BEYOND THE SHELL

A New Era of Eggs in Campus Dining

Photo from Food Sharing Vegan

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Prepared by

FOOD 4 THOUGHT INNOVATIONS

Edition

UPGRADE DINING REPORT #1

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EXECUTIVE SUMMARY

Egg price volatility has become a material operational risk for campus dining. In 2025 alone, egg prices peaked at over **$8 per dozen**, driven by recurring outbreaks of highly pathogenic avian influenza that eliminated **more than 21 million egg-laying hens nationwide**. For universities that purchase eggs at scale, this volatility has translated into unpredictable costs, supply shortages, and forced menu changes.

Plant-based egg products and whole food plant-based ingredients have emerged as a practical and scalable solution. These ingredients are incredibly versatile and can be used in desserts, breakfast foods, sauces (e.g. mayonnaise, hollandaise), recipes with eggs (e.g. pastas, casseroles), and egg-centric dishes (e.g. scrambled eggs, omelettes, quiches). They also provide insulation from price and supply shocks while delivering **lower environmental impact, improved food safety, better health outcomes, and greater accessibility** for students with dietary or religious restrictions.

On college campuses, adoption is already accelerating: use of JUST Egg (one of the preferred products by universities) increased **45% in the past year**, and **more than 120 universities** now offer plant-based eggs in their dining programs. As adoption scales, prices are expected to continue declining, strengthening long-term cost competitiveness.

Drawing on procurement data from U.S. universities, this report finds that hidden egg reduction in baked goods alone can save approximately **$34,000 per year** at a mid-sized campus, without visible changes to menus or student satisfaction. Under a higher-ambition, **EAT-Lancet–aligned scenario,** with more visible swaps and high volume changes, universities can reduce egg procurement by **approximately 67%**, yielding **$110,000 or more in annual savings** while avoiding an estimated **300 metric tons of CO_2e per year**.

This report evaluates the economic, environmental, and operational case for plant-based egg alternatives. It compares costs among leading products, highlights case studies from early-adopting institutions, and lays out a practical, phased roadmap for implementation. Together, the evidence is clear: **2026 is the moment for institutions to future-proof their dining programs and embrace the next generation of eggs.**

KEY FINDINGS AT A GLANCE

- **Egg price volatility is now a material risk for campus dining.**

  In 2025, egg prices peaked at **over $8 per dozen** due to avian influenza outbreaks eliminating 21 million hens nationwide.

- **Egg-free baked goods offer the fastest, lowest-risk savings.**

  Swapping eggs in baked goods can save approximately **$34,000 per year** at a mid-sized campus.

- **Larger savings are achievable through phased egg reduction.**

  A 67% reduction in egg procurement could yield **$110,000** in annual savings.

- **Egg reduction delivers meaningful climate benefits.**

  Reducing egg use by 67% avoids **~300 metric tonnes** of CO_2e per year.

- **Plant-based egg alternatives are operationally viable today.**

  Proven substitutes are already in use at **120+** universities nationwide.

- **This transition is both student-aligned and future-proof.**

  Universities currently exceed recommended intake benchmarks by nearly **300%**.

$34k / year	**$110k / year**	**300t CO_2e / year**
Baked good savings	*Through EAT-Lancet scenario*	*Emissions avoided*

All estimates are conservative and based on stabilized egg prices; savings may increase during future price spikes.

LANDSCAPE OVERVIEW

STATE OF THE INDUSTRY

Why Eggs are a Risky Bet for Campus Dining

In the spring of 2025, egg prices reached a record high of $8.17/dozen (1). The rise in prices is a direct result of highly pathogenic avian influenza (HPAI), which wiped out 21.1 million egg-laying hens between December 2024 and the end of January 2025, including 8.2% of the conventional caged egg-layer flock (2).

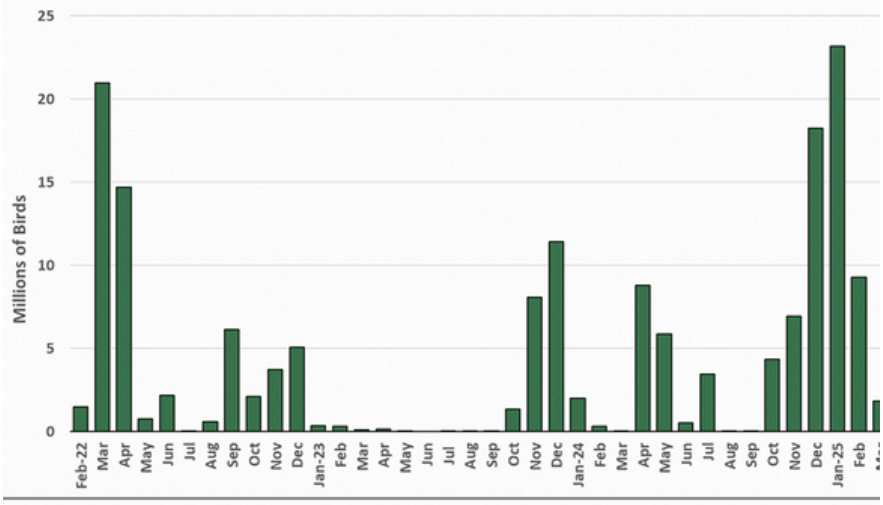


Figure 1: Millions of birds in the USA were infected with HPAI from 2022-2025 (5).

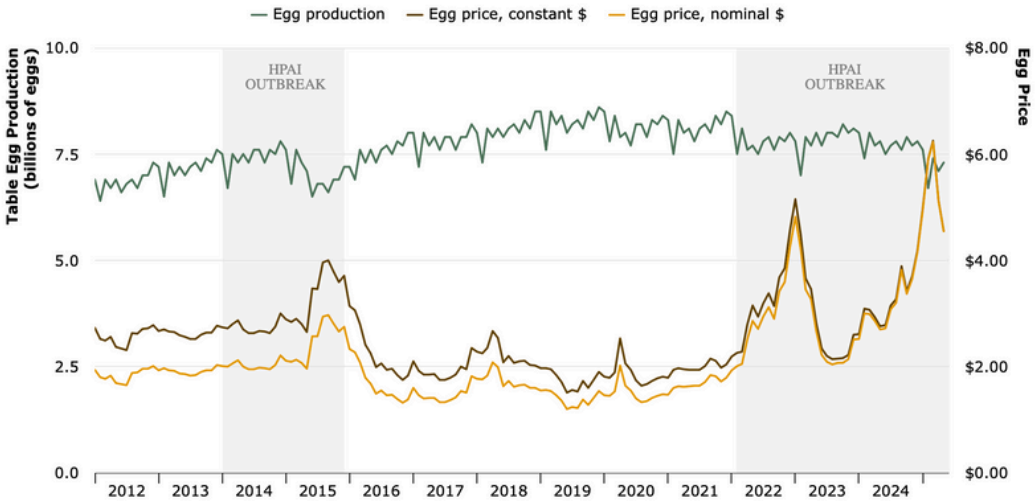


Figure 2: Egg prices rising as a result of the HPAI outbreaks and continuing to rise into 2025 (6).

As HPAI wiped out egg-laying hen flocks, egg farmers were unable to meet the continued demand for eggs from the general population, resulting in the increase in egg prices, as well as empty shelves at many grocery stores.

While most egg-laying hens have recovered from the most recent HPAI outbreak and egg prices have returned to levels similar to November 2024 (3), the 2025 HPAI outbreak reflects just one of several HPAI outbreaks in the past few years (4).

Based on recent trends, egg prices are likely to remain unstable and vulnerable to future spikes, particularly as HPAI outbreaks continue to recur across major egg-producing regions. This market instability poses a challenge to universities who purchase large quantities of eggs, especially as inflation continues to increase the price of other products (at a far slower rate) (7). In fact, many universities are already feeling the effects.

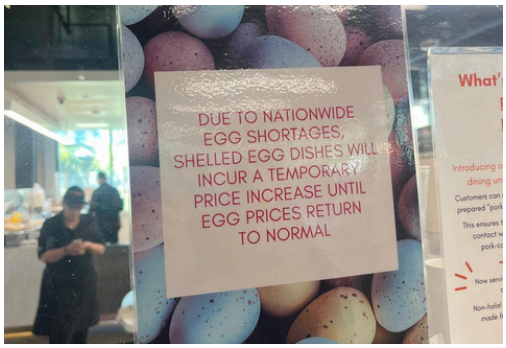


Figure 3: Photo from a dining hall at California Institute of Technology, demonstrating increasing prices due to egg shortages.

Across the Claremont Colleges, dining managers reported 5–8% egg price increases and warned that a 30–50% surge could force major menu changes, including eliminating liquid eggs altogether (8). Princeton temporarily halted the use of all shell eggs across its dining halls, citing “very limited” supply of cage-free eggs. One eating club removed egg-based menu items after case prices rose by $100 in just three weeks (9).

Similar challenges have appeared nationwide. Students at CalTech photographed increasing prices for shelled egg dishes while Northeastern’s Stetson East Dining Hall warned students of upcoming shortages due to national supply constraints (10). Quinnipiac University also shifted to liquid eggs when whole shelled eggs were not available (11).

At the University of Iowa, a long-standing contract has kept prices stable, but with its expiration in 2025, dining leadership is preparing to scale back egg dishes if costs rise (12). UT Austin, which purchases more than 11,700 pounds of liquid eggs annually, faces similar exposure once locked-in pricing resets (13). Stanford has absorbed higher wholesale costs, but its campus pantry has already cut egg purchases due to shortages (14).

Figure 4: Photo from a dining hall at Northeastern University, demonstrating limited egg availability (10).

Students at Cal Poly Pomona (15) and the University of Maryland (16) likewise reported empty shelves, higher costs, and noticeable menu changes during supply disruptions since as early as 2022. The experiences of peer institutions make clear that relying heavily on conventional eggs leaves dining programs exposed to supply shocks, unexpected cost surges, and forced menu changes, highlighting the need for more cost-stable alternatives.

THE MARKET OPPORTUNITY

With egg prices fluctuating and shortages disrupting dining operations nationwide, consumers and institutions alike are seeking lower-cost, reliable alternatives that can replicate the functionality of conventional eggs. In recent years, plant-based egg alternatives have emerged as one of the fastest-growing solutions (17).

A 1 Billion Dollar Industry

*According to a study from Technavio, the global plant-based egg market is set to grow by nearly **1 billion** between 2022 and 2027 with a compound annual growth rate of 8.28 percent (17).*

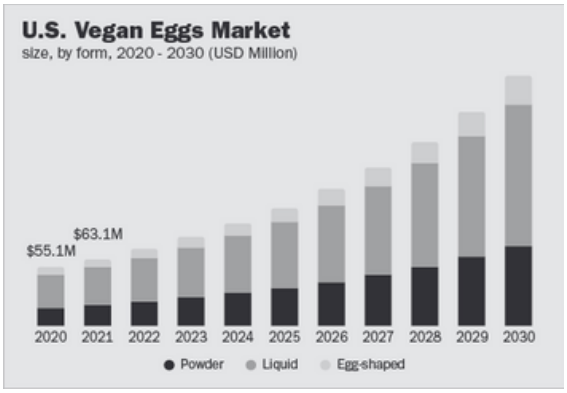


Figure 5: Projected growth of the plant-based egg market between 2020-2030 (17).

Figure 6: Comparison of growth in fresh eggs vs egg alternatives over two year period (18).

Momentum is especially strong in higher education. Over the past year, college campuses have increased their adoption of JUST Egg by 45 percent. Today, more than 120 colleges and universities offer plant-based eggs to students (19). This pattern mirrors broader marketplace behavior: during recent egg shortages, campus dining teams reported turning to plant-based eggs as the most practical substitute to maintain menu continuity. As more institutions adopt these products and the market scales, prices are expected to continue falling, strengthening their long-term cost advantage. Aside from being more stable and financially feasible than conventional eggs, plant-based eggs have advantages over conventional eggs in four important categories: environmental impact, inclusivity, food safety, and health.

Environmental Impact

Conventional eggs require considerable water (approximately 53 gallons per egg) and land to produce. Conversely, plant-based eggs have a very low environmental impact. When compared with conventional eggs, JUST Egg (one of the most popular plant-based egg replacements) uses 98% less water, 93% fewer CO2 emissions, and 83% less land (20). Other plant-based ingredients that can be used as binding agents, such as aquafaba, and flaxseeds, have an even smaller environmental impact (21).

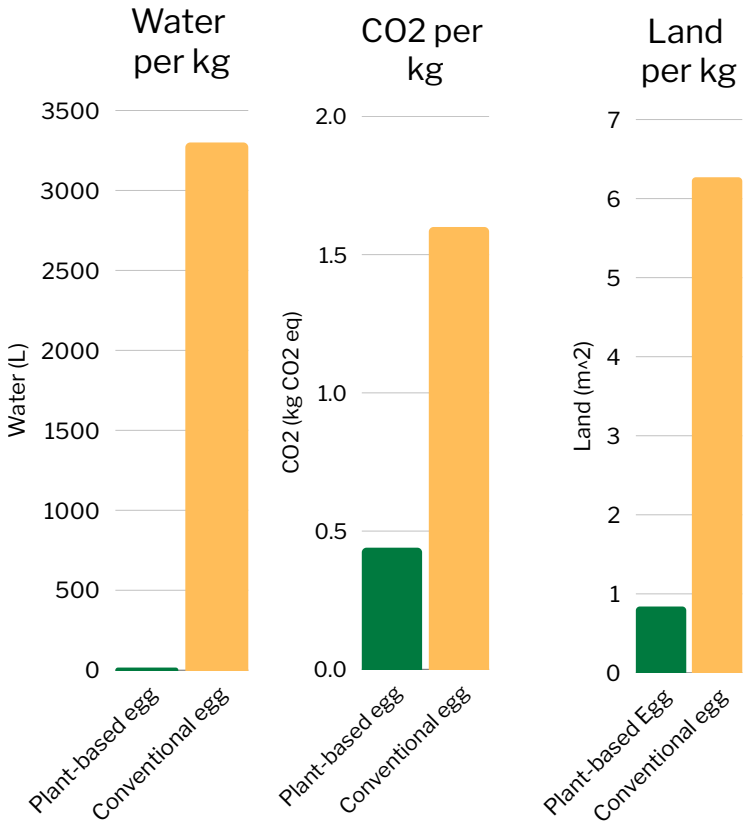


Figure 7: Comparison of the environmental impacts of 1 kg plant-based egg alternatives and 1 kg of conventional eggs (21).

Food Safety

While the FDA tries to regulate eggs to prevent contamination, fresh, uncooked eggs may still contain *Salmonella*, a bacteria that can cause severe stomach problems and sometimes results in hospitalization or death. In the past year, there have been at least three large-scale egg recalls attributed to *Salmonella* and hundreds of reported cases (22, 23, 24). In order to prevent this contamination, individuals cooking with eggs must take strict precautions, including only buying or eating refrigerated eggs; carefully washing any hands, utensils, and surfaces before and after they come in contact with raw eggs or raw-egg containing foods; and ensuring eggs are cooked adequately before serving (25). Conversely, plant-based eggs eliminate the risk of *Salmonella* and antibiotic-resistant pathogens found in eggs (26).

Health

Although often promoted as a healthy staple, conventional eggs contain components linked to elevated disease risk. A single large egg has 186 mg of cholesterol, over half the American Heart Association's recommended daily limit (27). This means that eating just two eggs exceeds the daily cholesterol limit even if the rest of the day's diet is cholesterol-free. Excess dietary cholesterol contributes to arterial plaque buildup and raises the risk of heart disease (28). By contrast, plant-based egg alternatives contain zero cholesterol* (29), while offering equal or higher protein levels, making them a heart-healthier choice for consumers.

*Plant-Based foods are free from cholesterol

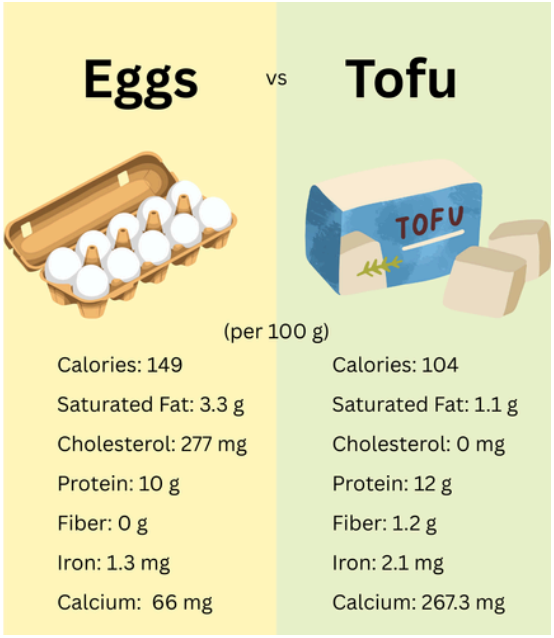


Figure 8: Comparison of the health impacts of tofu vs. egg (30). Tofu serves as a good egg replacement in scrambled eggs, sandwiches, and bowls.

Inclusivity

Eggs are one of the top nine food allergens (31), and while anaphylaxis is rare, allergic reactions can be severe (32). Eggs are also avoided in several religious traditions, including Jain, Hindu, and Sikh practices, and by individuals following plant-based diets (33). Plant-based egg alternatives avoid these barriers: most are free from the top nine allergens, compatible with religious dietary restrictions, and suitable for plant-based eating.

Photos from Canva

THE COST ADVANTAGE

PLANT-BASED EMERGING AS A CHEAPER ALTERNATIVE

With the instability of egg prices, plant-based alternatives have emerged as stable and affordable alternatives. This applies to egg replacements in two categories: **egg-centric dishes** and **dishes in which eggs are used as a binding ingredient** (such as baked goods).

In this section, we compare the prices of conventional eggs to those of their plant-based alternatives, using wholesale prices (39-41). In the egg-centric dishes category, mung beans and firm tofu emerge as cheaper options with the AcreMade Egg substitute being comparable to cage-free liquid eggs. Meanwhile, hard-boiled eggs are the most expensive option.

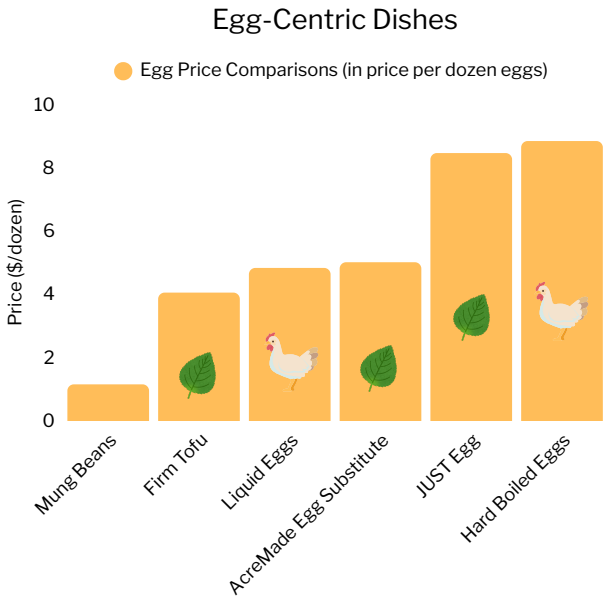


Figure 9: Comparison of the prices of conventional eggs and plant-based egg alternatives in egg-centric dishes.

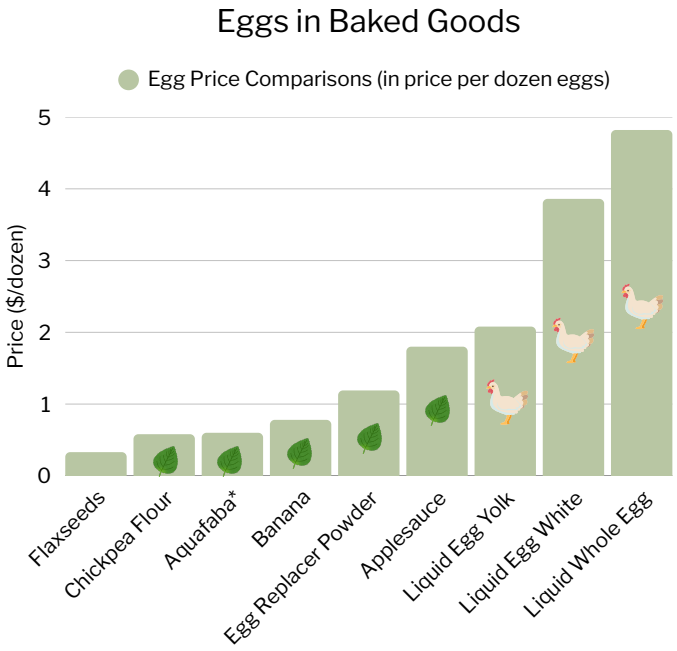
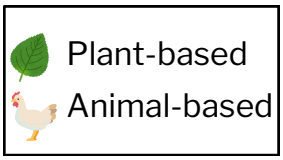


Figure 10: Comparison of the prices of conventional eggs and plant-based egg alternatives in baked goods.

When eggs are used as a binding agent, plant-based alternatives emerge as the considerably cheaper option with flaxseed, chickpea flour and aquafaba* (chickpea water) being the most affordable. Varieties of egg replacer powder are also considerably cheaper than liquid whole eggs and egg whites.



*Savings from aquafaba may be greater than pictured since universities are likely already purchasing chickpeas for other recipes and discarding the liquid.

COST-SAVING PROJECTIONS

Baked Goods are the Low Hanging Fruit

Swapping eggs in baked goods is one of the most reliable ways for institutions to reduce egg procurement and cut costs, while maintaining customer satisfaction. Because eggs primarily function as binders and emulsifiers in baking, they can be replaced with low-cost plant-based alternatives without affecting product quality.

$34,000 **saved per year for a medium-sized university**

Based on purchasing data from a medium-sized U.S. university (~7,000 students), replacing cage-free eggs in desserts (e.g., cakes, cookies, brownies) is estimated to save approximately **$12,600** per year, while extending these substitutions to breakfast baked goods (e.g., pancakes, muffins) increases annual savings by about **$21,000**.

photo from Eggless Cooking

All savings estimates are conservative and do not account for recent egg price spikes of up to 4x.

photo from Nora Cooks

EAT-LANCET SCENARIOS

THE PLANETARY HEALTH DIET

A Diet for People and the Planet

The EAT-Lancet Commission on Healthy, Sustainable, and Just Food Systems defines a science-based dietary framework designed to support human health while operating within planetary boundaries. Its recommendations emphasize diets centered on **fruits, vegetables, whole grains, legumes, nuts, and seeds**, while substantially reducing reliance on animal-based foods—including meat, dairy, and eggs—in favor of plant-based alternatives.

For universities, EAT-Lancet functions not as a consumer diet trend but as an **institutional planning framework**. It is increasingly used by policymakers, researchers, and food-system leaders to guide procurement strategies, sustainability targets, and climate action plans. The Commission identifies multiple co-benefits of this shift, including preventing 15 million premature deaths per year, reducing global GHG emissions by over 15%, increasing food access for billions, improving animal welfare, and returning $5 trillion to the economy (42).

Campus dining programs are uniquely positioned to operationalize these goals. Increasingly, universities reference EAT-Lancet-aligned benchmarks to assess whether dining operations are consistent with institutional commitments around health, climate, and resilience. For dining teams, the framework provides a **clear, defensible standard** for modernizing menus while managing cost, supply risk, and student expectations.

Despite this momentum, current university procurement patterns remain far from EAT-Lancet targets. In an analysis of **19 U.S. university dining systems**, institutions exceeded the Commission's recommended egg intake by an average of **293%** (34). This gap highlights a significant opportunity for dining programs to reduce over-reliance on volatile egg supply chains while advancing sustainability and cost-stability goals.

The following section explores what it would look like for a university to meaningfully close this gap, modeling a **high-ambition, EAT-Lancet–aligned egg reduction scenario** and quantifying the financial and environmental outcomes such an approach enables.

A HIGH AMBITION SCENARIO

What 67% Egg Reduction Enables

Using procurement data from a medium-sized U.S. university, the following analysis illustrates the financial and environmental outcomes associated with reducing egg procurement to EAT-Lancet-aligned levels. In this scenario, a campus reduces egg procurement by approximately 67% (the reduction needed to achieve EAT-Lancet target) and replaces those eggs with lower-cost plant-based alternatives.

$110,000 **saved per year for a medium-sized university**

In addition to cost savings, an EAT-Lancet–aligned egg reduction delivers material climate benefits, including reducing an estimated **300,000 kg of CO2** per year. That is equivalent to:

760k Miles Driven

700 Barrels of Oil

762,000 kWh of Electricity

ACHIEVING EAT-LANCET GOALS

A Step-by-Step Strategy

To achieve this 67% reduction and match the EAT-Lancet aligned scenario, here is a theoretical implementation plan:

Steps Involved	Procurement Reduction (from baseline)	Annual Cost Savings
Step 1: Implement egg-free defaults in baked goods and desserts (and some sauces/condiments)	**10-15%**	**$34,000**
Step 2: Utilize a "blended" scrambled egg batter composed of 60% eggs and 40% mung beans	**24%**	**$32,000**
Step 3: Swap 30% of scrambled eggs for fully plant-based alternatives like JUST Egg or tofu/mung bean scramble	**24%**	**$24,200**
Step 4: Utilize a "blended" omelette batter composed of 60% eggs and 40% plants	**8%**	**$12,700**
Step 5: Replace liquid eggs with plant-based eggs by 30-100% across dishes where eggs are not the "star of the show" (e.g. fried rice, breakfast burritos, casseroles, pastas, curries)	**4-6%**	**$7,400**

REPLACEMENTS IN EGG-CENTRIC DISHES

Egg-centric dishes include any dish where eggs are a major component and account for most of the flavor of the dish, such as omelets, scrambled eggs, breakfast burritos, breakfast sandwiches, and quiches. When replacing the egg in these dishes, it is important that the alternative used has a similar taste to eggs (eg. JUST Egg or Simply Eggless) or a similar consistency that can be seasoned to taste like eggs (eg. tofu). Many plant-based egg products strikingly resemble conventional eggs, with a similar taste, consistency, and cooking technique, but without the environmental impacts, exclusivity, and food safety risks.

Conversions and When to Use

Tofu is best used to replace eggs in recipes with a large volume of eggs, such as scrambles, quiches, or custards. To match the taste of eggs, simply add seasonings, such as nutritional yeast, turmeric (which mimics the yellow color of eggs), garlic powder, paprika, salt, black salt, and pepper.

JUST Egg (and similar liquid egg replacements) can replace eggs in most egg-centric dishes, including scrambles, omelets, breakfast sandwiches or burritos, and quiches. JUST Egg successfully matches the flavor, texture, cooking methods, and coloration of eggs, so no additional seasonings are needed to give it egg-like properties. This allows JUST Egg to replace conventional eggs with little additional work.

AcreMade Egg Substitute Powder: To get two eggs, mix 1.5 tablespoons of Substitute powder and 1/3 cup of cold water — whisk until smooth. AcreMade Egg Substitute powder is best used to replace eggs in scrambles, frittatas quiches, and breakfast sandwiches or burritos.

Mung Beans To get two eggs, mix ¼ cup of powdered mung beans, ½ cup of water, ¼ tsp of baking powder, and seasoning like nutritional yeast, black salt, salt, and pepper. Mung Beans work similar to liquid egg replacements while being one of the cheapest alternatives.

Black Salt (Kala Namak) is a sulfurous South Asian salt that provides a strikingly egg like flavor. A pinch of black salt can be added to any of the above egg replacements to enhance the flavor. It is best added at the end of cooking, as heat can reduce the egg-like flavor.

Case Study 1: Cornell University

Photo from Cornell

While plant-based eggs are not yet the default, Cornell University has incorporated plant-based egg alternatives from this category into their menu. At breakfast, the dining hall serves both regular scrambled eggs and a tofu scramble, which does not use eggs at all. In addition to serving a tofu scramble, some cafes across campus offer JUST Egg as an alternative to conventional eggs, such as in their bagel cafe Bus Stop Bagels, where JUST Egg can be added to any bagel. The addition of the tofu scramble and JUST Egg make the dining offerings more sustainable and inclusive of those with allergies or dietary or religious restrictions.

Photo from JUST Egg

Photo of tofu scramble from Cornell student

University Dining Experiences

"As many students become aware of the environmental impacts of animal-based proteins, they are choosing to go plant-based... These students are also looking for great food, too. JUST Egg is an ideal product since it is plant-based, environmentally-friendly, and packed with flavor."

Kelsey Rosenbaum, MS, RD, LDN, Campus Dietician at Tulane (35)

"Plant-based eggs, sausages, and grounds are popular options for vegans as well as omnivores/flexitarians."

Ken Toong, Assistant Vice Chancellor of UMass Auxiliary (36)

"JUST Egg products are nearly indistinguishable from their 'real' counterparts, they taste like eggs, cook like eggs and can bake like eggs."

Rob Morasco, Former Vice President of Culinary Innovation at Sodexo (37)

REPLACEMENTS FOR EGGS AS A BINDING AGENT

The second category we will explore is replacements in dishes in which egg is used as a binding agent, such as desserts (e.g. cakes, cookies, brownies) and pastries (e.g. croissants, some breads, scones). In these dishes, egg is mainly used as a binding agent and does not contribute much to the flavor of the dish. This means that replacing the egg requires ingredients that can act similarly to eggs in terms of binding, but do not need to taste similar to eggs. Examples of egg replacements in this category include ground flaxseeds mixed with water, aquafaba, applesauce, bananas, or egg replacement powder. These alternatives tend to be cheaper than the first category, as they are whole food ingredients that can often be purchased cheaply in bulk. Liquid egg alternatives (such as Simply Eggless or JUST egg) can also be used in this category, though they tend to be more expensive than other alternatives in this category.

For desserts not baked in house, a great option for eggless cookies is Sweet Loren's. Sweet Loren's sells multiple flavors of cookie dough that are free of the top nine allergens, including dairy, eggs, and gluten.

Conversions and When to Use

Conversions and ideal substitutes may vary with recipe and will likely take some experimentation to optimize. The Food Forward Recipe Database is a great resource containing many already optimized egg-free recipes.

Flaxseeds: To get one egg, mix 1 tablespoon of ground flaxseed with 3 tablespoons of water and let the mixture sit for a minute before using it. This alternative works well in most recipes in which eggs are used as a binding agent, including muffins, brownies, cookies, pancakes, some breads, and veggie burgers. Flaxseeds should not be used when egg is used for its leavening power and structure, such as in meringues or angel food cakes, or when eggs need to be whipped.

Photo from Bob's Red Mill

Aquafaba comes from the water in a can of chickpeas. It does not taste like chickpeas, but it has a binding quality. To get one egg, use 3 tablespoons of aquafaba (or 2 tablespoons for an egg white). Aquafaba works best to replace egg whites or in recipes in which eggs are used as a leavening or binding agent, including cookies, cakes, brownies, pancakes, and waffles. This also provides a use for a commonly wasted food product.

Photo from Walmart.com

Applesauce: To get one egg, simply use ¼ cup of applesauce. Applesauce is best used in denser baked goods, such as muffins, quick breads, and cakes, as it adds moisture to recipes. It can also be used for non-baked goods, such as potato pancakes.

Photo from Walmart.com

Bananas: To get one egg, simply mashed up ½ of a banana. Bananas should only be used to replace eggs when a banana flavor is desired, such as in cakes, muffins, pancakes, or quick breads. Bananas add moisture to recipes, so bananas should be used when added moisture is desired.


Photo from Canva

Egg replacement powder: To get one egg, follow the instructions on the package (usually a similar process to flaxseeds). This alternative works well in most dishes in which eggs are used as a binding or leavening agent, including baked goods like cakes, cookies, muffins, pancakes, breads, and waffles.

Photo from Bob's Red Mill

Chickpea/Garbanzo Bean Flour: To get one egg, whisk together 3 Tbsp of chickpea flour with 3 Tbsp of water. Chickpea flour provides structure and firmness, and works best in dishes like veggie burgers, fritters, meatballs, and dense baked goods.

Photo from Bob's Red Mill

Case 1: Cherry Creek School District

In spring 2023, Cherry Creek School District's food service program collaborated with ChooseVeg on a project to replace animal-derived ingredients in their baked goods with plant-based alternatives, switching their eggs and milk powder with applesauce and soy oil. While the texture, flavor, and performance of these new recipes matched those of the original recipes, the school district reduced its environmental and financial impact, saving 22,517 kg of CO_2 equivalent and $25,000 per year (38).

Dedicated to Excellence
Cherry Creek Schools

Photo from Cherry Creek School District

Case 2: University of California, Los Angeles

UCLA's dining team decided to swap the egg in their desserts for eggless alternatives, such as JUST Egg. Chef Joey Martin explains his motivations for making this change: "I think it is about giving more options simply to our residents and cutting down our carbon footprint where we can." Since making eggless desserts the default, UCLA has decreased their carbon footprint and increased their inclusivity, all while maintaining similar spending and student favorability.

Ucla
BRUINS

Photo from UCLA

EXECUTION STRATEGIES

EXECUTION STRATEGIES

Operational Strategies for Effective Implementation

Upgrade Dining and our partners provide consulting and advisory services to minimize operational risk while maximizing cost savings and student satisfaction. This includes:

Menu Engineering & Recipe Reformulation	Baked goods such as cookies, brownies muffins, pancakes, waffles, and quick breads perform well with substitutes like AcreMade, flaxseeds, or applesauce. Similarly, breakfast entrees can shift toward blended dishes, with tofu and mung ingredients, while sauces and dressings can be updated using plant-based mayo. These small menu refinements maintain familiarity while improving cost stability and reducing allergen risks.
Behavioral Nudges & Default Options	Positioning plant-based scrambles first in the hot line and using flavor- and protein-oriented labels such as “Just Egg protein scramble” or “savory breakfast bowl,” rather than the word “vegan,” encourages higher uptake. Offering plant-based options as the default, while still allowing egg-based dishes on request, has also been shown to improve student satisfaction and participation without compromising choice.
Culinary Team Training	Training kitchen staff is key to ensuring consistency and minimizing waste. Short training modules, substitution guides, and on-site demos from suppliers (e.g., Eat JUST) help culinary teams quickly master preparation methods. Providing ratio cards for baking and creating SOPs builds confidence and improves product quality across all dining locations.
Pilot Testing Before Full Rollout	To reduce operational risk, universities can begin with focused pilots, such as one dining hall, one station, or one product category, like cookies or breakfast baked goods. Tracking student acceptance, cost changes, and preparation time during these pilots enables teams to identify the most effective pathways before scaling campus-wide. Successful pilots build internal buy-in and demonstrate feasibility.

Procurement Optimization	Procurement teams can significantly reduce costs and operational risk by leveraging strategic purchasing practices, including bundling plant-based products across categories, negotiating competitive pricing with suppliers, and working through multi-campus or consortium purchasing channels to unlock discounts. By replacing volatile egg products with stable-cost plant-based alternatives, universities can strengthen budget predictability and reduce exposure to price shocks.
Student Engagement	Hosting taste tests, offering surveys, and incorporating menu voting gives students ownership and ensures that dining changes reflect their preferences. Student-led marketing campaigns, such as highlighting new dishes on social media or sharing sustainability impact metrics, help normalize menu shifts and build excitement. These feedback loops provide dining teams with real-time insights into satisfaction, flavor preferences, and cultural relevance, all of which support higher meal participation.
Supplier Collaboration	Companies such as Eat JUST, AcreMade, and Sweet Loren's offer on-site demos, technical assistance, and training to ensure culinary teams feel confident preparing scrambles, baked goods, and sauces. Many suppliers are eager to expand into university dining and can offer competitive pricing, promotional support, or samples for pilots. Close collaboration ensures that products integrate smoothly into existing menus and meet the operational needs of campus dining teams.
Implementation Assistance	Organizations like Upgrade Dining, Greener by Default, the Better Food Foundation, Humane World for Animals, and the Physicians Committee for Responsible Medicine provide specialized expertise in menu strategy, default design, cost modeling, and behavior change. These partners help dining teams build customized strategies, run pilots, train staff, and track impact, reducing the workload for campus teams while accelerating results. By leveraging the strengths of each organization, universities can implement egg alternatives more effectively and sustain these changes over time.

RECIPES AND RESOURCES

- Universal Meals Recipe Database
- Forward Food Recipe Database
- For more resources to aid switching to plant-based egg alternatives see Lever Foundation's Egg Replacement Directory.

Photos from Universal Meals and Forward Food recipe databases

ABOUT US

ABOUT US

About Upgrade Dining

Upgrade Dining is a university-focused consulting initiative that partners with campus dining programs to design and implement cost-effective plant-forward transition strategies. A program of Food 4 Thought Innovations, Upgrade Dining works across 40+ campuses nationwide and currently reaches over 100,000 student diners through active university contracts. Operating in collaboration with dining leaders, culinary teams, dietitians, and administrators, our mission is to equip institutions with the data, insights, and student engagement tools needed to confidently grow plant-forward offerings while balancing cost, quality, and sustainability targets. Upgrade Dining is an official member of the NACAS NextGen Dining Program, reflecting our alignment with industry best practices and professional campus dining networks.

About Food 4 Thought Innovations

Food 4 Thought Innovations is a nonpartisan 501(c)(3) organization led by emerging leaders across the US and beyond. We build the networks, tools, and talent pipelines that transform how institutions—from universities to corporations to governments—feed people and fund progress. Our vision is a food system with zero hunger, zero environmental harm, and zero animal suffering within our generation.

We disclose that we have partnered with several companies mentioned in this report for activities such as university tasting events. These partnerships are intended to promote awareness and accessibility of plant-based options, but have not influenced the research, analysis, or conclusions presented herein. We have not received any monetary incentives from any partnerships, nor do we have any vested financial interest in their success. The findings and recommendations in this report are based on independent research and a commitment to advancing sustainable and resilient food systems.

SOURCES & APPENDICES

APPENDIX A

Scenario 1 Math for Egg prices

Methods: To get the per price egg ranges, we looked at the prices on the websites for Food Service Direct (39), WebstaurantStore (40), and Fresh Direct (41). The lowest price was used as the lower end of the range and the highest price was used as the upper end of the range. For AcreMade, we used wholesale prices from direct communication with Puris Foods, the AcreMade parent company, as they are not yet in any of those three stores. We then divided the total price by the number of eggs or egg equivalents per package. For metric conversions across different egg categories (ie. pounds to egg yolks), we used the USDA grading standards. Egg equivalents and costs used for calculations are listed below:

- Hard-boiled eggs: 1 egg, $0.74
- Cage-free liquid eggs: 2 oz, $0.40
- Cage-free liquid egg yolk: 1 tbsp, $0.17
- Cage-free liquid egg white: 2 tbsp, $0.32
- JUST Egg: 2 oz, $0.70
- Firm tofu: 2 oz, $0.34
- AcreMade Egg Substitute: 7 g, $0.42
- Flaxseeds: 1 tbsp, $0.03
- Aquafaba: 3 tbsp, assuming 8 tbsp aquafaba/oz of canned chickpeas, $0.05
- Applesauce: 1/4 cup, $0.10-$0.20
- Bananas: 1/2 a banana, $0.06-$0.07
- Bob’s Red Mill Egg Replacer Powder: 1 tbsp, $0.10
- Mung Beans: 3 tbsp, $0.09
- Chickpea flour: 2 tbsp, $0.05

APPENDIX B

Scenario 2 Math for Cost Savings

Data sources:

- Medium-sized university ("University A"): confidential annual egg spend and average price per egg provided by a U.S. university (student population ≈7–10k).
- Large university ("University B"): confidential annual egg purchase volumes (in dozens) provided by a U.S. university (student population ≥10–15k).

Institution names are withheld to protect proprietary data; results are reported in aggregate.

Cost Savings in Baked Goods and Desserts

We obtained the annual spend on eggs for desserts from each university:

University A:

- egg yolk: $1,750
- egg whites: $1,800
- whole liquid eggs: $12,600

University B:

- egg yolks: $1,600
- egg whites: $2470
- whole liquid eggs: $13,300

Next, we calculated the cost for egg alternatives using average wholesale prices and aquafaba as egg yolk and egg white replacement and flaxseed as whole egg replacement.

University A:

- 20,000 egg yolk * $0.05 / egg replacement (aquafaba) = $1,000
- 10,800 egg white * $0.05 / egg replacement (aquafaba) = $540.00
- 75,000 whole eggs * $0.0275 / egg replacement (flaxseed) = $2,062.50

University B:

- 18,600 egg yolk * $0.05 / egg replacement (aquafaba) = $930
- 14700 egg whites * $0.05 / egg replacement (aquafaba) = $735
- 80,800 whole eggs * 0.0275 / egg replacement (flaxseed) = $2,222

Finally, we summed the difference in price for each category when using an alternative:

University A:

- ($1750 - $1,000) + ($1750 - $540) + ($12600 - $2062.50) = $12,497.50 saved

University B:

- ($1600 - $930) + ($2470 - $735) + ($13300 - $2222)= $13,483 saved

APPENDIX B

Scenario 2 Math for Cost Savings

We then repeated the same process for baked goods:

University A:

- annual spend: $25,300 (liquid whole eggs)
- alternative cost: 150,300 liquid whole eggs * $0.0275 / egg replacement (flaxseed) = $4,133.25
- cost-savings: $25,300 - $4,133.25 = $21,166.75 saved

University B:

- annual spend: $27,250 (liquid whole eggs)
- alternative cost: 161,900 liquid whole eggs * $0.0275 / egg replacement (flaxseed) = $4452.25
- cost-savings: $27,250 - $4,452.25 = $22,797.75 saved

We then totaled savings for each school:

University A:

- $12,497.50+ $21,166.75 = $33,664.25

University B:

- $13,483+ $22,797.75= $36,280.75

Average:

- ($33,664.25+$36,280.75)/2 = $34,972.5 ≈ $35,000

EAT-Lancet Aligned Cost Reductions

We used a 67% reduction in egg volume as a scenario parameter, informed by modeling that aligns a representative university procurement mix with the EAT-Lancet dietary pattern. This is not a campus-specific target but a generic “high-ambition” egg-reduction scenario for illustrative purposes.
For each university, we utilized egg procurement and price data from our partner universities.

Step 1: see calculations for above.

Step 2: We made calculations based on replacing scrambled eggs with mung bean powder and scrambled eggs accounting for 60% of egg usage.

- Annual scrambled egg spend: $184,838.64
- Cost for 40% of scrambled eggs: (.40)($184,838.64) = $73,935.456
- Cost of alternative: (429,307.52 eggs * $0.09466 / mung bean alternative = $41,584.8498
- $73,935.456 - $41,584.8498 = $32,350.61

Scenario 2 Math for Egg prices Cont.

Step 3: We made calculations based on replacing scrambled eggs with mung bean powder and scrambled eggs accounting for 60% of egg usage.

- Annual scrambled egg spend: $184,838.64
- Cost for 30% of scrambled eggs: (0.30)($184,838.64) = $55,451.592
- Cost of alternative: (329,480.64 eggs * $0.09466 / mung bean alternative) = $31,188.637
- $55,451.592 - $31,188.637 = $24,262.95

Step 4: We made calculations based on replacing omelettes with mung bean powder and omelettes accounting for 20% of egg usage.

- Annual omelette spend: $61,612.88
- Cost for 40% of eggs for omelettes: (0.40)($61,612.88) = $26,645.12
- Cost of alternative: (146,436 eggs * 0.09466 / mung bean alternative) = $13,861.632
- $26,645.12 - $13,861.632 = $12,783.49

Step 5: We made calculations of replacing 6% of liquid eggs with alternatives. We estimated a 40% cost reduction by replacing half of eggs with tofu and mung beans that are roughly 1/2 the cost, and replacing 100% of binding eggs with plant-based binders that are 1/4 the cost.

- Annual liquid egg spend: $308,064.33
- Cost of 6% of liquid eggs: $308,064.33 * (0.06) = $18,483.86
- Cost reduction: $18,483.86*(0.40) = $7,393.55

The emissions avoided are directly extracted from data from the university. Additional environmental impacts are estimated based on the EPA Greenhouse Gas Equivalencies Calculator.

Interpretations and Limitations

- These scenarios assume that all reduced eggs are replaced 1:1 by volume with the specified substitute. In practice, menus may use a mix of substitutes (e.g., tofu scrambles + flax in baking), so actual savings will likely fall within the ranges presented.
- We do not assume any change in labor, storage, or waste costs, although in many cases plant-based alternatives may also reduce spoilage and food safety risk.
- Prices are based on current or recent market conditions; long-term contracts, regional differences, and negotiated discounts may increase savings relative to these conservative estimates.

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