

EXECUTIVE SUMMARY MAY 2023

SERVING UP PLANTS BY DEFAULT

Optimizing variety, health, and sustainability of all-you-care-to-eat university dining with plant-based defaults.



A comprehensive research sprint conducted by Food for Climate League, sponsored by Better Food Foundation.



It Takes a League

Food for Climate League led the research and report development. The research was made possible through the generous support of Better Food Foundation. This report was made possible through the generous support of VegFund.

This project received in-kind support from Dr. Gregg Sparkman and the Social Influence & Social Change Lab at Boston College, along with Sodexo North America. We worked with students and the culinary staff of Tulane University, Lehigh University, and Rensselaer Polytechnic Institute.





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About Better Food Foundation

Better Food Foundation (BFF) is an action tank that incubates novel strategies for diet change. Better Food Foundation is on a mission to create a world where plant-based food is the norm. Research-informed and action-driven, BFF aims to accelerate the shifts to plant-centered eating that are already taking place globally by nudging people and institutions to adopt new norms where animal products are drastically reduced. BFF develops transformative strategies for diet change, supports other groups—like FCL—to advance unique pathways to change food culture, and incubates new organizations to scale strategies that show particular promise. BFF is committed to educating funders, the media, and nonprofit stakeholders to increase investment in the diet change movement as a whole.



About Food for Climate League

Food for Climate League is a trailblazing, female-led 501(c)3 non-profit working to make climate-smart eating the norm. Climate-smart eating is plant-forward, regenerative, and respectful of resources; it celebrates diversity, improves human nutrition, connects communities, is affordable and accessible to all, and preserves our shared planet. FCL creates toolkits, programs, and campaigns—founded in original behavioral science research—that connect sustainable food culture to people's diverse needs, values, and cultures. In doing so, we can make climate-smart eating accessible, enticing, and culturally relevant to the masses.



About VegFund

VegFund is a result-oriented, 501(c)3 non-profit that empowers vegan advocates worldwide through grant funding to inspire people to embrace a vegan way of life. VegFund understands the complex nature of shifting diets and therefore supports FCL's dissemination of this behavior change research so that they and other advocates may incorporate findings into new and existing animal welfare initiatives.

Glossary

The following terms relate to the design of this study:

Control Day

The meat dish was served as the primary entree option and served alongside a plant-based version of that dish. As students approached the intervention station, they first saw the meat dish and its description signage, followed by the plant-based version.

Intervention Station

The food station within the dining hall where the study was implemented.

Non-Intervention Station(s)

The other stations in the dining hall (i.e., pizza station, salad bar).

Plant-Based Dish

Dishes made entirely of plant ingredients and do not contain meat or animal products (i.e., dairy, egg).

Plant Default Day

The plant-based dish was presented as the sole option, while the meat version was placed behind the serving counter, out of sight from students. The intervention station displayed additional signage informing students that they could ask the serving staff for the meat option, if desired.

Spillover Effect

When students who typically visit the intervention station on a Control Day decide to visit the non-intervention stations on a Plant Default Day, in search of other food options.

Social Norm

Informal rules that shape behavior among groups and societies, specifying what is acceptable or unacceptable.¹



Introduction

What if a simple change in the way universities present food choices in dining halls could help us meet global climate goals? In this study, the research non-profit Food for Climate League (FCL)—in collaboration with Better Food Foundation (BFF), Sodexo, and researchers at Boston College—successfully tested the impact of serving plant-based dishes as the default option within dining hall stations at three universities: Tulane University, Lehigh University, and Rensselaer Polytechnic Institute (RPI).

This is the first-ever multi-site research study on plant-based defaults within all-you-care-to-eat dining halls.

KEY STUDY FINDING

On days when the **plant-based dish** was served as the **default option**, we observed a

23.6% reduction in food-related **greenhouse gas emissions.**

Scientists overwhelmingly agree that shifting global eating habits towards predominantly plant-based diets is one of the most powerful tools we have to combat the climate crisis and improve human health.²

While plant-based eating grows in popularity (particularly among Gen Z), meat-centric diets remain the norm. How might we address this challenge? Enter the use of defaults, a proven strategy to nudge human behavior.

Defaults are a type of behavioral nudge that make the desired choice the easy choice. Defaults gently guide a person to take on a desired behavior by presenting them with a pre-determined option that takes effect if that person does not seek out a different choice.³

We come across defaults daily. Think: automatic enrollment for 401(k) plans or taking an extra step to opt out of default privacy settings when you visit a website.

A default plant-based menu features plant-based dishes as the default option while allowing eaters to choose animal meat or dairy upon request. Literature shows that eaters are far more likely to select a plant-based meal with this simple change in presentation, even when meat and dairy are available.⁴⁻⁶ Therefore, **default plant-based menus offer foodservice operations the opportunity to meet environmental, social, and governance (ESG) priorities while providing even more menu choice to eaters.** These flips to the menu are not just effective: they are straightforward to implement and deliver on eaters' preferences.

While plant-based defaults have been successfully piloted at events and conferences and tested within universities as lab experiments, studying all-you-care-to-eat service models is critical to understanding common eating experiences throughout higher education and within corporate, restaurant, resort, and cruise ship dining. Furthermore, university dining experiences have the potential to shape the eating habits of our younger populations for years, if not decades, to come.

Our study represents three dining hall stations, all operated by Sodexo: Tulane University, Lehigh University, and RPI. On study days, each station site was randomly assigned to either serve plant-based dishes by default (a Plant Default Day) or serve meat dishes in a “business-as-usual” fashion (a Control Day). On Plant Default Days, a plant-based dish was presented as the main option at the station, but a meat version of that dish, hidden from students’ view, was available upon request. On Control Days, both a meat dish and its plant-based counterpart were served side-by-side.

Throughout the study, we measured how many plant-based and meat dishes were served, as well as student satisfaction and staff responses to the change.

We found that implementing plant-based dishes as the default in an all-you-care-to-eat university setting reduces the amount of animal protein served, reduces greenhouse gasses, and does so without causing major disruption to student or staff satisfaction.

KEY STUDY FINDING

When defaults are implemented consistently, average take rate of plant-based dishes increased—

30.8% → **81.5%**
CONTROL INTERVENTION

—without any other changes to the dining experience

This simple intervention—without any other changes to the dining experience—increased the average take rate of plant-based dishes from 26.9% to 57.6% across our three study sites. Moreover, the two universities that implemented the default consistently during the study experienced an even higher increase, from 30.8% to 81.5%! This increased uptake of plant-based dishes led to reduced greenhouse gas emissions compared to our Control Day: food-related emissions declined by an average of 23.6% on Plant Default Days across the three campuses.



We learned that students' satisfaction with plant-based dishes highly depends on the presence of a default, how the dishes are prepared, and the magnitude of pre-existing meat consumption norms. With dining hall staff members, we found that the default did not require significant effort to implement, and they are interested in expanding their plant-based repertoire. Collecting this rich feedback was crucial because, to scale the impact of defaults, we must ensure that they work for eaters and foodservice professionals alike.

The results described in this report validate the efficacy and applicability of default strategies in all-you-care-to-eat university settings. Here, we also highlight additional opportunities to make the impact even more significant.

We hope this work persuades foodservice operators, dining hall managers, and other campus decision-makers to utilize plant-based defaults to drive sustainability and health improvements on campus.

These research findings on defaults are also applicable within all-you-care-to-eat settings beyond college and university campuses, as noted above, to drive sustainable food behaviors, all while delighting eaters. **This research reaffirms that there is a future where food is good for us, good for business, and good for the planet.**

TOP TAKEAWAYS

- 1** When implemented consistently, plant-based defaults increase the selection of plant-based dishes, decrease the selection of meat dishes, and result in reductions in food-related greenhouse gas emissions.
- 2** With incorrect implementation, the impact of the default on dish choice vanishes.
- 3** Students—including meat eaters—are open to plant-based options.
- 4** Dining hall staff found a plant-based default easy—and enjoyable—to implement.
- 5** Eating and serving meat continues to be the social norm in campus dining, despite openness by students and staff to shift toward plant-forward choices. This indicates a considerable untapped opportunity for effective interventions, like defaults, to change consumption behavior.

Why All-You-Care-To-Eat University Dining Halls

If campus dining halls do defaults well, it can result in a massive impact:

~235 million

university students
worldwide⁸

consume

148 billion meals

per academic year*

**Assuming each student eats 3 meals per day, each day, for two 15-week semesters*

College and university students are at a critical juncture when developing food habits. University dining halls are well-positioned to guide students' newfound food freedom by making it easier to choose foods that are good for them and good for the planet, and most of all, delicious. This is in juxtaposition to the current norm where typical dining halls prioritize meat-centric dishes, which creates barriers to accessing plant-based options and encourages consumption of high carbon footprint meals.

Additionally, focusing on all-you-care-to-eat settings presents unique challenges for defaults compared to other food environments that have been studied. Conferences, campus events, corporate cafés, and hospitals tend to have a much narrower and more consistent set

of options, while all-you-care-to-eat university dining halls can have up to ten stations serving a wide variety of dishes.

Finally, university-aged Gen Z consumers are the most interested in consuming plant-based foods compared to any other generation—83% versus a combined average of 63% among Millennials, Gen X, and Boomers.⁷

If campus dining halls do defaults well, it can result in a massive impact: there are an estimated 235 million university students globally⁸ consuming 148 billion meals per academic year.* Plus, the rise of a new social norm among Gen Z—an emerging dominant consumer group—can provoke a massive ripple effect throughout food culture.



Image courtesy of Tulane University

Study Design

In the fall of 2022, FCL conducted a randomized controlled trial over five weeks.

WHERE WE TESTED

3 university dining hall stations



WHAT WE TESTED

2 dish serving approaches

Each study lunch period was randomly assigned to serve one of 8 pairs of dishes—each pair contained a plant-based dish and a meat dish—and was randomly assigned a dish serving approach:

Plant Default Day

On **Plant Default Days**, only a plant-based dish was presented, but a sign informed students they could ask serving staff for the meat version of the dish if desired.

Control Day

On **Control Days**, both the meat and plant-based dishes were presented side-by-side at the station.

WHAT WE ANALYZED

15,278 dishes

We analyzed station serving data encompassing **15,278 dishes** to assess changes in the number of plant-based and meat dishes served and calculated the resulting reduction in greenhouse gas emissions.

52 staff survey responses

09 post-study interviews

We analyzed **52 survey responses and 9 post-study interviews** with dining hall staff members to understand how their day-to-day responsibilities were affected during the default's implementation.

211 student survey responses

We analyzed **211 survey responses** from students to understand their eating habits and satisfaction with the dishes served.

STUDY DESIGN: PLANT DEFAULT DAY

Plant Default Day at Tulane University

The day's dish, Roasted Sesame Ginger Tofu Tikka Masala, is the only visible option at the station. The small sign next to the menu description (bottom right) informs students that the meat version of that dish, Chicken Tikka Masala, is available upon request.

Image courtesy of Tulane University



Plant Default Day at Lehigh University

The day's dish, Roasted Sesame Ginger Tofu Tikka Masala, is the only visible option at the station. The small sign next to the meat option description (top right) informs students that the meat version of that dish, Chicken Tikka Masala, is available upon request.

Image courtesy of Lehigh University



Plant Default Day at RPI

The day's dish, Lentil, Olive & Mushroom Spaghetti, is the only visible option at the station. The small sign next to the meat option description (top right) informs students that the meat version of that dish, Sausage, Olives & Mushroom Spaghetti, is available upon request.

Image courtesy of RPI





Key Findings

1

When implemented consistently, plant-based defaults increase the selection of plant-based dishes, decrease the selection of meat dishes, and result in reductions in food-related greenhouse gas emissions.

2

With incorrect implementation, the impact of the default on dish choice vanishes.

3

Students—including meat eaters—are open to plant-based options.

4

Dining hall staff found a plant-based default easy—and enjoyable—to implement.

5

Eating and serving meat continues to be the social norm in campus dining, despite openness by students and staff to shift toward plant-forward choices. This indicates a considerable untapped opportunity for effective interventions, like defaults, to change consumption behavior.

KEY FINDING #1

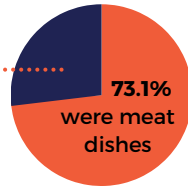
When implemented consistently, plant-based defaults increase the selection of plant-based dishes, decrease the selection of meat dishes, and result in reductions in food-related greenhouse gas emissions.

On Control Days...

only

26.9%

of dishes served were plant-based

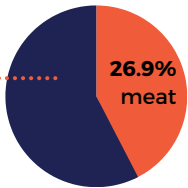


Control Days, all schools

On Plant Default Days...

57.6%

of dishes served were plant-based



Plant Default Days, all schools

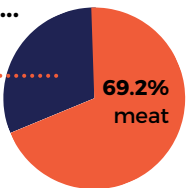
At Tulane and Lehigh

this shift was more pronounced.

On Control Days...

30.8%

of dishes served were plant-based

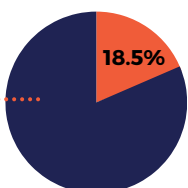


Control Days, Tulane & Lehigh

On Plant Default Days...

81.5%

of dishes served were plant-based



Plant Default Days, Tulane & Lehigh

We observed a dramatic increase in plant-based dishes served.

- On Control Days, only 26.9% of dishes served were plant-based. In comparison, on Plant Default Days, 57.6% of dishes served were plant-based.
- At Tulane and Lehigh, the proportion of plant-based dishes served on Plant Default Days jumped to 81.5%.

We calculate that food-related greenhouse gas emissions declined by 23.6% on Plant Default Days.

This estimation considers a “spillover effect,” whereby a proportion of students who would have visited an intervention station on a Control Day decided to avoid the intervention station on a Plant Default Day in search of meat options elsewhere in the dining hall. To more accurately compare the impacts of our two serving approaches, we modeled a hypothetical scenario of what these “spillover” students may have chosen—a mix of beef, chicken, and vegetarian dishes—informed by serving data from those non-intervention stations.

KEY STUDY FINDING

On days when the **plant-based dish** was served as the **default option**, we observed a

23.6% reduction

in food-related **greenhouse gas emissions**.

KEY FINDING #1

Opportunities

Adopting a plant-based default serving approach, even at one station, can improve the sustainability of foodservice operations.

This study shows that serving plant-based dishes by default at a single station may be a simple way for foodservice operators to assess their audience's appetite to change while reducing their climate impacts. Additionally, operators can roll out plant-based defaults over time at additional stations, if not throughout a dining hall or their entire campus.



TIP: HOW TO CONSIDER THE WHOLE DINING HALL

The power of defaults can become even more impactful when paired with additional culinary strategies that lower the GHG emissions of other stations' options.

To lower the environmental impact of these options, we recommend:

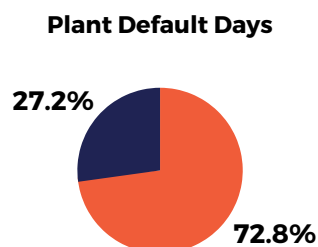
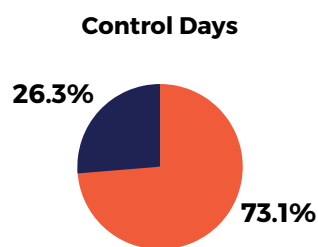
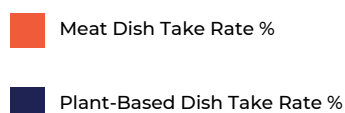
- ❑ Reducing portion sizes of animal products within a dish,
- ❑ Introducing “blended” proteins that combine plant and animal ingredients, and
- ❑ Prioritizing lower-carbon animal proteins.

These approaches would keep emissions low on days when students decide to visit the non-intervention stations in the dining hall, minimizing the spillover effect.

KEY FINDING #2

With incorrect implementation, the impact of the default on dish choice vanishes.

Average Plant-Based Take-Rate by Default Treatment at RPI



When one student asked for both the beef and the tofu, the server asked ‘Even the tofu??’ in a kind of surprised voice.
— Research Lead; Field notes, RPI on-site

Unlike Tulane and Lehigh, the proportion of plant-based dishes served at RPI remained unchanged between Control and Plant Default Days.

RPI faced many implementation inconsistencies: incorrect arrangement of dishes at the intervention station, exposure of the meat dish on Plant Default Days, inconsistent display of the signage informing students that they could ask for the meat dish, and serving staff inadvertently guiding student choices. This improper implementation of the plant-based default magnified meat-consumption norms at RPI, rendering the default ineffective.

- ❑ On Plant Default Days, RPI did not conceal the meat dish as well as the other schools. With this alternative dish easily visible to students as they approached the station, it ultimately undermined the default.
- ❑ RPI has a larger male student population than the other schools (69% of their student body vs. 54% at Leigh and 40% at Tulane), who reported eating more servings of meat per week and were less likely to shift their behavior than female respondents (see: Finding 5), influencing the campuses’ food norms.
- ❑ Understaffing challenged effective implementation and may continue to be a barrier when implementing plant-based initiatives, including defaults. While all three campuses’ Executive Chefs described understaffing as an ever-present challenge, at RPI, the Executive Chef occasionally had to rotate his staff to different stations to fill in the gaps. All of this impacted the ability of the dining hall staff to implement the study effectively, as the plant-based default was a new set-up, and staff had to be aware of the changes.
- ❑ Unlike the other campuses, RPI staff seemed to expect that students wanted meat options, which may have unintentionally reinforced meat consumption via staff’s body language and verbal interactions with students.

KEY FINDING #2

Opportunities

Engage foodservice staff early and often to increase implementation accuracy.

- ❑ Connect with Executive Chefs and other foodservice stakeholders as early as possible to share the purpose of defaults (and other behavior change strategies when relevant).
- ❑ Collaborate to determine the fine details of implementation, and allow plenty of time for integrating the plant-based default into their operations.
- ❑ Coordinate with foodservice leaders to identify 2-3 staff members in each dining hall to champion the intervention and ensure that responsibilities are not overlooked.

Position foodservice staff as stewards of default strategies and leverage their relationship with eaters.

- ❑ Educate staff on the purpose of these behavior change strategies and guide them on how to engage with eaters so as not to reinforce dominant meat-eating norms.



On Plant Default Days at RPI, the meat dish was concealed by this Rensselaer Dining sign, yet some students were able to see the meat dish, undermining the default's effect. Image courtesy of RPI

KEY FINDING #3

Students—including meat eaters—are open to plant-based options.

Satisfaction with the dishes served during our study depended upon many factors, including the institution serving the dishes, whether it was a Plant Default or Control Day, whether whole-plant or processed plant proteins were served, and gender.

STUDENT SATISFACTION BY PROTEIN TYPE

4.93 vs. **5.20**
Plant-based dishes vs. Meat dishes

On average, there was no statistical difference in student satisfaction between plant-based and meat dishes.

Satisfaction varied by institution. Tulane students rated plant-based dishes more highly than meat dishes (5.61 vs. 4.83), while RPI students rated plant-based dishes the least favorably (4.07).

STUDENT SATISFACTION WITH PLANT-BASED DISHES BY TREATMENT DAY

5.14 vs. **4.42**
Plant Default Day vs. Control Day

Student satisfaction was significantly higher when plant-based dishes were served during a Plant Default Day (5.14) than those served during a Control Day (4.42).

One of the reasons why defaults work is that they have what's known as an "implied endorsement" effect, whereby decision-makers believe that the party presenting the options knows what's best for them.⁹ When presented with the plant-based option, students may have assumed it was the recommended dish.

STUDENT SATISFACTION COMPARING PLANT-BASED PROTEINS

5.30 (n=36)
Dishes with processed plant-based proteins

vs.

5.20 (n=156)
Dishes with meat

vs.

4.61 (n=43)
Dishes with whole-food plant-based proteins

On average, students expressed a higher satisfaction rating for processed plant-based dishes compared to meat dishes and whole plant-based dishes.

□ This is in contrast to other publications, such as the most recent *Plant-Forward Opportunity Report* by Datassential—co-produced by The Culinary Institute of America, Menus of Change University Research Collaborative, and FCL—which shows that Gen Z eaters tend to prefer whole-food plant-based dishes over processed, but many are open to trying both.⁵

□ The lower rating for whole-plant dishes may have been influenced by dish presentation, how the dish was named, and varied preparation by the staff.

□ While the contrast in satisfaction between processed plant-based dishes and whole-food plant-based was statistically significant, a larger dataset is needed to meaningfully compare these two categories of dishes.

KEY FINDING #3

Opportunities

STUDENT SATISFACTION : BY GENDER

5.10 vs. **4.71**
Female Male

“

I was pleasantly surprised with the [lentil] patties today and liked them better than I originally had anticipated.
— Lehigh Student

[The student] appreciated that, although he was not a vegetarian or vegan himself, there were great protein options available made from plants for students to try.
— Lehigh RA; Field note

[I] liked the [Jerk Plant Shreds Jambalaya] with the rice and vegetables; [it] made me feel energized after instead of too full and slow, which I liked.
— Lehigh Student

”

Female students expressed higher satisfaction with plant-based dishes than male students, particularly at Tulane and Lehigh.

Qualitatively, students are interested in plant-based options in the dining hall.

Student survey respondents made positive comments about the texture, flavor profiles, and nourishing qualities of plant-based dishes served in the study. Additionally, though not an aspect of the default serving approach, students appreciated having both plant-based and meat dishes available on Control Days.



Image courtesy of Rensselaer Polytechnic Institute

Opportunities

Increase satisfaction with plant-based dishes by leveraging local food culture, maximizing verbal and visual dish appeal, and expanding culinary staff's plant-based repertoire.

- ❑ Collaborate with eaters and culinary stakeholders to develop culturally relevant plant-based dishes that resonate with eaters' palates.
- ❑ Reference FCL's Menu Language Workbook when crafting titles for plant-based dishes that emphasize enticing flavor profiles, textures, and preparation methods.
- ❑ Make plant-based dishes visually appealing: Play with color and contrasting textures, such as plating on eye-catching serve ware and adding edible garnishes for a special touch.



KEY FINDING # 4

Dining hall staff found a plant-based default easy—and enjoyable—to implement.

Average Effort Ratings on Plant Default Days

All schools. Scale: 1-7

2.12

ALL SCHOOLS

1

No extra effort

1.67



2.00



2.57



A lot more effort

7

Staff reported that implementing Plant Default Days did require some additional effort, but it was minimal (2.12).

(Scale: 1-7, with a score of “1” meaning “no extra effort” and “7” meaning “a lot more effort”)

Staff at Tulane and RPI found the study easier to manage than previous plant-based initiatives and are making changes to their dining halls to increase plant-based options as a result.

- At Tulane, a previous effort to turn their Chef’s Table station entirely plant-based resulted in a 40% loss in traffic at that station. Since the study, Tulane’s dining hall staff have incorporated one of the plant-based pasta dishes from our study into their regular rotation. They have also dedicated two plant-based days per week at that station.
- At RPI, a previous Meatless Monday campaign received so much student and campus leadership pushback that the staff reverted to their original menus. By the end of our study, RPI foodservice staff were exploring the expansion of their plant-based station and incorporating popular plant-based dishes from the study. Though RPI was not as successful in implementing the default compared to the other schools, the staff could still observe openness among their students for this plant-based default approach.

In our surveys and interviews, staff remarked how they enjoyed making new dishes and learning about plant-based foods.

- Though FCL did not provide staff with specific materials about plant-based dishes, some staff sought inspiration via social media. The plant-based dishes in our study exposed staff to new ingredients and ways of cooking, for example, using flaxseed as a binder instead of egg. Staff were also interested in learning how serving plant-based food intersects with students’ needs, such as health and religious diversity.

Opportunities

Cultivate buy-in among culinary staff by communicating the purpose of plant-based sustainability initiatives and tapping into what they value.

- ❑ Encourage creativity, collaboration, and ownership among staff to develop plant-based dishes that delight eaters.
- ❑ Share the benefits of plant-based eating beyond climate: emphasize taste, health, animal welfare, accommodating allergies and religious diversity, and more.

Foodservice staff are, generally, a non-academic audience with varied knowledge and abilities. Meet them where they are!

- ❑ Build educational and training materials in accessible formats so that Executive Chefs and other leaders are equipped to share these changes in team huddles, formal training meetings, and on-the-fly within the dining hall.
- ❑ Supplement verbal instruction with printed materials behind the scenes. Leverage graphics and straightforward language to get staff up to speed when other team members are unavailable.



Image courtesy of Tulane University

KEY FINDING #5

Eating—and serving—meat continues to be the social norm in campus dining, despite openness by students and staff to shift toward plant-forward choices.

Through our dish serving data, survey responses, and in-field observations, we found that eating meat is still the norm across all three campuses.

We recognize that these norms cannot be ignored and that foodservice stakeholders must reckon with students' food preferences when implementing any behavior change strategy. Thus, we highlight how meat-eating norms manifested in our study. This indicates a considerable untapped opportunity for effective interventions, like defaults, to change consumption behavior.

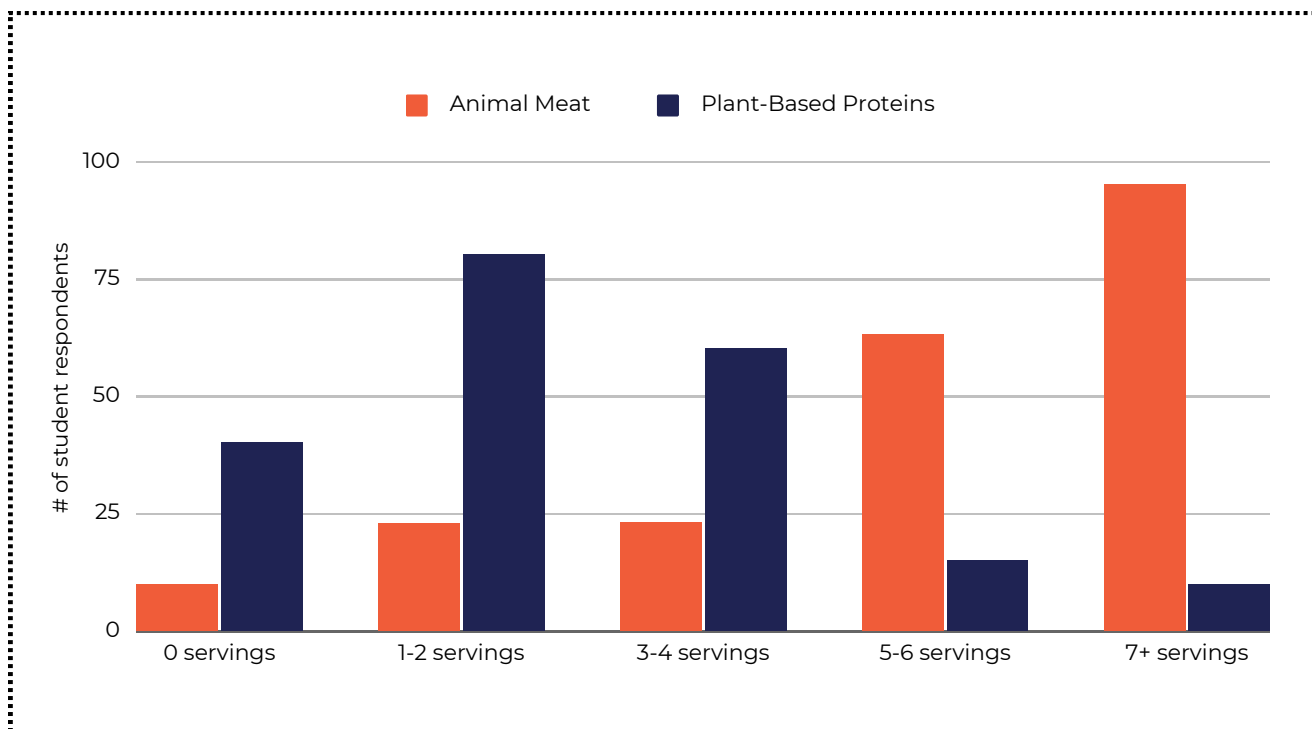
REPORTED PROTEIN CONSUMPTION:

43.1% vs. **5.2%**
Eat 7+ Meat Servings/Week Eat 7+ Plant Protein Servings/Week

Meat is the dominant source of protein among our surveyed students.

43.1% of students reported consuming seven or more servings of meat in a week. In contrast, only 5.2% reported consuming plant-based proteins at that same frequency.

Students' reported weekly intake of animal meat and plant-based proteins.



KEY FINDING #5

DESIRE TO MAKE DIETARY CHANGES BY GENDER

Desire to reduce animal meat consumption:

3.67 vs. **4.23**
Female Male

Desire to reduce non-meat animal product consumption:

3.91 vs. **4.10**
Female Male

Desire to increase fruit and veg consumption:

5.12 vs. **4.88**
Female Male

Desire to increase plant-based protein consumption:

4.88 vs. **4.36**
Female Male

Gender also plays a role in meat consumption norms, with women more open to adopting plant-based proteins and reducing meat consumption.

- Women expressed some interest in decreasing animal meat consumption (3.67)** and non-meat animal products (3.91). In contrast, men desired to increase these foods (4.23 and 4.10, respectively).

**We collected student-reported desire to change consumption of various food groups (animal meat, animal products, fruits and vegetables, and plant-based proteins) on a scale of 1-7. A rating of "1" indicates a strong desire to decrease consumption, a "4" indicates no desire to change, and a "7" indicates a strong desire to increase consumption.

- Additionally, women expressed a stronger desire to increase their consumption of fruits and vegetables (5.12) and plant-based proteins (4.88) compared to men (4.88 and 4.36, respectively).



Image courtesy of Tulane University



On Control Days, students shared that they chose the meat option over the plant-based version due to personal preference, flavor profile, and presentation.

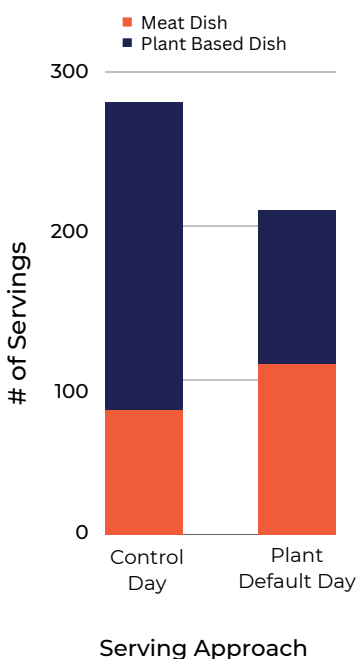
I liked the animal option [sausage, olive, mushroom spaghetti] and thought the sauce with the sausage was very flavorful. The plant one didn't look as appetizing to me, plus I saw the sausage one first, so that's why I went for that one."

—Lehigh Student



Decrease in Dishes Served Due to Spillover Effect

26.3%
REDUCTION IN SERVINGS



As described in Finding 1, we observed a “spillover effect,” where a proportion of students who visited our intervention stations on Control Days decided not to visit the intervention stations on Plant Default Days. Because dining hall attendance remained constant throughout the study period, this decrease suggests that students visited other stations searching for meat options.

- This spillover led to a 26.3% decrease in the overall number of all dishes served at the intervention station on Plant Default Days across the three campuses’ intervention stations.
- We also observed this spillover effect qualitatively. Our onsite research assistants at RPI and Lehigh noted how other stations within the dining hall served popular meat dishes throughout the study period (i.e., smashburgers, orange chicken, chicken fingers) that would pull students away from the intervention station. Additionally, on Plant Default Days, staff reported that students would glance at the intervention station, ignore the additional signage indicating that a meat option was available, and move on to a different station.

When it was only the plant-based [option], the students just don’t take the time to ask, so they’d move to the next station.

—Lehigh Staff



Opportunities

Take time to understand your audience of eaters.

- ❑ Partner with foodservice operators, eaters, and other relevant groups (such as corporate or university campus sustainability departments) to dig into the food culture and norms embedded in the foodservice environment you are looking to shift.
- ❑ Enhance the appeal and flavor profile of plant-based dishes.

Pair defaults with other behavior change strategies to target both conscious and subconscious decision-making. These additional strategies include:

- ❑ **Education** on the benefits of plant-forward diets.
- ❑ **Language** to increase the appeal of plant-forward dishes.
- ❑ **Social norm messaging** that informs eaters on the behaviors of others.
- ❑ **Commitments and pledges** to increase plant-based consumption.
- ❑ **Salience (or “Soft Default”)**. Increase the number of plant-based dishes relative to meat dishes
- ❑ **Choice architecture**. Manipulate the presentation of food choices visually, verbally, or physically without removing options or adjusting price.



Image courtesy of Tulane University

Summary

Plant-based defaults are a proven strategy to nudge eaters toward climate-smart meals. In our study, we increased students' selection of plant-based dishes, decreased the selection of meat dishes, and reduced food-related greenhouse gas emissions. We did all of this within a single-station implementation of a plant-based default in three real, all-you-care-to-eat university dining hall environments, where we maintained student satisfaction and kept the burden on staff to a minimum.

PROPER IMPLEMENTATION IS KEY

We observed variation among our partner campuses regarding implementation, effectiveness, student satisfaction, and meat-eating norms. We found that with typical behavior outside the intervention station, we reduced greenhouse gas emissions by 23.6%. Still, that effect can be much higher if these dining environments implement defaults consistently and integrate additional strategies to reduce the presence of high-impact animal proteins on menus overall.

STUDENTS + STAFF ARE OPEN TO PLANT-BASED CUISINE

Students across our partner universities expressed openness and satisfaction with the plant-based dishes we tested. Staff were also open to and interested in preparing and serving plant-based options, revealing a new creative outlet and potential for cultivating purpose among this stakeholder group.

PARTNER WITH FOODSERVICE LEADERS TO OVERCOME CHALLENGES

This report has highlighted challenges and opportunities for plant-based advocates to consider. In partnership with foodservice workers and leaders, we can work to minimize the “spillover effect” by considering the whole dining experience and growing the appeal of plant-based dishes. We can also fold in additional behavior change strategies. To make all of this work, we must ensure that campus dining staff are adequately supported.

STUDY SCOPE

This study was conducted with a small sample of U.S. universities, and this should be considered when implementing these findings. FCL will continue assessing plant-based defaults across university campuses and beyond, using integrative research methods and partnerships to make the plant-based choice the easy choice.

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It Takes a League

This project would not have been possible without our interdisciplinary team, research consultants, and organizational partnerships.



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Sodexo

Sodexo North America teamed up with FCL for this sprint, committing to this 5-week foodservice cycle of shifting eight dishes to default plant-based across three partner campuses: Tulane University, Lehigh University, and Rensselaer Polytechnic Institute. Sodexo volunteered time and resources due to their keen interest in meeting corporate sustainability goals by leveraging their significant presence in higher-education institutions nationwide.

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Humane Society of the United States

The Humane Society of the United States (HSUS) provides plant-based culinary training to university culinary staff in an effort to expand sustainable offerings to students. HSUS is excited to integrate these findings into their training approaches.

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Courtesy of Tulane University

References

- 1** Bicchieri, Cristina, Ryan Muldoon, and Alessandro Sontuoso. 2018. "Social Norms." In *The Stanford Encyclopedia of Philosophy*, edited by Edward N. Zalta, Winter 2018. Metaphysics Research Lab, Stanford University. <https://plato.stanford.edu/archives/win2018/entries/social-norms/>.
- 2** Clark, Michael A., Nina G. G. Domingo, Kimberly Colgan, Sumil K. Thakrar, David Tilman, John Lynch, Inês L. Azevedo, and Jason D. Hill. 2020. "Global Food System Emissions Could Preclude Achieving the 1.5° and 2°C Climate Change Targets." *Science* 370 (6517): 705–8. <https://doi.org/10.1126/science.aba7357>.
- 3** Thaler, Richard, and Cass Sunstein. 2008. *Nudge: Improving Decisions About Health, Wealth, and Happiness*. New York: Penguin.
- 4** Boronowsky, Renate D., Angela W. Zhang, Chad Stecher, Kira Presley, Maya B. Mathur, David A. Cleveland, Emma Garnett, et al. 2022. "Plant-Based Default Nudges Effectively Increase the Sustainability of Catered Meals on College Campuses: Three Randomized Controlled Trials." *Frontiers in Sustainable Food Systems* 6. <https://www.frontiersin.org/articles/10.3389/fsufs.2022.1001157>.
- 5** Campbell-Arvai, Victoria, Joseph Arvai, and Linda Kalof. 2014. "Motivating Sustainable Food Choices: The Role of Nudges, Value Orientation, and Information Provision." *Environment and Behavior* 46 (4): 453–75. <https://doi.org/10.1177/0013916512469099>.
- 6** Hansen, Pelle G, Mathilde Schilling, and Mia S Malthesen. 2019. "Nudging Healthy and Sustainable Food Choices: Three Randomized Controlled Field Experiments Using a Vegetarian Lunch-Default as a Normative Signal." *Journal of Public Health* 43 (2): 392–97. <https://doi.org/10.1093/pubmed/fdz154>.
- 7** Datassential, The Culinary Institute of America, Food for Climate League, and Menus of Change University Research Collaborative. 2022. "2022 Datassential Plant-Forward Opportunity Report." Datassential. <https://offers.datassential.com/2022-plant-forward-opportunity>.
- 8** UNESCO. 2023. "What You Need to Know about Higher Education." UNESCO. January 27, 2023. <https://www.unesco.org/en/higher-education/need-know>.
- 9** Johnson, Eric J., and Daniel Goldstein. 2003. "Do Defaults Save Lives?" *Science* 302 (5649): 1338–39. <https://doi.org/10.1126/science.1091721>.



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