2022 Food Recovery Team



Sustainability Action Research

June 10, 2022

## Introduction

This year, the Food Recovery Team focused on obtaining qualitative and quantitative data to promote less food waste on the Hill on both the student-side and dining-side. Our team gathered gualitative data by means of surveying students on the Hill about their food waste habits. This was done through a more general Mass Survey and a Longitudinal Diary Study. The aim of the Mass Survey was to get data on students' food waste habits and opinions on potential marketing materials from as many students as possible. In order to incentivize student participation, survey respondents were entered into a raffle to win a free Hydroflask or UCLA sweatshirt. The Longitudinal Diary Study was designed to conduct more in-depth research into student food waste habits in boutique locations specifically. Prior to the data collected this year, no SAR teams had ever studied food waste in boutique locations, which made it an important avenue to look into. Participants logged their food waste at boutique locations for a week. If they logged at least five meals, they received a \$25 BruinCard deposit.

Quantitative food waste data was gathered through the conduction of plate waste audits in three anchor dining locations on the Hill. The three dining halls were Bruin Plate, Epicuria, and De Neve Residential Restaurants. Data collection was run by Food Recovery Team members and other student volunteers. Volunteers were stationed in front of the dishwashing area with four bins to separate food waste into edible waste, inedible waste, liquid waste, and napkins. The bins were weighed as they approached fullness , and the weight was recorded before composting the waste.

## **Methods: Mass Survey**

- Location: Flyers posted in anchor & boutique locations on the Hill
- <u>Dates</u>: 6:00 AM 4/4 11:59 PM 4/22
- Materials: Google Forms, funding from The Green Initiative Fund
- <u>Demographics</u> of respondents: Students on the Hill with meal plans

## Methods: Longitudinal Diary Survey

- <u>Location</u>: Flyers posted in anchor & boutique locations on the Hill, interest indicator question on Mass Survey
- <u>Dates</u>: 4/16 4/22
- <u>Materials</u>: Google Forms, funding from the Green Initiative Fund
- <u>Demographics</u> of respondents:
  - 30 students recruited from either expressed interest on the Mass Survey or a QR code located on posters in dining areas on the hill
  - Equal amount of students for each meal plan

## **Methods: Plate Waste Audits**

- Location: Bruin Plate, Epicuria, De Neve Residential Restaurants
- <u>Dates</u>: 5:00 PM 9:00 PM
  - Bruin Plate 3/1
  - Epicuria 4/21
  - De Neve 4/28
- Materials:
  - 4 bins for edible waste, inedible waste, liquid waste, & napkins
  - Weighing scale
  - Adequate number of volunteers

## Locations Locations

## Overall Waste Trends at Anchor Locations

Question: Averaged across all your visits to the anchor dining hall you eat at, how often do you have leftovers (as \_% of your visits)?





Question: In a typical meal at an anchor location, which food group do you find yourself throwing away the most?

## **Overall Waste Trends at Anchor Locations**





## Recommendations

- Reductions in portion size
  - **Common whole grains** such as rice and wheat bread can be **reduced in portion size** at anchor locations.
  - **Common green vegetables** such as broccoli and spinach can be **reduced in portion size** at anchor locations.
  - **Common starchy vegetables** such as white potatoes and corn can be **reduced in portion size** at anchor locations.
  - **Meat and poultry** can be **reduced in portion size** at anchor locations. They can also be served in easier-to-eat options, such as meat separated from the bone.
  - Beans and peas can be reduced in portion size at anchor locations.
- Offer students **opportunities to sample dishes** before serving them the full portion.
- Include options that serve **separate components of the dish** alongside dishes with all the portions of food (i.e. serve some dishes with only the main and others with only the side).
- Begin initiatives that **communicate to students their ability to customize their dish** at anchor locations (ex. smaller portion sizes, dishes without all components). This must be done in tandem with educating dining staff about how to accommodate customizations for students' dishes.
- Encourage only taking what you can finish at self-serving locations via **verbal or written/visual signage** on dining tables or serving counters.

# Epicuria

## Waste Trends at Epicuria

Question: Averaged across all of your visits to Epicuria, how often do you have leftovers?





Question: In a typical meal at Epicuria, which food group do you find yourself throwing away the most?

## Waste Trends at Epicuria

Question: What are some reasons you are unable to finish your food at Epicuria?



## Recommendations

Epicuria exhibits a similar trend to the overall waste habits at all anchor locations, so the suggestions previously listed still apply.
Along with the previously mentioned food groups, common refined grains (tortillas, pasta) and red and orange vegetables (carrots, tomatoes) can be reduced in proportion.

# **B-Plate**

## Waste Trends at Bruin Plate







Question: In a typical meal at B-Plate, which food group do you find yourself throwing away the most?

## Waste Trends at Bruin Plate

**Question:** What are some reasons you are unable to finish your food at B-Plate?



## Recommendations

• B-Plate exhibits a similar trend to the overall waste habits at all anchor locations, so the **suggestions previously listed still apply**.

• By proportion, B-Plate has the highest amount of residents who find themselves not being able to finish the amount of whole grains they serve themselves. This location can be specifically targeted in **readjusting the proportions at which whole grains are served**.

## Waste Trends at De Neve



Question: Averaged across all of your visits to De Neve, how often do you have leftovers?



Question: In a typical meal at De Neve, which food group do you find yourself throwing away the most?

## Waste Trends at De Neve

Question: What are some reasons you are unable to finish your food at De Neve?



### Recommendations

- De Neve exhibits a similar trend to the overall waste habits at all anchor locations, so the **suggestions previously listed still apply**.
- By proportion, De Neve has the highest amount of residents who find themselves not being able to finish the amount of meat, poultry, and eggs they serve themselves. This location can be specifically targeted in readjusting the proportions at which meat is served. Meat can be prepared in a fashion that is easier to eat (ex. not serving meat with bone that is difficult to separate) or in lesser amounts.
- By proportion, De Neve has the highest amount of residents who didn't like the taste of food and were unable to finish it. De Neve can be a **good restaurant to initiate a trial sampling program**.
- De Neve has the highest proportion of students who have leftovers at <50% or more of the time. This anchor location can **reduce the serving sizes of their dishes** to combat this.

## **Boutique Locations**

One of the biggest challenges in terms of obtaining data for boutique location food waste was having no basis or reference from which to compare our data from. This data is the first of its kind and can serve as the base for future initiatives.

## **Overall Waste Trends at Boutique Locations**

Question: Averaged across all your visits to the boutique dining hall you eat at, how often do you have leftovers (as \_% of your visits)?





Question: In a typical meal at an boutique location, which food group do you find yourself throwing away the most?

## **Overall Waste Trends at Boutique Locations**

Question: What are some reasons you are unable to finish your food at boutique dining halls?





Question: In a typical meal at an boutique location, which food group do you find yourself throwing away the most?

## **Overall Waste Trends at Boutique Locations**

Question (Diary Study): What is your meal plan? Were you able to finish your food?





## Recommendations

- Overall, boutique locations generate much less food waste than anchor locations but **modest reductions in similar food groups can still be made**.
  - **Modest reductions in whole grains can be made** since whole grains are wasted more than other food groups.
- Consider allowing customization of the amount of each meal component, e.g. allow students to select Less, Regular, More amounts of rice.
- Students throw away their food for a variety of reasons. Reductions in serving sizes is not one-size-fits-all and will need to be addressed by location.
- Students with Regular meal plans tend to have leftovers more often than students with Premium meal plans in the Diary Study. An emphasis on **saving leftovers along with altering packaging to be easily resealable** could minimize instances in which students with Regular meal plans swipe for a whole meal when they are not fully hungry for fear of losing a swipe. In addition, **communication initiatives can be implemented to address students taking food when they are not hungry**.

## **B-Cafe**

## Waste Trends at B-Cafe

Question: Averaged across all of your visits to B-Cafe, how often do you have leftovers?



Question: In a typical meal at B-Cafe, which food group do you find yourself throwing away the most?



## Waste Trends at B-Cafe

Question: What are some reasons you are unable to finish your food at B-Cafe?



Reason for leftovers

## **Recommendations:**

- Because the sample size is small and most people are able to finish their food, definite reductions are not advised although an analysis of red and orange vegetables and beans and peas can be done.
- Few people expressed that the portion sizes are an issue when eating here, so business can continue as normal.

# East Rendezvous

## Waste Trends at Rendezvous East

Question: Averaged across all of your visits to Rendezvous East, how often do you have leftovers?



Question: In a typical meal at Rendezvous East, which food group do you find yourself throwing away the most?



## Waste Trends at Rendezvous East

Question: What are some reasons you are unable to finish your food at Rendezvous East?



Reason for leftovers

## **Recommendations:**

- Because the sample size is small and most people are able to finish their food, definite reductions are not advised although an analysis of red and orange whole grains and meat, poultry, and eggs can be done.
- More people expressed that the portion sizes and taste are an issue when eating here. Possible reductions in rice-based options can be looked into.

# Rendezvous West

## Waste Trends at Rendezvous West

Question: Averaged across all of your visits to Rendezvous West, how often do you have leftovers?



Question: In a typical meal at Rendezvous West, which food group do you find yourself throwing away the most?



Food Recovery Team

## Waste Trends at Rendezvous West

Question: What are some reasons you are unable to finish your food at Rendezvous West?



## **Recommendations:**

- Because the sample size is small and most people are able to finish their food, definite reductions are not advised although a reevaluation of beans, refined, and whole grains can be done.
- More people expressed that the portion sizes and not being hungry are an issue when eating here. Signage can be made to communicate to students that they can ask for smaller portions.

## Feast at Kitchen DiCO S

## Waste Trends at Spice Kitchen

Question: Averaged across all of your visits to Spice Kitchen, how often do you have leftovers?



Question: In a typical meal at Spice Kitchen, which food group do you find yourself throwing away the most?



## Waste Trends at Spice Kitchen

Question: What are some reasons you are unable to finish your food at Spice Kitchen?



## Recommendations

- Because the sample size is small and most people are able to finish their food, definite reductions are not advised although a reevaluation of whole-grain and green vegetable servings can be advised.
- More people expressed that the portion sizes are an issue when eating here, so possible reductions can be made.

# The Study

## Waste Trends at The Study

Question: Averaged across all of your visits to The Study, how often do you have leftovers?



Question: In a typical meal at The Study, which food group do you find yourself throwing away the most?



## Waste Trends at The Study

Question: What are some reasons you are unable to finish your food at The Study?



## Recommendations

- The Study can focus on reductions or proportioning in whole grains more than other food groups.
- The Study has a high proportion of people who throw away food since they are not hungry. More targeted signage can be included here to encourage students to only take what they can finish. Alternatively, the study can utilize a "choose-your-own-size/portion" option made available on the kiosks.

# The Drey

## Waste Trends at The Drey





Question: In a typical meal at The Drey, which food group do you find yourself throwing away the most?


# Waste Trends at The Drey

Question: What are some reasons you are unable to finish your food at The Drey?



Reason for leftovers

## **Recommendations:**

- Because the sample size is small and most people are able to finish their food, definite reductions are not advised although a reevaluation of whole and refined grains can be done.
- More people expressed that the portion sizes are an issue when eating here, so possible reductions in serving sizes can be made here.

# Recommendations for Student Engagement & Communitcation

In the mass survey, we included a section to gauge student preferences in regards to educational marketing and communication. We asked which features students most valued in marketing materials and asked participants to rank a collection of sample graphics that each employed different engagement methods.

Using these results, we found that students preferred graphics that included humor, statistics, and UCLA-specific material. Furthermore, participants indicated that they prefer the use of physical and digital signage inside dining locations and near waste bins.

## **Graphic Preferences**

Question: Take a few seconds to look at the following graphics. Choose 2-3 that stand out to you.



## **Graphic Preferences**

Question: Take a few seconds to look at the following graphics. Choose 2-3 that stand out to you (cont).



#### Question: What made these graphics stand out to you?



# **Graphic Preferences**

• Question: What communication methods/mediums do you think would be most effective at publicizing food waste at UCLA?



## **Recommendations:**

- Students preferred graphics that included **statistics**, **graphics**, **and humorous/UCLA-specific elements**. When creating educational marketing materials for dining, make sure to utilize these elements.
- Students preferred **physical signage at both inside and outside dining locations**. Dining should utilize these mediums in order to effectively engage students.

# Recommendations for Future Waste Audits

Quantitative food waste audits were conducted in front of the dish room to serve as baseline data and for educational purposes for students to see their combined effect on food waste.

Overall results show that half of the waste produced at the dining halls are still edible, consistent with the pre-COVID proportions. Additionally, students would often only eat a specific portion of a dish while leaving the rest. For example, in a chicken dish plated with rice and vegetables, students would get multiple plates just to eat the chicken rather than ask for a custom dish of just chicken.

Overall, the quantity of food waste decreased drastically (4x) compared to pre-COVID conditions in the 2020 waste audits.

## **B-Plate**

### Total Waste = 103.48625 lbs; 0.08 lb/person

- Majority of was attributed to quinoa from the maple chipotle pork plate.
- Non-edible waste was primarily used lemon slices and peels
- Should be noted that there is potential error in waste representation since take out was permitted so some diners' waste was likely not accounted for



73.7%

Item	Most Common Part Wasted	Approx serving wasted	Student feedback
Maple chipotle pork tenderloin with quinoa	Quinoa	Almost entire serving of quinoa	Diners wanted pork but not quinoa
Tempeh potato mushroom burrito	Tortilla	Half serving	
Grilled shrimp	Lemon slice	2-3 slices	Would rather be served separately
Salad	Assorted greens	About half a bowl or less	Smaller salad bowls

# Epicuria

## Non-edible Non-edible 18.2% Total Waste 69.135 lbs; 0.07 lb/person • 59.4% of the waste produced is still edible • Majority wasted were grains and vegetables: couscous from chicken & mushroom dish, spinach from spinach alfredo dish

Edible 59.6%

Item	Most Common Part Wasted	Approx serving wasted	Student feedback		
Tarragon Chicken & Mushrooms w/ Israeli Couscous	Couscous	Almost entire serving of couscous	Diners wanted chicken but not couscous		
Roasted Brussels Sprouts	Brussel sprouts	~3 pieces			
Penne w/ Spinach Alfredo Sauce OR Sauteed Spinach	Spinach	~3 pieces	Diners wanted pasta but not spinach		
Chocolate Bouchon	Chocolate Bouchon	Entire cupcake (minus 1-2 bites)			



## Total = 160.34 lbs; 0.16 lb/person

Non-edible 19.2%

- Greatest total weight of waste
- Highest weight of edible waste
- Largest weight of non-edible attributed to chicken bones (other dining halls did not have this, weighed more than peels)
- Majority of waste would be full burgers and baked potatoes (attributing to large mass)



Edible 55.5%

ltem	Most Common Part Wasted	Approx serving wasted	Student feedback
Classic Roasted Chicken w/ Corn Salsa	Corn	Entire serving of corn salsa	Diners wanted chicken without corn; diners also provided feedback that the chicken was too salty
Idaho Baked Potato Bar	Potato	Several whole baked potatoes, as well as numerous potato peels	Diners could not finish the entire potato; diners didn't know that potato peels could be eaten
LA Hot Chicken Sandwich	Patties and burger buns	Several patties, numerous whole burger buns	Diners wanted the patty without the bun; diners could not finish the burger
Big Island Turkey Burger	Patties and burger buns	Several patties, numerous whole burger buns	Diners wanted the patty without the bun; diners could not finish the burger
Philly Cheese Steak Pizza	Pizza dough	Half pizza (a few bites were eaten)	

# Future Waste Audit Recommendations

- Continue waste audits in the main dining hall, in front of students, for educational purposes.
- Consider additional sorting by food groups (grains, vegetables, meat, etc.) to provide more granular results, but note that this would have to implement on the back-end to avoid long lines.
- **Paid waste audit coordinator student position** which could potentially be funded by UCLA Dining or sustainability-oriented grants.
- **Conduct a waste audit during Fall**, when many freshmen might be trying more food at dining halls.
- Add a website and QR code to scan during the audit that includes information about audit purpose and data. This would help educate diners about the issue of dining hall food waste at UCLA.

# **Potential Challenges**

An ongoing challenge for our data collection was the coronavirus pandemic. When we conducted our first waste audit at Bruin Plate, students were still able to have bring food out of the dining halls take-out containers. This makes our waste audit data less reliable, as we were unable to account for the amount of food waste created by those students.

Additional sources of error include:

- **Inconsistencies with the scale**: Because the bin was larger than the scale, the weight would fluctuate slightly depending on how the bin was positioned. As such, all weights were measured with the bin centralized on the scale.
- Small amounts of leftover food in the bins after weighing and emptying
- **Potentially missed food waste from diners' plates** due to the need to scrape and empty plates as quickly as possible, especially during peak dining hours ~7pm where long lines would form at waste audit stations.
- Potentially missed food waste from students who continued to dine at dining halls past 9:15pm.

# Waste 0 Food Plate Audit Guide

# Student Sustainability Coordinator

The team feels the best course of action in order to ensure the longevity of student-initiated sustainability efforts in Dining is to reinstate a paid student position. (From our informational interview with the previous Sustainability Manager, Erin Fabris, we understood that there was previously a paid student sustainability coordinator which eventually tapered off during the COVID-19 pandemic.)

The Housing and Hospitality Student Sustainability Coordinator may work with the Sustainability Manager to assist or initiate sustainability programs. This would include planning, coordinating, and executing food waste audits at Dining facilities. The student sustainability coordinator would be responsible for:

#### <u>Planning</u>

- Contacting Dining managers to schedule a waste audit
- Gathering appropriate signage and materials

#### **Coordinating**

- Assigning roles to volunteers
- Ensure proper setup of the waste audit to minimize the impact on Dining operation
- Answering questions

#### <u>Executing</u>

- Be present for set-up and clean-up of waste audits
- Answering questions from dining guests about the purpose and impact of waste audits
- Weigh bins and record data
- Inputting data into a spreadsheet and sharing it with appropriate parties

# Student Sustainability Coordinator (cont.)

Ideally, at least one waste audit would be conducted at each Dining location per quarter, totaling 12 waste audits per academic year. The amount the student would be compensated would vary based on the other responsibilities within housing and hospitality (such as tabling, housing waste audits, policy work, etc.). In the past, there were multiple student sustainability coordinators under Housing and Hospitality. They were hired by the Sustainability Coordinator and paid for partially through Dining and Facilities Management. Given the flexibility in working hours per week, the team feels that a **quarterly stipend may be the most effective compensation** for the student position.

# Food Waste Audit Protocol

The team suggests doing at least one waste audit per anchor location per quarter, totaling to 12 waste audits per academic year. This is to provide a more holistic view of food waste throughout the year at each location.

## Timeline

#### 2 Weeks Before Audit

- Contact Dining Managers to schedule the date and time of the waste audit
  - Try to keep the day of the week and meal time for each waste audit consistent for each dining hall from quarter to quarter

#### 1-2 Weeks Before Audit

• Recruit volunteers

#### 2 Days Before Audit

• Email volunteers with details of the waste audit

# Food Waste Audit Protocol (cont.)

Day of Waste Audit

<u>Set-Up</u>

- Assign volunteer roles and explain roles to volunteers
- Waste table
  - Collect scale and at least 4 bins-one for each category of food (although we suggest having 2 bins for edible food waste)
    - In order of napkins, liquid waste, inedible food waste, edible food waste
  - If bins are not identical, weigh bins and label them with numbers 1 through 6 (or more, if required) to ensure that each bin's specific weight can be accounted for.
  - Set up a table for food waste collection and another table to host scale, aprons, gloves, and cleaning supplies, ideally near the dish collecting station
  - Stanchion sign educating students about food waste audits should be placed before the line
  - Place signs on bins
  - Have a compost bin nearby to empty the weighted bins into
  - We suggest having a physical paper to write down weight info as it may get a little messy

#### <u>During</u>

- Have at least one student volunteer at each bin to help sort food
  - If there are fewer student volunteers than bins, have one volunteer per two bins
- Have someone stationed near the dish station to redirect anyone who may have missed the line to sort food.

# Food Waste Audit Protocol (cont.)

- Weigh and record data of bins when they are ~50% full
  - Napkin Waste
    - This includes napkins only.
  - Liquid Waste
    - This includes ice, water, coffee/tea, sodas, and soft drinks.
  - Inedible Waste
    - This includes meat bones, chicken skin, fruit peels, and vegetable stems.
  - Edible Waste
    - This includes all other waste that would typically be edible but was thrown away by the student.
    - After emptying the Edible Waste bin, consider wiping around the bins as food waste tends to spill, making diners uncomfortable.
- Empty weighed bins into compost

#### <u>After</u>

- Take a picture of the data table
- Help disinfect and clean tables
- Help take bins to the dishwashing station
- Help put away scales and signage as needed

#### Up to 1 Week After

- Transfer data to the spreadsheet
  - Make a copy of the template sheet
  - Revamping of the waste audit spreadsheet to include different data views (e.g., by dining hall, by year) and to include automatic formulas will be completed over the summer.
- Share data on the UCLA website and on napkin inserts
  - A Shiny app is in progress, which would allow waste audit data to be automatically shared and visualized, is in progress and aims to be completed and shared over the summer.

## Volunteers

Scheduling enough student volunteers to perform the waste audit. We suggest having fewer volunteers from 5-6pm (approximately 2) and more volunteers (approximately 4) from 6-8pm during peak diner hours. Try offering 1-2 hour shifts in the following or similar fashion:

	5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00
Student Volunteer 1									
Student Volunteer 2									
Student Volunteer 3									
Student Volunteer 4									
Student Volunteer 5									
Student Volunteer 6									
Student Coordinator									

#### Volunteer roles

- <u>Waste</u> (2-4): Scrape diners' plates. A flexible model works best, i.e. volunteers can move around to freely take diners' plates and scrape them into the respective bins. but during peak diner hours (6-8pm), we encourage at least one volunteer per waste bin for a total of 4 volunteers.
- Education (1): Briefly explain waste audit goals to diners, and encourage diners to scan the QR code. Could double up as waste volunteer if there are insufficient volunteers.

## Supplies

Dining is to provide us with:

- 6-foot tables
- Clear Cambro/Lexan containers for sorting
  - At least 2 for edible food waste
- Crowd control stanchions
- Trash cans
- Disposable gloves (assorted sizes)
- Disposable aprons
- Hand sanitizer
- Stanchion sign educating students about food waste audits

## Emails

Volunteer Recruitment - 1-2 weeks before

Hello there,

We are conducting a waste audit from (start time) to (end time) during (lunch/dinner) at (location), and we need YOUR HELP! We are looking for enthusiastic, sustainability-minded volunteers to sort and weigh food waste. ALL materials and equipment, e.g., weighing scale, aprons, gloves, will be provided to you. As a token of appreciation, you will receive a FREE dining meal voucher to any dining hall on the Hill.

Please sign up for a (1-hour/2-hour shift) here: (include spreadsheet link). You will be contacted via email a few days before the shift with more details and to confirm your participation.

Feel free to contact (email address) if you have any questions. We look forward to volunteering with you!

## **Emails**

#### Instructions for Volunteers - 2 days before

Hello there,

You are receiving this email because you signed up for a waste audit from (start time) to (end time) during (lunch/dinner) at (location)! Please reply to this email to confirm whether you will be volunteering. If you are unable to volunteer, we ask that you find a replacement and provide us with their contact details in the same email reply.

Below you will find some details and expectations that will help you prepare for the shift. If you have any questions, feel free to reply to this email, or call/text (phone number).

#### <u>Details</u>

- Meet at the main entrance to (dining location) by (start time) so that we can enter as a volunteer group.
- If you are running late, please text (phone number). Simply enter the dining hall by identifying yourself to the dining hall staff - you do not need to swipe in!
- Non-slip, closed-toe shoes (e.g. sneakers with good traction) are strongly encouraged. Those with long hair may find it helpful to tie back their hair.
- Gloves, aprons and other protective equipment will be provided.

#### **Expectations**

- You must be present for the entire shift that you sign up for.
- Please be punctual and ready to begin at the start time of your shift.
- Be polite and friendly to diners.
- If your schedule changes last-minute and you need to arrive late or leave early, please reply to this email or text (phone number) as soon as possible.

We look forward to volunteering with you!

Food Recovery Team