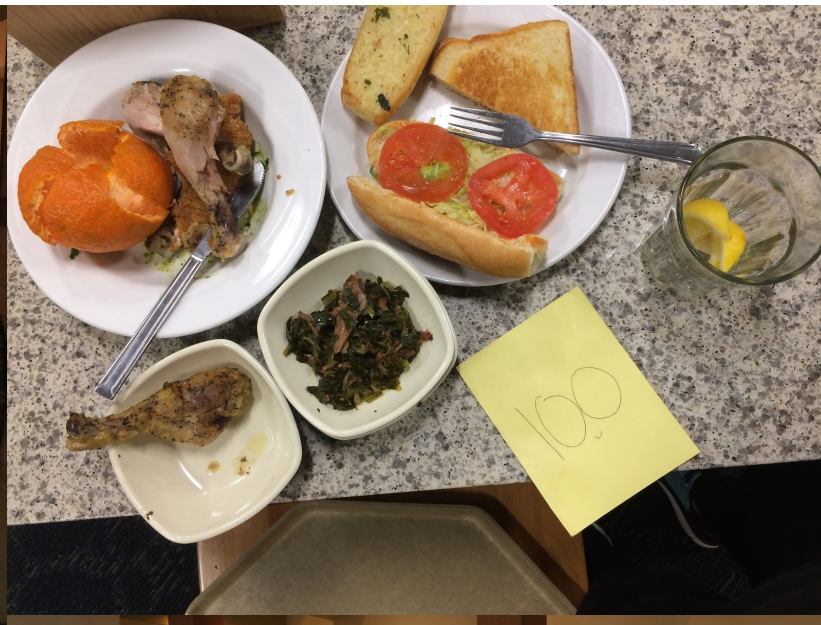
UCLA Sustainability Action Research



Assessment of Food Waste Behaviors in UCLA Residential Restaurants

2017 Final Report

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Special thanks to: Charles Wilcots, Associate Director of UCLA Dining

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Introduction

Our team aims to decrease food waste in UCLA dining establishments by educating students and staff on current food waste issues on campus and how to change current food waste levels. Our motive for doing so is to try to change the mindset regarding food waste with the main issue being that it is on the post-consumer side rather than the preparation side. In addition, we are interested in the behavioral changes that go along with further awareness regarding this topic. In order to accomplish this we have outlined a few different programs.The first step in our research was to collect data on demographic trends among dining patrons at two locations on campus and compare this to the amount of food that was wasted by each diner. In doing so we found there to be noticeably more food waste amongst patrons who had no dietary preferences, no allergies, got all of their food at the beginning of the meal and those who thought food waste was a bigger issue on the consumption side than the production side. We also elected to facilitate focus groups amongst students living in the dorms in order to gauge their perception of the issue of food waste on campus. With these meetings, we sought to evaluate responses to three styles of signage media: humor, statistics and visual appeal. Through this project, we have found that there is a lot of support to combat food waste on campus, but the biggest hurdle is educating students and staff so that the necessary changes can be focused on, which is the core issue that we seek to address.

Background

In 2009, Waste Watchers, another SAR team who set out to tackle food waste issues on campus, worked to quantify and reduce food waste in Residential Restaurants by conducting weekly food waste audits at De Neve. During these audits, the team took measurements of both solid and liquid waste that was discarded by diners throughout each meal period. In doing so, Waste Watchers collected valuable data on the amount of food that goes to waste in a given meal period. Waste Watchers set the pathway for future teams to follow to tackle the issue of food waste (Sanchez et. al) by utilizing the data in future studies. Soon after the work of Waste Watchers, in 2014, Sustainable Food Systems studied the effects of portion-control at Feast and Covel and conducted cross-comparison food audits by utilizing the Waste Watchers' data.

This year, we chose to take a different approach. We started by conducting surveys in dining halls, which yielded some interesting results. For example, we found that students who had dietary restrictions tended to waste less food than those who did not. We concluded that students with less dietary restrictions may be more unaware of their dietary habits, including the flexible options - like portion size and customizations - offered in dining halls. To address this issue, Chapman University built a "Just Ask Initiative" where signs are posted at food stations that inform students of alternative meal options such as half portions or no rice or pasta. The school has found that increasing consumer awareness has led to a reduction in food waste. These dining hall signs also have valuable facts regarding post-consumer wastes and their negative effects on the environment. By educating students on how to actively take steps to customize their meals, many benefits result: not only is there less food waste, but students are also more

satisfied with their meal (Merrow et. al).

Another university program, Try-a-Taste at UC Davis, allows diners to sample an entrée before they decide how much or how little of it they would like to be served. This sampling program prevents students from unknowingly choosing an entrée they don't like and therefore wasting almost an entire serving if they chose not to eat it for this reason. In order to implement this program, the school provides reusable 4 oz china ramekins or 2 oz ceramic soup spoons for students to sample with. The sample portions are served and refreshed frequently, just like a typical entrée (UC Davis). While the program does require additional dishes and manpower from the cooking staff, the school has seen a 40% reduction in food since the program started, which is a significant step in achieving their goal of zero waste by 2020.

Our Story

Winter Quarter

The Food Waste team wasted no time jumping right into the project. We scheduled our first meeting for week 1 of winter quarter with our stakeholder, Emma Sorrell, while we were still on winter break. She gave us a nice introduction that first meeting, but we still needed time to brainstorm some tangible research ideas. Before our next meeting with Emma, we collaborated on a Google document to write down every idea each team member had, no matter how big or small a project. During our meeting, Emma aided the team in narrowing down our potential research focuses to two potential routes: education for consumers or re-directing how food waste is managed on the production side. It was unanimously agreed upon that focusing our efforts in educating dining attendees would leave a more lasting impact on significantly reducing

food waste, especially since UCLA already undertakes significant actions to reduce food waste on the production end.

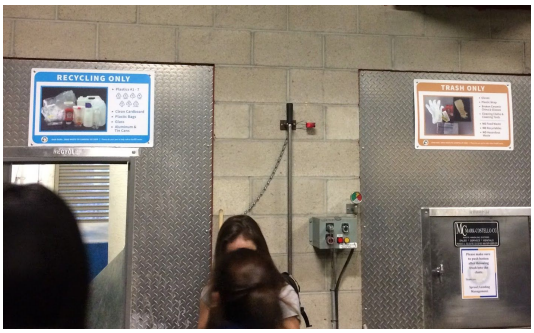
One of the ideas proposed by a member of the team suggested that since we already know physical measurements of food waste from previous SAR teams we should instead focus on figuring out who specifically wastes food. Upon doing this, we can better target our messaging for the purpose of changing behavior. To do this, we created a demographic survey to gather information about how certain traits of students relate to their individual consumption choices.We began by drafting up potential survey questions, narrowed down with the help of our stakeholder Emma. Yen Link Shek, Ph.D., Assistant Director of Research at UCLA Residential Life looked over our survey questions to help guide our team to a proper final draft. She ensured that they were concise and simple to answer. The questions focused on demographics such as meal plan and student year in school. The finalized list can be found in our appendix. As we continued the survey-creating process, we met up with the Associate Director of UCLA Dining, Charles Wilcots. He gave us a tour of Bruin Plate and Covel, showing us the processes of food preparation and disposal at each residential restaurant. During this process we were able to

Dining Tour

Charles Wilcots pointing towards the trough in which all food waste is poured into.

Charles pointing out the pulper, a machine that chews up food waste so that it can be sent to an industrial composting facility.

converse with members of the dining staff on what foods they see wasted most. We learned that at Bruin Plate a majority of the perceived food wasted by students consisted of fruit as well as vegetables from the self-serve station.



Separate waste removal chutes and bins at the loading dock

The tour also brought us to the loading dock, where they separate trash, compost, and recycling. After the tour, we had a brief meeting with Charles and our stakeholder Emma in order to share potential projects for the quarter. Charles appreciated our ideas for the residential restaurant survey since a major desire for him and his employees is to have more messaging in the dining halls themselves about food waste prevention. From this point forward, Charles Wilcots attended most of our meetings and became an extremely valuable secondary stakeholder for the team.

Our team was able to draft a final version of the survey and were ready to take on two residential restaurants per the recommendation of Charles: De Neve and Bruin Plate. We surveyed eight different meal periods total: two lunches in De Neve, two dinners in De Neve, two lunches in Bruin Plate, and two dinners in Bruin Plate. In order to incentivize students to take our survey as well as to obtain images of food waste, we told students to leave their plates and let us clear them. We did face some error with this since many students were uncomfortable with leaving their plates behind for someone else to clear, so we only aggregated results with a

paired photos. Overall, we had more successes than failures and ended up with approximately 400 total surveys that had corresponding food waste pictures.

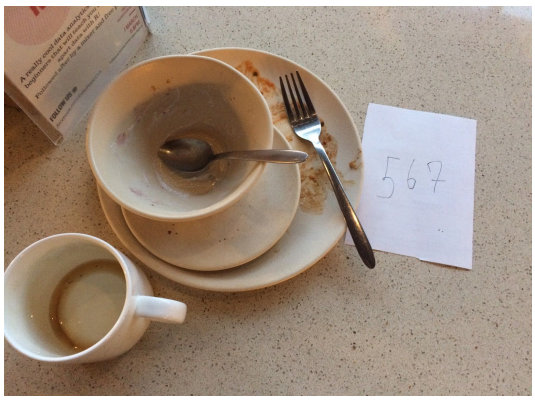
Along with surveying dining hall guests, we also organized a focus group with a sustainability-minded dormitory floor. We scheduled this to take place on Monday of winter quarter's week 8. With the goal of gaining a closer, more detailed outlook regarding the issue of food waste, our team asked a series of questions regarding food waste and effective messaging. Not only were we able to hear from more perspectives on our research, but we were also able to hear directly from students about possible solutions to mitigate food waste on the consumer-end of dining. A copy of all questions asked along with the results we gathered from this focus group are available in the Appendices section of this paper.

Action shot taken during the focus group with the sustainability-minded floor.

A secondary project we wanted to undertake was simulating a visual aid illustrating the amount of food students waste in a dining hall during a meal period. One of the obstacles with this idea was improving the level of accuracy of the data that is presented if real food is not used. Another obstacle was that simulations using real food could lead to issues with sanitation. Over the course of winter quarter, we solved this by deciding to attempt making a film in collaboration with the Residential Life Media Team. The main purpose of the film was to communicate and provide outreach for consumer-side food waste in residential restaurants. We met with Sara Miller, Media Team Supervisor & Social Media Coordinator at UCLA Residential Life, to brainstorm ideas for the film at the end of winter quarter.

We then delved into analyzing the pictures of food waste gathered during the survey process and pairing them with the survey results. Our discourse involved pairing the team up into three groups of two and then dividing up the meals between each coupling. The purpose of this was to ensure that food waste was analyzed in the most standard method possible and to prevent potential discrepancies. Determining how to analyze and quantify food waste was a bit of an obstacle and took advisement from both Charles and Emma. The team eventually came up with the conclusion to use a scale from 0 to 3. A 0 represented no food waste whatsoever and a 3 represented an egregious amount of food waste containing multiple untouched and uneaten pieces of food. Between them, a 1 was a normal or acceptable amount of food waste and a 2 was more than normal but less than overly excessive.

Food Scoring:



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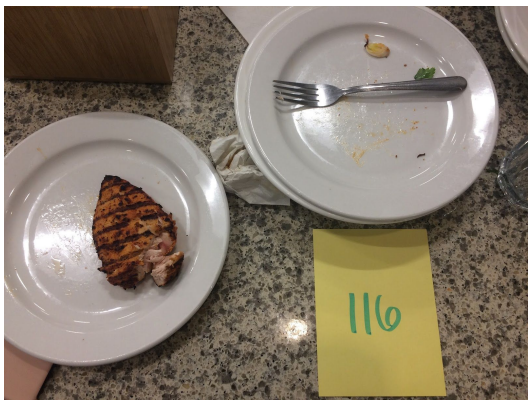

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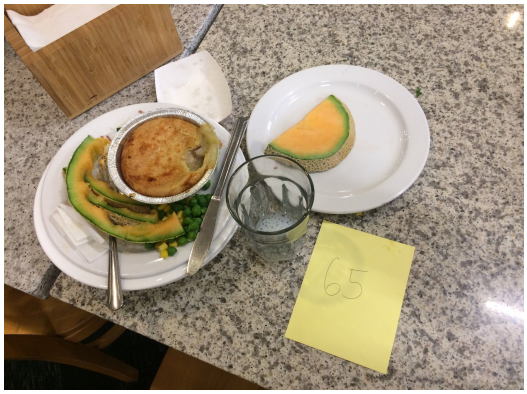

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Spring Quarter

After finishing the data collection, our focus for spring quarter was mostly centered on education and outreach. We were asked to participate in the event Food For Thought, which was put on by the sustainability-minded floor we had previously held a focus group with. Using the data we had collected mostly through the focus group and supplemented by the surveys, we came up with example signage to display at this event and the Earth Day Fair held on campus each year. The example signage was created with three main targeted categories: statistical, visual, and humorous. Students provided us with excellent feedback on signage which we then passed on to Emma and Charles for future drafts to implement in the dining halls. In addition to the example signage, we also held a raffle at the Earth Day Fair for free dish sets. The only condition to be entered into the raffle was attempting to eat an apple while wasting the least amount of food.

Team members Destiny and Sabrina tabling during Earth Day Fair.

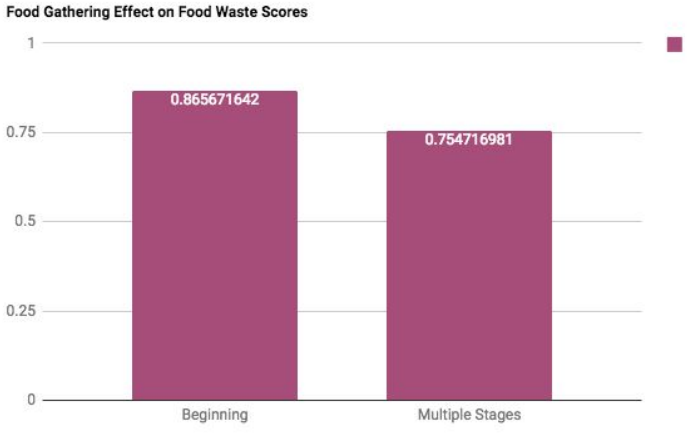
After weeks of deliberation and back-and-forth emailing on what our team wanted the food waste prevention video to look like, Sara Miller provided us a rough draft of what our film would look like. They spent a day filming in Bruin Plate's sitting area and kitchen, as well as the aforementioned loading dock where trash, compost, and recycling are separated for pick up and disposal. Several more weeks of back and forth deliberating provided the team with an excellent final draft of the video, which will soon be up online as well as shown near the dish drops and/or

exits of residential restaurants.

In order to drum up support and awareness for the research and work our team had been doing, several team members presented to the residential restaurant managers. Many were extremely excited and wanted to aid the project in any way possible. Some even had suggestions for research that future SAR teams could work on, such as implementing food waste prevention education into UCLA new student orientations. It was at this point where we finalized two important aspects of our project. First, we performed official statistical analyses on our survey data. Second, we finally transitioned from our general name of Food Waste team to a more clear and professional name for our project: Assessment of Food Waste Behaviors in UCLA Residential Restaurants. All of this was done in time to advertise our research at the Undergraduate Research Forum and the Second Annual Green Gala.

Results and Discussion

Upon aggregating our survey data, we created pivot charts that sorted all of the possible demographics with the average food waste scores. After running a 2 sample T-Test, we concluded that B-Plate diners were wasting significantly less food than those at De Neve. Across both dining locations, we identified three demographics as having the same waste trends. These trends indicated that students with **food allergies** were



less likely to waste food than those without them, followed by students with **dietary preferences** (vegan, gluten free etc.) were *less* likely to waste food than students with no dietary preferences and **students who obtained their food in stages** were *less* likely to waste food than those who got all of their plates at the beginning of the meal. In addition to this, we also found that diners who **believed more food on campus is wasted during food production** as opposed to consumption were also *less* likely to waste food. This last trend contradicts our initial hypothesis that diners who think more food waste is caused by consumption habits are less likely to waste food themselves. We intend for these trends to be used in education and outreach initiatives on campus.

The results of the focus group and tabling events that we performed indicated that students were constantly bombarded with email and facts and offered alternative routes to explore communication food waste ideas. The focus group suggested that we might put our results or well-known statistics in places on campus that students frequently look at. Some places suggested were on the online dining menus, dining hall table tents and in bathrooms.

By tabling at events throughout the past two quarters, we were able to test different forms of signage. We compared visual appeal, facts and humor as approaches for communicating with students. Overwhelmingly, the students preferred the humourous approach as most of the signage we created using this method was representative of the popularity of memes across campus. We

found humor to be a form of communication that both attracted students attention and showed that UCLA Dining cares about food waste and communicating these ideas in a manner students are interested in. The memes we created utilized light humor, so as to poke fun at how wasting food is not cool instead of blaming students. We gained valuable feedback from students at these events, which helped us fine-tune the final versions of the food waste education signage that will be implemented in UCLA dining halls Fall 2017.

Example Signage

Statistic:

Visual:

Humorous:

Challenges and Difficulties

Looking back on the last two quarters, we started the year off with four objectives: figure out demographics of dining hall consumers, meet with focus groups to see which signage and methods worked best to communicate with students, create signage and visuals to communicate, and create a short film showing what actually happens to food waste beyond the tray drop. Fortunately, we were able to complete all four of these objectives! Our timeline for project completion, however, was drastically different from what we originally planned. We started surveying dining halls around week 7 and didn't finish until week 10. We finished analyzing our survey results during finals week of winter quarter and didn't start brainstorming about signage until spring quarter, around week 2 or 3. We did manage to hold our focus group week 8 of winter quarter as planned but we wanted to hold more focus groups in spring quarter and didn't have the time to make it happen.

One of our earliest problems we faced was during surveying. The incentive we came up with so people would take our survey was to offer clearing students' plates once they were done eating, that way we could also take a photo of the food waste of the individual matched to a survey number for data collection. During our very first session, we didn't anticipate that so many students would be weirded out by having their dishes bussed so in the middle of our surveying session, we needed to make adjustments with our approach and wording. In the end, each of us came up with our own way of making sure students understood that leaving their plates for us to clear was an important part of the survey process, without giving away any information that would bias our results.

We really weren't met with a lot of roadblocks these past two quarters. Our stakeholders were very supportive of our research project and really wanted to see us succeed. What we are currently working on is finishing up our short film that shows what happens to people's food waste beyond the tray drop. We are currently in the editing portion of this video and we are about two edits in but there are still a couple of changes we are waiting to see before we publish it and share on our social media pages as well as UCLA Dining and Housing's social media pages. Some of our team also attended a dining managers meeting spring quarter and the senior director of dining was very excited about one of our humorous signage ideas. The director wanted us to create a presentation of memes that can be displayed in dining halls on rotation but before that can be piloted, there still needs to be meetings so that the marketing can be rolled out smoothly.

Conclusion

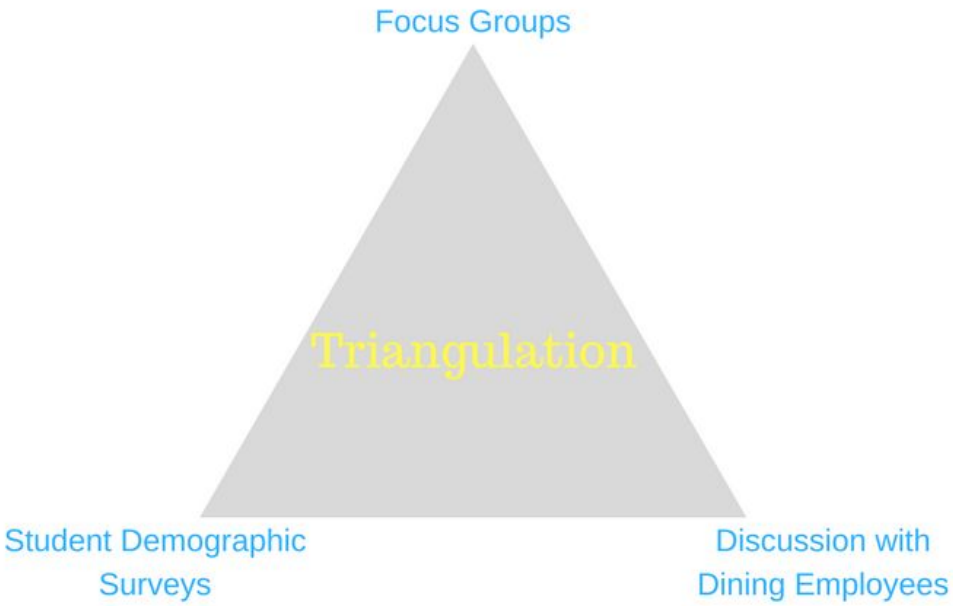
UCLA has a strong commitment to sustainability as seen in its nine areas of sustainable practices: clean energy, climate protection, green building, transportation, sustainable water systems, environmentally preferable purchasing, sustainable food service, sustainable operations and waste reduction and recycling. The latter pertains to our research as we are helping the University reach its 'Zero Waste by 2020' goal. This institution has expanded its recycling program to include composting and now composts 60 tons of food waste per month at the dining halls (Mok & Hewitt, 2012). But sending food waste to compost facilities is not enough. As Michelle La, program coordinator for the Waste Reduction and Recycling Program at UC Davis, said, "We're at a point where we're stuck around a certain level. There's only so much you can do

to increase recycling. We have to take that extra step to reach that zero-waste goal." (Mok & Hewitt, 2012). The zero-waste goal relies heavily on “reduce, reuse, recycle” and we as the food waste team are trying to tackle the first part of this slogan. Our project was focused on finding innovative ways to reduce food waste in the dining halls by observing behavioral trends among UCLA Residential Restaurants’ diners. With this information, we can better assist dining hall managers on how to successfully approach students and incentivize them to reduce their waste. The signage we created really resonated with dining hall managers and students and will be placed in the dining halls beginning Fall 2017. Our short film will also be placed in the dining halls in order to get students thinking about what happens to their food waste beyond the tray drop. This will in turn help with the ‘reduce’ portion of UCLA’s ‘Zero Waste by 2020’ goal.

For future projects, we would highly suggest SAR food waste teams continue focusing on changing student behavior and understanding of food waste. We believe that educating students on food waste issues should be introduced as students are coming in to UCLA, that way they can be more aware of the amount of food they consume and dispose. This project would require the future team to coordinate with New Student and Transitions Program to set up educational materials during new student orientation. We also believe that composting should be more accessible to students and staff to ensure proper waste disposal. For example, compost bins should be introduced to floor lounges, offices, and university apartments to make it as easy as possible for students and staff to compost. Many people are willing to participate in composting but many are not willing to do so if it is not as easy as possible. Introducing bins into these spaces would incentivize individuals to dispose of their waste properly.

The culmination of our project has been very satisfying given the amount of progress,

support and positive reception we have received from both dining staff and students. Students were very helpful and engaged in the focus groups we conducted and the amount of students that were willing to complete our surveys was astonishing. Our presentation to the dining hall managers about our project and the memes we created were very well received. In fact, one of the dining hall managers wanted to participate in expanding our meme repertoire! We are very satisfied and thankful for all the accomplishments made through our project.



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Appendices

Dining Hall Survey:

UCLA Dining Survey:

1. **Which meal plan do you have?**

   19P 19R 14P 14R 11R

   Non-Resident Plan None

2. **What year in school are you?**

   1st 2nd 3rd 4th 5th Graduate N/A

   Transfer: Yes No

3. **Which dining location do you visit most frequently?**

   B-Plate De Neve Covel Feast

   Café 1919 B-Café Rendezvous Hedrick Study

4. **Do you have any food allergies? If so, what?**

   No

   Yes_____

5. **Do you have any dietary preferences/restrictions?**
   (e.g. gluten free, vegetarian)

   No

   Yes _____

6. **Did you know you can customize your meals?**
   (e.g. no beans, no rice, etc.)

   Yes No

7. **Do you tend to get all of your food at the beginning of your meal or in multiple stages?**

   Beginning Multiple stages

8. **Do you think that more food is wasted in dining locations during meal preparation or during consumption?**

   Meal Prep Consumption

Focus Group Questions:

1. What type of food do you think students waste the most of? Why?
    a. Keep this open-ended; see what they have to say without probing or prompting them. (Focus initially on their views of other students - no blame, shame, or guilt-tripping)

        - **Probe:** What items do you observe students' leaving on their plates? How about you: what items do you find hard to finish?

2. When it comes to food waste, getting the message out makes a difference. What kinds of messages typically catch your attention? What about for your friends on campus: what messages catch their attention?

    Prompts

    - Humor - a funny story about students wasting food
    - Facts - statistics about how much food is wasted each day, week, year.
    - Positive - what students are doing themselves about curtailing food waste
    - Negative - guilt or shame-inducing messages

3. What media work best for you? What about for your friends on campus?

    Prompts:

    - Email - for you; for your friends?
    - Social media - for you; for your friends?

- Signage
    - Table tents - for you; for your friends?
    - Digital displays - for you; for your friends?
    - Stanchion signs - for you; for your friends?

- Word of mouth- for you; for your friends?
    - What signage do you pay the most/least attention to?

4. Do long waits in line affect how much food you take?
    - 4a. What about a line for a certain item, say an omelette, what happens when you get tired of waiting? Probe: Will you just give up and get something else? And do you eat that substitute item, or toss it?

5. Concluding questions
    - How would you tackle food waste on campus?
    - What's the best way to educate students about food waste?

Focus Group Analysis:

The purpose of holding focus groups was to find the most effective means of providing informational signage and messaging on campus. Our entire project has been geared towards the end goal of reducing food waste through changing student behavior, and a major part of that involves student outreach. Being students ourselves we acknowledge that not all outreach

campaigns reach the target audience in the most effective or meaningful ways. In order to ensure that our messaging is received in most effective ways possible, we set out to find answers to the following four main questions:

1.What type of food do you think students waste the most of? Why?

There were two most common and agreed upon answers to this question. The first was bananas or other fruits that can be taken out of the residential restaurants. Focus group participants stated that while Dining Services may not directly see this, many students will take fruit out and let it go to waste in their dorm rooms. The second common answer was that students waste the last plate of food that they grab. They fill up but grab too much food and are unable to finish.

2.When it comes to food waste, getting the message out makes a difference. What kinds of messages typically catch your attention?

Focus group participants noted that the most effective types of messaging were either humorous, emotional, or shocking. In terms of visuals, participants agreed that bright coloring draws in attention the most. The most interesting suggestion during the discussion of this question was the conclusion that signage works best when there is proper and effective placement. Participants specifically cited the examples of the well-placed stickers on paper towel dispenser since users do not have a choice in looking at the sticker or not.

3. What media works best for you?

The focus group expressed that they felt social media is not the best medium to educate

students. According to focus group participants, when students use social media they are in a mindless state and do not fully absorb the content they are looking at. Furthermore, students are less open to outreach campaign through emails since they frequently are already bombarded with large quantities of emails. Participants did say they appreciated table tents and signage in areas that are frequently trafficked. One creative idea for this was actually placing food waste informational signage in bathroom stalls since everybody utilizes bathrooms. It was unanimously agreed that the best form of messaging would through word-of-mouth in person interactions.

4. Do long waits in line affect how much food you take?

Several focus group participants said that long waits do affect how much food they take. Students are more inclined to get food from stations with shorter lines, especially during meals when they are in a rush. Sometimes, this results in students getting foods that they are less inclined to enjoy and results in greater amounts of food wasted.

An overall trend that we noticed from the given answers was that many students had the common misconception that food waste occurs mostly on the production end. This we found quite interesting because it contrasts with the data we found in the more comprehensive survey.

Dining Hall Data Tables

B-Plate Data		
Food Gathering	Average of Waste Score	Count

Beginning	0.865671642	134
Multiple Stages	0.754716981	106
Grand Total	**0.816666667**	**240**

Allergies (Y/N)	Average of Waste Score	Count
No	0.828703704	216
Yes	0.708333333	24
Grand Total	**0.816666667**	**240**

Dietary Preferences (Y/N)	Average of Waste Score	Count
No	0.879120879	182
Yes	0.620689655	58
Grand Total	**0.816666667**	**240**

De Neve Data		
Food Gathering	Average of Waste Score	Count
Beginning	1.025641026	78
Both	1.333333333	3
Multiple Stages	1.019607843	102

Grand Total	**1.027322404**	**183**
Allergies (Y/N)	Average of Waste Score	Count
No	1.034883721	172
Yes	0.909090909	11
Grand Total	**1.027322404**	**183**
Dietary Preferences (Y/N)	Average of Waste Score	Count
No	1.081632653	147
Yes	0.805555556	36
Grand Total	**1.027322404**	**183**