Preventing Food Waste in the AMS Nest

Alix Requillart, Haley Roeser, James Li, Thea Rodgers, Yun Kim, Yasmine Yavari

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UBC Social Ecological Economic Development Studies (SEEDS) Sustainability Program
Student Research Report

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EXECUTIVE SUMMARY

Food waste is a social, environmental, and economic sustainability issue. This study was aimed at studying food waste produced by AMS Conferences and Catering (AMS C&C) and suggesting alternative uses with the goal of decreasing the amount of pre- and post-consumer waste produced during a catering event. Pre-consumer waste analysis was achieved through personal visits to the AMS kitchen, observation of food preparation, and staff interviews. Pre-consumer food preparation was not a significant source of waste. However, the disparity in the number of attendees at the conference (n=39) compared with expected attendance numbers (n=70) resulted in a significant amount (over four full trays, or at least 25 portions) of food waste. The reason for this waste appeared to be miscommunication between event organizers and conference planners and overestimating the amount of food needed for second helpings during the event. A survey of conference attendees revealed interest in the option of choosing a small or regular portion size when registering for a catered event. Other recommendations to mitigate waste include: an extension to the amount of time conference planners have to confirm attendance numbers, a “green tax” deposit system paid by conference planners to in the event of under-attendance to help fund redirection strategies and developing an alert email list and/or partnerships with the AMS Food Bank, Sprouts Cafe and the Greater Vancouver Food Bank as sources for food redirection.

INTRODUCTION

Food waste can be defined as any food items which were discarded to the landfill or compost, rather than being consumed. This includes both *unavoidable* food waste, such as eggshells, bones and other scraps not generally consumed, and *avoidable* food waste, which should have been consumed, but instead have been discarded. The importance of reducing avoidable food waste becomes apparent when taking the triple-bottom-line approach which considers the environmental, social and economic consequences of discarding food (Schilt 2014).

Food waste is a global issue which results in environmental harm, food insecurity and economic damage (Schilt 2014). The Food and Agriculture Organization of the United Nations (2013) estimates that one third of all consumable food is wasted annually, the majority of which comes from developed nations. In Canada, the monetary value of our annual food waste reached $31 billion in 2014, $27 billion of which was produced but not consumed (Gooch and Felfel 2014).

Food waste reduction involves a) the prevention of food waste and b) its recovery and donation. The prevention of food waste requires dealing with many stakeholders throughout the production and supply chain to avoid unnecessary waste, prior to delivery for consumption. Food recovery includes the redirection of avoidable food waste from landfills or compost which can be accomplished by donation to charitable organizations and/or include repurposing of food into new meals, such as soups and stews. Food recovery and donation can improve food security thereby improving the social responsibility of organizations who have surplus food (Schilt 2014).

UBC aims to achieve a “zero-waste” status as outlined in the *Zero Waste Action Plan* (UBC Campus and Community Planning 2014). In 2008, UBC’s Alma Mater Society (AMS) adopted the *AMS Lighter Footprint Strategy*, which also aims to encourage reduction of the ecological footprint of food services and to improve overall food security within the UBC community. The AMS cites a commitment to sustainability as one of their main commitments (AMS Sustainability, 2014). The generation of pre- and post-consumer food waste by AMS owned-and-operated food services and outlets on campus could make up a large component of UBC’s overall food waste footprint (AMS Sustainability 2014). To date, there has been little to no quantification or qualification of the amount of food waste generated by AMS food outlets or by AMS Conferences and Catering (AMS C&C).

The goal of this study was to investigate if the amount of avoidable food waste generated by AMS C&C is relatively important and deserving of special attention. AMS C&C is the main event catering body on campus, operating out of the AMS Nest student building. AMS C&C also has a list of sustainability commitments; one major component of their sustainability goals is the reduction of waste (AMS Conferences and Catering, n.d.). So far, AMS C&C has been able to achieve some of these targets by recycling, using non-disposable dishes, and employing an in-house composting system - all aspects of a zero-waste paradigm. Despite making great progress in their sustainability initiatives, the AMS, UBC SEEDS and UBC’s Campus and Community Planning program are still looking for ways in which they can reduce the AMS collective food waste footprint to improve their sustainability record. The specific objectives of this project were to observe the amount of pre- and post-consumer food waste produced during a catering event in an attempt to target methods for reducing or redirecting

avoidable food waste and explore potential opportunities for redistributing edible food in cooperation with other on-campus organizations.

Redirecting avoidable food waste in particular, can create potential economic benefits for AMS C&C in the form of reduced waste management cost. Reducing waste by diverting it from the compost bin will also reduce UBC's total greenhouse gas (GHG) emissions since GHG are produced as the result of composting. Reducing emission is necessary to achieve UBC's goal of becoming a net zero carbon emitter (UBC Campus and Community Planning 2014). Diverting waste could also facilitate the closed-looped food system the Nest is looking to create (AMS Sustainability 2014). In addition, sustainable patterns of food production and consumption are established when implementing a diversion system for avoidable food waste. In addition, such a system is likely to benefit students and community members who can access food which would have otherwise been composted. This benefits community welfare, health and quality of life for recipients, and ultimately increases the overall sustainability by reducing the food waste footprint within the AMS Nest.

UBC has long been a leader in sustainability initiatives, and this research may help provide a model for other catering services to develop an effective waste reduction program. Overall, reducing avoidable food waste could increase food security on campus, reduce the costs of the AMS C&C event planning, and further UBC's sustainability goals. In this way, the results of this project are relevant to anyone looking to reduce food waste, develop strong communities, improve food security and reduce ecological footprints. Moreover, it will act as a catalyst and a source of inspiration for implementation of improved waste diversion systems at UBC which is already labeling itself as a leader in sustainability practice (University of British Columbia 2016).

METHODOLOGY

We conducted an online literature review to gain a better understanding of whether or not similar initiatives have been undertaken in North America. We searched for "'zero-waste catering" initiatives, as well as "food redirection programs" and "food waste reduction" within the contexts of universities and catering companies in both the United States and Canada. Specifically, we focused on finding ways in which food waste could be a) reduced, and b) redirected from the compost or waste system. We used both Google Scholar and UBC's library catalogue to find different academic articles that were referenced within this report.

We attended one catered event which took place on March 16, 2016 at the AMS Nest. Firstly, we gained access to the kitchen before the scheduled start of the event through permission of Executive Chef, Jonas Hamre. We interviewed staff members and observed food preparation (Appendix A). A list of weighed food items specific to the stated number of conference attendees was provided by the chef. During the conference, we interviewed and observed the banquet captain (Appendix B), serving staff and conference attendees, and took photos of the food left in the trays after the event. With the permission of AMS Food and Beverage Manager, Craig Levido, a brief and voluntary survey was distributed at the end of the catering event to gain feedback from attendees on their experience in regards to portion sizes at the event (Appendix C). We obtained a 74% reply rate or 29 surveys for 39 attendees at the event. Survey responses were analyzed and graphed using MS Excel.

RESULTS

Food Waste Audit Results

Kitchen observations

We spoke to kitchen staff members before the catering event of March 16th, 2016. The staff informed us of policies and protocols set in place regarding food waste and we concluded that the kitchen manages food very thoughtfully and is very conscientious of the food of which they discard. Only one compost bin or less is filled each day by the AMS C&C kitchen staff for an average of 20-25 kg per day. This waste consists mostly of inedible food scraps which could not be reused and which are taken at the end of the day to the AMS composting facility outside of the Nest. The kitchen is posted with signs that give detailed information regarding what can and cannot be composted and where to take the compost once full. The kitchen staff explained to us that the procedures and guidelines to minimize food waste to the fullest extent are very strict. Their recipes are measured to the gram for portion sizes, and staff knows exactly how much to multiply each ingredient depending on the number of guests attending the event. The inedible parts of food which are composted consist mostly of seeds and stems of produce. When working with meat, fat and bones are saved and used again later for stocks and other alternatives. Food which is not used during a typical event often gets reprocessed into another dish. For example, a Mediterranean dish containing beans and eggplants not served during an event can be made into soup the next day. Such reuse of unserved food is part of the job of a chef and that there is virtually no unserved food that is thrown away (Jonas Hamre, personal communication, March 2016). Therefore, pre-consumer food waste is not created at the kitchen stage in the supply chain of AMS C&C.

However, according to British Columbia's Food Safe regulations, food which is presented to the public, or food which has left temperature control for a duration of time greater than two hours can not be donated (BC Centre for Disease Control, 2015). Therefore, all food that is brought out of the kitchen into the event room cannot be reprocessed and becomes food waste once the event is over. For the particular event on March 16, 2016, food had been prepared for the 50 people who were initially expected to attend. This amount was then increased up to 70 servings because conference holder expected more people at the conference. However only 39 people were present at the event. Since AMS C&C has no protocol to rescue food at this stage of their catering process, the extra food was sent to compost at the end of the event. In accordance with our observations, Executive Chef Jonas Hamre suggested that the most improvement to food waste management will come from improving communication between the kitchen staff and the event coordinators to obtain an accurate number of attendees (Jonas Hamre, personal communication, March 2016). Typically, the events coordinator is contacted by a club manager or an outside party who is interested in holding an event in the AMS Nest. After confirming the location and size of the party, the events coordinator sends the information to the kitchen within nine days although most food preparation doesn't begin until at least three days before the event (Jonas Hamre, personal communication, March 2016). Because the actual number of attendees can change within this timeframe, the chef suggested improving communication about final attendee numbers in the days leading up to the event.

Catering Event Observations

A total of 39 people attended the "Dinner with Doctors" meet-and-greet catered event on March 16, 2016. This was a significant reduction from the expected number provided to the AMS kitchen, which was originally 50, and was later increased to 70 people. The conference

was held at the former Perch Restaurant, on the 4th floor of the Nest, and all foods were transported from the basement where the AMS kitchen is located, to a small kitchen used as the preparation area which was located on the backside of the conference room. The preparation kitchen was equipped with heating or refrigerating appliances to keep food at proper temperatures before being set out on tables for guests. Food staying in this small kitchen is available for reuse or repurposing. Food leaving the small kitchen and entering the dining room will not be available for repurposing.

The changes in attendee numbers from an expected 70 to an actual 39 resulted in a large amount of leftover food at the end of the conference even after attendees went up for second helpings (Fig. 1).

Fig. 1: Leftovers of the “Dinner with Doctors” conference on the evening of March 16, 2016 in the AMS Nest. The tray in the bottom right corner was plate scrap waste and not avoidable. The remainder of items could have been repurposed if they had remained in the small kitchen according to Vancouver Coastal Health regulations.

Food leftovers from attendee's plates and remaining in serving trays (Fig.1) were all put into the compost bin. Unserved food in the small kitchen was supposedly returned to the basement kitchen. The banquet captain explained that all well-preserved, unserved food is reused and repurposed within the kitchen (Gordon Jeeves, personal communication) but we were unable to confirm which items were returned for repurposing.

Survey

The survey questionnaire was filled by 29 out of the 39 attendees resulting in a 74% response rate (Appendix A). A majority, 86%, of respondents thought that the amount of food served was sufficient and 14% felt that the amount served was too much. Most people, 79% of participants agreed that the option to choose small portions should be available (Table 1). An open-ended section of the questionnaire to explain reasons for leftovers on plate included personal food preferences, lack of appetite for food, portion size, and disturbance from conversation.

Survey questions	Response		
1. Did you feel as if there were (too much/just enough/too little) food?	Too much	Just enough	Too little
	14%	86%	0%
2. Would you like to see less food wasted even if that meant smaller portion/less food at events and conferences?	Yes		No
	75%		25%
3. Would you like to have an option to choose a small or regular portion size for meals at catered events?	Yes		No
	79%		21%

Table 1. Overall survey response from all participants (n=23) at the "Dinner with Doctors" conference on the evening of March 16th, 2016.

DISCUSSION

Pre-consumer food is not the main source of avoidable waste during AMS C&C events. While the AMS kitchen does an excellent job at food waste mitigation and has strict procedures in place, the main cause of food waste on March 16, 2016 was due to an overestimation of the number of conference attendees by the customer and event coordinator and subsequently, a lack of procedure to minimize the amount of food remaining in the conference room after all attendees have finished eating.

The overestimation of number of attendees may result from communication problems between customers and attendees, customer and event coordinator or event coordinator and kitchen staff. Customers rely on registrations and RSVP's for estimates of attendance numbers which must be given nine days in advance of the event to AMS event organizers. The planner for the Dinner with Doctors conference admitted that it is difficult to predict how many people will come based solely on RSVP's. Additionally, it was mentioned that the wasted food is still paid for by the customer. This procedure may make economic sense but we do not see it as being environmentally or socially sound because it does not discourage the production of unnecessary waste.

A timeframe for confirming attendance numbers shorter than nine days may contribute to provide better estimates of number of attendees. We feel that the current cutoff period for specifying attendance numbers of nine days before the event could be reduced to at least five days and still allow the kitchen to get ready for the event. The customer we spoke with at the Dinner with Doctors event confirmed that the nine-day timeframe was too far from the date of the conference to give an accurate estimate of planned attendance.

Food Safety regulations from Vancouver Coastal Health include several criteria which need to be met for a restaurant, catering function or other retail operation to donate “Ready-to-eat” (RTE) foods. For example, all hot RTE foods must not be below 60°C for longer than a two hour period to be eligible, and they must not have been exposed to the public, in a buffet, for instance (BC Centre for Disease Control, 2015). Temperature and public exposure rules also apply to cold RTE foods. As such, any food that leaves temperature control for more than two hours, or has been presented to customers in a buffet tray - whether it is used or not - can not legally be eligible for donation. Therefore, any food that AMS C&C takes out of the kitchen and presents to their customers can not be re-purposed. Therefore, RTE food must be kept in a covered container in the kitchen at an appropriate temperature to be donated. These rules present significant barriers for donation. We feel that a way to prevent food losses in future situations like this would be to limit the sizes of trays leaving the conference kitchen for the buffet table to be served as second helpings. These trays should be limited to at least half their current size (Fig. 1) to limit the amount of food falling under the abovementioned health regulations which prevent reuse. In such case, unserved food items which are easily incorporated into other meals can then be returned to the kitchen and prepared meal items (such as lasagna or mixed salads) which are not easily reincorporated into a new dish could be packaged and redirected to alternate avenues for consumption such as the AMS Food Bank.

We noted that kitchen staff indicated that no food was returned to the kitchen once it was sent out to the catering event. However, conference staff indicated that any unserved food which had remained in the small kitchen was sent back to the kitchen. This was a source of confusion for us as we were unable to confirm which scenario takes place after C&C events. This discrepancy may be contributing to food waste since there seems to be no single

understanding of where unserved food goes after a conference event.

Case Studies

Initiatives for the repurposing of food exists in some university campuses in North America. They offer potential models that could be adopted by UBC. The Campus Kitchens Project (CKP) is a volunteer student-run organization which aims to meet hunger needs in post-secondary and high school campuses across the United States by preparing and delivering meals to community members in need of food. The federal *Good Samaritan Act for Food Donations* allows food recovery organizations recover and repurpose food, as the target of this legislation is to protect donors from criminal liability in the case that the product does harm the recipient (Campus Kitchens, 2012).They do so by developing partnerships, recovering food, planning menus and organizing the production and delivery of repurposed food to those in need. Currently, CKP is working out of 51 schools across the USA (Campus Kitchens, 2016). CKP is able to recycle food, provide meals and educate their respective communities while providing leadership opportunities for students. CKP's food recovery model includes picking up unused food from food providers on campus, grocery stores and farmers markets. Their volunteers subsequently prepare and deliver food to organizations and low-income families and individuals. CKP accepts monetary donations from individuals and organizations. This organization provides an inspiring model for UBC by showing that food recovery and redistribution is possible and that it can improve food security of surrounding communities.

The Massachusetts Institute of Technology (MIT) has similar sustainability goals to UBC, as the university aims to reduce its event footprint. In 2015, they published a *Sustainable Catering Guide*, which outlines the main facets of catering that can be targeted to reduce the overall

event footprint, and to improve food security and food safety while providing ethically based, healthy and local food for their clients (MIT Food, 2015). In the *Zero Waste* chapter of this guide, the authors outline various ways in which both post- and pre-consumer food waste can be reduced, if not eliminated, and also present possible alternatives for diverting the waste from the compost bin. Additionally, MIT has developed a certification program which helps event planners meet their sustainability goals. Events can obtain a Bronze, Silver or Gold certification depending on the degree of sustainability, taking into consideration food waste reduction, waste disposal and menu offerings (MIT Food, 2015).

Ryerson University's own catering service has developed a program in which they donate all leftover food to the Good Food Centre on Ryerson's campus or to local shelters within walking distance (Ryerson University, 2016). They are able to do this both on a daily and weekly basis. Moreover, a food-donation non-profit called Second Harvest is available for picking up donations of large quantities of food (Melissa Yu, Personal Communication, March 16, 2016). Stanford University has created a mailing list which intends to help students find free food on campus (Stanford University, 2016). Currently, their email list has over 280 members and it emails students the location, availability, description, tips and notes regarding free food. The emails are sent out by any member of the community who 'spots' free food on campus, and acts as a way to increase the food security of students in the area. No program like this is currently functioning on UBC's campus. It is not possible to immediately create such a program for AMS C&C, however, there is potential for this to be achieved in the future. One possible drawback of such a method is that it doesn't necessarily cater to those who are actually facing food insecurity. Often "free food" draws the attention of anyone, and is not necessarily given to those who need it the most (Jay Singh, Personal communication, February 8, 2016). Using the

UBC food bank for example, would be a better method of directing food to those in need rather than having a free food alert for the entire student body.

RECOMMENDATIONS

It was very encouraging to have our project met with such a huge amount of positivity from all stakeholders. We were able to discuss our ideas with many different community members, and with each one we were met with encouragement. The AMS Food Bank and Sprouts Cafe were both open to the concept of collaboration and receiving donations from AMS C&C, with some stipulations. The UBC community showed us the potential that a project like this has for becoming a reality, and now it is just a matter of setting up strong connections between the various stakeholders.

Research

Going forward, it would be beneficial to acquire additional waste audit data from several different styles of catered events in the Nest. UBC SEEDS can expedite the process by ensuring ahead of time that students are able to get access to events and kitchens, by connecting with the AMS Food & Beverage Manager and the Executive Chef either before the project starts or in the first few weeks of the project timeline.

We also suggest four avenues for food redistribution which can be further researched by UBC SEEDS in cooperation with AMS C&C since if AMS C&C does not currently have staff on hand to organize food redistribution. We also foresee the need for the acquisition of resources like fridges and to-go containers, and the establishment of a protocol for food distribution (Table 2). The first avenue for food donations would be the AMS Food Bank. We believe that

collaboration with the Food Bank would be the most practical, and the effects would be the most far reaching. It was clear during our contact with food bank coordinator Jay Singh that the AMS Food Bank would be open to this endeavour, and keen to establish a strong relationship with AMS C&C. Limitations to the successful donation of food include food safety, access to packaging, efficient transport and storage capacity and food safety. To combat food safety barriers, we suggest that the AMS C&C generate lists of known allergens for donated items. For packaging, a “green tax” deposit paid by conference organizers in the event fewer people than anticipated show up to an event, could be used to fund containers for individual donations or the AMS could designate a budget for such items as part of the Food Bank budget. Food Bank volunteers and/or catering staff willing to volunteer for food transport could be part of an alert email alert list for food pickup and transport to the food bank. Fundraising for purchase of a large fridge in the AMS Food Bank could help overcome the current storage limitations.

Community Eats

The second avenue for food donation could be Community Eats which is a volunteer-run initiative on UBC campus, hosted by Sprouts Cafe (Sprouts, 2016). This event runs once weekly, and it involves the preparation of a meal for students and UBC community members in exchange for a small donation at the door. The ingredients are donated from local grocery stores and various other companies (Save on Foods, Terra breads etc.). This event has been running since 2008, and has been hugely successful on campus. Sprouts has shown interest in talking with and collaborating with AMS C&C to take in ingredients and vegetarian dishes.

This collaboration is appealing because Sprouts is conveniently located in the AMS Nest. The limitations of this option are that Community Eats is an exclusively vegetarian event.

“Free food” mailing list

A third option for food donation is a mailing system similar to Stanford University’s free-food notification system. It could also be constructed in the form of an app which notifies users of food availability, which SEEDS could enlist students to develop. This would allow AMS C&C to redirect food efficiently by allowing users to pick up food from the Nest instead of transporting food elsewhere. It would be important, however that information on ingredients be available for those with allergies and dietary restrictions.

Greater Vancouver Food Bank (GVFB) Food Runners

The GVFB has a food recovery program which uses Food Runners to pick up donated food to help provide with those in need. The appeal of the Food Runners program is that it presents minimum effort for AMS C&C and continuously all year long. However, Food Runners can only accept a 10lb minimum donation of food within the city. Furthermore, the food needs to be packaged in containers. For this reason, it may be more practical for AMS C&C to focus their delivery on more locally based organizations, such as Community Eats at Sprouts Cafe or the AMS Food Bank.

Possible Outlet	Strengths	Limitations
AMS Food Bank	- Increase access of food to vulnerable individuals - Available on daily basis **Monday - Friday**	- Limited storage space **- Requires transport to food bank**
GVFB	- Pickup is handled by food runners	- Requires containers
Community Eats	- Support local, student run initiative - Increases food security on campus	- Only vegetarian food - Only once weekly
Email List (Free 'as is' for students)	- Little organization necessary	- Doesn't target those most in need - Specific area would need to be designated

Table 2. Summary of strengths and limitations of various outlets for donated food.

Action

First and foremost, the communication between event coordinators and the kitchen must be improved. Since the clients of conferences and catering often book these events much in advance, we recommend that the day before food is ordered to the kitchen, the event coordinators call the clients back to confirm the number of guests. This should be promptly communicated to the kitchen to ensure that no extra food is produced for the event. An online checklist that is sent out to the clients along with a follow-up call by the event coordinators would make this process fairly simple to enact. This online checklist should include the order, number of guest, time and location of the catering event. The online checklist should also be made available to the kitchen. Such an online tool would minimize the time needed for event coordinators to inform the AMS kitchen about the change. On the other hand, changing the limit from nine days to five days for conference organizers to confirm numbers with AMS C&C

could also decrease the room for error in estimation of attendance numbers.

As mentioned, protocols to be developed by the AMS C&C concerning unserved food should be developed, specifically, to reduce the size of serving trays going out for second helpings and that staff be trained accordingly. The organizer of the event or the various outlets listed for redirection above should be allowed to use this unserved food because it will adhere to health guidelines.

An option for small or regular sized portions proved relevant according to our survey of conference attendees. During registration and RSVP for the conference, planners could provide the option for attendees to choose a “small” or a “regular” sized meal. These portion sizes could be displayed on the current AMS C&C menu for reference.

We suggest considering the implementation of a ‘“green tax” for conference organizers, which would be paid as a deposit during conference booking. The deposit would be charged to the conference planner if the excess food waste at the end of an event is significant, and was due to oversight by the conference planner in regards to attendance numbers. This fee could then be used in a variety of different ways to fund redistribution programs, such as purchasing refrigerator space for the AMS Food Bank, or purchasing packaging containers for meal portions which can then be transported to the food bank or elsewhere. The fee should be promptly and prominently displayed on the online order form as well as told to the planner of the event. The notice should also display why there will be this surcharge (in the event of wasted food), as well as a reminder that it can be avoided by confirming the orders to the best of their ability up to a certain number of days before hand, with no charge. In the event that a

conference has a good number of attendees with minimal food waste, the deposit would be returned to the conference planner.

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APPENDIX A. Interview questions for Jonas Hamre Executive Chef
Question 1. We want to take a look and audit the kitchen during the prep and service of a conference here at the Nest is that possible?
Question 2. Can we get a list of upcoming catered conferences if possible ?
Question 3. Any plans in place right now for sustainability and food waste management?
Question 4. Any suggestions on where to look for food waste?
Question 5. How much compost do you have a day on average?
Questions 6. Where do you think you can improve most on in terms of food waste?

APPENDIX B. Interview questions for banquet staff/banquet captain Gordon Jeeves
Question 1. What happens to all the unused food after the banquet?
Question 2. Is it typical to have a lot of food left over after a banquet?
Question 3. Do banquets typically show up with more or less people than RSVPed?

APPENDIX C. Survey questionnaire handed out to participants at the end of their AMS Conference and Catering event.

Preventing Food Waste Survey

LFS 450: UBC SEEDS Sustainability Program

- Did you feel as if there was (too much / just enough / too little) food ?
- Would you like to see less food wasted even if that meant smaller portions / less food at events and conferences? (Y / N)
- Would you like to have an option to choose a Small or a Regular portion size for meals at catered events? (Y / N)
- Was there leftover food on your plate? Why?
- Any Comments in regards to food waste?