THE

MAHA

REPORT

Make Our Children *Healthy* Again

ASSESSMENT

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Establishing the President's Make America Healthy Again Commission

Executive Order 14212 of February 13, 2025

The initial mission of the Commission shall be to advise and assist the President on how best to exercise his authority to address the childhood chronic disease crisis. Therefore, the Commission shall:

(a) study the scope of the childhood chronic disease crisis and any potential contributing causes, including the American diet, absorption of toxic material, medical treatments, lifestyle, environmental factors, Government policies, food production techniques, electromagnetic radiation, and corporate influence or cronyism;

(b) advise and assist the President on informing the American people regarding the childhood chronic disease crisis, using transparent and clear facts; and

(c) provide to the President Government-wide recommendations on policy and strategy related to addressing the identified contributing causes of and ending the childhood chronic disease crisis.

Within **100 days of the date of this order,** the Commission shall submit to the President, through the Chair and the Executive Director, the **Make Our Children Healthy Again Assessment.**

Within 180 days of the date of this order, the Commission shall submit to the President, through the Chair and the Executive Director, a Make Our Children Healthy Again Strategy based on the findings from the Assessment.

DONALD J. TRUMP

PRESIDENT OF THE UNITED STATES

Commission Members

Robert F. Kennedy, Jr., Secretary of Health and Human Services – Chair

Vincent Haley, Assistant to the President for Domestic Policy – Executive Director

Brooke Rollins, Secretary of Agriculture

Scott Turner, Secretary of Housing and Urban Development

Linda McMahon, Secretary of Education

Douglas Collins, Secretary of Veterans Affairs

Lee Zeldin, Administrator of the Environmental Protection Agency

Russell Vought, Director of the Office of Management and Budget

Stephen Miller, Assistant to the President and Deputy Chief of Staff for Policy

Dr. Kevin Hassett, Director of the National Economic Council

Dr. Stephen Miran, Chairman of the Council of Economic Advisers

Michael Kratsios, Director of the Office of Science and Technology Policy

Dr. Martin Makary, Commissioner of Food and Drugs

Dr. Jayanta Bhattacharya, Director of the National Institutes of Health

Purpose of This Assessment

This report—*Make Our Children Healthy Again: Assessment*—is a call to action. It presents the stark reality of American children's declining health, backed by compelling data and long-term trends. More importantly, it seeks to unpack the potential dietary, behavioral, medical, and environmental drivers behind this crisis. By examining the root causes of deteriorating child health, this assessment establishes a clear, evidence-based foundation for the policy interventions, institutional reforms, and societal shifts needed to reverse course.

To turn the tide and better protect our children, the United States must act decisively. During this administration, we will begin reversing the childhood chronic disease crisis by confronting its root causes—not just its symptoms. This means pursuing truth, embracing science, and enacting pro-growth policies and innovations to restore children's health. Today's children are tomorrow's workforce, caregivers, and leaders—we can no longer afford to ignore this crisis.

After a century of costly and ineffective approaches, the federal government will lead a coordinated transformation of our food, health, and scientific systems. This strategic realignment will ensure that all Americans—today and in the future—live longer, healthier lives, supported by systems that prioritize prevention, wellbeing, and resilience.

But real transformation requires more than vision—it requires clarity. Before we act, we must fully understand the scope of the crisis, the conditions that created it, and the mechanisms through which it continues to grow. Without this foundation, interventions risk being reactive, fragmented, or ineffective.

To Make Our Children Healthy Again, we must begin with a shared understanding of the magnitude of the crisis and subsequently what's likely driving it. This assessment provides that foundation—grounding future efforts in a common scientific basis that identifies four potential drivers behind the rise in childhood chronic disease that present the clearest opportunities for progress:

- **Poor Diet**: The American diet has shifted dramatically toward ultra-processed foods (UPFs), leading to nutrient depletion, increased caloric intake, and exposure to harmful additives. Nearly 70% of children's calories now come from UPFs, contributing to obesity, diabetes, and other chronic conditions.
- **Aggregation of Environmental Chemicals**: Children are exposed to an increasing number of synthetic chemicals, some of which have been linked to developmental issues and chronic disease. The current regulatory framework should be continually evaluated to ensure that chemicals and other exposures do not interact together to pose a threat to the health of our children.
- **Lack of Physical Activity and Chronic Stress**: American children are experiencing unprecedented levels of inactivity, screen use, sleep deprivation, and chronic stress. These

factors significantly contribute to the rise in chronic diseases and mental health challenges.

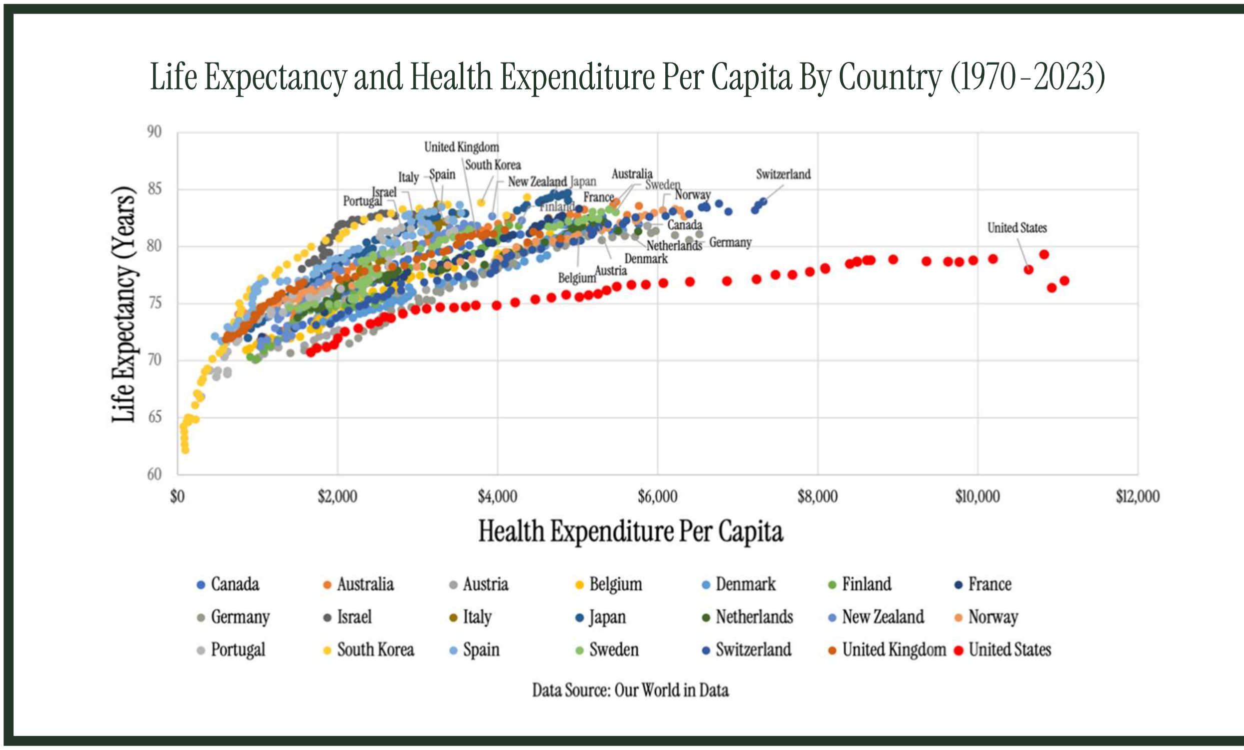
- **Overmedicalization**: There is a concerning trend of overprescribing medications to children, often driven by conflicts of interest in medical research, regulation, and practice. This has led to unnecessary treatments and long-term health risks.

By examining each of these drivers, this assessment equips MAHA Commission stakeholders and partners with the facts needed to identify where and how policy interventions will likely have the most impact.

The sections that follow analyze the evidence, spotlight gaps, and map the terrain—laying the groundwork for coordinated, high-impact solutions.

Introduction

The health of American children is in crisis. Despite outspending peer nations by more than double per capita on healthcare, the United States ranks last in life expectancy among high-income countries – and suffers higher rates of obesity, heart disease, and diabetes.[1,2] Today's children are the sickest generation in American history in terms of chronic disease and these preventable trends continue to worsen each year,[3] posing a threat to our nation's health, economy, and military readiness.



In 2023 alone, national health expenditures were projected to grow by 4.4%,[4] outpacing real U.S. GDP growth of just 2.5%.[5] Yet despite the ever-growing financial investment in the U.S. healthcare system, American life expectancy lags other high-income countries.

[1] Wager, E., Telesford, I., Rakshit, S., Kurani, N., & Cox, C. (2024, October 9). *How does the quality of the U.S. health system compare to other countries?* Peterson-KFF Health System Tracker. https://www.healthsystemtracker.org/chart-collection/quality-u-s-healthcare-system-compare-countries/.
[2] Tikkanen, R., & Abrams, M. K. (2020, January 30). *U.S. health care from a global perspective, 2019: Higher spending, worse outcomes?* The Commonwealth Fund. https://www.commonwealthfund.org/publications/issue-briefs/2020/jan/us-health-care-global-perspective-2019
[3] Wisk, L. E., & Sharma, N. (2025). Prevalence and Trends in Pediatric-Onset Chronic Conditions in the United States, 1999-2018. *Academic Pediatrics*, 102810.
[4] Centers for Medicare & Medicaid Services. (2024). National health expenditure (NHE) fact sheet. U.S. Department of Health and Human Services. https://www.cms.gov/data-research/statistics-trends-and-reports/national-health-expenditure-data/nhe-fact-sheet.
[5] Bureau of Economic Analysis. (2024, February 28). Gross domestic product, fourth quarter and year 2023 (second estimate). *U.S. Bureau of Economic Analysis*. https://www.bea.gov/news/2024/gross-domestic-product-fourth-quarter-and-year-2023-second-estimate.

Over the past century, U.S. GDP has grown over 30,000%.[6] **Today, American farmers feed the world, American companies lead the world, and American energy powers the world.** This economic growth has been a force for technology, health and agriculture innovations that have increased U.S. life expectancy by more than 30 years compared to 1900. But **the same forces of modernization and industrialization have also introduced threats to our health and revealed growing inefficiencies in our ability to respond to them.**

Over the past two generations, we have failed to address the alarming rise in childhood chronic disease. Federal and state policy have sometimes been guided more by corporate profit than the public interest. Many of our leading scientific and medical institutions have grown complacent, defaulting to symptom management rather than harnessing gold-standard science to prevent and reverse root causes. The U.S. food and agricultural systems have embraced ultra-processed ingredients and synthetic chemicals. Meanwhile, our healthcare system has over-medicalized children, frequently masking and compounding underlying issues. Coupled with rising screen addiction and sedentary lifestyles, these factors are converging to produce a chronically stressed, sick, and isolated generation. This crisis is undermining national resilience and competitiveness.

The purpose of this report is radical transparency about our current state to spur a conversation about how we can build a world – together – where:

- American farmers are put at the center of how we think about health.
- The American healthcare system thrives when disease is prevented and reversed, not just "managed" in a sick-care system.
- The Great American Comeback of energy dominance powers AI technology that will develop new tools and push the frontiers of science to help us better understand how to measure and reverse chronic disease.
- The next ten years see a revolution in living standards and prosperity, while we understand how to better manage the increased threats to our children's health that come from industrialization.

America will begin reversing the childhood chronic disease crisis during this administration by getting to the truth of why we are getting sick and spurring pro-growth policies and innovations to reverse these trends.

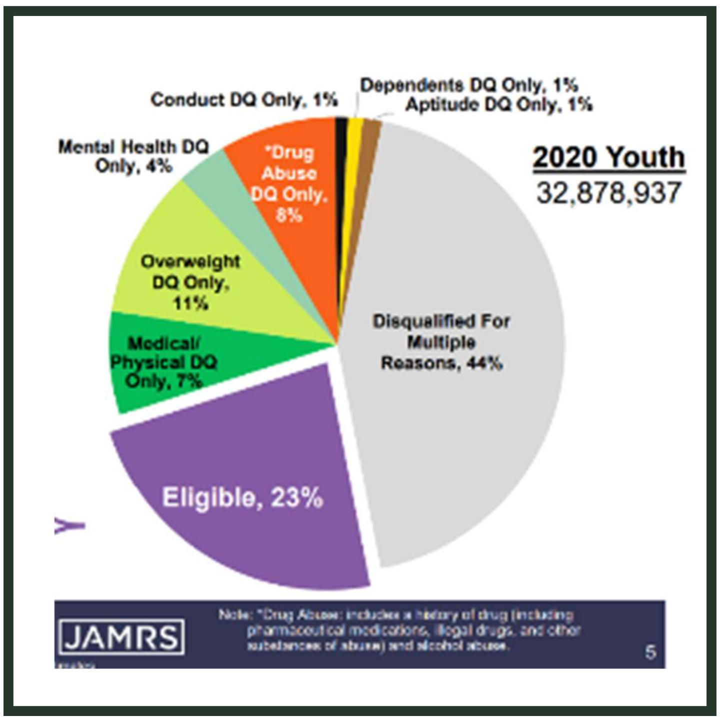
These concerning trends persist despite decades of federal investment in nutrition standards, physical activity campaigns, chemical risk assessments, and clinical quality initiatives. Still, childhood chronic disease continues to rise. To Make Our Children Healthy Again, we must go further. This assessment begins with a shared understanding of the crisis.

[6] Federal Reserve Bank of St. Louis. (n.d.). *Gross Domestic Product [GDP]*. FRED, Federal Reserve Economic Data. Retrieved May 16, 2025, from https://fred.stlouisfed.org/series/GDP.

The Chronic Disease Crisis: A Generation at Risk

America's children are facing an unprecedented health crisis. Over 40% of the roughly 73 million children (aged 0-17) in the United States have at least one chronic health condition, according to the CDC, such as asthma, allergies, obesity, autoimmune diseases, or behavioral disorders.[7] Although estimates vary depending on the conditions included, all studies show an alarming increase over time.[8] [9]

This chronic disease crisis has far-reaching consequences: Over 75% of American youth (aged 17-24) are ineligible for military service—primarily due to obesity, poor physical fitness, and/or mental health challenges.[10]



Here, we provide a brief overview of the problem – the main epidemiological trends related to childhood chronic disease in America, including obesity, diabetes, neurodevelopmental disorders, cancer, mental health, autoimmune disorders, and allergies.

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[7] National Survey of Children's Health. (n.d.). *NSCH 2018-19: Number of current or lifelong health conditions, nationwide, age in 3 groups. ChildHealthData.org.* Retrieved February 24, 2021, from https://www.childhealthdata.org.
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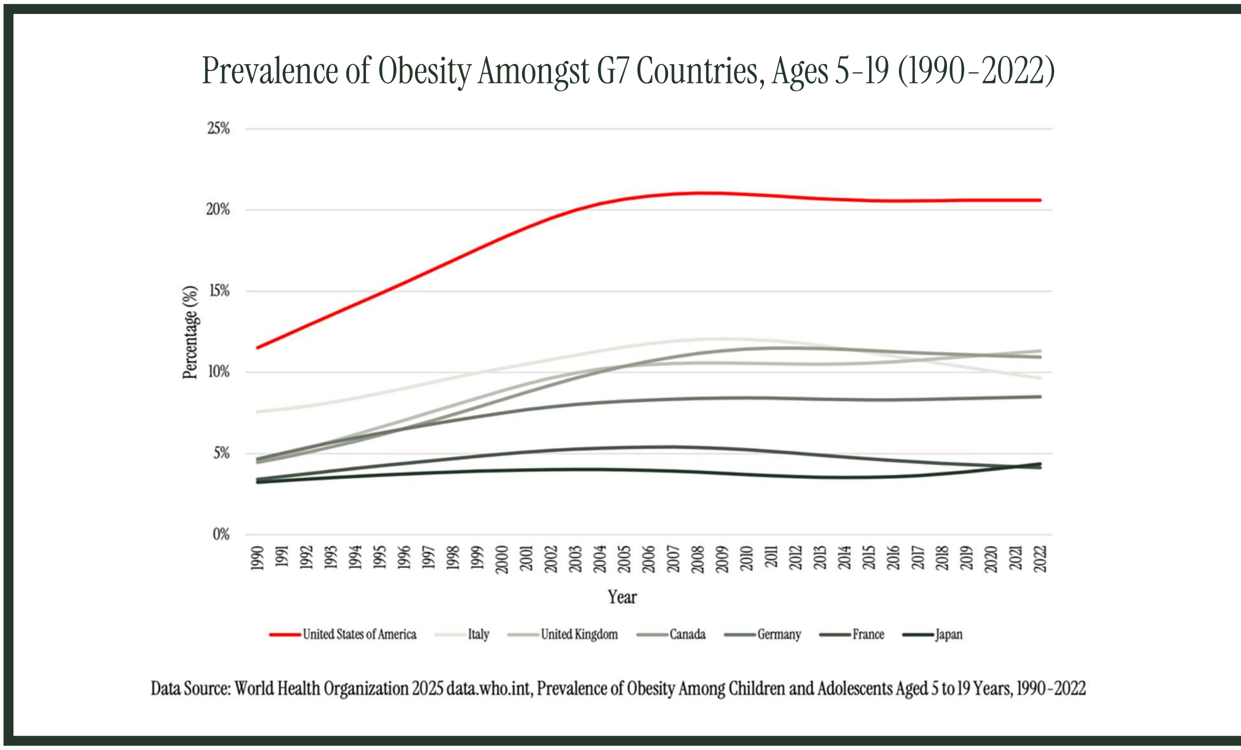
[10] Novelly, T. (2022, September 28). New Pentagon study shows 77% of young Americans are ineligible for military service. *Military.com*. https://www.military.com/daily-news/2022/09/28/new-pentagon-study-shows-77-of-young-americans-are-ineligible-military-service.html.

Childhood Obesity is a Worsening Health Crisis

- Today in the U.S. more than 1 in 5 children over 6 years old are obese.[11] This is a more than 270% increase compared to the 1970s, when less than one in twenty children over 6 were obese.[12]
  - Rates of severe obesity increased by over 500% in the same period.
- The U.S. obesity rate is, on average, more than double that of its G7 peers.
- Approximately 80% of obese teens will be obese into adulthood.[13]
- Around 70% of youth with obesity already have at least one risk factor for heart disease.[14]



[11] National Center for Health Statistics. (2021, January 29). *Prevalence of overweight, obesity, and severe obesity among children and adolescents aged 2–19 years: United States, 1963–1965 through 2017–2018. Centers for Disease Control and Prevention (CDC).*

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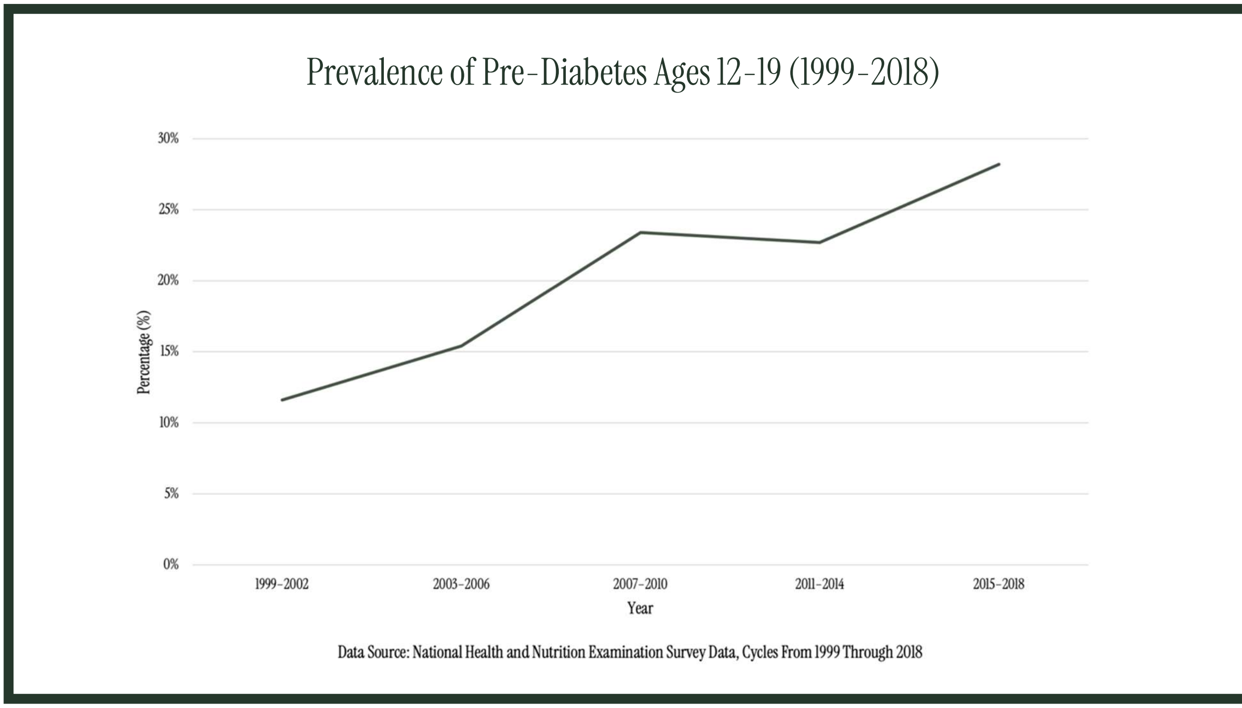
Diabetes is Increasing among American Youth

- In the 1980s, there were very few cases of type 2 diabetes in children, and incidence rates for both type 1 and type 2 diabetes have consistently increased the past 2 decades.[15] [16]
- Today, over 350,000 children have been diagnosed with diabetes (3.5 per 1,000).[17] [18] One study estimated a 65% increase in type 1 diabetes and a more than 600% increase in type 2 diabetes by 2060 if current trends continue.[19]
- Prevalence of pre-diabetes (elevated blood sugar levels but not high enough to be classified as diabetes) is more than one in four teens, having more than doubled over the last 2 decades.[20] [21]



[15] Cizza, G., Brown, R. J., & Rother, K. I. (2012). Rising incidence and challenges of childhood diabetes. A mini review. *Journal of endocrinological investigation*, *35*, 541-546.
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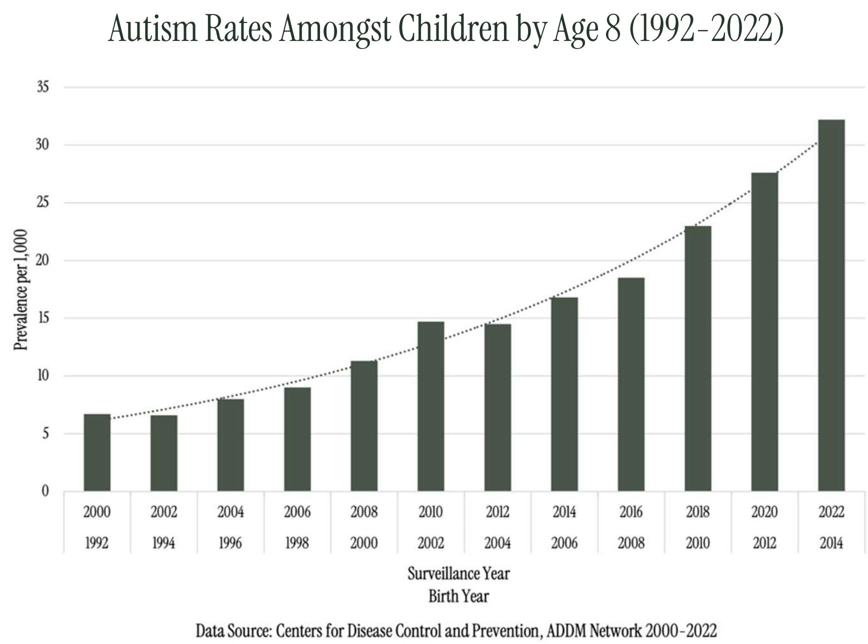
Rates of Neurodevelopmental Disorders are Increasing

- Autism spectrum disorder impacts 1 in 31 children by age 8 and is estimated to be 3.4 times more common in boys than girls, according to the CDC.[22] Rates also vary significantly by state – from 9.7 per 1,000 in Texas (Laredo) to 53 per 1,000 in California.[23] In 1960, autism occurred in less than 1 in 10,000 children.[24] [25] In the 1980s, autism occurred at rates of 1 to 4 out of 10,000 children.[26]
- Over 10% of children have been diagnosed with Attention Deficit Hyperactivity Disorder (ADHD), with approximately 1 million more children diagnosed in 2022 compared to 2016.[27]
- Rates of other neurodevelopmental disorders and learning impairments are also increasing.[28] [29] Over 7.5 million K-12 students received special education services in 2023-24.[30]



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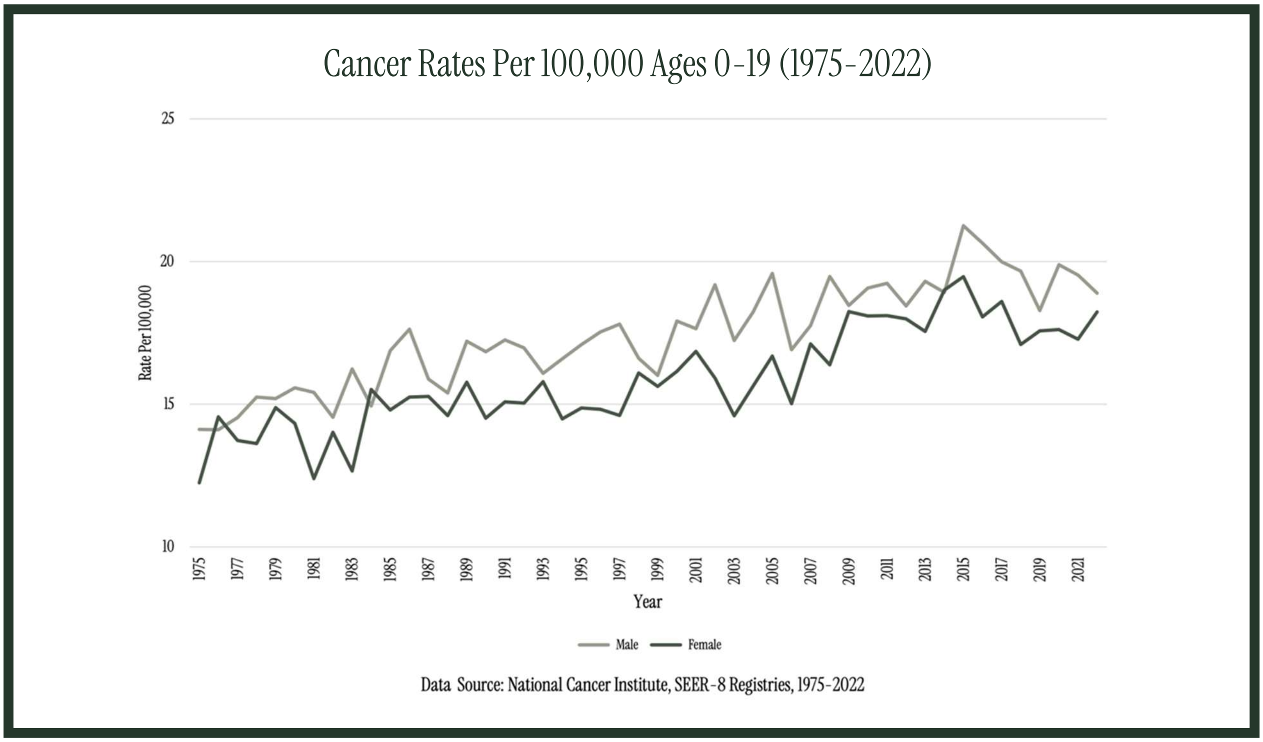
[30] National Center for Education Statistics. (2024). *Students with disabilities.* Condition of Education. U.S. Department of Education, Institute of Education Sciences. https://nces.ed.gov/programs/coe/indicator/cgg.

Childhood Cancer Incidence Has Risen Dramatically

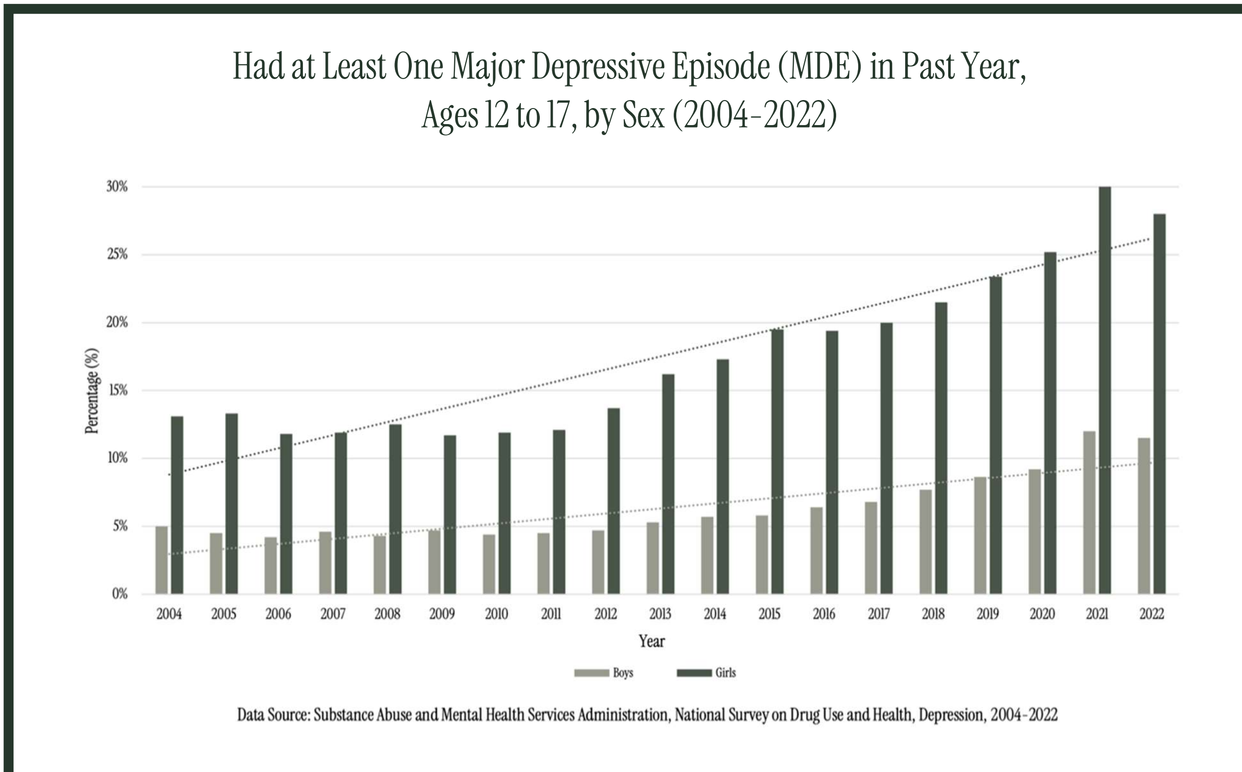
- Childhood cancer incidence has risen over 40% since 1975.[31]



[31] National Cancer Institute, SEER-8 Registries, 1975-2022.

American Youth face a Mental Health Crisis

- Teenage depression rates nearly doubled from 2009 to 2019, with more than 1 in 4 teenage girls in 2022 reporting a major depressive episode in the past year.[32 33]
- Three million high school students seriously considered suicide in 2023.[34]
- Suicide deaths among 10- to 24-year-olds increased by 62% from 2007 to 2021, and suicide is now the second leading cause of death in teens aged 15-19.[35]
- The prevalence of diagnosed anxiety increased by 61% among adolescents between 2016 and 2023.[36]
- Over 57% of girls report feelings of sadness and hopelessness, while suicidal ideation in teen girls has surged by 60% since 2010.[37]



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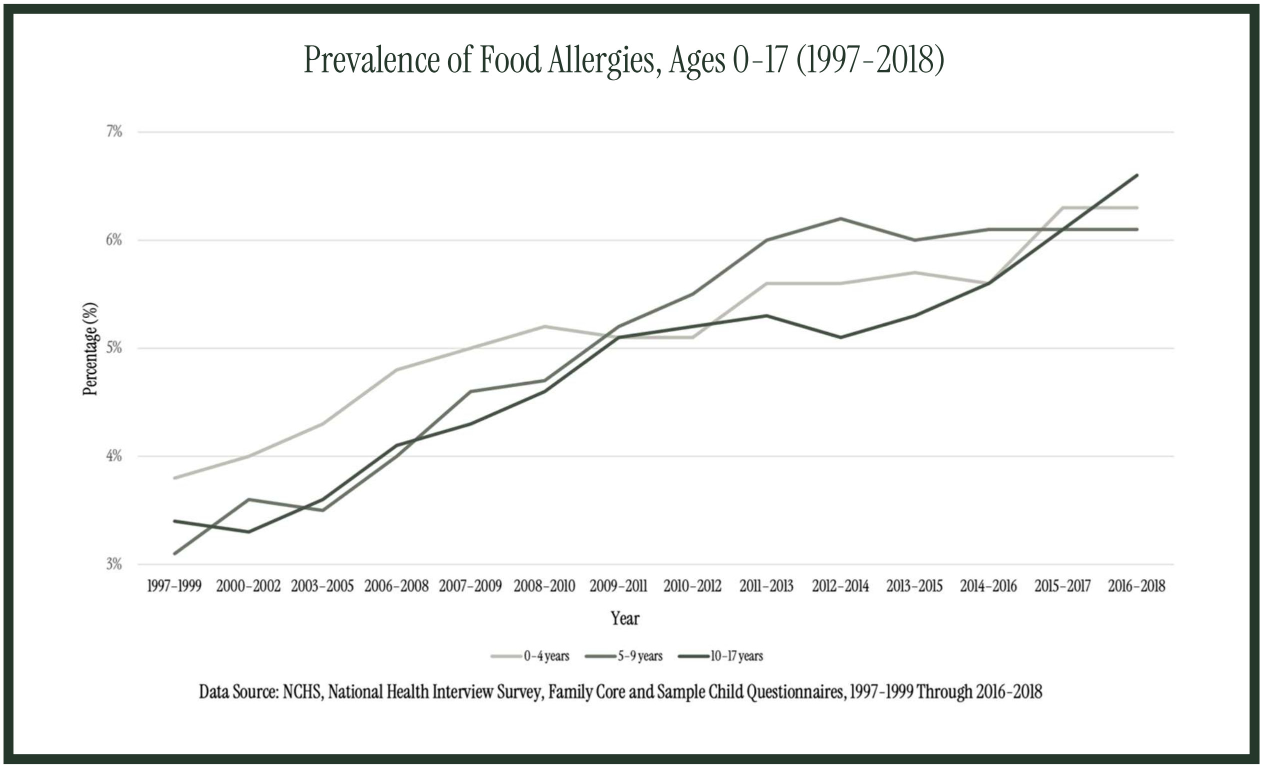
Allergies are Widespread, and Autoimmune Disorders are Rising

- Today, over 1 in 4 American children suffers from allergies, including seasonal allergies, eczema, and food allergies.[38]
    - Eczema (atopic dermatitis) and skin allergies increased from 7.4% of children under 18 from 1997-1999 to 12.7% from 2016-2018.[39]
- Between 1997 and 2018, childhood food-allergy prevalence rose 88%.[40]
- Celiac disease rates have increased 5-fold in American children since the 1980s.[41] [42]
- Rates of Inflammatory Bowel Disease (IBD), including Crohn's, have increased by 25% over the last decade.[43]



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[39] National Center for Health Statistics. (2019). *National Health Interview Survey (NHIS): Family core and sample child questionnaires*. https://www.cdc.gov/nchs/data/hus/2019/012-508.pdf.

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What is Driving the Increase in Childhood Chronic Disease?

Rising rates of childhood chronic disease are likely being driven by a combination of factors, including the food children are eating, the chemicals they are exposed to, the medications they are taking, and various changes to their lifestyle and behavior, particularly those related to physical activity, sleep and the use of technology. This report focuses on these four major drivers.

The food American children are eating

The American food system is safe but could be healthier. Most American children's diets are dominated by ultra-processed foods (UPFs) high in added sugars, chemical additives, and saturated fats, while lacking sufficient intakes of fruits and vegetables. This modern diet has been linked to a range of chronic diseases, including obesity, type 2 diabetes, cardiovascular disease, and certain cancers.[44] The excessive consumption of UPFs has led to a depletion of essential micronutrients and dietary fiber, while increasing the consumption of sugars and carbohydrates, which negatively affects overall health.[45]

- Nearly 70% of an American child's calories today comes from ultra-processed foods[46] (increased from zero 100 years ago), many of which are designed to override satiety mechanisms and increase caloric intake.
- UPFs makeup over 50% of the diets of pregnant and postpartum mothers.[47]

American children's exposure to environmental chemicals

The cumulative load of thousands of synthetic chemicals that our children are exposed to through the food they eat, the water they drink, and the air they breathe may pose risks to their long-term health, including neurodevelopmental and endocrine effects.

- Over 40,000 chemicals are registered for use in the U.S.[48]
- Pesticides, microplastics, and dioxins are commonly found in the blood and urine of American children and pregnant women—some at alarming levels.[49] [50] [51]
- Children are particularly vulnerable to chemicals during critical stages of development—in utero, infancy, early childhood, and puberty. Research suggests that for some chemicals, this cumulative load of exposures may be driving higher rates of chronic childhood diseases.[52] [53] [54]

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[44] Clemente-Suárez, V. J., Beltrán-Velasco, A. I., Redondo-Flórez, L., Martín-Rodríguez, A., & Tornero-Aguilera, J. F. (2023). Global Impacts of Western Diet and Its Effects on Metabolism and Health: A Narrative Review. Nutrients, 15(12), 2749. https://doi.org/10.3390/nu15122749.

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Yet, current risk assessment methods may not allow us to fully understand how these exposures affect human health.

American children's pervasive technology use

Over the past four decades, American children have transitioned from an active, play-based childhood to a sedentary, technology-driven lifestyle, contributing to declines in physical and mental health. Specifically, these declines have been driven by increased screen time, reduced physical activity, and psychosocial stressors like loneliness, chronic stress, and sleep deprivation.

- Teens average nearly 9 hours of non-school screen time each day.[55] [56]
- Over 70% of children, and 85% of teens, fail to meet the 2024 federal guideline of 60 minutes of daily moderate-to-vigorous physical activity.[57] [58]
- Nearly 80% of U.S. high school students do not sleep at least 8 hours per night, up from 69% in 2009.[59]
- Persistent sadness and hopelessness among U.S. high school students surged between 2011 to 2021 from 28% to 42%, with female students' suicidal ideation rising 58% from 19% to 30%.[60]
- In 2024, 73% of 16–24-year-olds reported loneliness, with 15% of young men having no close friendships—a fivefold increase since 1990.[61]
- Teens using social media over 3 hours daily face double the risk of anxiety and depression, with a 2022 meta-analysis showing each additional hour increases depression risk by 13%, and girls face nearly four times the risk of boys.[62]

American children are highly medicated – and it's not working

The health system has aggressively responded to these increases in childhood chronic disease with increasing rates of pharmaceutical drug prescriptions which may cause further harm to the health of American children when used inappropriately.

- Stimulant prescriptions for ADHD in the U.S. increased 250% from 2006 to 2016,[63] despite evidence they did not improve outcomes long-term.[64]

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- Antidepressant prescription rates in teens increased by 14-fold between 1987 and 2014,[65] even though a systematic overview shows that psychotherapy is just as effective as drugs in the short term, and potentially more effective in the long term.[66]
- Antipsychotic prescriptions for children increased eight-fold between 1995 and 2005, with most of these medications prescribed for conditions not approved by the FDA for use in children.[67]
- Studies find that more than 35% (equivalent to more than 15 million prescriptions) of childhood antibiotics are unnecessary[68] and that infants exposed to antibiotics in the first 2 years of life are more likely to develop asthma, allergic rhinitis, atopic dermatitis, celiac disease, obesity, and ADHD.[69]

Corporate Capture and the Revolving Door

Although the U.S. health system has produced remarkable breakthroughs, we must face the troubling reality that the threats to American childhood have been exacerbated by perverse incentives that impact the regulatory bodies and federal agencies tasked with overseeing them. While Congress is ultimately in charge of authorizing federal regulatory agency research budgets, government funding has been a small portion of the totality of research dollars being spent on chronic childhood disease. The majority is funded by the food, pharmaceutical, and chemical, as well as special interest Non-Governmental Organizations (NGOs) and professional associations. The following examples illustrate how deep and widespread this influence has become across multiple sectors:

- **The food industry** funds the bulk of research in the field. A *BMJ* analysis found that industry spent over $60 billion on drug, biotechnology, and device research in nutrition science;[70] by comparison, the government spends an estimated $1.5 billion on nutrition research.[71] Concerningly, industry-funded nutrition research may bias conclusions in favor of sponsors' products.[72] Government funding for nutrition research through the NIH is only 4-5% of its total budget[73] and in some cases is subject to influence by food industry-aligned researchers.[74]

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Moreover, one analysis reported that 95% of the 2020 Dietary Guidelines Advisory Committee members had financial ties to food and pharmaceutical companies.[75]

- **The chemical-manufacturing industry** spent roughly $77 million on federal lobbying activities in 2024, while 60% of their lobbyists previously held federal posts.[76] In addition, more than ten thousand chemicals listed on the EPA's inventory are designated as confidential, and generic chemical names are used to identify them.[77]
- **The pharmaceutical industry**, from 1999 to 2018, spent $4.7 billion on lobbying expenditures at the federal level, more than any other industry.[78] In addition, 9 out of the last 10 FDA commissioners[79]—and approximately 70% of the agency's medical reviewers[80]—have gone on to work for the pharmaceutical industry. Over 80% of clinical departments and teaching hospitals at U.S. medical schools receive some degree of pharmaceutical funding, while half of the total costs for continuing medical education (CME) is funded by industry.[81] [82] Between 2010 and 2022, industry provided *$6 billion* to over 20,000 patient advocacy organizations.[83]

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SECTION ONE

The Shift to Ultra-Processed Foods

Following World War II, much of Europe and Asia's agricultural system was destroyed, and the United States responded by increasing its agricultural output through mechanization, synthetic fertilizers, industrial-scale farming, and shelf-stable processing techniques to feed the world.

An outgrowth of this shift in food production and resulting abundant food supply was the increased development of ultra-processed foods, a category of industrially manufactured food products that undergo multiple physical and chemical processing steps and contain ingredients not commonly found in home kitchens. While there is no single, universally accepted definition of UPFs, the term is most commonly associated with the NOVA food classification system, "industrially manufactured food products made up of several ingredients (formulations) including sugar, oils, fats and salt and food substances of no or rare culinary use."[84] Food substances of no culinary use include additives such as flavors, colorants, non-sugar sweeteners, and emulsifiers. Although definitions vary, for the purposes of this assessment, UPFs refer broadly to packaged and ready-to-consume products that are formulated for shelf life and/or palatability but are typically high in added sugars, refined grains, unhealthy fats, and sodium and low in fiber and essential nutrients. Research suggests that the industrial processing required to create UPFs—through additives and nutritional alterations—is a key contributor to their harmful health effects in children.[85] [86]

Though UPFs may have been created with good intentions for convenience purposes, food safety, and to allow for the ability for longer shelf life and preservation (which was important to ship food around the world), UPF consumption has gone up at an exponential rate as share of the American diet. Today, nearly 70% of an American child's calories come from UPFs,[87] a dramatic change since the 1960s when most food was cooked at home using whole ingredients. It also coincided with significant declines in food prices as a total share of American household income.[88]

Today, 90% of medical costs in the United States are tied to chronic conditions,[89] many of which are tied to diet.[90] The production of UPFs transforms the whole and healthy food produced by America's farmers into food-like substances that have far different nutrient profiles than the original form. **Farmers are the backbone of America - and the most innovative and productive in the world. We continue to feed the world as the largest food exporter.** The greatest step the United States can take to reverse childhood chronic disease is to put **whole foods produced by American farmers and ranchers at the center of healthcare.**

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A Closer Look at Ultra-Processed Foods

A growing body of research associates UPFs with negative health outcomes, including in children.[91]

A closer examination of the statistics, particularly over time and in comparison with our global peers, reveals a troubling reality:

- Roughly 70% of the over 300,000 branded food products available in grocery stores today are ultra-processed.[92 93]
- Over 50% of the calories consumed by Americans come from UPFs,[94] while peer countries like Portugal, Italy, and France average UPF consumption rates of just 10–31%.[95 96 97] Meanwhile, over 40% of Americans are obese,[98] compared to less than 25% of the Portuguese,[99] Italian,[100] and French populations.[101]

Research is beginning to point to three key reasons why UPFs are detrimental to children's health:

1. **Nutrient Depletion**

The rise in UPF consumption has led to the dominance of three key ingredients in American children's diets: ultra-processed grains, sugars, and fats. These engineered components, virtually nonexistent a century ago, now account for over two-thirds of all calories consumed by American children.[102] The ultra-processing of these ingredients displaces nutrient-dense whole foods, resulting in a reduction of essential vitamins, minerals, fiber, and phytonutrients needed for optimal biological function. Analyzing each of the three ingredients reveals the severity of the nutrient depletion issue:

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- **Ultra-Processed Grains**: Found in cakes, cookies, refined breads, candy, and snacks, these grains make up a large portion of the UPF calories that dominate daily intake. Processing grains involves the removal of the bran and germ, which strips away essential vitamins, minerals, and fiber. The stripping of these components can lead to blood sugar spikes,[103] increasing the risk of type 2 diabetes,[104] while also displacing healthier, nutrient-rich whole grains from the diet.
- **Ultra-Processed Sugars**: Found in 75% of packaged foods,[105] the average American consumes 17 teaspoons of added sugars daily, which amounts to 60 pounds annually. [106] This substantial intake, particularly of high fructose corn syrup and other added sugars, may play a significant role in childhood obesity, type 2 diabetes, and nonalcoholic fatty liver disease (NAFLD).[107] Alarmingly, 63% of the U.S. population aged 2 and older derives more than 10% of their daily calories from added sugars.[108]
- **Ultra-Processed Fats**: Over the course of the 20th century, U.S. dietary fats shifted from minimally processed animal-based sources like butter and lard—rich in fat-soluble vitamins A, D, and E, supporting brain and immune health—to industrial fats from refined seed oils, such as soybean, corn, safflower, sunflower, cottonseed, and canola. Industrial refining reduces micronutrients, such as vitamin E and phytosterols. Moreover, these oils contribute to an imbalanced omega-6/omega-3 ratio, a topic of ongoing research for its potential role in inflammation.[109]

2. Increased Caloric Intake

UPFs drive increased caloric intake and weight gain.[110] Industrial processing inherent in UPF production leads to significant changes in fiber, protein, caloric density, and digestibility. Research suggests that these alterations could interfere with brain reward pathways and satiety hormones, promote faster eating, and compromise gut fullness signals.[111] The refined ingredients in these foods can rapidly spike blood sugar and insulin levels[112] as well as damage the gut microbiome.[113]

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Compelling experimental research further underscores these issues. A 2019 study[114] published in *Cell* confined 20 adults to an NIH facility, where participants consumed unlimited UPFs for two weeks, followed by two weeks of unlimited unprocessed foods. Despite having identical caloric access, participants consumed roughly 500 fewer calories per day and lost 2 pounds on the unprocessed diet, while they gained 2 pounds on the ultra-processed diet. The researchers observed significantly higher levels of satiety hormones during the unprocessed phase, supporting the idea that UPFs may disrupt hunger signals, promote overeating, and contribute to weight gain.

Multiple peer-reviewed studies demonstrate that whole foods, on the other hand, contain built-in satiety mechanisms that help regulate appetite and reduce overeating. Specifically:

- Whole foods rich in dietary fiber stimulate the release of key satiety hormones.[115] A 2016 analysis found that UPFs contributed significantly fewer grams of dietary fiber per calorie compared to minimally processed foods.[116]
- Foods that require more chewing increase oral exposure time, enhancing satiety signals.[117] The texture of whole foods can influence satiety through differences in appetite sensations and gastrointestinal peptide release.[118]
- Protein is the most effective macronutrient for providing a satiating effect. In addition to stimulating the release of satiety hormones, protein requires more energy to digest than carbohydrates or fats, leading to a higher calorie burn during digestion.[119]

3. Inclusion of Food Additives

Over 2,500 food additives—including emulsifiers, binders, sweeteners, colorings, and preservatives—may be used to mimic the taste and texture of conventional food and increase its shelf life.[120] Studies have linked certain food additives to increased risks of mental disorders, ADHD, cardiovascular disease, metabolic syndromes and even carcinogenic effects.[121] Specific additives of potential concern include, but are not limited to:

- Certain **food colorings**, such as red 40, which is present in widely-consumed products have been associated with behavioral issues in children, such as increased hyperactivity and

[114] Hall, K. D., Ayuketah, A., Brychta, R., Cai, H., Cassimatis, T., Chen, K. Y., Chung, S. T., Costa, E., Courville, A., Darcey, V., Fletcher, L. A., Forde, C. G., Gharib, A. M., Guo, J., Howard, R., Joseph, P. V., McGehee, S., Ouwerkerk, R., Raisinger, K., Rozga, I., … Zhou, M. (2019). Ultra-Processed Diets Cause Excess Calorie Intake and Weight Gain: An Inpatient Randomized Controlled Trial of Ad Libitum Food Intake. Cell metabolism, 30(1), 67–77.e3. https://doi.org/10.1016/j.cmet.2019.05.008.
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symptoms consistent with ADHD.[122] [123] [124] Additionally, preliminary evidence suggests a possible association between the consumption of food colorings and autism, although further long-term research is necessary to establish a definitive link.[125]

- **Titanium Dioxide**, widely used in a range of candies and sauces, may cause cellular and DNA damage.[126] [127]
- **Propylparaben**, a preservative used in baked goods and snacks, shows estrogenic activity, potentially disrupting hormonal balance.[128]
- **Butylated Hydroxytoluene (BHT)**, found in common snacks and cereals, is a preservative that may be associated with tumor growth in rodent studies.[129] [130]
- **Artificial Sweeteners** like aspartame, sucralose, and saccharin, used widely in diet sodas and sugar-free foods, have been observed to interfere with the gut microbiome in some studies.[131] Gut microbiome shifts have been linked to obesity, metabolic issues, and possibly glucose intolerance.[132] The classification of aspartame as possibly carcinogenic (Group 2B) by the International Agency for Research on Cancer (IARC)[133] further complicates the understanding of these widely used substances, especially given the existence of conflicting research results.

One notable example of concern around food additives is infant formula. In recent years, some American parents have turned to European formula brands, driven by supply concerns and questions regarding the number and types of additives found in U.S. formulas.[134]

Additives in processed foods are consumed in complex combinations, where cumulative and synergistic effects may amplify harm beyond individual components.[135] Yet, testing often ignores these interactions, particularly in children. With dozens of additives consumed daily, these overlooked risks could be significantly impacting children's health.

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The Impact of Ultra-Processed Foods and the Vital Role of Whole Foods in Children's Health

Human health and biology rely heavily on dietary inputs. During gestation, fetal development depends on maternal nutrition, influencing everything – from membrane composition and mitochondrial integrity to nervous system wiring and hormone regulation. This programming ultimately determines the child's long-term metabolic, cognitive, and immune resilience. UPFs make up over 50% of the diets of pregnant and postpartum mothers,[136] despite evidence that increased UPF consumption during pregnancy negatively impacts health outcomes for their children.[137]

This trend is mirrored in the wider population, where the rise in UPF consumption poses threats to human health across the lifespan:

- A recent study published in *Nature Medicine* estimated that sugar-sweetened beverages alone may be responsible for ~1.2 million new cases of heart disease and 340,000 deaths worldwide in 2020 alone.[138]
- An umbrella review of 45 meta-analyses published in the *BMJ* analyzing data from nearly 10 million participants, found that higher consumption of ultra-processed foods is linked to 32 adverse health outcomes, including increased risks of cardiovascular disease, cancer, type 2 diabetes, mental health disorders, and all-cause mortality.[139]
- A study published in *JAMA Internal Medicine* followed over 44,000 adults and found that every 10% increase in the intake of UPFs was associated with a 14% increased risk of all-cause mortality.[140] This study adjusted for confounding factors like age, sex, physical activity, and overall diet quality to isolate the impact of UPF consumption on mortality risk.

As the consumption of UPFs has surged, children are increasingly neglecting the whole foods essential for their health.[141] [142] Approximately 50% of children ages 2 to 18 skip discrete fruit entirely on any given day.[143] Research consistently shows that key micronutrients such as calcium, iron, potassium, and

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vitamin D, which are found in fruits and vegetables, are essential for children's physiological functioning.[144] [145] [146]

Research also consistently links diets centered on whole foods to lower rates of obesity, type 2 diabetes, heart disease, certain cancers, and mental illness.[147] [148] This is not surprising. Diet and lifestyle significantly influence gene expression and cellular biology - ultimately determining our health outcomes.[149] [150] For instance:

- Leafy greens supply magnesium and folate critical for energy production and other benefits.[151]
- Salmon delivers omega-3 fatty acids that help reduce cardiovascular risk and support brain health.[152] [153]
- Legumes offer fiber and resistant starch that help nourish beneficial gut bacteria.[154] [155]
- Nuts contain magnesium that helps reduces oxidative stress and enhances activity of mitochondrial enzymes.[156] [157] [158]
- Beef contains protein that maintains skeletal muscle, which plays a key role in regulating metabolic health.[159] [160]
- Whole milk and other dairy products are rich sources of calcium, vitamin D, and bioactive fatty acids, which support bone health, help regulate inflammation and may reduce the risk of type 2 diabetes.[161]

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Some of the most compelling dietary intervention data comes from randomized controlled trials (RCTs) of reduced-carbohydrate diets in adults and children to reverse obesity,[162] type 2 diabetes,[163] Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD), and risk factors for heart disease[164] such as hypertension. Both UPF reduction and reduced-carbohydrate diets are hypothesized to work by addressing the root cause of these diseases: insulin resistance.[165] While reduced-carbohydrate diets have been studied in several two-year trials, including one with five-year follow-up data,[166] RCTs on UPFs have typically lasted only two weeks, highlighting the critical need for more extensive research, especially with children.

The Driving Forces Behind American Children's Food Crisis

UPFs are built into the fabric of the post-World War II American society and economy. The convenience of "fast food" and the food processing and delivery industry that facilitates them is viewed, internationally, as a distinctly "American" innovation. UPFs have allowed us to save money and to "eat on the run," but today's over-reliance on UPFs is damaging the health of American children. This crisis results, in large part, from decades of policies that have undermined the food system and perpetuated the delivery of unhealthy food to our children.

Consolidation of the Food System

Our agricultural system has historically focused on abundance and affordability. The progress we have made is largely thanks to the hard work of American farmers, ranchers, and food scientists. However, the rise of UPFs has corresponded with a pattern of corporatization and consolidation in our food system. Today's diet-related chronic disease crisis, demand a closer examination of this pattern and its broader impact. Key observations include:

- Farmers today receive a small share of consumer food spending; in 2023, only 16 cents of every dollar spent on food went to farmers, while 84 cents was absorbed by food manufacturers, marketers, and distributors.[167]
- A small number of corporations control a large share of food production, processing, distribution, and retail. Many of the core products of "Big Food" companies are UPFs and

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nutrient-poor foods and beverages. This trend of consolidation began in earnest in the late 1980s and early 1990s, when the two largest U.S. tobacco companies transformed into major players in the packaged food industry through aggressive acquisitions.[168] [169] Four companies control 80% of the meat market in the U.S.[170]

- The regulation of the food industry also presents challenges to smaller farmers and smaller food producers. Key regulations, such as the Food Safety Modernization Act (FSMA) enacted in 2011, implemented rigorous compliance requirements for food safety that smaller farms often lack the resources to meet. This has inadvertently led to increased costs and burdensome paperwork that disproportionately impact family-run operations.[171] Similarly, the implementation of the Hazard Analysis and Critical Control Points (HACCP) system has further complicated operations for smaller producers without the expertise or capital to navigate such comprehensive safety protocols.[172]

Distorted Nutrition Research and Marketing

The public depends on scientific research and the media for information about the food we consume. The food industry has increasingly influenced these critical sources of public information, diminishing the integrity of information available to consumers:

- A *BMJ* analysis found that while industry spent over $60 billion on drug, biotechnology, and medical device research in nutrition science,[173] the government spent $1.5 billion on nutrition research.[174] While it's not a direct comparison, the contrast still illustrates a striking disparity.
- Government funding by the NIH for nutrition research is only 4-5% of its total budget[175] and in some cases can be subjected to influence by food industry-aligned researchers.[176]
- Industry funding skews the outcomes of nutrition research. In 2018, 13% of articles in the top 10 most cited nutrition journals reported industry involvement, and 56% of these studies yielded favorable results, compared to just 10% of non-industry studies.[177] A meta-analysis further revealed that 0% of interventional nutrition studies funded by the industry reported unfavorable health conclusions regarding soft drinks, juices, and milk, while 37% of studies backed by non-industry funding did; the likelihood of reaching a favorable conclusion in studies that received

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industry funding was 7.61 times higher compared to studies that did not receive any industry funding.[178]
- According to one study, children are exposed to 15 food ads per day, with over 90% promoting products high in fat, sugar, and sodium.[179] This constant exposure has been linked to increased cravings for and consumption of sugary beverages and other unhealthy products.[180] [181] [182]

Compromised Dietary Guidelines

The Dietary Guidelines for Americans (DGA) have been the foundation of national nutrition policy. They attempt to shape what millions of Americans eat by influencing programs like the Supplemental Nutrition Assistance Program (SNAP) and the National School Lunch Program, and by setting food standards for the military, prisons, and veterans' care. The DGA also influences public health campaigns, nutrition labels, and food industry practices, making them one of the most powerful forces in the U.S. food system.[183,184]

While the DGA's do emphasize the importance of whole foods such as fruits, vegetables, whole grains, lean proteins, and unsaturated fats as well as recommend limiting added sugars, saturated fats, and excess sodium,[185] they are often presented in technical language that can be difficult for the average person to understand. This complexity may contribute to the worrying statistic that less than 10% of Americans follow a diet that aligns fully with the DGA.[186] Additionally, there are more fundamental criticisms of the DGA's approach that warrant serious consideration.

Specifically, the DGA:
- **Maintain problematic reductionist recommendations**,[187] [188] such as:
    - Advising people to "reduce saturated fat" or "limit sodium" instead of focusing on minimizing ultra-processed foods.

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[181] Smith R, Kelly B, Yeatman H, Boyland E. Food Marketing Influences Children's Attitudes, Preferences and Consumption: A Systematic Critical Review. Nutrients. 2019 Apr 18;11(4):875.
[182] Cairns G, Angus K, Hastings G, Caraher M. Systematic reviews of the evidence on the nature, extent and effects of food marketing to children. A retrospective summary. Appetite. 2013 Mar;62:209-15.
[183] National Academies of Sciences, Engineering, and Medicine; Health and Medicine Division; Food and Nutrition Board; Committee to Review the Process to Update the Dietary Guidelines for Americans. Redesigning the Process for Establishing the Dietary Guidelines for Americans. Washington (DC): National Academies Press (US); 2017 Nov 16. 2, Role and Purposes of the Dietary Guidelines for Americans: Evaluation and Findings. Available from: https://www.ncbi.nlm.nih.gov/books/NBK469833/.
[184] U.S. Department of Health and Human Services & U.S. Department of Agriculture. (2020). Dietary Guidelines for Americans, 2020-2025 (9th ed.).
[185] U.S. Department of Health and Human Services & U.S. Department of Agriculture. (2020). Dietary Guidelines for Americans, 2020-2025 (9th ed.).
[186] Wilson, M. M., Reedy, J., & Krebs-Smith, S. M. (2016). American diet quality: where it is, where it is heading, and what it could be. Journal of the Academy of Nutrition and Dietetics, 116(2), 302-310.
[187] Tapsell LC, Neale EP, Satija A, and Hu FB. (2016) Foods, Nutrients, and Dietary Patterns: Interconnections and Implications for Dietary Guidelines. Advances in Nutrition 7(3). https://doi.org/10.3945/an.115.011718.
[188] Mozaffarian, D., Rosenberg, I., & Uauy, R. (2018). History of modern nutrition science—implications for current research, dietary guidelines, and food policy. Bmj, 361.

- Treating all calories similarly, rather than distinguishing between nutrient-dense foods and ultra-processed products.

- **Remain largely agnostic to how foods are produced or processed**: There is little distinction between industrially processed foods and home-cooked or whole foods if their nutrient profiles look similar. Added sugars, saturated fats and sodium are treated as proxies for ultra-processed foods. For instance, a cup of whole-grain ready to eat fortified breakfast cereal and a cup of oatmeal with fruit might both count as "whole grain servings," and the guidelines do not weigh in on differences in processing.
- **Do not explicitly address UPFs**: The 2025 Dietary Guidelines Advisory Committee (DGAC) under the Biden Administration opted not to issue recommendations limiting UPFs. Although they concluded that a diet higher in UPFs was associated with greater risk of obesity and/or being overweight, they graded the evidence as "limited."[189] The DGAC noted methodological discrepancies in existing studies—particularly variations in defining and measuring UPFs—rather than an absence of concern or research rigor. Meanwhile, other countries explicitly urge citizens to avoid or limit UPFs:
  - **Brazil's** guidelines explicitly advise people to "avoid ultra-processed foods." and emphasize home cooking, shared meals, and cultural food traditions.[190]
  - **Japan's** guidelines, rooted in traditional dietary culture, emphasize staple foods, side dishes, and moderation, and stress portion variety, food education in schools, and daily physical activity.[191]
  - **The Nordic countries'** guidelines (2023) recommend "minimal intake of…processed foods containing high amounts of added fats, salt, and sugar."[192] They also integrate nutrition and reducing food waste in one framework that prioritizes whole grains, legumes, root vegetables, and sustainable fish.
  - **France's** guidelines encourage cooking from scratch, enjoying minimally processed foods, limiting ultra-processed, high sugar/fat items, and seasonal, local, and organic choices.[193] [194]

[189] United States Department of Agriculture & Health and Human Services. (2025). Myths vs. Facts: Correcting Misinformation about the Dietary Guidelines. https://www.cspinet.org/sites/default/files/2025-04/1.%20DGA%20Myths%20vs%20Facts_CSPI.pdf.
[190] Ministry of Health of Brazil. (2014). Dietary guidelines for the Brazilian population (2nd ed.). https://bvsms.saude.gov.br/bvs/publicacoes/dietary_guidelines_brazilian_population.pdf.
[191] Ministry of Health, Labour and Welfare & Ministry of Agriculture, Forestry and Fisheries. (2005). Japanese food guide spinning top. https://www.maff.go.jp/e/policies/tech_res/attach/pdf/shokuiku-1.pdf.
[192] Nordic Council of Ministers. (2023, June 20). Nordic nutrition recommendations 2023: Integrating environmental aspects. https://www.norden.org/en/publication/nordic-nutrition-recommendations-2023.
[193] Delamaire, C., Escalon, E., & Noirot, L. (2019). Recommendations concerning diet, physical activity and sedentary behaviour for adults (62 p.). Santé publique France. https://www.santepubliquefrance.fr.
[194] Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail (ANSES). (2024, January 17). *ANSES updates its food consumption guidelines for the French population* https://www.anses.fr/en/content/anses-updates-its-food-consumption-guidelines-french-population.

The DGA have a history of **being unduly influenced by corporate interests.** For example:

- The infamous 1992 Food Pyramid, which was influenced by research from the sugar industry,[195] [196] [197] recommended carbohydrates at the base of the pyramid and made no differentiation between refined grains and whole grains.
- In 2015, the DGAC recommendation to reduce processed meat consumption faced pushback from the meat production industry, which led to these recommendations being removed from the final published guidelines.[198]
- A recent analysis found that 95% of the 2020 DGAC members had some form of relationship with industry actors, most often through research funding but also as board members, speakers/honoraria, or consultants.[199]

Government Programs Compounding the Issue

Over the past 50 years, several well-intentioned government programs have been launched to improve children's nutrition and access to food. However, as these programs have grown in size and complexity, many have drifted from their original goals:

Traditional Field Crops vs. Specialty Crops: Historically, federal crop insurance programs have primarily covered traditional field crops like wheat, corn, and soybeans, while providing much less support for specialty crops such as fruits, vegetables, tree nuts, and nursery plants.[200] While specialty crop coverage has been expanding, it still only accounted for 17% of the entire federal crop insurance portfolio by liability during crop year 2017, and subsidies for fruits, vegetables, tree nuts, and support for organic foods account for a mere 0.1% of the 2018 Farm Bill.[201] Just over 80% of Farm Bill spending is devoted to the Supplemental Nutrition Assistance Program, described further below.

The Supplemental Nutrition Assistance Program (SNAP) served on average 42 million low-income Americans per month with Federal SNAP spending totaling $113 billion in fiscal year 2023.[202] [203] 1 in 5 American children 17 and under receive SNAP benefits.[204] SNAP participants can buy everything on grocery store shelves with the exception of alcohol, hot foods, tobacco and non-food products.[205]

[195] Kearns, C. E., Schmidt, L. A., & Glantz, S. A. (2016). Sugar Industry and Coronary Heart Disease Research: A Historical Analysis of Internal Industry Documents. *JAMA Internal Medicine*, 176(11), 1680–1685.
[196] Nestle, M. (1993). Food lobbies, the food pyramid, and US nutrition policy. International Journal of Health Services, 23(3), 483-496.
[197] Nestle, M. (2013). Food politics: How the food industry influences nutrition and health. In *Food Politics*. University of California press.
[198] Nestle M. (2018). Perspective: Challenges and Controversial Issues in the Dietary Guidelines for Americans, 1980-2015. Advances in nutrition 9(2), 148–150. https://doi.org/10.1093/advances/nmx022.
[199] Mialon, M., Serodio, P. M., Crosbie, E., Teicholz, N., Naik, A., & Carriedo, A. (2022). Conflicts of interest for members of the US 2020 dietary guidelines advisory committee. Public health nutrition, 27(1), e69. https://doi.org/10.1017/S1368980022000672.
[200] Congressional Research Service. Federal crop insurance: specialty crops. R45459 (2019).
[201] Agriculture Improvement Act of 2018 (Public Law 115–334, Dec. 20, 2018); USDA Economic Research Service Based on Congressional Budget Office, Direct Spending Effects for the Agriculture Improvement Act of 2018 (2018 Farm Bill), December 11, 2018; USDA Budget Explanatory Notes, NIFA & AMS, 2021-2024.
[202] Food and Nutrition Service, U.S. Department of Agriculture. (n.d.). Short history of SNAP. Retrieved May 5, 2025, from https://www.fns.usda.gov/snap/history.
[203] *Supplemental Nutrition Assistance Program (SNAP)—Key Statistics and Research | Economic Research Service*. (n.d.). Retrieved May 4, 2025, from https://www.ers.usda.gov/topics/food-nutrition-assistance/supplemental-nutrition-assistance-program-snap/key-statistics-and-research.
[204] Bureau, U. C. (n.d.). *Supplemental Nutrition Assistance Program (SNAP): 2022*. Census.Gov. Retrieved May 4, 2025, from https://www.census.gov/library/fact-sheets/2022/demo/p70fs-199.html.
[205] Food and Nutrition Service, U.S. Department of Agriculture. (n.d.). What Can SNAP Buy?. Retrieved May 20, 2025, from https://www.fns.usda.gov/snap/eligible-food-items.

- Children receiving SNAP benefits are more likely to consume greater quantities of sugar-sweetened beverages and processed meats compared to income-eligible nonrecipients;[206 207] by one estimate, nearly twice as much will be spent by SNAP on UPFs and sugar-sweetened beverages ($21 billion) compared to fruits and vegetables ($11 billion) in FY2025.[208 209]
- SNAP participants face worsening health outcomes compared to non-participants, exhibiting elevated disease risks: according to one study, they are twice as likely to develop heart disease, three times more likely to die from diabetes, and have higher rates of metabolic disorders.[210] Additionally, children on SNAP can struggle to meet key dietary guidelines and perform poorly on key health indicators when compared with income-eligible and higher income nonparticipants.[211]
    - The costs for these preventable diseases fall directly on taxpayers. Roughly 60% of SNAP participants received Medicaid in 2019, highlighting the connection between healthcare costs and suboptimal nutritional services.[212]

SNAP currently has incentives in place to encourage increased consumption of fruit, vegetables, dairy, and whole grains. These incentive programs encourage healthy eating by making nutritious food more accessible and affordable through coupons, discounts, gift cards, bonus items, or extra funds.[213] Other countries steer food-assistance recipients toward healthier dietary choices rather than merely emphasizing caloric intake. For example, South Korea and Chile implement food voucher programs similar to SNAP but prioritize domestic and nutritious food products, effectively guiding recipients toward healthier eating habits.[214 215]

The School Breakfast Program and National School Lunch Program (NSLP) operates in nearly 100,000 schools covering more than 30 million children,[216] with an annual cost of $24 billion,[217] and yet:

- Schools that receive federal lunch subsidies are required to follow a meal pattern that limits added sugars, sodium, and carbohydrates, but do not set limits on UPF consumption, leading to

[206] Mande, J., & Flaherty, G. (2023). Supplemental Nutrition Assistance Program as a health intervention. *Current Opinion in Pediatrics*, *35*(1), 33.
[207] Smith, T. A., & Gregory, C. A. (2023). Food insecurity in the United States: Measurement, economic modeling, and food assistance effectiveness. *Annual Review of Resource Economics*, *15*(1), 279–303.
[208]Garasky, S., Mbwana, K., Romualdo, A., Tenaglio, A., & Roy, M. (2016). Foods typically purchased by SNAP households (Summary). U.S. Department of Agriculture, Food and Nutrition Service.
[209] *Make America Healthy Again: Stop Taxpayer-Funded Junk Food*. (2025, January 16). The Foundation for Government Accountability. https://thefga.org/research/make-america-healthy-again-stop-taxpayer-funded-junk-food/.
[210] Conrad, Z., Rehm, C. D., Wilde, P., & Mozaffarian, D. (2017). Cardiometabolic Mortality by Supplemental Nutrition Assistance Program Participation and Eligibility in the United States. *American Journal of Public Health*, *107*(3), 466–474.
[211] Mande, J., & Flaherty, G. (2023). Supplemental Nutrition Assistance Program as a health intervention. *Current Opinion in Pediatrics*, *35*(1), 33.
[212] Macartney, S., & Ghertner, R. (2023, January). How many people who receive one safety net benefit also receive others? U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation. https://aspe.hhs.gov/sites/default/files/documents/5bd792aaea69a2259bc93b3dfd9110b3/program-overlap-datapoint.pdf.
[213] U.S. Department of Agriculture, Food and Nutrition Service. (n.d.). SNAP healthy incentives. Retrieved May 17, 2025, from https://fns-prod.azureedge.us/snap/healthy-incentives.
[214] *Food insecurity and food assistance programmes across OECD countries: Overcoming evidence gaps* (OECD Food, Agriculture and Fisheries Papers No. 183; OECD Food, Agriculture and Fisheries Papers, Vol. 183). (2022). https://doi.org/10.1787/42b4a7fa-en.
[215] *Food and Nutrition Assistance Policies in Korea: Focus on Food Voucher Program*. (2023, March 1). FFTC Agricultural Policy Platform (FFTC-AP). https://ap.fftc.org.tw/article/3293.
[216] *National School Lunch Program | Food and Nutrition Service*. (n.d.). Retrieved May 4, 2025, from https://www.fns.usda.gov/nslp.
[217] *Child Nutrition Programs—National School Lunch Program | Economic Research Service*. (n.d.). Retrieved May 4, 2025, from https://www.ers.usda.gov/topics/food-nutrition-assistance/child-nutrition-programs/national-school-lunch-program.

excessive intake of sugar, processed carbohydrates, processed fats, and sodium among children.[218]

- To get into schools, many food companies have reformulated their products with minor ingredient adjustments to qualify for the federal Smart Snack program by meeting the school nutrition standards, which children can purchase separate from school meals.[219]
  - There are concerns that providing these snacks in school can confuse students' perceptions of healthy foods,[220] especially since Smart Snacks are often virtually indistinguishable from less-nutritious versions of fast-food products available outside of school.[221]

While the U.S. has long had programs that both incentivize fruits and vegetables, other countries' school lunch programs have additional standards and guidelines. In France, schools are required to source half their products from local sources and prohibit vending machines.[222] Japanese schools typically prepare meals on-site using whole ingredients, often from local farms and school gardens.[223] Nordic countries, such as Sweden and Finland, have established guidelines that emphasize unprocessed foods while strictly limiting high-fat, high-sugar, and high-sodium processed items.[224] [225]

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is one example of a government program that is focused exclusively on the nutritional health of its participants—pregnant and breastfeeding women, women who recently had a baby, infants, and children up to 5 years of age. WIC provides nutrition education, food assistance, and support to approximately 6.7 million women and children up to age five as of 2024.[226] WIC has a proven track record of improving children's health:

- WIC allows health-conscious food purchase that are adjusted according to participants' life stage nutritional needs, including increased fruit and vegetable consumption, reductions in juice consumption, and reductions in calorie intake.[227] [228]

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[218] U.S. Department of Agriculture, Food and Nutrition Service. (2024). National School Lunch Program Meal Pattern. https://www.fns.usda.gov/school-meals/nutrition-standards/nslp-meal-pattern.
[219] All foods sold at school during the school day are required to meet nutrition standards. The Smart Snacks in School regulation applies to foods sold a la carte, in the school store, vending machines, and any other venues where food is sold to students. https://www.fns.usda.gov/school-meals/nutrition-standards/smartsnacks.
[220] Jensen, M. L., McCann, M., Fleming-Milici, F., Mancini, S., & Harris, J. L. (2022, April). Food industry self-regulation: Changes in nutrition of foods and drinks that may be advertised to children. UConn Rudd Center for Food Policy & Health. https://uconnruddcenter.org/research/food-marketing. https://media.ruddcenter.uconn.edu/wp-content/uploads/sites/2909/2024/06/FACTS2022.pdf.
[221] Harris, J. L., Hyary, M., & Schwartz, M. B. (2016). Effects of offering look-alike products as smart snacks in schools. Childhood Obesity, 12(6), 432-439.
[222] Sylvie Avallone et al., "School Meals Case Study: France," School Meals Coalition (2023), https://www.schoolmealscoalition.org/sites/default/files/2024-05/Avallone_etal_2023_School_Meals_Case_Study_France_.pdf.
[223] International Confederation of Dietetic Associations. (n.d.). *National School Lunch Program (Japan)*. Sustainability Case Studies. Retrieved May 5, 2025, from https://icdasustainability.org/case-study/national-school-lunch-program/.
[224] Food and Agriculture Organization of the United Nations. (n.d.). *Sweden: School food*. Retrieved May 5, 2025, from https://www.fao.org/platforms/school-food/around-the-world/europe-and-central-asia/sweden/en.
[225] Food and Agriculture Organization of the United Nations. (n.d.). *Finland: School food*. Retrieved May 5, 2025, from https://www.fao.org/platforms/school-food/around-the-world/europe-and-central-asia/finland/en.
[226] U.S. Department of Agriculture, Food and Nutrition Service. (2025). WIC National Level Annual Summary FY 1974-2024. https://www.fns.usda.gov/pd/wic-program.
[227] Schultz DJ, Byker Shanks C, Houghtaling B. The impact of the 2009 Special Supplemental Nutrition Program for Women, Infants, and Children Food Package revisions on participants: a systematic review. J Acad Nutr Diet. 2015;115(11):1832–1846.
[228] Ng SW, Hollingsworth BA, Busey EA, Wandell JL, Miles DR, Poti JM. Federal nutrition program revisions impact low-income households' food purchases. Am J Prev Med. 2018;54(3):403–412.

- Research has shown that recipients experience improved pregnancy outcomes, better birth weights, higher immunization rates, improved diet quality, and cognitive gains.[229] [230]
- A study showed the 2009 WIC food package change may have helped reverse increasing childhood obesity rates.[231]

[229] American Public Health Association. (2024, August). *Bridging the gap: Federal food access programs and their impact on food insecurity*. https://www.apha.org/getcontentasset/6f04791d-d297-4bfb-a03d-f1b32b822648/7ca0dc9d-611d-46e2-9fd3-26a4c03ddcbb/food_access_programs_report.pdf.

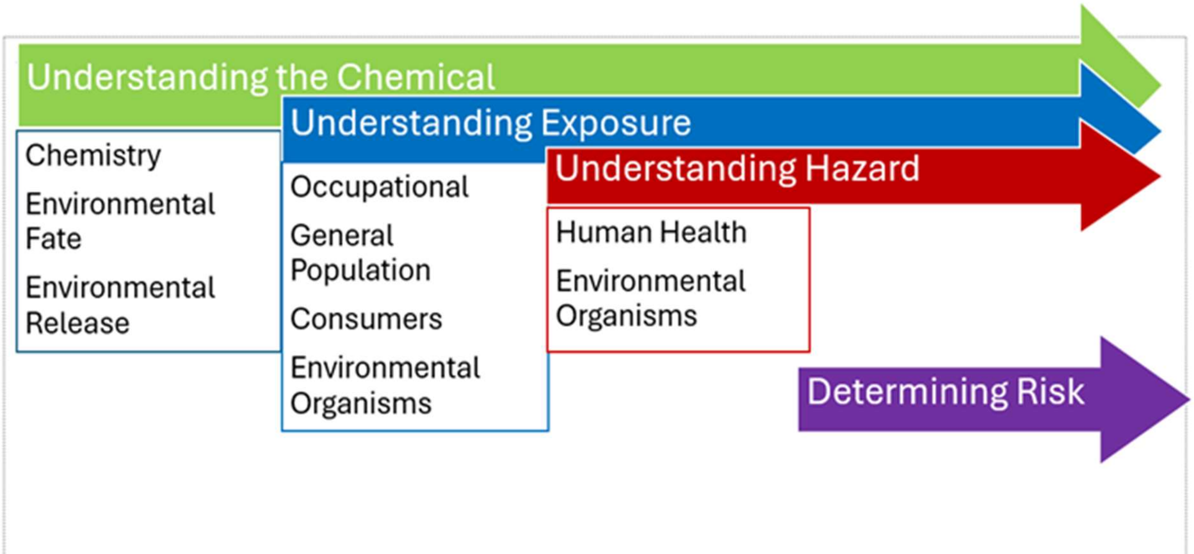
[230] Caulfield, L. E., Bennett, W. L., Gross, S. M., Hurley, K. M., Ogunwole, S. M., Venkataramani, M., Lerman, J. L., Zhang, A., Sharma, R., & Bass, E. B. (2022). *Maternal and child outcomes associated with the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)* (Comparative Effectiveness Review No. 253). Agency for Healthcare Research and Quality.

[231] Daepp, M. I. G., Gortmaker, S. L., Wang, Y. C., Long, M. W., & Kenney, E. L. (2019). WIC food package changes: Trends in childhood obesity prevalence. *Pediatrics, 143*(5), e20182841.

SECTION TWO

The Cumulative Load of Chemicals in our Environment

Chemical Exposures



Protecting children has been a priority for the federal executive branch for nearly 30 years, and yet, as science and technology advance there is a need to assess our current system to ensure it continues to be effective in utilizing the best tools and information available. In 1997, President Bill Clinton signed Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks,* which required federal agencies to make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children and ensure effective policies, programs, activities, and standards that address them.[232] Environmental health and safety risks were defined as risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest, such as the air we breathe, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we use or are exposed to. The EO created the President's Task Force on Environmental Health Risks and Safety Risks to Children and the Interagency Forum on Child and Family Statistics.[233] [234] As depicted by the figure above, the U.S. Environmental Protection Agency (EPA) has a robust risk-based approach that considers hazard and exposure for assessing the risks of chemicals, including pesticides, to human health and the environment.

[232] *Executive Order 13045 of April 21, 1997: Protection of children from environmental health risks and safety risks. Federal Register, 62 (78), 19885–19888. Retrieved from https://www.govinfo.gov/content/pkg/FR-1997-04-23/pdf/97-10695.pdf*.

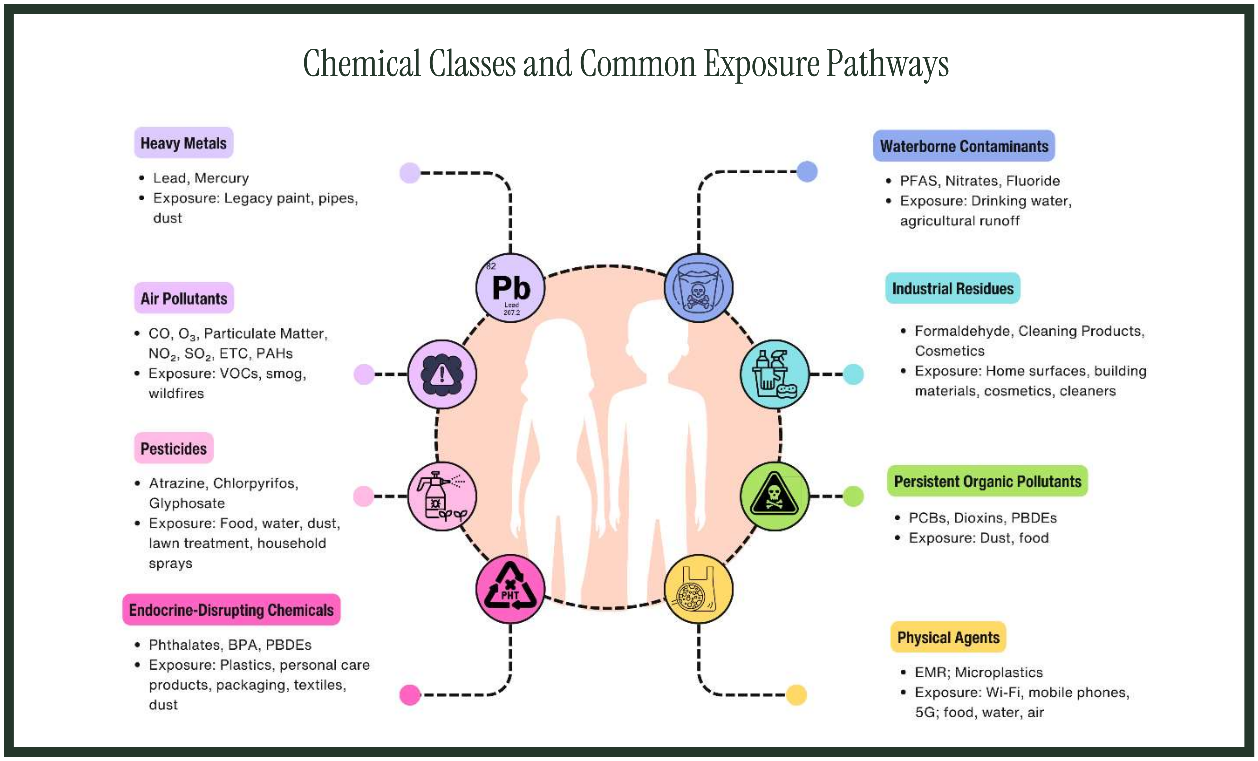
[233] President's Task Force on Environmental Health Risks and Safety Risks to Children. *President's Task Force on Environmental Health Risks and Safety Risks to Children*. National Institute of Environmental Health Sciences. https://ptfcehs.niehs.nih.gov/.

[234] Federal Interagency Forum on Child and Family Statistics. (n.d.). *Forum on Child and Family Statistics*. Retrieved, from https://www.childstats.gov/forum/.

Since 2000, the EPA has been tracking indicators of children's environmental well-being through *America's Children and the Environment (ACE)*.[235] ACE tracks chronic childhood disease in children (e.g., asthma, ADHD, autism, childhood cancers, and obesity) and summarizes trends over time for specific environmental exposures (e.g., air pollutants, drinking water contaminants, and chemicals in food). Many ACE indicators show significant improvements over time—such as exposure to lead which has been reduced over 90% since the 1970s and >70% reduction in key pollutants such as carbon monoxide, ozone, particulate matter (PM), nitrogen dioxide, and sulfur dioxide.[236]

However, in 2025—28 years after EO 13045 was signed—childhood health has largely worsened, and there is a growing concern about the link between environmental health risks, particularly cumulative risks, and chronic disease. Furthermore, in the past nearly 30 years, the chemicals children are exposed to have grown - and no country fully understands how the cumulative impact of this growth impacts health.

Exposure Pathways



[235] U.S. Environmental Protection Agency. (n.d.). Basic information about ACE: America's Children and the Environment. https://www.epa.gov/americaschildrenenvironment/basic-information-about-ace.
[236] U.S. Environmental Protection Agency. (2024). ACE environments and contaminants https://www.epa.gov/americaschildrenenvironment/ace-environments-and-contaminants.

It is critical to recognize that chemicals are important tools that are inextricably linked to economic growth and innovations - helping to feed, shelter, and power every American and maintain food safety standards. Yet regulatory and medical systems around the world largely evaluate chemicals or chemical classes individually and may be neglecting potential synergistic effects and cumulative burdens, thereby missing opportunities to translate cumulative risk assessment into the clinical environment in meaningful ways.[237 238 239] The cumulative effect of multiple chemical exposures and impact on children over time is not fully understood.[240 241]

No country in the world has fully accounted for **the fact that children are often exposed to complex mixtures of chemicals.** The rapid progression of AI technology creates new opportunities to develop tools to better evaluate the environmental exposures of chronic diseases in children.[242] The great challenge of the next decade is for government and industry around the world to understand the impacts of the *cumulative* chemical exposure that a child faces. This presents an opportunity for American technologic innovation to develop new risk evaluation tools and to promote solutions.

The U.S. government is committed to fostering radical transparency and gold-standard science to better understand the potential cumulative impacts of environmental exposures. We must understand and ameliorate any potential links between cumulative chemical exposure and childhood chronic disease. This cannot happen through a European regulatory system that stifles growth. It will happen through a renewed focus on fearless gold-standard science throughout the federal government and through unleashing private sector innovation to understand and reduce the cumulative chemical load on our children. It is critical the U.S. evaluate the current environmental regulatory structure and determine ways to continue to promote economic growth through innovation, while also evolving our frameworks for promoting children's health.

Why Children Are Uniquely Vulnerable to Environmental Chemicals

Children are not "little adults" when it comes to environmental chemicals.[243] Exposure to these substances can begin at conception and continue throughout childhood, adolescence, and into adulthood, accumulating over time. The placenta and umbilical cord do not serve as impenetrable barriers; they can allow hundreds of industrial chemicals and pollutants to reach the developing fetus.[244] Once children are exposed to these substances, several unique characteristics make newborns, children, and adolescents particularly vulnerable. Here are some key factors that heighten their risk:

[237] Elcombe, C. S., Evans, Neil P. & and Bellingham, M. Critical review and analysis of literature on low dose exposure to chemical mixtures in mammalian in vivo systems. *Critical Reviews in Toxicology* 52, 221–238 (2022).
[238] Vermeulen, R., Schymanski, E. L., Barabási, A. L., & Miller, G. W. (2020). The exposome and health: Where chemistry meets biology. Science, 367(6476), 392–396. https://doi.org/10.1126/science.aay3164.
[239] Rappaport SM, Smith MT. Epidemiology. Environment and disease risks. Science. 2010 Oct 22;330(6003):460-1. doi: 10.1126/science.1192603. PMID: 20966241; PMCID: PMC4841276.
[240] Taiba, J., Beseler, C., Zahid, M., Bartelt-Hunt, S., Kolok, A., & Rogan, E. (2025). Exploring the joint association between agrichemical mixtures and pediatric cancer. *GeoHealth, 9*, e2024GH001236. https://doi.org/10.1029/2024GH001236.
[241] Kassotis, C. D., & Phillips, A. L. (2023). Complex mixtures and multiple stressors: evaluating combined chemical exposures and cumulative toxicity. *Toxics*, *11*(6), 487.
[242] Kleinstreuer, N., & Hartung, T. (2024). Artificial intelligence (AI)—it's the end of the tox as we know it (and I feel fine). *Archives of Toxicology*, *98*(3), 735-754.
[243] Landrigan, P. J., & Landrigan, M. M. (2018). Children and environmental toxins: What everyone needs to know®. Oxford University Press.
[244] Mathiesen, L., Buerki-Thurnherr, T., Pastuschek, J., Aengenheister, L., & Knudsen, L. E. (2021). Fetal exposure to environmental chemicals; insights from placental perfusion studies. *Placenta*, *106*, 58–66. https://doi.org/10.1016/j.placenta.2021.01.025.

- **Sensitive Developmental Windows**: Even minor exposures during critical periods—in utero, infancy, early childhood, and adolescence—can result in developmental delays or permanent harm.[245] [246] [247]
- **Developing Immune Systems**: Young children have maturing immune systems, making them susceptible to chemical exposures that can disrupt lifelong immune development.[248] [249]
- **Detoxification Challenges**: Babies struggle to detoxify chemicals as effectively as adults, allowing chemicals to accumulate in their smaller bodies.[250] [251]
- **Accelerated Brain Development**: Early childhood is marked by rapid brain development, with up to one million new neural connections forming every second.[252] Toxic exposures during this time can derail neurodevelopment, leading to lifelong learning disabilities and behavioral disorders.[253] [254]
- **Endocrine Disruption**: Multiple developmental stages, from fetal growth to onset of puberty, are regulated via exquisitely sensitive hormonal signaling that can be disrupted by endocrine-disrupting chemicals, impacting growth trajectories and outcomes from conception through early adulthood.[255]
- **Adolescent Brain Remodeling**: The brain undergoes a second phase of remodeling during adolescence, particularly in regions responsible for impulse control and emotion.[256] Neurotoxic substances—such as solvents and heavy metals—can have lasting effects that extend well beyond the teenage years.[257] [258]

[245] Rodulfo-Cárdenas, R., Morales-Álvarez, A., García-Muñoz, M., Bonilla-Aldana, D. K., & Rodríguez-Morales, A. J. (2023). The influence of environmental particulate matter exposure during late gestation and early life on the risk of neurodevelopmental disorders: A systematic review of experimental evidences. Environmental Research, 236, 116792.
[246] National Research Council & Institute of Medicine. (2000). From neurons to neighborhoods: The science of early childhood development. National Academies Press.
[247] Ames, J. L., Sharma, V., & Lyall, K. (2025). Effects of early-life PFAS exposure on child neurodevelopment: A review of the evidence and research gaps. Current Environmental Health Reports, 12(1), 9.
[248] von Holst, H., Nayak, P., Dembek, Z., & Buehler, S. (2021). Perfluoroalkyl substances exposure and immunity, allergic response, infection, and asthma in children: Review of epidemiologic studies. Heliyon, 7, e08160.
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[250] Scheuplein, R., Charnley, G., & Dourson, M. (2002). Differential sensitivity of children and adults to chemical toxicity. I. Biological basis. *Regulatory toxicology and pharmacology: RTP*, *35*(3), 429–447. https://doi.org/10.1006/rtph.2002.1558.
[251] Naji-Talakar, S., Sharma, S., Martin, L. A., Barnhart, D., & Prasad, B. (2021). Potential implications of DMET ontogeny on the disposition of commonly prescribed drugs in neonatal and pediatric intensive care units. Expert Opinion on Drug Metabolism & Toxicology, 17(3), 273–289. https://doi.org/10.1080/17425255.2021.1858051.
[252] Center on the Developing Child at Harvard University. (n.d.). Brain Architecture. Retrieved from https://developingchild.harvard.edu/key-concept/brain-architecture/.
[253] Hauptman, M., & Woolf, A. D. (2017). Childhood ingestions of environmental toxins: What are the risks? *Pediatric Annals, 46*(10), e466–e471. https://doi.org/10.3928/19382359-20170925-01.
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[255] Gore, A. C., Chappell, V. A., Fenton, S. E., Flaws, J. A., Nadal, A., Prins, G. S., Toppari, J., & Zoeller, R. T. (2015). EDC-2: The Endocrine Society's Second Scientific Statement on Endocrine-Disrupting Chemicals. *Endocrine reviews*, *36*(6), E1–E150. https://doi.org/10.1210/er.2015-1010.
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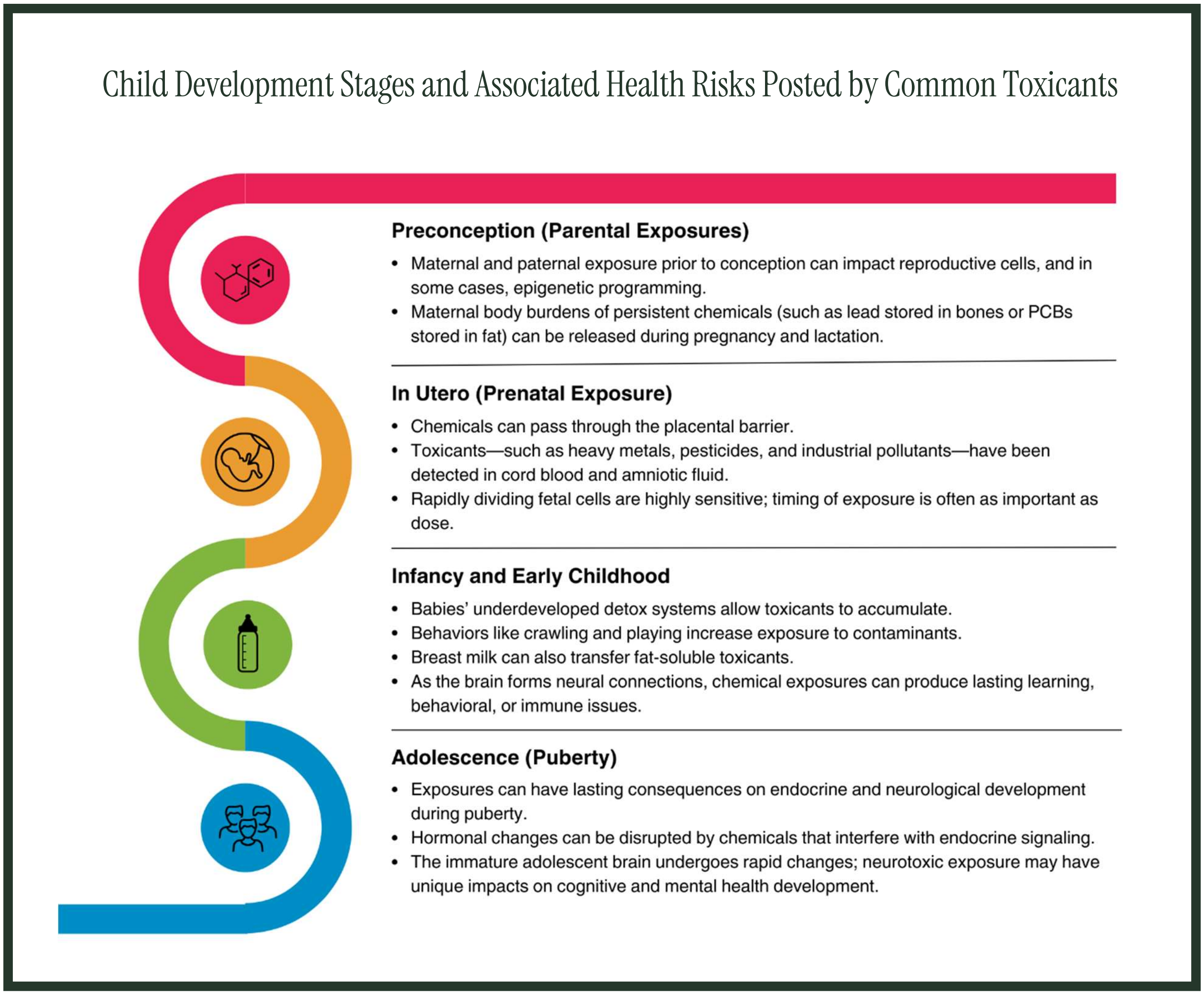

While children are uniquely vulnerable, they are also exposed to hazardous substances in different ways:

- Virtually every breastmilk sample (important for infant health, growth, and development) tested in America contains some level of persistent organic pollutants (POPs), including pesticides, microplastics, and dioxins.[259] [260] Breastfeeding is the top recommendation for infant nutrition but the data indicates the pervasiveness of the exposures in American life.

[259] LaKind, J. S., Verner, M. A., Rogers, R. D., Goeden, H., Naiman, D. Q., Marchitti, S. A., ... & Fenton, S. E. (2022). Current breast milk PFAS levels in the United States and Canada: after all this time, why don't we know more?. Environmental health perspectives, 130(2), 025002.
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- Infants and toddlers ingest much more household dust than adults, much of which contains detectable levels of lead, flame retardants, and pesticide residues.[261] [262]
- With infants putting their hands and objects in their mouths nearly ten times per hour, they are frequently ingesting invisible contaminants, such as lead dust, which often exceeds federal hazard levels in many homes nationwide.[263] [264]
- The 2009 American Healthy Homes Survey, a collaborative effort by EPA and HUD, demonstrated the widespread presence of pesticides in U.S. homes, with almost 90% showing measurable levels of at least one insecticide on their floors.[265]
- Nearly 25% of U.S. children live within close proximity to one of 1,341 Superfund sites -areas contaminated with industrial toxic waste which, depending on their level of contamination and clean up status, could further compound their risk for chemical exposure and associated adverse outcomes.[266] [267] [268]
- More than eight billion pounds of pesticides are used each year in food systems around the world, with the U.S accounting for roughly 11%, or more than one billion pounds.[269] [270]

The Executive Order establishing the MAHA Commission directed this assessment to evaluate the threat that "certain chemicals, and certain other exposures pose to children with respect to chronic inflammation or other established mechanisms of disease, using rigorous and transparent data."

Children are exposed to numerous chemicals, such as heavy metals, PFAS, pesticides, and, phthalates, via their diet, textiles, indoor air pollutants, and consumer products.[271] [272] Children's unique behaviors and developmental physiology make them particularly vulnerable to potential adverse health effects from these cumulative exposures,[273] many of which have no historical precedent in our environment or biology.[274]

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[270] U.S. Geological Survey. (n.d.). Pesticides. Retrieved from https://www.usgs.gov/centers/ohio-kentucky-indiana-water-science-center/science/pesticides.
[271] U.S. Environmental Protection Agency. (n.d.). Understanding Exposures in Children's Environments. from https://www.epa.gov/healthresearch/understanding-exposures-childrens-environments.
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A limited review of the epidemiological and clinical studies of several environmental exposures reveals that certain studies, though findings vary, show these exposures, including when combined, may affect children's health. Though findings that show risk often contrast with findings that show minimal, if any, risk, this still demonstrates the need for continued studies from the public and private sectors, especially the NIH, to better understand the cumulative load of multiple exposures and how it may impact children's health, including exposures from:

- **PFAS**: a large group of more than 12,000 distinct synthetic chemicals widely used for water-, oil-, and stain-resistance in products, such as nonstick cookware, food packaging, textiles, cosmetics, and firefighting foam.[275] According to a recent review by *the National Academies of Sciences, Engineering and Medicine*,[276] high levels of certain types of PFAS exposure has been associated with a variety of health effects, including immune suppression and, changes in cholesterol in children. Announced in May 2025, EPA will implement national enforceable drinking water standards for two PFAS compounds in drinking water and consider regulatory determinations for another four PFAS compounds, in line with a new agency-wide strategy.
- **Microplastics**: plastic fragments less than 5 millimeters in size used frequently in products such as clothing, medicine, and shower gels.[277] One single-site study in 2025 showed that the concentration found in Americans' brain tissue increased by 50% between 2016 and 2024.[278] Some studies have additionally found that microplastics often carry endocrine-disrupting chemicals that interfere with hormonal development and potentially trigger early puberty—especially in girls—and heighten the risks of obesity, infertility, and hormone-related cancers.[279] [280] [281]
- **Fluoride**: an inorganic salt first added to water in 1945 to combat cavities.[282] By 2022, over 60% of Americans—more than 70% of those on Community Water Systems—were consuming fluoridated water.[283] A 2025 systematic review published in JAMA Pediatrics, analyzing 74 high-quality studies, found a statistically significant association between exposure to fluoride above recommended levels and reduced IQ levels in children.[284] EPA is currently conducting a review

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[275] Interstate Technology & Regulatory Council (ITRC). (2023) *PFAS Technical and Regulatory Guidance Document and Fact Sheets* PFAS-1. Washington, D.C.: Interstate Technology & Regulatory Council, PFAS Team. https://pfas-1.itrcweb.org/.

[276] National Academies of Sciences, Engineering, and Medicine. (2022). *Guidance on PFAS exposure, testing, and clinical follow-up*. National Academies Press: Washington, DC.

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[280] Soliman, A. T. *et al.* Long-term health consequences of central precocious/early puberty (CPP) and treatment with Gn-RH analogue: a short update: Long term consequences of precocious puberty. *Acta Biomedica Atenei Parmensis* 94, e2023222–e2023222 (2023).

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[282] Reported by Div of Oral Health, National Center for Chronic Disease Prevention and Health Promotion, CDC. Achievements in Public Health, 1900-1999: Fluoridation of Drinking Water to Prevent Dental Caries. https://www.cdc.gov/mmwr/preview/mmwrhtml/mm4841a1.htm.

[283] CDC. 2022 Water Fluoridation Statistics. *Community Water Fluoridation* https://www.cdc.gov/fluoridation/php/statistics/2022-water-fluoridation-statistics.html (2024).

[284] Taylor KW, Eftim SE, Sibrizzi CA, et al. Fluoride Exposure and Children's IQ Scores: A Systematic Review and Meta-Analysis. *JAMA Pediatr.* 2025;179(3):282–292. doi:10.1001/jamapediatrics.2024.5542.

of additional research that will inform any potential revisions to the federal drinking water standard.[285]

- **Electromagnetic Radiation (EMR)**: an exposure due to the proliferation of cell phones[286], Wi-Fi routers, cell towers, and wearables)[287] Some studies have linked EMR exposure to reduced sperm counts and motility but not quality.[288] The NIH's National Toxicology Program identified "clear evidence" of DNA damage and increased cancer risk in rats.[289] However, a recent systematic review of over 50 studies found low to inadequate evidence on impact in children and called for more high-quality research.[290]
- **Phthalates**: used primarily to make plastics more flexible, durable, and long-lasting, are found in vinyl flooring, food packaging, dust, personal care products, medical devices, and synthetic fabrics. Research shows continuous exposure to certain phthalates can trigger hormone dysregulation and reproductive and developmental problems for babies in-utero and infants.[291] The FDA has restricted the use of several phthalates in food packaging and industry has discontinued use over time.[292]
- **Bisphenols**: a group of industrial chemicals primarily used to manufacture polycarbonate plastics and epoxy resins are found in consumer goods such as food and beverage containers.[293] Some studies have shown bisphenols to be endocrine-disrupting[294] by mimicking estrogen and interfering with hormone signaling and the reproductive system in animals and humans.[295] [296] Public concern about safety has resulted in a use ban for some products.[297] [298]
- **Crop Protection Tools**: including pesticides, herbicides, and insecticides. Some studies have raised concerns about possible links between some of these products and adverse health outcomes, especially in children, but human studies are limited.[299] [300] [301] For example, a selection

[285] U.S. Environmental Protection Agency. (2025, April 7). EPA will expeditiously review new science on fluoride in drinking water [Press release]. https://www.epa.gov/newsreleases/epa-will-expeditiously-review-new-science-fluoride-drinking-water (epa.gov).
[286] Mobile Fact Sheet. *Pew Research Center* https://www.pewresearch.org/internet/fact-sheet/mobile/ (2024).
[287] Frank, J. W. Electromagnetic fields, 5G and health: what about the precautionary principle? *J Epidemiol Community Health* 75, 562–566 (2021).
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[289] Melnick, R. Regarding ICNIRP'S Evaluation of the National Toxicology Program's Carcinogenicity Studies on Radiofrequency Electromagnetic Fields. *Health Physics* 118, 678 (2020).
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[292] U.S. Environmental Protection Agency. (2024, December). EPA Finalizes TSCA Risk Evaluation for Diisononyl Phthalate (DINP).
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[298] EFSA Panel on Food Contact Materials, Enzymes and Processing Aids, Barat Baviera, J. M., Bolognesi, C., Chesson, A., Cocconcelli, P. S., & Fernandez-Cruz, M. L. (2023). Re-evaluation of the risks to public health related to the presence of bisphenol A (BPA) in foodstuffs. EFSA Journal, 21(4), e06857.
[299] Myers, J. P., Antoniou, M. N., Blumberg, B., Carroll, L., Colborn, T., Everett, L. G., ... & Benbrook, C. M. (2016). Concerns over use of glyphosate-based herbicides and risks associated with exposures: a consensus statement. Environmental Health, 15(1), 19.
[300] Roberts, J. R., Karr, C. J., Paulson, J. A., Brock-Utne, A. C., Brumberg, H. L., Campbell, C. C., ... & Wright, R. O. (2012). Pesticide exposure in children. Pediatrics, 130(6), e1757-e1763. https://doi.org/10.1542/peds.2012-2757.
[301] Nougadère, A., Sirot, V., Cravedi, J. P., Vasseur, P., Feidt, C., Fussell, R. J., ... & Hulin, M. (2020). Dietary exposure to pesticide residues and associated health risks in infants and young children–results of the French infant total diet study. *Environment international*, *137*, 105529.

of research studies on a herbicide (glyphosate) have noted a range of possible health effects, ranging from reproductive and developmental disorders as well as cancers, liver inflammation and metabolic disturbances.[302 303 304 305] In experimental animal and wildlife studies, exposure to another herbicide (atrazine) can cause endocrine disruption and birth defects.[306] Common exposures include lawn care, farming, and pesticide residues; however, a large-scale FDA study of pesticide residues (2009-2017) found the majority of samples (>90%) were compliant with federal standards.[307] More recent data from the USDA's Pesticide Data Program found that 99% of food samples tested in 2023 were compliant with EPA's safety limit.[308] Federal government reviews of epidemiologic data for the most common herbicide did not establish a direct link between use according to label directions and adverse health outcomes, and an updated U.S. government health assessment on common herbicides is expected in 2026.

Importantly, the Executive Order establishing the MAHA Commission directed the involved agencies to work with farmers to ensure that United States food is the healthiest, most abundant, and most affordable in the world. American farmers are critical partners in the success of the Make America Healthy Again agenda. All the involved agencies are therefore committed to ensuring not just the survival, but the prosperity, of American Farmers. American farmers rely on these products, and actions that further regulate or restrict crop protection tools beyond risk-based and scientific processes set forth by Congress must involve thoughtful consideration of what is necessary for adequate protection, alternatives, and cost of production. Precipitous changes in agricultural practices could have an adverse impact on American agriculture and the domestic and global food supply. The federal government will continue to regularly review the safety of these important crop protection tools.

Corporate Influence

Scientific Research

A significant portion of environmental toxicology and epidemiology studies are conducted by private corporations.[309] Reports in 2023 indicate that the largest pesticide manufacturers spent billions on

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[302] Hall, M., Ashley-Martin, J., Till, C., Hu, J., Lanphear, B., Curl, C., ... & Hyland, C. (2025). Associations of prenatal glyphosate exposure with child neurodevelopment in a Canadian pregnancy cohort study. *Environment International*, 109480.
[303] von Ehrenstein, O. S., Ling, C., Cui, X., Cockburn, M., Park, A. S., Yu, F., Wu, J., & Ritz, B. (2019). Prenatal and infant exposure to ambient pesticides and autism spectrum disorder in children: Population based case-control study. *BMJ*, 364, l962. https://doi.org/10.1136/bmj.l962.
[304] Eskenazi, B., Gunier, R. B., Rauch, S., Kogut, K., Perito, E. R., & Mendez, X. (2023). Association of lifetime exposure to glyphosate and aminomethylphosphonic acid (AMPA) with liver inflammation and metabolic syndrome at young adulthood: Findings from the CHAMACOS study. Environmental Health Perspectives, 131(3), 037001.
[305] Zhang, L., Rana, I., Shaffer, R. M., Taioli, E., & Sheppard, L. (2019). Exposure to glyphosate-based herbicides and risk for non-Hodgkin lymphoma: a meta-analysis and supporting evidence. Mutation Research/Reviews in Mutation Research, 781, 186-206.
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[309] Bero, L., Anglemyer, A., Vesterinen, H. & Krauth, D. (2016) The relationship between study sponsorship, risks of bias, and research outcomes in atrazine exposure studies conducted in non-human animals: Systematic review and meta-analysis. *Environment International* 92–93, 597–604.

research initiatives.[310] [311] [312] [313] Limited comparisons between industry-funded research versus non-industry studies have raised concerns over potential biases in industry-funded research.

These disparities are potentially due to bias in study design and reporting, along with publication bias favoring positive findings in academic research.[314] [315] Such biases amplify potential discrepancies in the literature and limit the scientific publication of unfavorable results:

- An analysis of a common pesticide found that 50% of non-industry research found it harmful, compared to 18% of industry-funded studies, which also reported fewer significant adverse results (9% vs. 33%).[316]
- An analysis of 115 studies before 2005 revealed that 100% of chemical industry-funded studies declared BPA safe, while over 90% of non-industry research identified harm at low doses.[317] [318]
- Recently analyzed confidential documents from industry leaders revealed that the PFAS industry focused on suppressing unfavorable research and distorting public discourse, effectively delaying public awareness of its dangers.[319]
- Secondary analysis of approximately 2,500 "high production volume" chemicals suggests that further toxicological studies may be necessary to ensure adequate understanding of their potential health effects.[320] [321] [322]

Additionally, some industry leaders have engaged in promoting ghostwriting and sponsored reviews to influence the scientific literature. Notably, this ghostwriting strategy mirrors tactics used by the tobacco industry to distort scientific consensus.[323]

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[310] Agricultural Transformation in Focus at Corteva Agriscience 'Growing for Good' Initiative. https://www.corteva.com/resources/media-center/agricultural-transformation-in-focus-at-corteva-agriscience-growing-for-good-initiative.html (2023).
[311] BAYER CONVERTS R&D INVESTMENT INTO INNOVATIVE PRODUCTS | BayerTraits | Crop Science US. https://www.cropscience.bayer.us/news-press/bayer-traits/bayer-converts-r-and-d-investment-into-innovative-products (2023).
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[313] BASF Group - BASF Report 2023. https://report.basf.com/2023/en/combined-managements-report/basf-group.html (2023).
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[316] Bero, L., Anglemyer, A., Vesterinen, H. & Krauth, D. (2016) The relationship between study sponsorship, risks of bias, and research outcomes in atrazine exposure studies conducted in non-human animals: Systematic review and meta-analysis. *Environment International* 92–93, 597–604.
[317] Vom Saal, F. S., & Vandenberg, L. N. (2021). Update on the Health Effects of Bisphenol A: Overwhelming Evidence of Harm. *Endocrinology*, *162*(3), bqaa171. https://doi.org/10.1210/endocr/bqaa171.
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[320] Department of Toxic Substances Control. (n.d.). Emerging chemicals of concern. Retrieved May 14, 2025, from https://dtsc.ca.gov/emerging-chemicals-of-concern.
[321] S. Environmental Protection Agency. (2008). Initial risk-based prioritization of high production volume (HPV) chemicals (EPA/600/R-08/075). Washington, DC: U.S. EPA.
[322] Gaber, N., Bero, L., & Woodruff, T. J. (2023). The Devil they Knew: Chemical Documents Analysis of Industry Influence on PFAS Science. Annals of global health, 89(1), 37. https://doi.org/10.5334/aogh.401.
[323] Nakajima, N. (2021) Green Advertising and Green Public Relations as Integration Propaganda. *Bulletin of Science, Technology & Society* 21, 334–348.

Laws and Regulations

Corporate influence stretches beyond extensive involvement in scientific research to include active governmental lobbying:

- In 2024, the chemical-manufacturing lobby spent roughly $77 million on federal influence activities—placing the industry among Washington's top spenders.[324]
- In 2023, 60% of chemical-sector lobbyists previously held federal posts.[325]

As a result of this influence, the regulatory environment surrounding the chemical industry may reflect a consideration of its interests. For example, more than ten thousand chemicals listed on EPA's inventory are designated as confidential and generic chemical names are used to identify them.

[324] OpenSecrets. (2024). Chemical & related manufacturing: Lobbying, 2024. https://www.opensecrets.org/federal-lobbying/industries/summary?cycle=2024&id=N13.
[325] *OpenSecrets.org. (n.d.). Federal Lobbying: Industries Summary (N13, 2021 Cycle). from https://www.opensecrets.org/federal-lobbying/industries/summary?cycle=2021&id=N13.*

SECTION THREE

The Crisis of Childhood Behavior in the Digital Age

Over the past four decades, American children have transitioned from an active, play-based childhood to a sedentary, technology-driven lifestyle, contributing to increases in chronic physical and mental health disease. Jonathan Haidt, a social psychologist and co-author of *The Anxious Generation,* terms this shift the "Great Rewiring of Childhood," driven by increased screen time, reduced physical activity, and psychosocial stressors such as loneliness, chronic stress, and sleep deprivation.[326]

The Decline of Physical Activity

Physical activity, encompassing moderate-to-vigorous exercise, aerobic fitness, and reduced sedentary time, is critical for child health and well-being.[327] However, American youth have seen a steady decline in activity and cardiorespiratory fitness over decades, contributing to rising obesity, diabetes, mental health disorders, and cardiometabolic risks.[328] [329] [330] Studies show:

- **Aerobic Fitness Among U.S. Children Has Declined**: U.S. children experienced a significant decline in aerobic fitness for decades; an international study ranked the aerobic fitness of U.S. children 47th out of 50.[331] [332] A 2020 Scientific Statement from the American Heart Association (AHA) reported that nearly 60% of American children (specifically 12- to 15-year-olds) do not have healthy cardiorespiratory fitness (CRF).[333]
- **Very Few Children Meet Daily Physical Activity Recommendations**: More than 70% of children aged 6-17 (rising to 85% in teens) did not meet the 2024 federal minimum recommendation of daily moderate-to-vigorous physical activity.[334]

Several factors contribute to this "physical activity deficit":

- **Reduced Active School Transportation**:
    - In 1969, 48% of K-8 students usually walked or bicycled to school,[335] declining to 12.7% in 2009.[336]

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[336] Ibid.

- **Diminished In-School Activity and Recess**: Since the 1970s, recess and physical education (PE) have steadily declined.[337 338 339]
    - Weekly recess time fell by 60 minutes since 2001, and PE access dropped by 32% since 1990.[340 341]
    - In 2025, U.S. public school PE minutes fell short of SHAPE America's targets, for all age groups with elementary and middle schools offering about an hour less PE than recommended.[342]
- **Limited Recess Policies**:
    - In 2022, only 10 states mandated daily recess for elementary students.[343]
    - Fewer than half of U.S. school districts had formal recess policies, with many treating recesses as optional.[344]
- **Screen Time Impact on Sedentary Behavior**:
    - Nearly half of teens report being online almost constantly[345] while excessive screen time exposure has been linked to physical inactivity.[346]

Psychosocial Factors and Mental Health Crisis

Parallel to the decline in physical activity, American youth face a deepening psychosocial crisis. This is marked by rising mental health disorders, significant sleep deficits, chronic stress, and pervasive loneliness, all exacerbated by the widespread influence of technology. The crisis persists despite rising therapy rates, with some suggesting it may exacerbate issues.

Declining Sleep

Sleep is foundational to health, essential for children's physical, mental, and cognitive development. Yet, American children, particularly adolescents, face a nationwide sleep crisis, with up to 75% of 17–18-year-olds reporting inadequate sleep and 95% of 12th graders getting less than recommended sleep

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time.[347] [348] While specific data before 2000 is limited, sleep duration has likely declined since the 1960s, driven by societal shifts like increased screen use and academic pressure.[349] [350] [351]

Circadian rhythms, regulated by sunlight and disrupted by artificial light, play a critical role in sleep health. Morning sunlight synchronizes the body's internal clock, boosting mood and metabolism, while nighttime light exposure, affecting 99% of Americans due to widespread light pollution, suppresses melatonin production and increases risks of metabolic disorders.[352] [353] [354]

- **High School Students**: In 2021, 78% of U.S. high school students reported sleeping less than the recommended 8 hours per night on school nights, a rise from 69% in 2009. This trend disproportionately impacted female students (81%) and 12th graders (83%).[355] [356]
- **Younger Children**: In 2020-2021, 35% of children aged 4 months to 14 years had inadequate sleep.[357]
- **Light Exposure**: Natural sunlight can reach up to 100,000 lux, significantly brighter than typical indoor lighting (100–300 lux), yet individuals, including children, typically receive only 1–2 hours daily in environments exceeding 1,000 lux.[358] Additionally, 36% of parents, according to one study, report leaving electronic devices powered on in their children's bedrooms at night, contributing to sleep disruption through blue light exposure.[359]

Chronic sleep deprivation has severe consequences:

- **Metabolic Health**: Six days of four-hour nightly sleep reduces insulin sensitivity and impairs glucose tolerance.[360]
- **Physiological Impact**: Sleep loss elevates oxidative stress and inflammation, contributing to insulin resistance.[361]

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- **Screen Time**: Evening screen time from electronic devices in children's bedrooms delays melatonin production, disrupting sleep onset.[362] [363] [364]

Poor sleep exacerbates mental health disorders, creating a vicious cycle.

Chronic Stress

Chronic stress among youth has surged, particularly since 2010, with mental distress scores rising sharply in 2022.[365] [366] Stress has become pervasive, with roughly 50% of Americans reporting frequent stress, a 16% increase over the past two decades. Stress levels have likely increased since the 1980s due to growing academic and social pressures.[367]

- **Prevalence**: In 2021, the CDC reported that 42% of U.S. high school students experienced persistent feelings of sadness or hopelessness, up from 28% in 2011.[368] Female students faced disproportionate impacts, with 57% reporting persistent sadness or hopelessness and a 58% increase in suicidal ideation from approximately 19% in 2011 to 30% in 2021.[369] Approximately 20% of adolescents reported anxiety symptoms and over 15% reported depressive symptoms, with girls showing significantly higher rates.[370]
- **Physiological Consequences**: Chronic stress triggers inflammatory cytokines (e.g., CRP, IL-6), linking it to obesity, type 2 diabetes, and cardiovascular disease.[371] It also impairs mitochondrial function and elevates oxidative stress.[372]

Many psychologists, including Jonathan Haidt, attribute the rise in adolescent mental health issues to increased smartphone use and declining in-person interactions, which is supported by peer-reviewed studies on social media's psychological impacts.[373]

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Loneliness Epidemic

Loneliness among American youth has surged since the 1970s, driven by declining in-person interactions and digital isolation. The UK's Tackling Loneliness Strategy highlights global parallels, emphasizing loneliness as a public health crisis with profound impacts on youth well-being.[374] For American children, this reflects a loss of community and play, compounding mental and physical health risks:

- **Prevalence in young people**: Over three in five Americans feel lonely, a 13% increase since 2018, with 73% of 16-24-year-olds reporting loneliness, a trend worsening since the 1970s. Young men are particularly affected, with 15% reporting no close friendships, a fivefold increase since 1990.[375] [376]
- **Prevalence in children**: Approximately 20% of U.S. children aged 6-11 experience social difficulties indicative of loneliness, such as trouble making or keeping friends, a condition exacerbated by reduced unstructured play.[377]
- **Health Risks**: Loneliness in children is associated with increased risks of depression and anxiety, posing significant health challenges.[378] [379] [380]

Technology's Systemic Impact

Since 2010, smartphones, social media, and gaming have reshaped childhood, and have likely helped to drive mental health declines through social deprivation, sleep disruption, attention fragmentation, and addiction.[381] American youth are increasingly tethered to digital devices, displacing physical activity and in-person interactions.

- **Device Ownership and Media Use**: In 2024, 95% of U.S. teens aged 13-17 had access to smartphones, and 46% report being online "almost constantly," up from 24% in 2015. In 2021, teens aged 13-18 averaged approximately 8 hours and 39 minutes of non-school screen time daily.[382] [383]

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The Negative Impact of Social Media on Children's Mental Health

The near-ubiquitous presence of social media in the lives of American adolescents, with up to 95% of teens regularly using at least one or more of these platforms[384]—is increasingly correlated with a concerning rise in mental health challenges, particularly among younger users. With the vast majority of teenagers engaging with these platforms, understanding the nuanced consequences and mental health impacts of social media on their developing well-being is of critical public health importance:

- **High Usage and Mental Health Risks**: Adolescents spending more than three hours per day on these platforms may be at heightened risks of mental health issues such as anxiety and depression compared to their peers with lower usage.[385]
- **Dose-Response Relationship**: A 2022 meta-analysis of studies on adolescents found that each additional hour spent daily on social media was associated with a 13% increase in the risk of depressive symptoms, with adolescent girls showing higher associations than boys.[386]
- **Internal Industry Findings**: A social media company's internal findings documented its platform's negative effects on young users, including: worsening body image issues in one in three teenage girls; links drawn by teen users between the platform and suicidal thoughts; one in five teens reporting the platform made them feel worse about themselves; aggravation of existing mental health conditions in struggling teens.[387]
- **Emotional Distress**: A randomized controlled trial involving youth with emotional distress demonstrated that limiting social media use to one hour per day resulted in statistically significant reductions in self-reported depression, anxiety, and fear of missing out (FOMO).[388] Another randomized controlled trial where participants deactivated their social media accounts for four weeks found statistically significant improvements in subjective well-being, including increased happiness and life satisfaction, and reduced symptoms of depression and anxiety.[389]

Corporate Influence on Children's Social Media Use

Technology corporations suggest a reach over childhood health that stretches well beyond the direct harms of screen exposure, actively shaping the contours of scientific discourse and the public-health policies that follow. The pervasive influence of major technology firms on the digital environment of children has prompted significant scrutiny, particularly regarding the alignment of corporate practices with child protection frameworks and the erosion of parental oversight:

- **Content Control and Censorship**: During COVID-19, the tech platforms became quasi-public utilities for health messaging. Court records and Congressional research show federal agencies

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urged—or in some cases pressed—platforms to suppress content questioning pediatric vaccine-risk profiles or school-closure policies.[390] [391]

- **Dark-pattern purchases**: An FTC settlement found a leading game platform used in-app flows that let minors carry out purchases and surrender data *"without any parental involvement."* [392]

These informal, largely invisible coordination between agencies and platforms—coupled with undisclosed ranking algorithms—compresses the range of permissible debate on childhood-health questions and can bury legitimate scientific concerns while impacting parental supervision. Recognizing this hidden architecture is a crucial step toward improving childhood health and restoring transparency in the digital age.

Family Dynamics and Socio Economics

- Frequent family meals are associated with teens having lower rates of disordered eating, alcohol and substance use, violent behavior, and feelings of depression or thoughts of suicide in adolescents.[393]
- Single-parent family homes are associated with worse mental health outcomes in teens:[394]
    - Double the rate of internalizing disorders (i.e., Anxiety & Depression).
    - Triple the rates of externalizing disorders (i.e., ADHD, conduct disorder).
- The single-parent family home rate in the U.S. has increased from 9% in 1960 to 28% in 2012.[395]
- Children from lower socioeconomic backgrounds are two to three times more likely to develop mental health issues.[396]

Nature Exposure Impacts Childhood Mental Health

A concern has been raised that children are spending less time outdoors and in nature, resulting in a range of behavioral problems and negative health effects exemplified in the 2005 book "Last Child in the Woods" by Richard Louv.[397]

- Increasing childhood nature exposure is associated with improved psychological well-being and emotional functioning as well as reduced stress and ADHD symptoms. [398]

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[390] State of Missouri v. Biden, No. 23-30445 (5th Cir. Oct. 3, 2023). https://www.ca5.uscourts.gov/opinions/pub/23/23-30445-CV0.pdf.
[391] Knight First Amendment Institute at Columbia University. (n.d.). *Jawboning and the first amendment*. Retrieved from https://knightcolumbia.org/research/jawboning.
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- Parents have reported decreased ADHD symptoms after their children participated in activities in green areas compared to non-green areas.[399] [400]
- In a controlled experiment, children with ADHD who took a walk in a park showed improved attention performance, compared to those who walked in urban setting.[401]

Balancing the Paradox: Overdiagnosis, Genuine Distress, and Intervention Risks

Children's mental health in America presents a paradox for clinicians and policymakers: overdiagnosis of conditions like ADHD, depression, and anxiety coexists with a genuine rise in distress. This tension, driven by factors like screen time, social isolation, and academic pressure discussed earlier, complicates efforts to address youth mental health effectively.

Data confirms a real rise in youth mental health struggles. National surveys report that the number of adolescents experiencing persistent sadness or hopelessness increased from 28% in 2011 to 42% in 2021.[402] Suicide rates for ages 10–24 rose 62% from 2007 to 2021, after remaining stable from 2001 to 2007,[403] and emergency department visits for self-harm among ages 10–14 surged 63% from 2009 to 2018.[404]

Yet, overdiagnosis remains a significant concern. Research shows ADHD has the strongest evidence of overdiagnosis, with studies noting that for youth with milder symptoms, "the harms associated with an ADHD diagnosis may often outweigh the benefits."[405] Schools, eager to "fix kids" by addressing behavioral challenges, may inadvertently contribute to this trend by encouraging diagnoses to access support, potentially mislabeling typical developmental behaviors as disorders. Similar concerns exist for depression and anxiety, where overdiagnosis risks labelling normal emotional or developmental challenges as clinical conditions, potentially increasing diagnoses without clear evidence that these youth benefit from treatment.[406] [407]

Dominant mental health approaches, often relying on reductive diagnoses and targeted treatments, face scrutiny for overlooking environmental factors. Some interventions may even cause harm. For example, universal school-based mental health programs can inadvertently increase distress in certain adolescents by encouraging rumination, though evidence is debated.[408]

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Such over-pathologization may lead to interventions that fail to address root causes. Echoing these concerns, Abigail Shrier's 2024 book, *Bad Therapy: Why the Kids aren't Growing Up,*[409] contends that interventions like therapy and Social-Emotional Learning programs may weaken resilience by pathologizing normal emotions. This perspective raises concerns that practices like trauma-informed care and gentle parenting potentially pathologize normal emotions, undermine resilience, and contribute to rising anxiety and depression rates among children and teenagers. Though controversial and disputed by many experts, this perspective remains viable and warrants rigorous scientific investigation to either confirm or refute its validity.

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SECTION FOUR

The Overmedicalization of Our Kids

Medical overuse in children typically occurs by well-intended physicians and parents attempting to help a child. It has been estimated that roughly one-third of healthcare spending in the United States is wasteful and does not improve patient health.[410] American healthcare operates in a marketplace where incentives, when misaligned, can foster and encourage overuse by allowing stakeholders to maximize profits at the expense of consumer health and wellbeing. In recent decades, American children have, as a product of these misaligned incentives, been subject to an unprecedented period of over-prescription driven, in large part, by corporate influence, with demonstrable consequences for their health.

The information below offers an assessment of how the medical system may be exacerbating the chronic disease epidemic in children and is summarized from the published scientific literature.

American Children are on Too Much Medicine—A Recent and Emerging Crisis

One in five U.S. children are estimated to have taken at least one prescription medication in the past 30 days, with ongoing use most pronounced among adolescents, among whom 27% take one or more daily prescription drugs.[411] Time trends suggest the current breadth of prescription drug exposure in US children is of relatively recent origin:

- **Stimulant prescriptions, drugs used to treat ADHD** in the US, **doubled** from 2006-2016;[412] by 2022 11% of children had an ADHD diagnosis, with boys having a rate of nearly 1 in 4 by age 17.[413]
- **Antidepressant** prescriptions were written for greater than 2 million adolescents in 2022,[414] a 14-fold increase from 1987-2014.[415]
- **Antipsychotic** use in US kids rose eight-fold from 1995-2005, 66% of which was off-label for issues like ADHD or "aggression."[416]
- **Antibiotics** for outpatient children reached 49 million in 2022.[417] It has been estimated that about 35% are unnecessary, suggesting every year about 15 million children are prescribed unnecessary antibiotics, offering only risk with no chance of benefit.[418]
- **Asthma controller** prescriptions increased 30% from 1999-2008.[419] There is evidence of overprescription of oral corticosteroids for mild cases of asthma.[420]

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[417] CDC, "Outpatient Antibiotic Prescriptions — United States, 2022" (for prescription volume and pediatric prescribing rates).
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- **GLP-1 drug** use is increasingly common among US kids,[421] very likely influenced by the American Academy of Pediatrics (AAP) strong recommendation to use weight loss drugs and surgery “early and at the highest available intensity.”[422]

These time trends significantly outpace more moderate increases seen in other developed countries. Psychotropics for ADHD are one example, prescribed 2.5 times more in US than in British children[423], and 19 times more than in Japanese youth.[424] [425] The crisis of overdiagnosis and overtreatment in children is therefore both empirically evident, and proportionally specific to American youth.

While excessive medical intervention in the US healthcare system is broadly recognized,[426] there has been less attention given to direct harms experienced by Americans due to overtreatment. Despite this there exists a robust evidence base demonstrating significant and costly (both financially and in terms of human suffering) harms experienced by children due to overtreatment at the hands of American healthcare.

Of note, as this report lists representative examples of demonstrably harmful practices in children, many will depend on readers’ understanding of a core principle of evidence-based medicine: interventions shown to offer no benefit when compared to placebo are harmful. All medical interventions involve some risk of biological adverse effects, as well as cost, resource investment, opportunity cost, and human capital. From an evidence-based standpoint, these harms are the only potential impact when using interventions proven to have no benefit. Therefore, in some of the examples given below, the net harmfulness of a listed example is understood by virtue of the proven absence of a benefit, that is frequently learned when an undertested, but commonly used, intervention is properly evaluated in a randomized controlled trial, which is the gold standard of evidence in medicine.

Examples of proven harms due to overtreatment include:

- **Psychiatric drugs**, commonly used in children are known to cause serious, and often dangerous, short term adverse effects, such as, seizures, manic episodes, QT prolongation, discontinuation withdrawal syndrome as listed on FDA labels. [427]
- **Adenotonsillectomy** for children with sleep apnea, an historically common procedure, conferred no benefit in trials,[428] suggesting the many, and often severe, harms of this surgery are unnecessary.

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[421] Lee JM, Sharifi M, Oshman L, Griauzde DH, Chua K. Dispensing of Glucagon-Like Peptide-1 Receptor Agonists to Adolescents and Young Adults, 2020-2023. *JAMA*. 2024;331(23):2041–2043. doi:10.1001/jama.2024.7112.

[422] https://publications.aap.org/aapnews/news/22965/AAP-s-first-clinical-practice-guideline-on-obesity.

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[425] Calculations made from references 391, 399, and 400.

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- **Tympanostomy tubes** for recurrent ear infections, despite being recommended by professional societies,[429] did not reduce infections in trials—showing common surgeries cause harm without offering benefits.[430]
- **Blood tests for inflammation** in infants with fever routinely led to a cascade of unnecessary, invasive, and harmful further testing such as spinal taps—but were broadly recommended by professional society guidelines.[431]
- **ADHD, depression, and "intellectual disability"** are diagnosed disproportionately in children relatively young for their school grade, suggesting misdiagnosis leads to unnecessary drugs, treatments, and social stigma.[432]
- **New generation antidepressants**, despite widespread use, in children offer only a "small and unimportant" reduction in depression symptoms according to a meta-analysis of 26 studies.[433]
- **Antibiotics** are over-prescribed to millions of US children annually, causing serious harms like rashes, diarrhea, recurrent infections, allergic reactions, and antibiotic resistance.[434]
- **Antidepressants, stimulants, antipsychotics, and other psychiatric drugs**, when stopped, often lead to disabling and prolonged physical dependence and withdrawal symptoms.[435]
- **Specific antipsychotics** in adolescent boys, when compared to placebo, cause 5 times more gynecomastia (male breast growth),[436] 4 times more extrapyramidal effects, and 6-8 times more significant weight gain.[437]
- **Topiramate**, commonly prescribed throughout the 2000s off-label to children for migraine headaches, were presumed effective in children given known efficacy in adults; however, no high-quality trials in children existed.[438] [439] In 2017, the first high-quality trial was published, demonstrating the drug did not improve migraines in children[440] but did cause suicidal thoughts and behaviors as acknowledged on the FDA drug label.[441] Following this trial, prescriptions of the Topiramate dropped for children with migraines.

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[440] Powers, S. W., Coffey, C. S., Chamberlin, L. A., Ecklund, D. J., Klingner, E. A., Yankey, J. W., ... & Hershey, A. D. (2017). Trial of amitriptyline, topiramate, and placebo for pediatric migraine. *New England Journal of Medicine*, *376*(2), 115-124.
[441] U.S. Food and Drug Administration. (2008, December 16). Information for healthcare professionals: Suicidal behavior and ideation and antiepileptic drugs [FDA Alert]. https://wayback.archive-it.org/7993/20170404234152/https:/www.fda.gov/Drugs/DrugSafety/PostmarketDrugSafetyInformationforPatientsandProviders/ucm100192.htm.

The above examples represent harms that have been carefully studied and thus well proven. However, in the setting of childhood growth and development there remains an important likelihood of undetected but potentially major long-term repercussions. Established harms in children may therefore be thought of as the tip of a potentially vast iceberg representing both detectable short term negative effects, and potentially hidden negative effects with long term implications. While long term research on the developmental and adult-stage impact of most commonly used drugs for children is limited, there are contributory human data that raise important questions. **Examples include**:

- **SSRIs**: Used to treat depression and anxiety, SSRIs carry a black box warning[442] due to established incidents of suicidal thinking and behavior caused by the drugs in adolescents—such incidents are difficult to separate from progression of baseline disease and therefore may go largely undetected.
- **Stimulants**: According to best trial data available, these widely used ADHD drugs cause long-term height loss averaging an inch;[443] of note, the only long-term trial found exclusively short-term (14-month) behavior benefits, which were not found at 3 years.[444] Indeed, at 3, 5, 8, and 14 years, no benefits were seen in grades, relationships, achievement, behavior, or any other measure.
- **GLP-1 Agonists**: Increasingly common,[445] these popular weight-loss and diabetes drugs with complicated metabolic effects lack neurodevelopmental and other long term safety data, raising the specter of unforeseen problems that interrupt, damage, or impair metabolism and growth development.
- **Child Chemical and Surgical Mutilation** carries major risks related to puberty blockers, cross-sex hormones, and surgeries, including irreversible effects like infertility.[446] The AMA[447] and AAP[448] recommend these medications and procedures, however, despite an HHS review finding no long-term evidence for safety (or effectiveness) and short-term evidence of "very low quality."[449]
- **Antibiotics:** Children exposed to antibiotics in the first 2 years of life are more likely to develop asthma, allergic rhinitis, atopic dermatitis, celiac disease, overweight, obesity, and ADHD.[450] The antibiotic prescription rate from birth until age 2 is over 2,500 antibiotic prescriptions for every 1,000 children this age.[451]

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[442] Food and Drug Administration. (2018). Suicidality in Children and Adolescents Being Treated With Antidepressant Medications. FDA. https://www.fda.gov/drugs/postmarket-drug-safety-information-patients-and-providers/suicidality-children-and-adolescents-being-treated-antidepressant-medications.

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[447] https://www.ama-assn.org/press-center/ama-press-releases/ama-states-stop-interfering-health-care-transgender-children.

[448] https://publications.aap.org/aapnews/news/25340/AAP-reaffirms-gender-affirming-care-policy.

[449] U.S. Department of Health and Human Services. (2025). Treatment for pediatric gender dysphoria: Review of evidence and best practices. Office of Population Affairs. https://opa.hhs.gov/.

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[451] Fleming-Dutra, K. E., Hersh, A. L., Shapiro, D. J., Bartoces, M., Enns, E. A., File, T. M., Finkelstein, J. A., Gerber, J. S., Hyun, D. Y., Linder, J. A., Lynfield, R., Margolis, D. J., May, L. S., Merenstein, D., Metlay, J. P., Newland, J. G., Piccirillo, J. F., Roberts, R. M., Sanchez, G. V., ... Hicks, L. A. (2016). Prevalence of inappropriate antibiotic prescriptions among US ambulatory care visits, 2010-2011. JAMA, 315(17), 1864-1873. https://doi.org/10.1001/jama.2016.4151.

- **Acid suppressants (PPIs, H2 antagonists)** in their first year of life are more likely later in childhood to develop food and drug allergies, anaphylaxis, allergic rhinitis, and asthma,[452] findings that again require careful long-term investigation.

Compounding the crisis of known and potential long-term harms of pediatric overtreatment is a lack of pediatric-specific trials creating a critical knowledge gap. In many settings of pediatric care authorities, guidelines, and healthcare providers rely largely on dosing and safety profiles from adult studies.[453]

Growth of the Childhood Vaccine Schedule

The Executive Order establishing the MAHA Commission directed the study of any potential contributing causes to the childhood chronic disease crisis, including medical treatments, and to "assess the threat that potential over-utilization of medication… pose[s] to children with respect to chronic inflammation or other established mechanisms of disease, using rigorous and transparent data, including international comparisons."

Vaccines benefit children by protecting them from infectious diseases. But, as with any medicine, vaccines can have side effects that must be balanced against their benefits. Parents should be fully informed of the benefits and risks of vaccines. Many of them have concerns about the appropriate use of vaccines and their possible role in the growing childhood chronic disease crisis.

- Since 1986, for the average child, by one year of age, the number of recommended vaccines on the CDC childhood schedule has increased from 3 injections to 29 injections (including in utero exposures from vaccines administered to the mother). Of course, parents may choose to delay to a later age or forego one or more of these vaccines.[454] [455]
- The number of vaccinations on the American vaccine schedule exceeds the number of vaccinations on many European schedules, including Denmark, which has nearly half as many as the U.S.[456] [457] [458] Yet, no trials have compared the advisability and safety of the U.S. vaccine schedule as compared to other nations.[459]
- Unlike other pharmaceutical products, vaccines are unique in that all 50 states enforce some form of vaccine mandate for public school enrollment although almost all states allow

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[452] Mitre, E., Susi, A., Kropp, L. E., Schwartz, D. J., Gorman, G. H., & Nylund, C. M. (2018). Association between use of acid-suppressive medications and antibiotics during infancy and allergic diseases in early childhood. JAMA pediatrics, 172(6), e180315-e180315.
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[454] https://www.cdc.gov/vaccines/schedules/images/schedule1983s.jpg; No new vaccines were added to the schedule between 1983-1989.
[455] Centers for Disease Control and Prevention. (2025, January 16). Advisory Committee on Immunization Practices recommended immunization schedule for children and adolescents aged 18 years or younger—United States, 2025. MMWR. Morbidity and Mortality Weekly Report, 74(2), 26–29. https://www.cdc.gov/mmwr/volumes/74/wr/pdfs/mm7402a2-H.pdf.
[456] Ministère de la Santé et de la Prévention. (2025, April 28). Calendrier des vaccinations 2025. https://sante.gouv.fr/prevention-en-sante/preserver-sa-sante/vaccination/calendrier-vaccinal.
[457] UK Health Security Agency. (2025, January 22). Routine childhood immunisations from 1 January 2025. https://assets.publishing.service.gov.uk/media/678fbe6ec88969ba1bc2ada9/UKHSA_13197_Routine_Childhood_imms_schedule_04.pdf.
[458] Danish Health Authority. (2019, August 20). The Danish childhood vaccination programme. Statens Serum Institut. https://en.ssi.dk/vaccination/the-danish-childhood-vaccination-programme.
[459] IOM (Institute of Medicine). 2013. The childhood immunization schedule and safety: Stakeholder concerns, scientific evidence, and future studies. Washington, DC: The National Academies Press. ("Experts who addressed the committee pointed not to a body of evidence that had been overlooked but rather to the fact that existing research has not been designed to test the entire immunization schedule" and "studies designed to examine the long-term effects of the cumulative number of vaccines or other aspects of the immunization schedule have not been conducted.").

exemptions for religious and/or personal reasons.[460] In contrast, over half of European countries—including the UK—do not require childhood vaccination.[461]

Despite the growth of the childhood vaccine schedule, there has been limited scientific inquiry into the links between vaccines and chronic disease, the impacts of vaccine injury, and conflicts of interest in the development of the vaccine schedule. These areas warrant future inquiry:

Clinical trials: Our understanding of vaccine safety and any links to chronic disease would benefit from more rigorous clinical trial designs,[462] [463] including the use of true placebos, larger sample sizes, and longer follow-up periods. Many vaccines on the CDC's childhood schedule involved small participant groups, had no inert placebo-controlled trials, and had limited safety monitoring, some lasting six months or less—raising concerns about the ability to detect rare or long-term adverse effects.

Complications and the Vaccine Safety Surveillance System:

Vaccines can have a wide range of adverse effects. Manufacturers are only required by Federal law to list these adverse events in their package insert if they have a basis to believe there is a causal relationship between the drug and the occurrence of the adverse event.[464] There are, however, many possible adverse events for which there is inadequate evidence to accept or reject a causal relationship.[465] [466]

Vaccine reactions are supposed to be evaluated in the United States through a range of federal agencies.[467] The Vaccine Adverse Event Reporting System (VAERS) relies on passive reporting by physicians and others, but provides incomplete "early warning" observational data. Many health care professionals do not report to VAERS because they are not mandated to do so or they may not connect the adverse event to a vaccination.[468] [469]

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[460] National Conference of State Legislatures. (2025, March 10). State non-medical exemptions from school immunization requirements. https://www.ncsl.org/health/state-non-medical-exemptions-from-school-immunization-requirements.
[461] Farina S, Maio A, Gualano MR, Ricciardi W, Villani L. Childhood Mandatory Vaccinations: Current Situation in European Countries and Changes Occurred from 2014 to 2024. Vaccines (Basel). 2024 Nov 20;12(11):1296. doi: 10.3390/vaccines12111296.
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The Vaccine Safety Datalink (VSD) system, established in 1990, works with healthcare organizations to monitor and study adverse events using electronic health records, covering 15 million people.[470] [471] However, deidentified data in the VSD, paid for by taxpayers, is not generally available to scientists outside of the VSD network to conduct analyses or replicate findings using VSD data. Furthermore, the CDC has noted that VSD studies are likely prone to confounders and bias; it is also geared towards studying short-term outcomes and is not well-suited to studying associations between vaccination and longer-term chronic disease conditions.[472]

Conflicts of interest: The National Childhood Vaccine Injury Act of 1986 was enacted in response to liability concerns surrounding injuries linked to the three routine childhood vaccines in use at the time.[473] The law shields vaccine manufacturers from liability for vaccine-related injuries, creating a unique regulatory and legal framework. This framework creates financial disincentives for pharmaceutical companies to identify safety issues either pre- or post-licensure. Congress made HHS responsible for vaccine safety in the Mandate for Safer Childhood Vaccines.[474] However, HHS also has the conflicting duty to promote vaccines and to defend them against claims of injury in the National Vaccine Injury Compensation Program.[475] In fact, HHS has faced lawsuits for failing to fulfill basic duties under the Mandate for Safer Childhood Vaccines such as its requirement to submit biannual reports to Congress on how it has made vaccines safer.[476]

Scientific and Medical Freedom: Open scientific discussion and inquiry has become more difficult with the expansion of childhood vaccine mandates and public health—combined with efforts to combat vaccine hesitancy.[477] Physicians who question or deviate from the CDC's vaccine schedule may face professional repercussions, including scrutiny from licensing boards and potential disciplinary action. The American Medical Association (AMA), for example, adopted a new policy aimed at "addressing public health disinformation" that called to "ensure licensing boards have the authority to take disciplinary action against health professionals for spreading health-related disinformation."[478] This dynamic discourages practitioners from conducting or discussing nuanced risk-benefit analyses that deviate from official guidelines—even when those analyses may be clinically appropriate. It also discourages physicians and scientists from studying adverse reactions. This silences critical discussion, discourages reporting to safety systems and hampers vaccine research, and undermines the open dialogue essential to protecting and improving children's health.

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From Bench to Bedside: Mechanisms of Corporate Capture

The overmedicalization of American children, characterized by escalating prescription rates, unwarranted interventions, and declining health outcomes, signals a critical policy failure where corporate profitability supersedes the health of children. While in the 1960s U.S. healthcare achieved excellent health outcomes for children while spending at a level consistent with other developed nations, today's system far outspends sister nations while delivering far worse outcomes.

This phenomenon is largely propelled by "corporate capture," in which industry interests dominate and distort scientific literature, legislative actions, academic institutions, regulatory agencies, medical journals, physician organizations, clinical guidelines, and the news media. The pharmaceutical industry, with its vast resources and influence, is a primary driver of this capture, though similar dynamics pervade the food and chemical industries, further exacerbating health challenges. This analysis details the mechanisms of corporate capture through a "bench to bedside" framework, followed by an examination of the systemic frailties that perpetuate industry dominance.

At a granular level, this suggests the poor health and increased morbidity of our children is multifactorial and includes, most prominently, the corporate capture of medical knowledge. The distortion and influence of medical education, medical knowledge, and therefore clinical guidelines and practice, has led providers to over-diagnose and over-prescribe, and over-use by children, while largely ignoring the potential population-level impact of diet, lifestyle, and environment as focal points for health, healing, and wellness.

Corporate capture entails the systematic distortion of scientific literature, regulatory processes, clinical practices, and public discourse by pharmaceutical and healthcare industries, all aimed at maximizing profits. These mechanisms illustrate a trajectory from initial research to pervasive market saturation and narrative control.

1. Distorting Scientific Literature

In medical school, doctors are taught high quality care is based on the scientific evidence presented in peer reviewed articles published in reputable medical journals. Embedded in this dictum are several assumptions:

- That medical research is broadly focused on the most common and serious health challenges.
- That journal articles include the most relevant findings on benefits and harms.
- That the publication of articles in reputable journals is tantamount to an attestation and confirmation that the reports are faithfully distilled representations of original study data.
- That peer reviewers are unbiased and have the biomedical, analytic, and scientific expertise to filter and curate study reports, assuring they are methodologically valid, presented fairly, and interpreted correctly.

These assumptions are often incorrect

- In the United States, private industry funds five times as many clinical trials than all U.S. Federal agencies combined including the NIH.[479] Since 1999, 97% of the most frequently cited clinical trials received funding from industry[480] The number of citations is a measure of papers' impact,[481] suggesting nearly all of the most impactful clinical trials have been funded by industry.
- Medical journals often do not have access to patient-level data from pharmaceutical research and therefore cannot vouch for the accuracy or completeness of the data they see. Industry data is firewalled, and companies generally allow no one other than employees to see it[482]—doctors and patients must therefore rely on the good faith of corporations to present an honest picture of their research.
- Peer review, the gatekeeping attribute that defines medical journals, is ineffective and biased; reviewers at top journals are untrained,[483] ineffective when tested,[484] and many have financial ties to drug companies.[485]

Drug companies, therefore, exercise corporate control over the research agenda, corporate control of the research findings seen by patients and doctors, and corporate influence over the review of those findings. These are the structural components comprising the corporate capture of medical information.

Despite the broad inability of scientists or journalists to obtain access to original research data from pharmaceutical companies, there is an overwhelming body of scientific evidence supporting the conclusion that pharmaceutical industry dominance of research leads to distorted and misleading information routinely published in top journals, while journals and their content are routinely manipulated and controlled by industry money:

- Pharmaceutical companies often craft studies and papers designed to favor their products. Evidence shows industry studies are *much* more likely to report favorable outcomes,[486] exaggerating benefits and underreporting harms.[487]
- Editorials and opinion pieces in top journals are often written by biased, industry funded authors, and therefore disproportionately conclude the drugs in question are safe and effective.[488]

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- Medical journal economics: Medical journals rely for profitability on revenue from industry (advertising and reprints), thus journals reap handsome profits when publishing successful studies of drugs.[489]
- More than half of top medical journal editors have been paid directly by drug companies, often as funding for research; though most payments were modest there were two notable outliers who received general payments of greater than $1M in 2014.[490]
- Despite incentives to favor industry, some of the world's most respected medical journal editors have publicly expressed disgust and loathing for industry's impact on the content and nature of medical journals, including:[491]
  - Richard Horton, editor of The Lancet: "Journals have devolved into information laundering operations for the pharmaceutical industry."
  - Marcia Angell, former editor of the New England Journal of Medicine: Criticized industry for becoming "primarily a marketing machine" and co-opting "every institution that might stand in its way."
  - Richard Smith, former editor of the BMJ: "Medical journals are an extension of the marketing arm of pharmaceutical companies."
  - Arnold Relman, former editor of the New England Journal of Medicine: "The medical profession is being bought by the pharmaceutical industry, not only in terms of the practice of medicine, but also in terms of teaching and research. The academic institutions of this country are allowing themselves to be paid agents of the pharmaceutical industry. I think it's disgraceful."

One of the world's most prestigious journals published an article critiquing pharmaceutical advertisements, and lost an estimated $1-1.5 million in advertising revenue, revealing "the true colors of the pharmaceutical industry, which was willing to flex its considerable muscles when it felt its interests were threatened."[492]

2. Exerting Potentially Undue Influence

Evidence suggests that pharmaceutical money strongly influences congressional legislation through lobbying and the manipulation of patient advocacy groups, and exerts considerable financial control over the FDA and its employees:

- From 1999 to 2018, the pharmaceutical industry spent $4.7 billion on lobbying expenditures at the federal level, more than any other industry.[493]
- Industry-funded patient advocacy groups often present as independent entities, pressuring regulatory bodies to prioritize rapid access to new treatments over safety.[494]

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- Between 2010 and 2022, industry provided *$6 billion* to over 20,000 patient advocacy organizations.[495]
- 9 of 10 past FDA commissioners have gone on to work in the pharmaceutical industry;[496] similarly, roughly 70% of FDA medical examiners ultimately find employment in the industry.[497]

3. Widening Markets and Influencing Clinical Practice

The pharmaceutical, device, and related healthcare industries have used a broad range of tactics to maximize profits, many of them explicitly untethered to improvements in child health. Such tactics typically have the impact of distorting and widening markets for industry product sales. Examples include:

- In prior studies, 80% of clinical departments at U.S. medical schools and teaching hospitals are funded directly by the pharmaceutical industry.[498]
- Industry sponsorship of education for medical students and physicians typically promotes drugs, encourages off-label prescribing, and contributes to polypharmacy in kids.[499]
- Half of Continuing Medical Education courses in the U.S. are funded by the pharmaceutical industry.[500] Studies find sponsored courses profoundly impact physician behavior, increasing prescribing of the sponsor's drug;[501] industry studies show the return on investment for this averages $3.56 for every dollar spent.[502]
- Industry donations to the CDC Foundation are believed to influence federal public health campaigns, highlighting "awareness" of selected child conditions to justify more diagnosis and drug use.[503] The CDC foundation openly advertises that "you can advance CDC's work on a specific health threat by supporting a CDC foundation program" and have "the ability to target investments where most needed."[504] Such conflicts of interest may have influenced CDC work, related to hepatitis C screening and chronic kidney disease, as noted in a BMJ investigation.[505]
- Clinical guidelines written by respected professional societies and organizations provide a particularly powerful and potentially amplified influence target for industry. Studies suggests there is considerable funding and effort in this direction, with notable consequences. Examples include:

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- Studies have found the majority of clinical guideline panelists in the US have financial ties to pharmaceutical or device companies.[506]
- The American Diabetes Association's (ADA) type 2 diabetes guideline, with 94% of authors reporting conflicts, recommends aggressive glucose control through drugs; research indicates this may often worsen outcomes.[507]
- The ADA guideline also recommends treating "prediabetes" with drugs despite limited evidence of long-term benefits,[508] consistent with marketing of "conditions" like pre-hypertension and pre-hyperlipidemia.
- The majority of the panelists who composed the DSM-5 were found to have conflicts of interest[509] and their recommendations loosened criteria for ADHD and bipolar disorder, driving a 40-fold increase in diagnoses in children 1994-2003,[510] with a rise in prescriptions for antipsychotics and stimulants.[511]

- Pharmaceutical companies have settled with U.S. government, including for major settlements of $430 million,[512] $2.2 billion,[513] and $3 billion.[514]

4. Influencing Media, Disincentivizing Public Criticism

The corporate capture of media, primarily through lavish advertising campaigns that are uniquely targeted to American consumers (no other developed country allows direct advertising of drugs to consumers, other than New Zealand where such advertising is heavily regulated and federally controlled)[515] confers a notable level of reliance on the industry by those that benefit financially. While in the U.S. the pharmaceutical industry has the First Amendment right to have these advertisements, studies suggest that they have a strong influence on those who view them, potentially increasing inappropriate prescriptions.

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In 2023, drug companies spent over $5 billion on television advertisements.[516] While many more studies exist on drugs used by adults,[517] [518] [519] [520] the impact of Direct to Consumer (DTC) advertising on children is also highly concerning:

- DTC advertising for ADHD drugs in children have been suggested to use vague symptom lists including typical childhood behaviors, potentially leading parents to overestimate ADHD prevalence and to request ADHD drugs inappropriately.[521]
- Similarly, DTC advertising is believed to encourage greater use of psychotropic medications in adolescents, including antianxiety, antipsychotic, and antidepressant classes.[522]

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Next Steps – Supporting Gold-Standard Scientific Research and Developing a Comprehensive Strategy

To close critical research gaps and guide efforts to better combat childhood chronic disease in America, the following research initiatives are recommended:

1. **Addressing the Replication Crisis**: NIH should launch a coordinated initiative to confront the replication crisis, investing in reproducibility efforts to improve trust and reliability in basic science and interventions for childhood chronic disease.
2. **Post-Marketing Surveillance**: NIH and FDA should build systems for real-world safety monitoring of pediatric drugs and create programs to independently replicate findings from industry-funded studies.
3. **Real-World Data Platform**: Expand the NIH-CMS autism data initiative into a broader, secure system linking claims, EHRs, and environmental inputs to study childhood chronic diseases.
4. **AI-Powered Surveillance**: Create a task force to apply AI and machine learning to federal health and nutrition datasets for early detection of harmful exposures and childhood chronic disease trends.
5. **GRAS Oversight Reform**: Fund independent studies evaluating the health impact of self-affirmed GRAS food ingredients, prioritizing risks to children and informing transparent FDA rulemaking.
6. **Nutrition Trials**: NIH should fund long-term trials comparing whole-food, reduced-carb, and low-UPF diets in children to assess effects on obesity and insulin resistance.
7. **Large-scale Lifestyle Interventions**: Launch a coordinated national lifestyle-medicine initiative that embeds real-world randomized trials—covering integrated interventions in movement, diet, light exposure, and sleep timing—within existing cohorts and EHR networks.
8. **Drug Safety Research**: Support studies on long-term neurodevelopmental and metabolic outcomes of commonly prescribed pediatric drugs, emphasizing real-world settings and meaningful endpoints.
9. **Alternative Testing Models**: Invest in New Approach Methodologies (NAMs), such as organ-on-a-chip, microphysiological systems, and computational biology, to complement animal testing with more predictive human-relevant models.
10. **Precision Toxicology**: Launch a national initiative to map gene–environment interactions affecting childhood disease risk, especially for pollutants, endocrine disruptors, and pharmaceuticals.

Some of the steps to implement these research initiatives are already underway and others will begin this in the near future. In parallel, the MAHA Commission will immediately begin working on developing the strategy to make our children healthy again—due in August 2025. We invite all of America, especially the private sector and academia, to be part of the solution.