Tufts University
Food Is Medicine Coalition
Food Law and Policy Clinic, Harvard Law School
Food Pantries of the Capital District
Food Tank
Food team @ Google
Foodsmart
General Mills Inc.
God's Love We Deliver
The Good Food Institute
Good Measures
The Greater Boston Food Bank
The Harkin Institute for Public Policy, Drake U.
Healthy Food America
HumanCo
Hunger Free America
Instacart
Institute of Food Technologists

International Fresh Produce Association
January, Inc.
John Hancock
Juice Press
KIND Snacks
Kroger
Laurie M. Tisch Center for Food, Education, & Policy, Columbia
Manna Tree Partners
McCormick Science Institute
Milken Institute
Mission: Readiness
National Association for the Advancement of Colored People
National Association of Nutrition and Aging Services Programs
National Sustainable Agriculture Coalition
National Produce Prescription Collaborative
National WIC Association
Novo Nordisk
Nutrition and Obesity Group, National Academy of Medicine
NYS Food As Medicine Coalition
The Obesity Society
Ocean Spray
Oldways

Partnership for a Healthier America
PepsiCo
PowerPlant Ventures
Produce for Better Health Foundation
Resnick Center for Food Law and Policy, UCLA School of Law
Rhode Island Community Food Bank
The Rockefeller Foundation
Rudd Center for Food Policy & Obesity, U. Connecticut
Sage Mountain Farm
Season
Share Our Strength
Society for Nutrition Education and Behavior
Tangelo
Teens for Food Justice
1000 Days
Trust for America's Health
2RHealth
Union of Concerned Scientists
Urban School Food Alliance
Vitamix Foundation
The Well
Wholesome Wave
World Central Kitchen
World Food Policy Center, Duke University
World Food Prize Foundation