# Webinar Will Begin Momentarily

**TODAY'S AGENDA:**

- Welcome
- Speaker Introduction
- Presentation
- Q&A
- Closing

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Professional Education Series

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# Processed Foods: What Every Health Care Professional Should Know



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# Disclosures

Write digestive health blog twice monthly for WebMD.com; write a twice-monthly Substack newsletter

Co-author, *The Menopause Diet Plan: A Natural Guide to Managing Hormones, Health and Happiness*

U.S. Soy/Soy Connection (FNCE 2024)

American Pistachio Growers – Ongoing Educational Outreach Partnership

# Defining Processed Foods

# The Nova System

- Introduced in 2009 to classify foods according to the extent of their "industrial processing."
- Made with ingredients you "wouldn't normally find in supermarkets or kitchens or made with industrial manufacturing processes."
- Food fits into one of four groups.
- Nutrient composition is **not** part of the Nova system.

https://pubmed.ncbi.nlm.nih.gov/21180977/

# Group 1: Unprocessed or Minimally Processed Foods

- Foods from nature

- You can discard parts of the food, but you can't add to them.

- Can be dried, crushed, ground, powdered, fractioned, filtered, roasted, boiled, pasteurized, chilled, frozen, in a container, or vacuum-packed:

  - Raisins; dried beans and peas
  - Dairy milk
  - Olives
  - Fresh or frozen plain meat, poultry, seafood
  - Coffee
  - Plain grains, such as oats
  - Unsalted roasted or raw nuts

https://pubmed.ncbi.nlm.nih.gov/21180977/

# Group 2: Processed Culinary Ingredients

➢Foods from Group 1 that have been pressed, refined, milled, including:

- Olive oil
- Butter
- Lard
- Maple syrup, honey, brown sugar, white sugar
- Seed oils
- Salt

https://pubmed.ncbi.nlm.nih.gov/21180977/

# Group 3: Processed Foods

- Made by adding salt, sugar, oil, or other substances to foods from Group 1 or Group 2
- Food that's cured, smoked, salted, including:
  - Salami, prosciutto
  - Smoked salmon
  - Canned beans (including reduced-sodium)
  - Sourdough bread (not packaged)
  - Canned fish (tuna, salmon)
  - Freshly-made cheeses

https://pubmed.ncbi.nlm.nih.gov/21180977/

# Group 4: Ultraprocessed Foods (UPF)

- "Industrial formulations" made entirely or mostly from oils, fats, sugar, starch, and proteins, flavor enhancers, colors, and food additives, including:

  - Hot dogs
  - Chocolate milk
  - Packaged whole wheat bread, white bread, pasta, rice
  - Cheese puffs, snack chips, packaged cookies
  - Ice cream and frozen desserts
  - Sweetened yogurt
  - Carbonated soft drinks, energy drinks, coffee drinks
  - Frozen pizza
  - Distilled alcohol, such as whisky, gin, rum, vodka, etc.

https://pubmed.ncbi.nlm.nih.gov/21180977/



**Dried chickpeas: Group 1**



**Homemade hummus: Group 2 (made with dried chickpeas)**



**Canned chickpeas: Group 3 (added sodium)**



**Packaged hummus: Group 4 (added guar gum)**

**“UPF are industrial formulations and/or ingredients not commonly found in your kitchen.”**

## Homemade



## Packaged



- **Emulsifiers (soy lecithin)**
- **Artificial flavors**
- **Slightly higher in sodium**

# What to Consider About Nova

- Production method outweighs nutrient content.
- The notion that food manufacturers always purposefully design and produce UPF for overconsumption.
- Avoiding all UPF doesn't guarantee a high-nutrient, balanced eating plan.

https://www.sciencedirect.com/science/article/abs/pii/S0924224421004970

https://nutrition.org/limiting-ultra-processed-foods-does-not-necessarily-make-for-a-healthy-diet/

# Pros and Cons of Food Processing

# Food Processing: Pros



- **Saves time**

- **Improves convenience, food security, and reduces food waste:**
  - Canned beans, tuna, fruit, vegetables are shelf-stable

- **Improves food safety:**
  - Pasteurization



- **Improves nutrition:**
  - Milk fortified with vitamins A and D
  - Kefir and yogurt with live active cultures
  - Enriched and fortified grains



- **Helps manage food allergy and intolerance:**
  - Lactose-free milk, gluten-free options

# Food Processing: Cons



- Often lower nutrient-density/greater energy-density



- Reduced fiber content
- May have added sugar, sodium, saturated fat



- May use additives that could be harmful to health
- Texture and higher palatability of UPF may cause overconsumption

# What Does the Research Say About UPF and Health?

# UPF in the US Diet

- Americans over the age of 19: 55% of calories from UPF
  - -Children 1–18 years: about 62%

- Top UPF foods:
  - sandwiches
  - burgers
  - sweet bakery products
  - savory snacks
  - sweetened beverages



- Those with the highest family income eat the least amount of UPF.

https://www.cdc.gov/nchs/products/databriefs/db536.htm

WSJ



# This is Your Brain on Ultra-Processed Foods

Scientists are discovering clues to how these foods affect the way we learn, remember and feel

*By Andrea Petersen*

MARCH 22, 2024

TAP STORY >

The Washington Post

*Democracy Dies in Darkness*

# Ultra-processed diet decreases male sex hormones, new study suggests

Researchers also found that eating ultra-processed foods led to weight gain.

August 28, 2025

CNN Health Life, But Better Fitness Food Sleep Mindfulness Relationships NEW Watch Listen

life but better Food

# Scientists criticize food manufacturers for massive profits from sales of unhealthy ultraprocessed food

UPDATED NOV 20, 2025

By Sandee LaMotte

The New York Times

# Eating Processed Foods Tied to Shorter Life

Foods like instant noodles and soups, breakfast cereals and chicken nuggets were associated with an earlier death.

# Health Issues Related to Eating Patterns Higher in Calories from UPF

- Overweight and obesity
- Type 2 diabetes
- CVD
- Breast cancer, thyroid cancer, colon cancer
- Thyroid disease
- Depression
- Dementia
- IBD, Chron's disease
- Liver disease

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7441617/; https://www.bmj.com/content/384/bmj-2023-077310

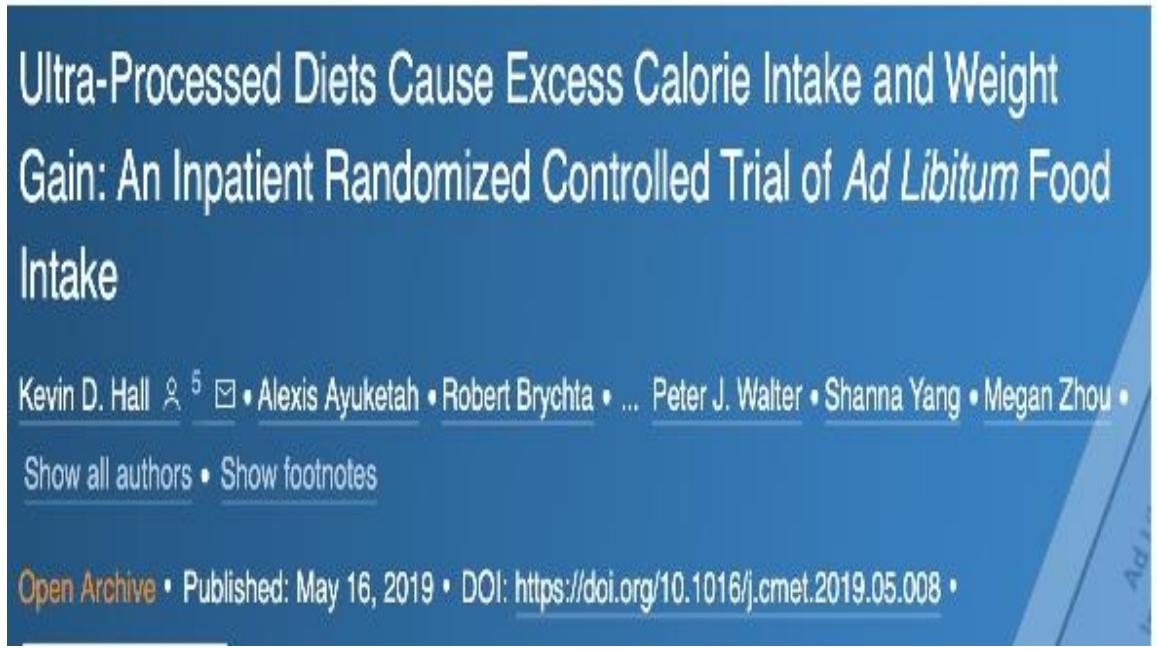
# Possible Reasons for Health Issues

- Excess calorie, sugar, saturated fat, and sodium intake
- Increased inflammation
- Advanced Glycation End Products (AGEs), associated with type 2 diabetes, CVD, and accelerated aging
- Immune system abnormalities
- Negative changes in the gut microbiome
- Aggravation of existing intestinal issues

https://www.nature.com/articles/s41577-024-01049-x ; https://www.nature.com/articles/s41575-024-00893-5

# UPF and Body Weight

# UPF and Body Weight


Ultra-Processed Diets Cause Excess Calorie Intake and Weight Gain: An Inpatient Randomized Controlled Trial of *Ad Libitum* Food Intake

Kevin D. Hall [5] • Alexis Ayuketah • Robert Brychta • ... Peter J. Walter • Shanna Yang • Megan Zhou •

Show all authors • Show footnotes

Open Archive • Published: May 16, 2019 • DOI: https://doi.org/10.1016/j.cmet.2019.05.008 •

- RCT with a cross-over design that compared a diet with **80%** calories from UPF to a minimally processed plan
- Diets matched for energy, energy density, macros, sodium, fiber, etc.
- Energy intake and **weight gain** was greater on the UPF diet than minimally processed diet.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7946062/

# UPF and Body Weight: Texture and Energy Density

The Journal of Nutrition 155 (2025) 2602–2610

American Society for Nutrition
Excellence in Nutrition Research and Practice

JN THE JOURNAL OF NUTRITION

journal homepage: https://jn.nutrition.org/



Ingestive Behavior and Nutritional Neuroscience

**The Effect of Energy Density and Eating Rate on *Ad Libitum* Energy Intake in Healthy Adults—A Randomized Controlled Study**

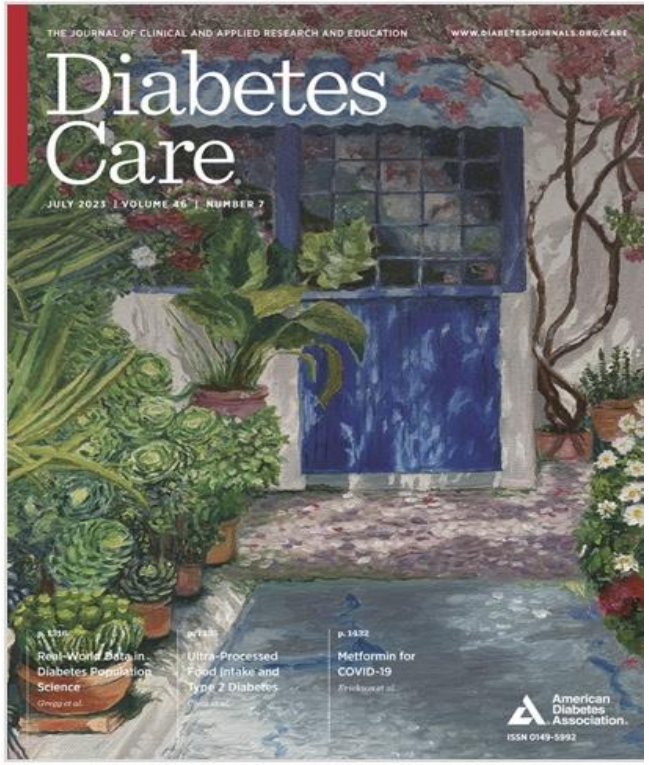
Marlou P Lasschuijt [1], Lise AJ Heuven [1,2], Karina Gonzalez-Estanol [1], Els Siebelink [1], Yong Chen [1], Ciarán G Forde [1,*]

https://www.sciencedirect.com/science/article/pii/S0022316625003621

- 69 adults in a randomized crossover design
- UPF meals that varied in energy density and texture
- Meals with **softer texture** and **higher energy density** resulted in significantly higher calorie intake.
- **Firmer foods** were consumed more slowly and in smaller quantities.

# UPF and Type 2 Diabetes Risk

July 2023




- **People who at the most UPF were 50%** more likely to develop type 2 diabetes.

- **UPF animal-based products** were associated with the **greatest risk** followed by **ready to eat/heated mixed dishes.**

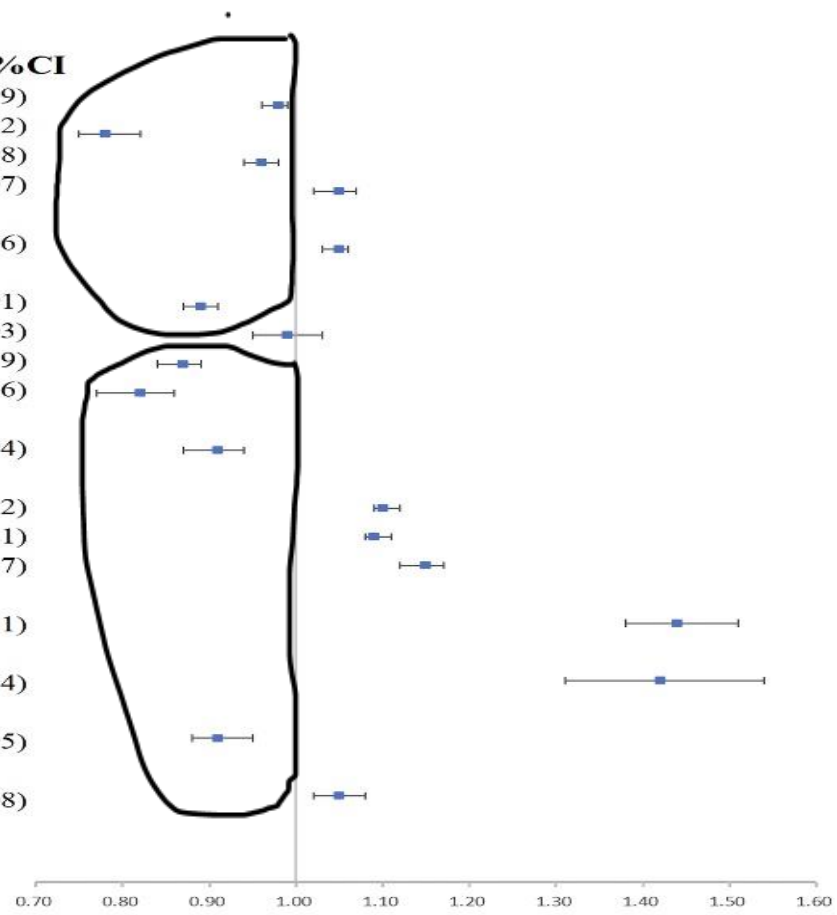
https://diabetesjournals.org/care/article/46/7/1335/148548/Ultra-Processed-Food-Consumption-and-Risk-of-Type

American Diabetes Association®

From: **Ultra-Processed Food Consumption and Risk of Type 2 Diabetes: Three Large Prospective U.S. Cohort Studies**

Diabetes Care. 2023;46(7):1335-1344. doi:10.2337/dc22-1993

| Subgroups | HR and 95%CI |
|---|---|
| **Ultra-processed breads and cereals** | 0.98 (0.96, 0.99) |
| *Ultra-processed cereals* | 0.78 (0.75, 0.82) |
| *Ultra-processed dark breads and whole-grain breads* | 0.96 (0.94, 0.98) |
| *Other ultra-processed refined breads* | 1.05 (1.02, 1.07) |
| **Sauces, spreads, and condiments** | 1.05 (1.03, 1.06) |
| **Packaged sweet snacks and desserts** | 0.89 (0.87, 0.91) |
| *Confectioneries* | 0.99 (0.95, 1.03) |
| *Packaged sweet snacks* | 0.87 (0.84, 0.89) |
| *Fruit-based products* | 0.82 (0.77, 0.86) |
| **Packaged savory snacks** | 0.91 (0.87, 0.94) |
| **Artificially and sugar-sweetened beverages** | 1.10 (1.09, 1.12) |
| *Artificially sweetened beverages* | 1.09 (1.08, 1.11) |
| *Sugar-sweetened beverages* | 1.15 (1.12, 1.17) |
| **Animal-based products** | 1.44 (1.38, 1.51) |
| **Ready-to-eat/heat mixed dishes** | 1.42 (1.31, 1.54) |
| **Yogurt and dairy-based desserts** | 0.91 (0.88, 0.95) |
| **Other ultra-processed foods** | 1.05 (1.02, 1.08) |




https://diabetesjournals.org/care/article/46/7/1335/148548/Ultra-Processed-Food-Consumption-and-Risk-of-Type

Date of Download: 3/1/2024

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# UPF, Heart Disease, and Stroke Risk

- Those with the **highest intake of UPF** had a significantly greater risk for CVD, heart disease, and stroke compared to those with the lowest intake.

- Risk **varied** by food groups:
  - **Processed meats** and **sugary and artificially-sweetened drink**s associated with greater risk
  - Inverse associations observed with **bread/cold cereals, yogurt/dairy desserts and savory snacks**

- **Conclusion:** Nutrition advice for cardiovascular health should consider specific groups of UPF.

https://pmc.ncbi.nlm.nih.gov/articles/PMC11403639/ Lancet

# UPF: Not All Created Equal

➢**Top UPF offenders:**

- Sugar- and artificially sweetened beverages
- Processed meats
- Ready-to-eat meals





➢**Protective UPF foods:**



- Cereals
- Whole grain bread
- Packaged sweet snacks and desserts
- Packaged savory snacks
- Yogurt- and dairy-based desserts (flavored)

# American Heart Association Advisory 2025

- Focus on cutting back UPFs that are high in unhealthy fats, added sugars, and salt.

- Allow **affordable UPFs** of **higher nutritional quality** as part of a healthy dietary pattern:

  - Whole grain breads
  - Low-sugar yogurt
  - Tomato sauce
  - Nut or bean-based spreads







https://doi.org/10.1161/CIR.0000000000001365

# Are UPF Addictive?

# UPF and Addiction

Addiction / Early View

RESEARCH REPORT | Open Access

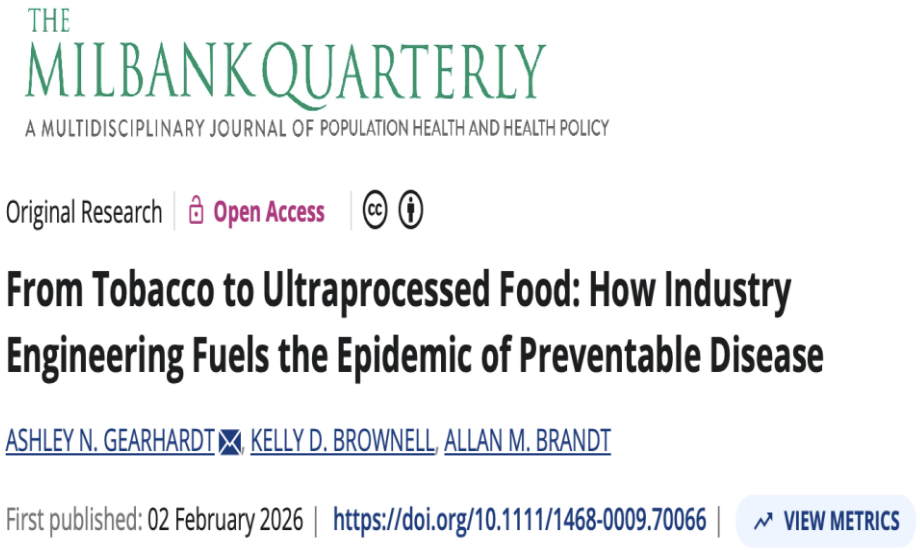
Ultra-processed food addiction in a nationally representative sample of older adults in the USA

Lucy K. Loch, Matthias Kirch, Dianne C. Singer, Erica Solway, J. Scott Roberts, Jeffrey T. Kullgren, Ashley N. Gearhardt

First published: 29 September 2025
https://doi.org/10.1111/add.70186

- About **1 in 5 women** ages 50-64 addicted to UPF, using the Yale Food Addiction Score 2.0
- Only about half as many men qualified as addicted to food
- Brain is wired to seek pleasure
- UPF foods rich in fat, sugar, and salt trigger a surge of dopamine

# Is Food As Addictive as Nicotine?



THE MILBANK QUARTERLY

A MULTIDISCIPLINARY JOURNAL OF POPULATION HEALTH AND HEALTH POLICY

Original Research | Open Access

**From Tobacco to Ultraprocessed Food: How Industry Engineering Fuels the Epidemic of Preventable Disease**

ASHLEY N. GEARHARDT, KELLY D. BROWNELL, ALLAN M. BRANDT

First published: 02 February 2026 | https://doi.org/10.1111/1468-0009.70066 | VIEW METRICS

- "Cigarettes and UPFs are not simply natural products but **highly engineered delivery systems** designed specifically to maximize biological and psychological reinforcement and habitual overuse."

https://onlinelibrary.wiley.com/doi/10.1111/1468-0009.70066

# Food Additives

# Food Additives Associated With Chronic Disease Risk



➢Sodium

- Salt and sodium in other preservatives



➢Sugar

- White and brown sugar, high fructose corn syru

honey, maple syrup, etc.




➢Fat

- Saturated fat



# Food Additives Associated With Decreased Chronic Disease Risk





- Calcium
- Vitamin D
- Iodine
  - Iodized salt largely eradicated goiter in the U.S. (UPF don't use iodized salt.)
- Iron
- B vitamins
  - Folic acid: NTD have declined significantly in the U.S. since the mandatory fortifica enriched grains in 1998



  - Many women don't take folic acid supplements prior to pregnancy; fortified grains help fill that gap

https://www.cdc.gov/spina-bifida/data/index.html;
https://www.healio.com/news/endocrinology/20240213/iodized-salt-celebrating-the-centennial-of-a-major-us-public-health-triumph

# Synthetic Dyes (petroleum-based



- Make foods more appealing.
- May cause or worsen behavioral problems in children, including hyperactivity and inattention.
- Some animal evidence that synthetic dyes cause cancer, but no human evidence.

https://www.jandonline.org/article/S2212-2672(25)00166-2/fulltext

# HHS and FDA Phase Out Synthetic Food Dyes

- Red No. 3 banned in January 2025
- Working to eliminate six remaining synthetic dyes including Citrus Red No. 2 and Orange B
- FDA now allows manufacturers to claim “no artificial colors.”

https://www.fda.gov/industry/color-additives/fdc-red-no-3

https://www.fda.gov/news-events/press-announcements/hhs-fdaphase-out-petroleum-based-synthetic-dyes-nations-food-supply

# Emulsifiers

- Help oil and water components mix, provide a smooth texture, increased shelf life.
    - Carrageenan
    - Soy lecithin
    - Guar gum
    - Carboxymethylcelluose (cellulose gum)
    - Polysorbate 60, 65, 80
    - Native rice starch

# Preservatives and Cancer Risk





- **BHA: Butylated hydroxyanisole**
  - Potato chips, frozen pizza, canned soup, cured meats, breakfast cereals
  - Animal studies: BHA is a potential carcinogen
  - FDA launched safety review in 2026



- **Sodium nitrite/Celery powder and juice**
  - Used to preserve meat, such as hot dogs, deli meats, etc.
  - Nitrites can form carcinogenic nitrosamines in the body


https://www.sciencedirect.com/science/article/pii/S0273230021000271

https://publications.iarc.who.int/Book-And-Report-Series/Iarc-Monographs-On-The-Identification-Of-Carcinogenic-Hazards-To-Humans/Ingested-Nitrate-And-Nitrite-And-Cyanobacterial-Peptide-Toxins-2010

# Polydextrose



- Bulking agent, stabilizer, thickener, and humectant.
- Soluble fiber that replaces replacer of sugar, starch, and fat, and used for for calorie reduction.
- Polydextrose is fermentable and can be used by beneficial gut bacteria as food.

# Incorporating Guidelines for UPF into Dietary Advice





## Limit Highly Processed Foods, Added Sugars, & Refined Carbohydrates

- Avoid highly processed packaged, prepared, ready-to-eat, or other foods that are salty or sweet, such as chips, cookies, and candy that have added sugars and sodium (salt). Instead, prioritize nutrient-dense foods and home-prepared meals. When dining out, choose nutrient-dense options.
- Limit foods and beverages that include artificial flavors, petroleum-based dyes, artificial preservatives, and low-calorie non-nutritive sweeteners.
- Avoid sugar-sweetened beverages, such as sodas, fruit drinks, and energy drinks.
- While no amount of added sugars or non-nutritive sweeteners is recommended or considered part of a healthy or nutritious diet, one meal should contain no more than 10 grams of added sugars.
- When selecting snack foods, added sugar limits should follow FDA “Healthy” claim limits. For example, grain snacks (e.g., crackers) should not exceed 5 grams of added sugar per ¾ ounce whole-grain equivalent, and dairy snacks (e.g., yogurt) should not exceed 2.5 grams of added sugar per ⅔ cup equivalent.

https://cdn.realfood.gov/DGA.pdf

# UPF in the Dietary Guidelines for Americans

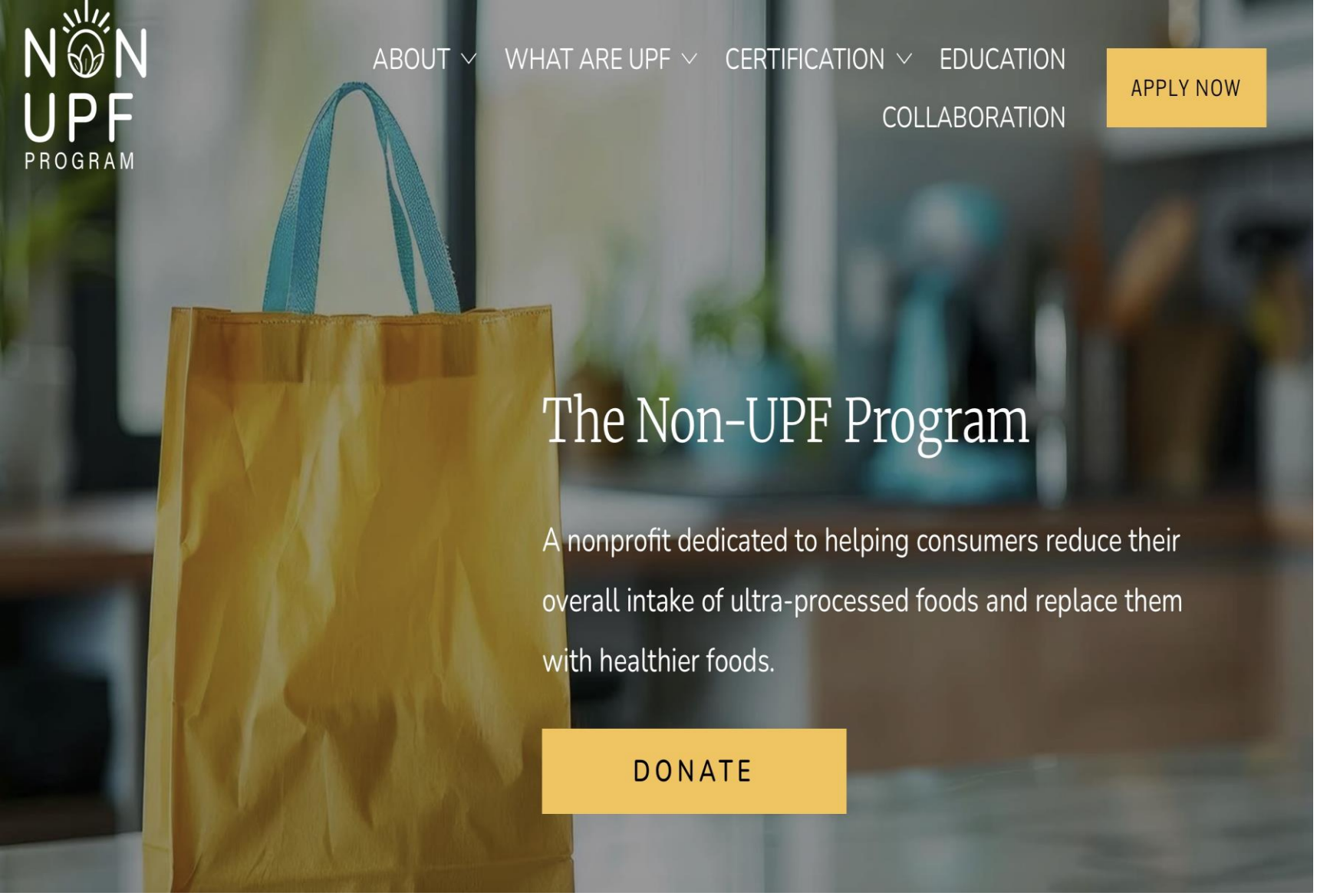
- In 2025, FDA issued a **request for information** to develop a **uniform definition** of UPF.
- A formal definition could shape what's eligible for school lunches and food assistance programs.
- More than **20 states** have passed or proposed bans on dyes, additives, and other ingredients.

# Incorporating Foods Classified by Nova Into Dietary Guidance

- The concept of UPF is **subjective** and not yet defined by the FDA/DGA.
- It's possible to **misclassify** foods.
- Nearly all the studies of health effects are **observational** in nature.
- May **demonize** nutritious foods such as unsweetened soy milk, enriched grains (white rice, etc.) and tofu.
- Adds little or no value to **established metrics** and existing nutrient profiling systems.

https://ajcn.nutrition.org/article/S0002-9165(23)03684-5/fulltext; https://pubmed.ncbi.nlm.nih.gov/30820487/

# What Should We Say About Processed Foods?




*"The Non-UPF certificate is an endorsement that a food contains no ultra-processed ingredients at the time of certification approval."*

*"Ultra-processed foods are industrial formulations and/or ingredients not commonly found in your kitchen. "*

# Nutritious UPF Fill Nutrient Gaps



- Those living in **food deserts** with little regular access to fresh food
- People without **refrigeration or stoves**



- **Schools** that send students home with food for the weekend
- **Hunger relief** and **disaster relief** organizations



- People with **limited** mobility and dexterity
- People who need **extra nutrition** found in fortified foods and protein powders

https://link.springer.com/article/10.1007/s00394-021-02701-1

# Group 4 NOVA Foods: Not All Created Equal

- Fortified soy milk and other plant milks
- Peanut butter (not the natural kind)
- Enriched breakfast cereal
- Packaged whole wheat bread
- Enriched white bread, pasta, rice
- Sweetened, flavored yogurt
- Dairy-based desserts
- Tofu (calcium sulfate), flavored tempeh

- Plant-based burgers, such as soy burgers
- Infant formula
- Protein powder
- Ultrafiltered milk and lactose-reduced milk
- Parmesan cheese (packaged)
- Salted nuts
- Seltzer water

https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(25)01565-X/fulltext

# Group 4: UPF

- Hot dogs, salami, and deli meats
- Cheese puffs, snack chips, packaged cookies
- Ice cream
- Fast food
- Sugary soft drinks, including soda and energy drinks
- Frozen pizza and other frozen meals
- Ready to eat/heat entrees

https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(25)01565-X/fulltext

# Take-Away Messages



- **Lend nuance** to a confusing conversation.
- Recognize that not all UPF are **not the same.**
- Help consumers **make food choices** based on nutrient composition, personal health history, culture, affordability, accessibility, etc – and not necessarily based on food processing.
- Understand that some **food additives** may irritate GI conditions and educate people about how to read food labels for ingredients.
- Emphasize the effect of **overall eating patterns** and not single foods on health.

# Thank you for joining us today.

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