



Sustainable Food Systems Final Report Spring 2014

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Executive Summary

The 2014 Sustainable Food Systems Team demonstrated what action research is throughout the course of two quarters, winter and spring. Part of this year's Action Research Teams' umbrella, the Sustainable Food Systems Team embarked on a two-quarter endeavor to pick up where Waste Watchers left off and investigate what food waste is, how much of it is there, and what can we do about it, simply put. The collective efforts of six zealous and unique individuals shed some light on a grave and almost dormant crisis. What has been an ongoing costly issue for the University, with minimal recognition, has created an opportunity for us to expand on and truly motivate others to see the bigger picture.

The opportunity at hand has been challenging from early onset. Our team's main concern was post-consumer food waste: measuring it and creating awareness. After weeks of extensive collaborative teamwork, we were given the greenlight to begin measuring waste at two distinct dining halls: Covell, a traditional American cuisine buffet and Feast at Rieber, a pan-Asian portion-controlled style buffet. The waste audits conducted at each of these halls spanned the course of two weeks, in the winter quarter, with alternating meal periods between lunch and dinner. Given the amount of time we were allotted, the data gave us enough information to drive our efforts into the spring quarter with educational initiatives. Earth Day was the day to begin. We planted our seeds in every individual that came to inquire about our research. On average, each student discards three ounces of solid food waste and around three liquid ounces. That amount equates to a comparable three slices of bread, per person. Now, what stood out to most students was the information we utilized to demonstrate the interconnectedness of food. In other words, how much water, energy, time, all the precious resources to produce those three slices of bread that are discarded daily. Our educational tactics aligned themselves with shame, persuasion, and most importantly, opportunity. We were out to change students eating behaviors so that they understood what's at stake--our environment. Our final waste audit, challenged students to make conscious choices when selecting foods that will eliminate as much waste as possible for the designated period. The results were gratifying.

If knowledge is the driving force needed for change to take effect, than we highly recommend future teams continue our path in educating students about the power they neglect to rely upon. The crisis at hand of food waste is not yet resolved; however, this year, we have made significant strides by captivating students into operating more cognizantly about what is on their plate, and more importantly, what is left behind.

Background and Significance

This year's Sustainable Food Systems Team, in conjunction with Aliana Lungo-Shapiro (Stakeholder), decided to revamp one of ART's successful predecessors: Waste Watchers. Alaina's objective, for dining facilities on the residential hill, is to reduce the 3,500 pounds of daily waste students produce Waste Watchers measured in 2009. As the Sustainability Manager of Housing and Hospitality, she is concerned about issues that could jeopardize the students' dining experience as the costs of food are invisible to their eye. Housing and Hospitality, too, seeks to actively participate in UCLA's Grand Challenge of reaching 20% sustainability by 2020. Her efforts are exemplary of hospitality and sustainability engaging in a productive conversion at a dinner table.

In 2009, Waste Watchers conducted waste audits at (then) the busiest dining hall--De Neve--on a weekly basis for one whole quarter. In addition, they measured both solid and liquid waste that dining guests had discarded only during the dinner service. What the team had achieved has been influential as students are becoming more adept to food waste and collectively interested in their environment. Waste Watchers set standards for future teams to adhere to and transcend for a zero-waste University in the years to come.

Our team thought it would be interesting to measure the effects of Waste Watchers five years later in 2014. What inspired our team was the brand new sustainable food-themed dining hall that controlled portions and sourced food items locally with an organic emphasis when feasible: Bruin Plate. However, our goals were redirected to a similar portion-controlled dining hall: Feast. The data collected from a dining hall, such as Feast, allowed us to determine the effects of portion-control, sustainably sourced food and cuisine. The differences are minimal between the two halls in regards to waste. In addition, our team relished the idea of comparing two different types of dining halls for a more qualitative and quantitative outcome: Covell and Feast. The previous, serving traditional American buffet style foods and the latter serving controlled portions from with authentic a pan-Asian fusion cuisine.

What sets our team apart from 2009's is the fact that we are measuring the effects of their contributions, and, most importantly, the cross-comparison between two dining halls that significantly differ from one another. Part of success is building off previous work to measure the effects of their efforts and incorporate up-to-date techniques, ideas, and data. Furthermore, this year, we made it a point to keep in mind the bigger picture. We maintained a holistic approach that connected our team's efforts to other Action Research Teams' so that students understood what is the value of food waste. It was crucial for us to maintain our connection to the current state's water crisis and global hunger to help aid our voices. The contributions we have made, thanks to Waste Watchers and Aliana, have already reconfigured many students' perceptions into thinking more globally and consciously

Objectives/Project Goals

Our objective as the Sustainable Foods Team of 2014 was to work towards the campus-wide goal of zero waste by 2020 by analyzing different methods of reducing food waste in the on-campus dining establishments. A main focus of ours was to conduct waste audits in dining halls and compare it to the Waste Watchers' audits of 2009. Specifically, we planned to measure waste in Bruin Plate and Covell, one dining hall with smaller portions and higher quality, locally sourced, sustainable food and the other a more typical dining hall with larger portions. We wanted to see if Waste Watchers had an effect on the amount of food wasted and also if food waste differed depending on the quality of the food and controlled portions. In addition, we sought to implement our own food waste campaign on campus to lessen the overall waste. Our campaign was directed towards educating students so that they could change their personal eating habits. Another intention of ours was to recommend changes to the dining hall meals based on student preferences and the types of waste we observed. We were motivated by the Waste Watchers team in 2009, as we were curious if any major changes have occurred in the past years. The new dining hall, Bruin Plate, also inspired us to take on this project as it sparked our curiosity to see whether higher quality food and smaller portions had an effect on food waste. To measure the waste, we planned to separate solid and liquid waste and weigh it at time intervals. We also planned to take pictures of random plates and record the most commonly wasted foods.

Our project was also inspired by UCLA's goal to reach 20% sustainability by 2020 and we hope that our team contributes to this campus wide effort.

The other major aspect of our project was the education and outreach portion. We wanted to spread our research results around campus and make a visible impact on the amount of food waste. We planned to measure this impact by conducting another waste audit at the end of our educational events. Our target was a wide audience and not only those students that were already environmentally conscious, though they may be the most likely to effect change immediately. Overall, we designed a plan to compare the food waste of two very different dining halls and assess the disparities between the two. Our objectives included educating students, making a difference in the amount of waste produced and improving the overall sustainability of the UCLA campus.

Research Methodology

Research Process

Our main goals in conducting food waste audits were to establish a deeper understanding of the effects of portion size and authentic food flavors in order to draw conclusions about potential food waste disparities between Covell Commons, a typical dining hall, and Feast at Rieber, a Pan-Asian themed dining hall. We used our resulting data in the second quarter of our project to encourage students to eat with a sustainable mindset and raise awareness about the consequences of consumption habits. In order to execute our plan most efficiently during the fall quarter, we split our team into two subgroups: one responsible for conducting audits during the lunch period (11 a.m.- 2 p.m.), and one during the dinner period (5-9 p.m. at Covell, 5-8 p.m. at Feast). The lunch team was comprised of member Katie Pastor and both team leaders Maddy Routon and Joseph Martinus Sanchez while the dinner team included members Hannah Doan, Gabrielle Ruxin, and Alice Wong. Team assignments were based entirely on individual availability. Each team had the chance to work in both dining halls in order to provide the opportunity for all team members to compare environments.

Initially, our team intended to conduct our waste audits at Covell Commons (the ideal example of a "typical" dining hall) and Bruin Plate at Sproul (the most recent and health-focused installment). With the help of our stakeholder, UCLA housing sustainability manager Aliana Lungo-Shapiro, we were able to tour the dining halls and arrange for a scale to be provided in the kitchen during audits at the beginning of winter quarter. Adapting the protocol of the 2009 UCLA Waste Watchers project to fit our conditions, we were able to develop a detailed process for sorting and measuring food waste. Soon after arranging the methodology of the project, we were informed that the locale of our "alternative" dining hall would have to change due to ongoing research already occurring in Bruin Plate. Our team decided Feast at Rieber would be the ideal substitute, with a somewhat similar initiative and small portion sizes. With these changes solidified, our teams scheduled dates for audits and moved ahead with our research.

The data considered included solid edible waste that were collected, converted into pounds, and recorded every 30 minutes. As for the liquid waste (beverages, ice, soups, ice cream), the dinner team weighed the mass each time the container was full, recording the converted total weight at the end of each shift. In addition, the dining hall manager also provided the team with the number of patrons present during that particular meal period for statistical purposes.

The various tasks were divided so that one person recorded the data, documented the audit via photography, and did minimal dish sorting while the other two-team members acted as the main waste sorters. Sorting dishes entailed removing dishes from the rotating rack, separating inedible waste (bones, fruit peels, napkins, paper fry boats, etc.) from edible waste into respective bins and then sorting the dishes. Our teams embarked upon the project with the intention of recording the weight every 15 minutes, however, due to technical difficulties involving the scale's absence during the lunch team's first audit, we decided that recording our data every 30 minutes would yield more informative, consistent data.

Dinner Team Experience

The dinner team first took on the waste audit challenge at Covell on February 20th. Dinner in Covell was scheduled from 5 p.m. to 9 p.m., but our team stayed through the facility's grace period until 9:30 p.m. We established designated bins for edible food waste, inedible waste, liquid waste, and a small container for apple cores. The dining hall manager provided us with aprons, gloves, and shoe-covers. During our shift, the recorder and photographer was Alice and the main sorters were Hannah and Gabrielle.

One thing that we discovered was that the night tends to start out slow, however, the pace picked up about an hour into the meal period. That night, pork chops served with macaroni and cheese seemed to be the most popular dish yet oddly was the dish with the most scraps of wasted food. We found ourselves scraping macaroni off the plates too often and most of the pork chops had leftover morsels of meat on the bones. Meat leftover was pulled off the bones and the bones were not weighted. Another popular entree of the night was pasta with walnuts in pesto sauce, and we noticed that the walnuts were often left behind in the bowl uneaten. In addition to our main research goals, our team was interested in presenting a side project regarding the proper way to eat an apple (further described in the initiatives of spring quarter). Thus, we collected all of the apple cores that students discarded. Over four hours of constant work, our team collected a total of 280.89 pounds of solid edible waste and 11.25 gallons of liquid waste. The total patron count for that night was 1,169.

The second dinner audit was done at Feast on February 27th. Our team continued the same procedures at Feast with each member having the same tasks because we found that the way we structured ourselves in Covell was efficient and successful. We concluded the night with 126.88 pounds of solid edible waste and 12.39 gallons of liquid waste. The total patron count for that evening was 703.

Lunch Team Experience

Our lunch team first took on the waste audit challenge at Feast on February 24. Feast serves two different Asian cuisines during each meal period and for this particular audit the food consisted of Chinese and Japanese cuisines. Following the dinner team in their audit methodology, the lunch team constructed a similar setup in the Feast dish room, allotting one bin for solid food waste and one for liquid waste. All inedible waste was disposed of through the kitchen's integrated composting system.

Initially, the team attempted an assembly line setup, in which Katie and Joseph worked together to collect, sort and empty all of the plates coming through the dish line into their respective containers. Maddy formally documented results with a camera and a time chart. As a policy, we attempted to separate all the solids from the liquids, including noodles from broths in the bowls, as well as any remaining vegetables or eggs. However, some dishes proved difficult to

sort so rapidly, resulting in a slew of liquids and some remaining morsels in the liquid waste receptacle. From 11 a.m. to 2 p.m., one member paused their duties every 15 minutes to record the weight of the liquid and solid waste. Approximately halfway through our audit, the scale broke, forcing us to skip a weighing period while we were busy both collecting all dishes during a busy hour and finding a measurement alternative. Luckily, Feast provided us with a slightly smaller scale with which we were able to weigh the food for the remainder of the audit. For the problematic interval, we simply collected all the waste for 30 minutes, leaving us with an estimate for the amount of waste collected during the first 15. In order to standardize our data, though, we combined the data into 30-minute intervals for consistent, accurate results.

From the beginning, it was clear—as some of our fellow Feast workers initially attested—that the majority of waste would be liquid: soup and broth comprising most waste, followed closely by rice. What was distinct about this was that these ingredients were generally secondary components to dishes. At Feast, broths are typically an accompaniment to noodles, and rice is often served under a cut of meat, acting more as a side. Feast employees posited that waste from these dishes was usually most common.

Over three hours of work, our team collected a total of 104.5 pounds of solid edible waste and 10.5 gallons of liquid waste (not including beverages). The total patron count for that night was 758.

The second lunch audit, performed at Covell Commons on March 10, was conducted in a similar manner, with all team members in the same roles. We concluded the audit with a total of 93.2 pounds of solid edible waste and 2.64 gallons of liquid waste. The total patron count for this meal period was 527.

Spring Quarter Initiatives

We began this research endeavor with the intention of disseminating our data to the campus and evoking change in UCLA student residents' consumption patterns for the better. We sought to open a dialogue about how portion size and sustainable sourcing affects food waste through the two different facilities. Initially, we had hoped to split into three working sub-teams (survey, campus outreach, and creative) to accomplish these goals through different avenues. While we did stick to our original roles during the planning phase, once we began our work, we realized that the opportunities for outreach that we decided to undertake required the work of the whole team, and our efforts to reach out became more collaborative.

One of our leaders, Maddy, created a survey that was designed to help us understand the meanings with which students imbue the foods they eat (cultural, religious, cost-effective, healthy, etc.), the way these meanings affect their dietary choices as consumers, and the way these choices affect the campus and the world. The survey was sent out to different campus listservs and was available to take at on-campus sustainability events such as the E3 Earth Day Fair and Ecochella. The survey was made to be inclusive of both students living on-campus or off-campus. Surveys asked students about their dining preferences on the Hill, as well as addressed waste and disposal practices in both eating out and cooking at home. The latter part of the survey asked about opinions on waste in general and aimed to garner interest toward the waste measured in our particular data sets. A total of 61 surveys were completed during the events at which we tabled.

Our campus outreaching focused on connecting our research to sustainability groups on campus and drawing attention to the waste issue at hand at events like E3's Earth Day Fair and Ecochella. Tabling at these events consisted of providing students with the opportunities to take

our team's survey and/or play a waste/water trivia game, which was developed by Joseph and Katie, that prompted participants to make estimates about how much water is used to make certain meals, and how much waste is generated on the Hill, using information from online research and our own research. Students who participated in our trivia game or took our survey were eligible to enter into our drawing to win a reusable bag filled with farmers market goods, all of which were funded by ESLP. As a part of our tabling, we also had a tri-fold display, put together by Hannah and Gabrielle, of our winter quarter hands-on audits and data results for students to view our work and understand what our team does. Perhaps the most intriguing element for our audience, however, was led by our team member, Alice, in the "apple challenge"—a challenge to prove that an apple core is nonexistent. Participants had to eat an apple from the bottom-up and ending with just a few seeds and the stem left. Our intention was to demonstrate the little waste that comes from eating an apple, if done properly. Having this engaging activity allowed passersby to take a small piece of knowledge—eating an apple in the most waste-efficient way possible—and pass it on to the greater community. While this was a small activity, it carried the greater weight of our goal in its intent, encouraging less waste on a grand scale in a small, memorable way. Many individuals who took the apple challenge were photographed throughout the process, and Alice created a short stop-motion film as a promotional material for our team. Additionally, Maddy participated as a speaker in a panel on food waste hosted by the on-campus groups Student Food Collective and Food Recovery Network.

No Food Left Behind Challenge & Audit

In 2009, the Waste Watchers Action Research Team held a waste challenge outside De Neve Dining where they informed and encouraged students prior to entering the dining hall about reducing waste during their meals. At the same time, the team measured the food waste during the meal period to observe for any apparent waste reductions. Inspired by this idea, our team set out with the same mindset this year as an addition to one of our outreaching efforts.

Our goal for this No Food Left Behind challenge was to raise student awareness on global and local ramifications of food waste. We believe that any change we hope to see has to first start with the change of behaviors from the source itself, the students.

During week six of spring quarter, our team embarked on our second audit where we incorporated our No Food Left Behind challenge. Our tabling was stationed outside of the dining hall and similar to our set up at the E3 Earth Day Fair, we had our survey for students to take that helped us better assess and understand how people are influenced in their choice of food as well as our apple core challenge. Half of our team was outside the dining hall outreaching and the other half was inside the back kitchen measuring the food waste. As students entered the dining hall for dinner, we asked them to challenge themselves to be cognizant about the food they select for dinner and to aim for a zero waste meal that night and henceforth. Our apple core challenge initiated more dialogue and our survey brought us more results to evaluate.

For that dinner period, we collected a total of 108.4 pounds of edible waste and 7.25 gallons of liquid waste. The total patron count for that night was 1,254, but we only measured food waste the first two hours, when 1,024 students had entered. We noticed that the most frequently wasted food items for that meal period were lemon rice, burger buns and unfinished slices of pizza.

Results

Some significant findings we've found are the types of food groups that student patrons are most likely to throw away in either lunch or dinner shifts, what the dining preferences are and which types of food tend to be consumed completely.

As mentioned above during the 3 hour lunch shift at Feast, 758 patrons came to dine and left 104.5 pounds of solid edible food waste and 10.5 gallons of liquid waste. For the dinner audit, 703 patrons came in and created 126.88 pounds of solid edible waste and 12.39 gallons of liquid waste. Some things that we found out about where that sides such as white rice, soups and noodle soups were being wasted the most. Normally there is a flatbread station, a burger station with fries and then other stations that are a dish featuring whichever asian cultures were the theme for the day. Dishes that had a bed of rice or noodles had the sides discarded more often than a single food item such as a slice of flatbread.

For the lunch shift at Covell Commons, 527 patrons created a total of 93.2 pounds of solid edible waste and 2.64 gallons of liquid waste. The dinner audit had 1,169 patrons. Over four hours of constant work, our team collected a total of 280.89 pounds of solid edible waste and 11.25 gallons of liquid waste. For Covell Commons, we found that bread, pasta, burgers and sides were being wasted the most. Being known for having pizza and pasta, many diners come to carbo-load whether they mean to or not. However, due to breadsticks being readily available at the pasta station and other variety of bread being so ample, many patrons load up on their plates and trays and more often than not, we see large amounts of break nibbles or untouched. Covell is not portion controlled like Feast and so when people have an appetite for hamburgers (which are pretty large), only a couple of mouthfuls are taken or whole untouched due to the patron's other food.

However during the dinner shift at Covell the first time, it was extremely odd to see the amount of bone in pork chops to be wasted in the quantities observed. Normally seen as a nice cut of meat, many people chose to take a few bites or not at all. Along with the bed of rice it came with, we found mildly intact plates of these pork chops. We found that the portion size of the porkchop played a key factor in consumption. When comparing the portion size to observed food habits of Feast, we notice that the size of the pork chop is a larger portion size for meat than for Feast.

Though when looking at a place like Feast where we see portion size is controlled, many patrons chose to take larger quantities of portion controlled food to "equal" a normal amount. One example are the hamburgers; they are three inches in diameters and would be considered bite-sized. People take two to compensate for the portion difference and then rarely finish both plates. Though portion controlled food servings were meant to save on food cost as well as encourage diners to finish their portions, the cost of return has been similar or even more than the typical buffet-style dining hall.

After looking at the 62 survey responses gathered, the majority of people dine most at Bruin Plate, then Feast @ Reiber, then Covell Commons and then De Neve dining hall. For the people that do live on the Hill, the majority tends to eat about 1-3 meals in on-campus dining where as people not living on the Hill vary from 1-15. For the people that do and do not live on the Hill, we see that Healthiness, Convenience and Cost are the three biggest factors when making choices on what food to eat. For both groups, they threw from 1-15 meals out per week of leftover food that they could finish. Also when asked which food items do they tend not to

eat/throw away most, they ranged from answers of “cooked/raw vegetables” to “the type of food doesn't matter, I throw food away when I've served myself more than I can eat.”

In the survey, when asked for reasons why they threw away the food, many put down answers such as “I'm too full; I served myself/was served too much”, “I don't like the way it tastes”, “I don't have enough time to finish my meal”, “It has gone bad in my fridge; I forgot about it”, and etc. There still many responses that are of interest and the general audience seem to be split on the idea of sustainability and personal choices.

For the apple challenge, we've found that the dozens of people that took the challenge reacted very positively to the idea of incorporating the new method into their own diet as well as passing on the knowledge to friends, families and strangers. When their challenge was documented, all participants were asked questions such as “Would you tell your friends”, “What do you think is wasted most in on-campus dining halls”, “what else do you think you can eat more sustainably/economically” and “What could you do to change your food habits so there'd be less edible waste?” All participants were engaged in the challenged and genuinely welcomed the dialogue. This was a positive reaction to how we wanted to approach this challenge because we wanted to engage with students in a realistic and practical setting that made them reevaluate even their smallest food choices.

Every participant who listened to Alice give a tutorial on the the “correct” way to eat an apple finished the challenge with nothing but seeds and the stem. Many didn't quite believe that an apple core could disappear if eaten correctly and so after the challenge, many of them were very vocal on passing along this neat new trick as well as immersing it into their daily routine. This is a significant amount considering that an apple core is 30 percent of our apples and at \$1.30 per pound, that's about \$42 wasted per person per year—which is \$13.2 billion annually. That's just one food item; if people started to see the lifecycle of foods, a lot of student's tuition would stop going in the trash, literally.

Discussion

The results from our first set of waste audits indicate that white carbohydrates and side dishes are the most wasted foods. At Covell, the side dishes and rice that came with the meat and other entrees were often discarded, while at Feast, the white rice and soup was wasted. The types of food wasted indicate that students often don't want the side dishes, but take them simply because they accompany the entrees. Our survey results also indicate that most students waste because it doesn't taste good or they are served/serve themselves too much food. While students did waste less at Feast, where the portions are smaller, there was not a huge difference. Overall, taste seems to be the main reason why food is wasted and the simple white carbohydrates do not have much flavor. The numbers from our audits also demonstrate that eating habits have not changed since the Waste Watchers did their research in 2009. The amount of food wasted is still about three slices of bread every day.

The major problems we faced during our waste audits included the scale breaking and trying to take pictures and record our findings, while also measuring the waste. The broken scale forced us to change our data collection from every 15 minutes to every 30 minutes as we had to obtain a new scale during the waste audit. To complete all the tasks at once, we learned that having one person record and take pictures the whole time was much easier than switching roles throughout. Also, as we prepared to undertake research in week four, we found out that our original plan to conduct comparative waste audits at Bruin Plate, the new health- and

sustainability-themed dining hall partially established by the SFS '13 team, and Covell had to be altered. The new dining hall had too many other projects occurring at the time, and management was not interested in adding another. Thus, we decided to adapt our research to Feast, a themed dining hall featuring authentic Asian cuisine. As a specialty dining hall, Feast makes for an interesting comparison to Covell. It also features smaller portion sizes, one of the aspects we wanted to explore at Bruin Plate. Although we had been looking forward to continuing the work of prior teams, Feast was an easy switch and the staff seemed excited and very willing to be a part of our research.

The response to our research and surveys was positive, especially at the Earth Day Fair and Ecochella concert. People were very interested and agreed that waste should be lessened and food should not be taken for granted. Most of our survey audience were attendees at these green events, so it is difficult to gauge how their responses differ from the average student. When we tried to have a zero waste dinner challenge, it was difficult to engage students in the challenge and stop them for a minute on their way to dinner. This challenge also occurred around the time of midterms and student government elections so we felt that many people did not want to be bothered with more campaigning. However, the results from this “No Food Left Behind Challenge” indicate that the amount of food wasted per person did drop from our winter quarter audits. The apple challenge proved to be successful and got many people involved at all three educational events. The main obstacle during spring quarter was the issue of how to make students concerned enough about waste to make a difference in their eating habits. It is very difficult to change people’s eating habits, especially in the dining halls. The dining hall culture encompasses serving oneself a large amount of food since there is an abundance of food at one’s fingertips. To improve our methodology, we could have conducted more waste audits to obtain more comprehensive data. Along with this, we should have done more education and outreach because even with our small number of audits, the waste numbers were shocking. It was difficult to plan and fit all our research and outreach in two quarters, especially when many projects require loopholes to get through.

Recommendations

Our research indicated many trends in the consumer culture of UCLA students, and provided insights that we hope will be more fully explored by future teams. We also hope that our data collection will be useful for Aliana and the facilities management on the hill to make positive changes that will reduce post-consumer food waste in the dining halls. Our research methodology, as explained above, was two-fold: waste audits and education initiatives. Each project revealed specific information for how to reduce waste, and as such the recommendations will be broken into these two sub-headings.

Winter: Waste Audits

During our waste audits, we noticed several repeated trends. Firstly, the most wasted food items were salt-, sugar-, and fat-laden products, as well as base items such as rice, pasta, and bread. This indicates that students are making healthier choices in preferring to avoid heavy starches, sugars, and fats. Often these dishes are plated with other items that the students want to eat, and so students simply eat the more healthy side dish and leave the remaining items to waste. The same can be said about base items; we have seen students select a plate of fish on pasta, eat

the fish, and leave an entire plate of perfectly good pasta just because it is too heavy or perhaps unhealthy. We believe that the dining halls could easily remedy this problem in a few ways.

Firstly, allowing students to serve themselves grain items that serve as a base for the primary ingredient would cut down on the waste of these starches. Many students would serve a much smaller portion of pasta, if any, to accompany their fish. If this is not feasible with such a high volume of diners, perhaps the halls could decrease portion size, and/or advertise to students their right to ask for a change in plating of their food (e.g. asking for less pasta). Many students are unaware that they are able to change the plating of their foods, and we believe that this simple alteration would be an easy first step to reduce post-consumer food waste. Signage on tables or near the serving stations would be an option.

Another options dining halls have is serving smaller portions in general. As indicated below, many students prefer to eat at Bruin Plate, which specializes in healthy and wholesome food in small portions. This gives the students a wider variety of choice and allows them to truly enjoy the buffet-style experience without taking too much. Smaller portion sizes would avert the common “eyes bigger than stomach” problem, and we believe it would cut down on post-consumer food waste considerably.

Similarly, we noticed that students who used trays were more likely to take more than they could eat, and therefore to waste more. Although it is unlikely that we will do away with trays entirely, we recommend making trays less accessible to decrease their use. Perhaps keep them behind or below the counter and provide them only to those who ask for them.

We would also recommend that a new team is created to focus specifically on waste audits, allowing the Sustainable Food Systems team to explore other avenues of sustainable foods while a Waste Watchers team can build an institutional memory and track changes throughout time. They could eventually expand from the dining halls and into restaurants both on and off the Hill, and come up with unique and new methodologies and projects to track food waste, specifically.

Future teams, whether they be Sustainable Food Systems or Waste Watchers, have a lot of material to work with and plenty to be done. We would hope that a future team would try out even more No Food Left Behind Challenges, which was very successful for us but unfortunately was only performed once due to time constraints. Perhaps a future team could experiment more with the impacts of guerilla education tactics on the food waste generated in a specific meal period.

Future teams could also expand their research off of the hill, and incorporate other aspects of the dining experience into their research. For example, working with Feast @ Rieber staff to find authentic ingredients used in Asian cuisine that are grown locally, both supporting community agriculture and cutting down on food miles and emissions while maintaining the cultural authenticity Feast is known for.

Spring: Surveys + Education Initiatives

Survey data generated many responses that provided a baseline for student sentiments regarding both the dining experience on- and off-campus and opinions about food waste. These survey answers showed us that there is lots of room to grow our research, and that students are excited about and interested in the sustainable food movement.

A majority of students surveyed indicated that they eat at Bruin Plate, a sustainability- and health-themed dining hall that serves light foods in small portions. Their second choice was Feast @ Rieber, also known for light portions and an availability of wholesome foods. This is an

important metric, because a considerable number of these students eats a majority of their meals on the hill. This supports our prior recommendation that dining halls serve smaller portions with lighter food options.

Furthermore, students indicated that the foods they wasted the most were not determined by a certain category of ingredient (e.g. fruits, vegetables, processed snacks, etc.), but rather they wasted foods most when they did not taste good or when they were served more than they could eat. This indicates, again, the imperative that students should either be allowed to serve themselves or to be served small portions, limiting the amount of food wasted.

Paying attention to student taste profiles in designing a dining hall menu would also be a worthwhile cause, considering “taste” was indicated as one of the most important factors in choosing what to eat and what to waste. Along with taste, convenience, healthiness, and cost were emphasized. This supports our recommendation to serve more healthy food options to meet the demand that students have indicated both through their survey answers and through their actions. Convenience and cost would be more difficult for the dining hall to work with, although future teams may explore these vectors in their research of restaurants and student stores on the UCLA campus.

Future teams could use surveys again for equally-important insights, and could also work more with other on-campus education initiatives. We wished that we could have participated more in fairs and events during Winter quarter rather than focusing solely on Spring festivities; a future team should start early when establishing a market research baseline. It is also suggested that future teams maintain an emphasis on intersectionality and interactive activities, such as our two wildly successful games. Our “Apple Challenge,” which taught students how to eat an apple entirely without leaving a core, drew many people to our table and hopefully saved 30% of a couple apples! Our Waste Water game also had people guess how much water was used in the production of certain foods served in the dining halls we audited, and hopefully shocked students enough to make them more considerate of their waste habits. We strongly recommend that future teams maintain these interactive elements, as they seemed to really get students interested in our initiatives.

Conclusion

We began winter quarter with a lot of ideas and not enough time to put them all into practice. However, at the end of this spring, we feel that we have done some really amazing work and laid the foundation for a legacy of student directives and sustainable food initiatives across campus. We feel that our waste audits, building off of those of the 2009 Waste Watchers team, have provided valuable insights to students and staff on the Hill, and that hopefully some of the recommendations that were influenced by our research will really make a tangible reduction in post-consumer food waste. We believe that future teams will be able to utilize and expand upon our methodology, and hope that we have instigated an institutional memory through ESLP that will continue with future food-waste focused action research teams. The 50% decrease in waste as a result of our No Food Left Behind challenge was the first step of many in measuring the ways in which education can positively impact conscious consumer behavior.

We hope that our specific education initiatives, instituted over the course of Spring quarter, have provided a groundwork for future teams to work off of. The market research compiled through the survey process was successful in that it consolidated student sentiments into a database that can be useful for dining hall staff to implement new policies geared toward

reducing waste, but it is just the tip of the iceberg. We feel that there is a lot of work to be done with surveying more students, and expanding the survey as campus climates shift and food literacy becomes more prevalent on our campus.

Overall, we feel that our work was an incredible and enlightening first step in a long process taking place locally, nationally, and globally. With the growing interest in sustainable food and the upcoming transformations on UCLA's campus with the implementation of a food studies program, we feel that the Sustainable Food Systems team can play a special role in revolutionizing the movement and imbuing it with a solid research base. We hope that future teams, either Sustainable Food Systems or Waste Watchers, will increase campus cohesion and share their data, time, and resources with these administrative changes to the campus foodscape. Moreover, we would love for our work to be carried on to play a part in these inspiring transformations, both on and off campus.

References

Winner, Heidi, Alisa Ahmadian, Debbie Chong, Natalie Gaber, Lotta Chan, Victor Weisberg, and

Eric Vallone. *Waste Watchers Action Research Team Final Report*. Rep. University of California Los Angeles: Education for Sustainable Living Program, 2009.

Graycar, Kyle, Mason Sayer, Isabel Sepkowitz, and Steven Eggert. *Sustainable Food Systems Action Research Team Final Report*. Rep. University of California Los Angeles: Education for Sustainable Living Program, 2013.

Appendices











COVEL LUNCH DATA 03/10

TIME	SOLID WASTE
11:00 AM	--
11:30 AM	--
12:00 PM	30.1
12:30 PM	40.1
1:00 PM	63.2
1:30 PM	77.4
2:00 PM	93.2
SOLID WASTE TOTAL:	93.2 lbs
PATRON COUNT:	527
SOLID WASTE PER NO. OF PATRONS (AVERAGE):	0.176850 lbs
LIQUID WASTE TOTAL:	2.64 gal

COVEL DINNER DATA 02/21

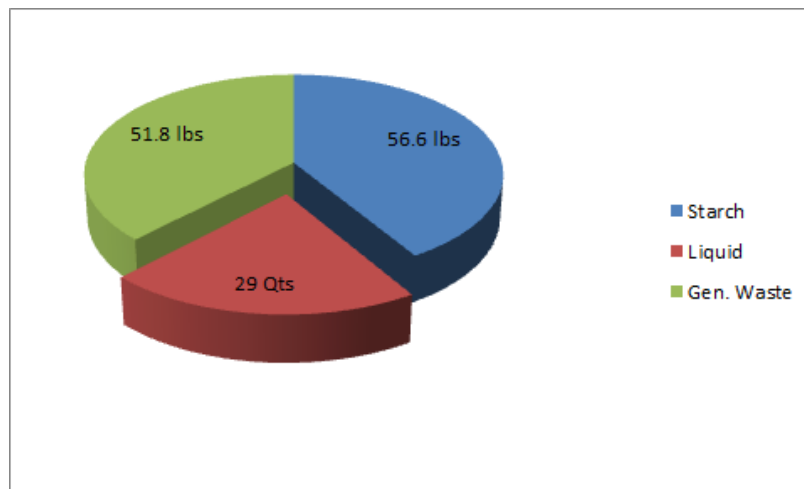
TIME	SOLID WASTE
5:00 PM	--
5:30 PM	2.8 lbs
6:00 PM	32.4 lbs
6:30 PM	64.7 lbs
7:00 PM	99.8 lbs
7:30 PM	143 lbs
8:00 PM	183.9 lbs
8:30 PM	210.4 lbs
9:00 PM	244.6
9:30 PM	280.89
SOLID WASTE TOTAL:	280.89 lbs
PATRON COUNT:	1169
SOLID WASTE PER NO. OF PATRONS (AVERAGE):	0.240282 lbs
LIQUID WASTE TOTAL:	11.25 gal

FEAST LUNCH DATA 02/24	
TIME	SOLID WASTE
11:00 AM	0
11:30 AM	1.3
12:00 PM	16.1
12:30 PM	28.6
1:00 PM	37.9
1:30 PM	
2:00 PM	76.75
2:30 PM	27.75
SOLID WASTE TOTAL:	104.5 lbs
PATRON COUNT:	758
SOLID WASTE PER NO. OF PATRONS (AVERAGE):	0.137862 lbs
LIQUID WASTE TOTAL:	10.5 gal

FEAST DINNER DATA 02/28	
TIME	SOLID WASTE
5:00 PM	0
5:30 PM	1.34
6:00 PM	10.78
6:30 PM	26.53
7:00 PM	48.19
7:30 PM	69.03
8:00 PM	90.13
8:30 PM	115.63 lbs
8:50 PM (end of night)	126.88
SOLID WASTE TOTAL:	126.88 lbs
PATRON COUNT:	703
SOLID WASTE PER NO. OF PATRONS (AVERAGE):	0.180484 lbs
LIQUID WASTE TOTAL:	12.39 gal

No Food Left

Behind



Food Survey

* Required

1. How many meals per week do you eat on the hill/in a dining hall? *

- ☐ None
- ☐ 1-3
- ☐ 3-6
- ☐ 6-9
- ☐ 9-12
- ☐ 12-15
- ☐ 15+

2. If you do eat on the hill, which hall do you dine at most?

- ☐ Bruin Plate
- ☐ Feast @ Rieber
- ☐ De Neve
- ☐ Covell Commons

3. How many meals per week do you eat in an on-campus restaurant? *

- ☐ None
- ☐ 1-3
- ☐ 3-6

- ☐ 6-9
- ☐ 9-12
- ☐ 12-15
- ☐ 15+

4. If you do eat on campus, which restaurant do you dine at most?

Listed by location. For example, if you eat at Panda Express the most, choose Ackerman Terrace Food Court, Level 1.

- ☐ Lu Valle Commons
- ☐ Stage Canteen, Macgowan Hall
- ☐ Untitled Cafe, Broad Arts
- ☐ Cafe 451, Young Research Library
- ☐ North Campus Student Center (Northern Lights, Harvest Market, etc.)
- ☐ Kerckhoff Coffee House
- ☐ Avenue A, Ackerman Level A
- ☐ Terrace Food Court, Ackerman Level 1
- ☐ Terasaki Cafe, Terasaki Life Sciences
- ☐ Court of Sciences Student Center (Southern Lights, Fusion, etc.)
- ☐ Cafe Synapse, Gonda Center

5. How many meals per week do you eat in an off-campus restaurant? *

Includes any restaurant that is not on-campus, including fast food.

- ☐ None
- ☐ 1-3
- ☐ 3-6
- ☐ 6-9
- ☐ 9-12
- ☐ 12-15
- ☐ 15+

6. If you do dine off campus, which restaurant do you eat at most?

Or, which restaurant is your favorite?

7. How many meals per week do you cook at home? *

Includes homemade meals made by friends/family/etc. Meals you have not purchased from a restaurant.

- ☐ None
- ☐ 1-3
- ☐ 3-6
- ☐ 6-9
- ☐ 9-12
- ☐ 12-15
- ☐ 15+

8. If you do prepare meals at home, where do you buy a majority of your groceries?

- ☐ Supermarket (Vons, Safeway, Ralphs, etc.)
- ☐ Trader Joe's

- ☐ Whole Foods
- ☐ Farmer's Market
- ☐ Convenience Store (7-11, Chevron, Shell, etc.)
- ☐ Co-Op
- ☐ Other:

9. Which factors are most important to you when you are choosing what to eat?

Please choose no more than three.

- ☐ Convenience
- ☐ Healthiness
- ☐ Cultural authenticity
- ☐ Sustainability
- ☐ Vegetarian/Vegan
- ☐ Organic
- ☐ Fair Trade
- ☐ Locally-sourced
- ☐ Cost
- ☐ Corporate/Labor Practices of producer
- ☐ Other:

10. How many times per week do you throw away leftover food that you were unable to eat? *

E.g. leftovers from a restaurant you don't take home, food cooked at home you don't want to store, snacks you threw away, food left on your plate after eating at a dining hall, etc.

- ☐ Never
- ☐ 1-3
- ☐ 3-6
- ☐ 6-9
- ☐ 9-12
- ☐ 12-15
- ☐ 15+

11. Which group of food items do you find yourself throwing away/not eating most? *

Please limit your response to three answers maximum.

- ☐ Fruits (apples, pears, plums, grapes, bananas, etc.)
- ☐ Raw Vegetables (spinach salads, carrot sticks, kale smoothies, etc.)
- ☐ Cooked Vegetables (roasted squash, grilled zucchini, stir-fried onions and mushrooms, etc.)
- ☐ Processed meals (TV dinners/frozen entrees, prepackaged sandwiches, etc.)
- ☐ Grab'n'go snacks (Poptarts, Pringles, chips, cookies, candy, fruit snacks, trail mix, etc.)
- ☐ Culturally diverse foods/foods you've never tried before
- ☐ The type of food doesn't matter, I throw food away when I've served myself more than I can eat.
- ☐ They type of food doesn't matter, I throw food away when it doesn't taste good
- ☐ Other:

12. Which factors most influence what kinds of foods you waste? In other words, why do you throw away food? *

Please limit your response to three answers maximum.

- ☐ I don't like the way it tastes
- ☐ I'm too full; I served myself/was served too much
- ☐ I don't have enough time to finish my meal
- ☐ It has gone bad in my fridge; I forgot about it
- ☐ My religious beliefs dictate that I should get rid of it
- ☐ I throw extra food away out of habit
- ☐ I see no problem with throwing away food, there's plenty of it

13. How many pounds of waste do you think UCLA dining halls generate each day? *

- ☐ 10-100
- ☐ 200-300
- ☐ 300-400
- ☐ 400-500
- ☐ 500-600
- ☐ 600-700
- ☐ Other:

14. What do you think is the most important aspect of the eating experience?

There are no wrong answers!

15. What do you think is the most important reason to not waste food?

There are no wrong answers!

Survey Responses:

1. How many meals per week do you eat on the hill/in a dining hall? *

- | | |
|-----------------------------|----|
| <input type="radio"/> None | 17 |
| <input type="radio"/> 1-3 | 5 |
| <input type="radio"/> 3-6 | 3 |
| <input type="radio"/> 6-9 | 0 |
| <input type="radio"/> 9-12 | 12 |
| <input type="radio"/> 12-15 | 15 |
| <input type="radio"/> 15+ | 9 |

2. If you do eat on the hill, which hall do you dine at most?

- | | |
|--------------------------------------|----|
| <input type="radio"/> Bruin Plate | 30 |
| <input type="radio"/> Feast @ Rieber | 9 |
| <input type="radio"/> De Neve | 5 |
| <input type="radio"/> Covell Commons | 6 |

3. How many meals per week do you eat in an on-campus restaurant? *

- | | |
|-----------------------------|----|
| <input type="radio"/> None | 22 |
| <input type="radio"/> 1-3 | 26 |
| <input type="radio"/> 3-6 | 5 |
| <input type="radio"/> 6-9 | 5 |
| <input type="radio"/> 9-12 | 1 |
| <input type="radio"/> 12-15 | 2 |
| <input type="radio"/> 15+ | 0 |

4. If you do eat on campus, which restaurant do you dine at most?

Listed by location. For example, if you eat at Panda Express the most, choose Ackerman Terrace Food Court, Level 1.

o Lu Valle Commons	3
o Stage Canteen, Macgowan Hall	0
o Untitled Cafe, Broad Arts	2
o Cafe 451, Young Research Library	0
o North Campus Student Center (Northern Lights, Harvest Market, etc.)	5
o Kerckhoff Coffee House	6
o Avenue A, Ackerman Level A	12
o Terrace Food Court, Ackerman Level 1	7
o Terasaki Cafe, Terasaki Life Sciences	0
o Court of Sciences Student Center (Southern Lights, Fusion, etc)	10
o Cafe Synapse, Gonda Center	0

5. How many meals per week do you eat in an off-campus restaurant? *

Includes any restaurant that is not on-campus, including fast food.

o None	15
o 1-3	37
o 3-6	5
o 6-9	3
o 9-12	1
o 12-15	0
o 15+	0

6. If you do dine off campus, which restaurant do you eat at most?

Or, which restaurant is your favorite?

Chipotle	4
Bella Pita	1
TLT	2
In-N-Out	7
Whole Foods	2
Five Guys	1
El Pollo Loco	1
Lemonade	1
Wolfgang Puck	1
Chick-Fil-A	1
Le Pain Quotidien	1
Flame Boiler	1
Subway	1
Tomodachi	1
Mr. Noodle	1
K-BBQ	2
Dolphin Bay	1
Native Foods	1
Fat Sal's	1
Del Taco	1

BJ's	1
Nekter	1
Tender Greens	1
Fast Food	1
Barney's	1
Sushi	1

7. How many meals per week do you cook at home? *

Includes homemade meals made by friends/family/etc. Meals you have not purchased from a restaurant.

o None	29
o 1-3	12
o 3-6	3
o 6-9	4
o 9-12	3
o 12-15	4
o 15+	6

8. If you do prepare meals at home, where do you buy a majority of your groceries?

o Supermarket (Vons, Safeway, Ralphs, etc.)	30
o Trader Joe's	18
o Whole Foods	5
o Farmer's Market	4
o Convenience Store (7-11, Chevron, Shell, etc.)	0
o Co-Op	0
o Other:	1

9. Which factors are most important to you when you are choosing what to eat?

Please choose no more than three.

o Convenience	37
o Healthiness	44
o Cultural authenticity	10
o Sustainability	7
o Vegetarian/Vegan	11
o Organic	6
o Fair Trade	3
o Locally-sourced	2
o Cost	30
o Corporate/Labor Practices of producer	1
o Other:	0

10. How many times per week do you throw away leftover food that you were unable to eat? *

E.g. leftovers from a restaurant you don't take home, food cooked at home you don't want to store, snacks you threw away, food left on your plate after eating at a dining hall, etc.

o Never	19
o 1-3	28
o 3-6	8
o 6-9	4
o 9-12	0
o 12-15	2

- o 15+ 0

11. Which group of food items do you find yourself throwing away/not eating most? *

Please limit your response to three answers maximum.

- o Fruits (apples, pears, plums, grapes, bananas, etc.) 16
- o Raw Vegetables (spinach salads, carrot sticks, kale smoothies, etc.) 19
- o Cooked Vegetables (roasted squash, grilled zucchini, stir-fried onions, etc.) 9
- o Processed meals (TV dinners/frozen entrees, prepackaged sandwiches, etc.) 11
- o Grab'n'go snacks (Poptarts, Pringles, chips, cookies, fruit snacks, trail mix, etc.) 4
- o Culturally diverse foods/foods you've never tried before 2
- o The type of food doesn't matter, I throw food away when I've served myself more than I can eat. 10
- o The type of food doesn't matter, I throw food away when it doesn't taste good 10
- o Other: 5

12. Which factors most influence what kinds of foods you waste? In other words, why do you throw away food? *

Please limit your response to three answers maximum.

- o I don't like the way it tastes 14
- o I'm too full; I served myself/was served too much 26
- o I don't have enough time to finish my meal 7
- o It has gone bad in my fridge; I forgot about it 32
- o My religious beliefs dictate that I should get rid of it 0
- o I throw extra food away out of habit 0
- o I see no problem with throwing away food, there's plenty of it 2

13. How many pounds of waste do you think UCLA dining halls generate each day? *

- o 10-100 1
- o 200-300 8
- o 300-400 7
- o 400-500 15
- o 500-600 11
- o 600-700 17
- o Other: 2

14. What do you think is the most important aspect of the eating experience?

There are no wrong answers!

- Taste/enjoyment 26
- Health/nutrition 16
- Social 4
- Other 20

15. What do you think is the most important reason to not waste food?

There are no wrong answers!

- Waste (of money, resources, food) 16
- Starving people 14
- Environmental reasons 11
- Other 8

Dining Hall Preferences

