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Engaging with Food Recovery at Devour Culinary Classic
Local First Arizona

Abstract

The American food system creates a significant amount of waste and relies on significant energy, land, and freshwater inputs, accounting for a large amount of the United States GHG emissions (US EPA, 2009). Across the supply chain, a total of 40-50% of all food is not consumed. Reducing food waste is a way to decrease the impacts of the food system across the supply chain. At present, restaurants do not know of options available to them to mitigate their food waste and decrease their impact on climate change. For this project I partnered with Local First Arizona to use food recovery, or donating unused food to organizations that serve food insecure people, as an attempt to close the loop between the food that is being wasted and those who struggle to meet their caloric needs. The restaurants at Devour Culinary Classic, a weekend long food festival in Phoenix, AZ, received information about food donation and were prompted to donate at the end of the event. In total, 24 restaurants donated food, diverting 500 pounds of food, or 7% of all diverted waste, from the event's waste stream. Donations were given to refugees recently released from ICE custody through a partnership with Arizona Jews for Justice. Following the event, recommendations on how to improve the project in future years were given to Local First Arizona in the categories of organization & logistics, marketing, communication, financial, and sustainability. A diffusion of innovation framework was used to identify the barriers faced by restaurants and analyzed how food festivals are a way to overcome those barriers.

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Introduction

Americans throw out millions of pounds of food annually. According to a 2016 report from The Guardian (Goldenberg, 2016), 60 million tons of produce alone were thrown out each year. A large portion of that food is edible but is thrown away despite its value. It ends up as leftovers, food scraps, or recently-expired food. Meanwhile, people are going hungry and lack the ability to provide food for their households, leading them to become food insecure. The emerging field of food recovery and food donation is an attempt to provide food to people who are struggling to meet their caloric and nutritional needs. This field bridges the gap between where the food is that is going to waste and where the food needs to be. The process of food recovery can be used alongside food banks and pantries as a way to feed the food insecure with leftover food, all the while keeping food from becoming waste and ending up in our landfills.

Many restaurants have not heard of this concept, do not have the logistical capacity to donate their leftovers, or do not participate due to the unknown ramifications of donating perishable foods. One way to target all three of these problems is to introduce food recovery to a large food festival, allowing restaurants to opt-in on a one-time basis; letting them see how convenient donating their leftover food can be. Food festivals generate a significant quantity of food waste that goes to the landfill. This presents an opportunity to access a large number of restaurants at once. We can take advantage of this opportunity to reduce waste at similar events and to create a leverage point to donate unused food from restaurants in the future.

This project was an undertaking of a food recovery and donations service at Devour Culinary Classic (DCC), a weekend-long food festival in Phoenix, AZ. The project was divided into three main parts. First, the food recovery service implemented at DCC. This was a part of the overall “Towards Zero Waste” efforts organized by Local First Arizona (LFA) at this event to increase waste diversion. This included donating the recovered food to a charity that provides food to refugees. Secondly, I evaluated the success of the food recovery and donation and made recommendations to LFA on how to improve for future events. The deliverables to the client consisted of three documents that detailed the sustainability problem and the outcomes of the project, a work breakdown structure and Gantt chart of the work, and the recommendations for future events. Lastly, I focused on the direct engagement with the restaurants and the chefs. In order to understand how food festivals can be used to overcome barriers that keep restaurants from donating, I used a diffusion of innovation framework to identify ways in which DCC and this project attempted to overcome those barriers.

Sustainability Background

Food is a huge influence in our daily lives. As one of our basic needs, humans need food for sustenance. As such, there are many industries that deal with the production, distribution, and consumption of food. Given the size of the industry, it is no wonder that it makes up a large part of our environmental and economic footprint. According to the NRDC, “Getting food to our tables eats up 10% of the total U.S. energy budget, uses 50% of U.S. land, and swallows 80% of freshwater consumed in the United States” (Gunders, 2012: 4). This impact is compounded by

the fact that 40-50% of food becomes waste and goes uneaten (Gunders, 2012; Phillips et al., 2013). Of that figure, 60% of the food waste comes from the consumer side, which includes restaurants.

Waste is harmful over both the short and long terms because it squanders Earth's resources, contributes to climate change, and threatens human health. Landfills are often situated in or near poor, minority neighborhoods, which is an environmental injustice (Been, 1994). Landfills not only lower property values by a significant percentage (Ready, 2010), they are also unsightly, have a bad odor, and pose health threats. These effects last for decades, negatively affecting future generations. The effects can be avoided by treating waste as a resource. This would benefit present and future generations. (Velez, 2017) If our habits do not change, American landfills are expected to be filled within 10 to 15 years, has China has recently turned away American trash and recyclables (Watson, May 4, 2018).

Diverting food and organic materials from waste streams is important in particular because of the impact that it has on climate change. Climate change is an urgent threat to the planet. Up to 47% of US greenhouse gas emissions are associated with the energy used to produce, process, transport, and dispose of the food we eat and the goods that we consume (US EPA, 2009). Of that, food waste alone accounts for 23% of the United States methane emissions, a greenhouse gas thirty times more potent than carbon dioxide (Gunders, 2012).

At the same time food is being wasted, people are going hungry. Food insecurity can be defined as “the food intake of one or more household members was reduced and their eating patterns were disrupted at times during the year because the household lacked money and other resources for food” (Nord et al., 2009). In total, over 40 million people in America lived in food insecure households in 2017. Access to food is so important that it is the second Sustainable Development Goal set forth by the UN (2006): “End hunger, achieve food security and improved nutrition and promote sustainable agriculture”.

The importance of food donation is corroborated by the EPA whose Food Recovery Hierarchy (Figure 1) prioritizes actions that organizations can do to reduce their food waste. The top priority is Source Reduction. By reducing the surplus of food generated, organizations can make the greatest impact on reducing their food waste. The second action is to feed hungry people by donating excess food to food banks, soup kitchens, and shelters (Food Recovery Hierarchy, n.d.). Only 10% of edible wasted food is recovered in the United States each year, therefore focusing on food donation and feeding hungry people is vital to decrease our food waste (Gunders, 2012). With large quantities of food being wasted, 19% from food service operations and households and 40-50% across the supply chain, there are currently openings in our system to increase food recovery and make a significant impact.

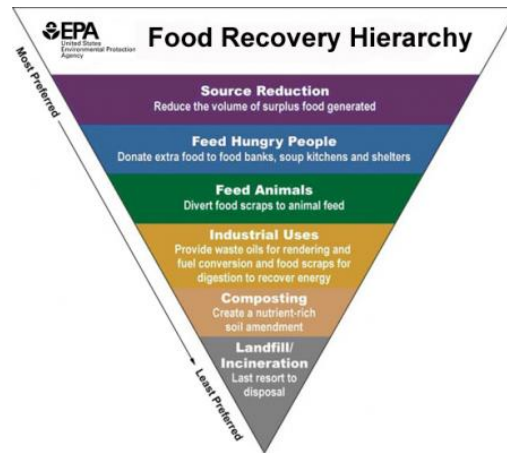


Figure (1): EPA Food Recovery Hierarchy

Food donation and food recovery is not a new idea, but it has several barriers that have prevented it from being widespread. There are, however, several successful cases of food recovery from restaurants that exemplify how it can be utilized. Refettorio Gastromotiva, a restaurant and a part of the social gastronomy movement in Brazil, distributes over 100 meals per day to vulnerable populations. It receives its food from local partner restaurants that would have otherwise thrown the food away. Furthermore, they provide career opportunities and training as part of their restaurant. Refettorio Gastromotiva has been running successfully since it launched during the 2016 Rio de Janeiro Olympic Games (Ferraz, February 22, 2019). Meanwhile, the EPA presents Food Recovery Challenge awards and winners annually. These awards recognize organizations that have been exceptional at reducing their food waste across seven industries to give recognition to these program (US EPA, n.d.).

Reducing food waste at restaurants can add financial and reputational value. Consumers are starting to consider food waste when choosing a restaurant. The direct profit potential of food waste reduction depends on the method of reduction used, with source reduction, food recovery, and composting offering different profit margins. The reputational value comes from increased consumer awareness thanks to media coverage of food waste. A study by Unilever revealed that 72% of U.S. diners care about how restaurants handle food waste, and 47% would be willing to spend more to eat at a restaurant with an active food recovery program (Unilever, 2011).

Project Background

The idea for my project came about after a series of iterative discussions with Local First Arizona about the sustainability issues they were facing related to Devour Culinary Classic. A series of discussions over multiple weeks focused on the impact of greenhouse gas emissions on the event, opinions of restaurants about local foods, and more. One idea was to bring a food festival towards zero waste, focusing on the sustainability of the event itself. The scope of this plan was broad with many possible avenues of advancing the project. Eventually, the project was narrowed down by evaluating the Greening Events Guide (GEG) released in 2018 by ASU's Sustainable Cities Network. The GEG "is intended to guide event planners in the process of hosting sustainable events in a cost-effective manner. Using this guide, events will produce less waste, increase sustainability knowledge, and lower the event's environmental impact, as well as increase local interest and exposure for the event" (Sustainable Cities Network, 2018).

Using the GEG, discussions with Local First Arizona led to the realization that, while there was an emphasis on waste diversion, no efforts had been made for donating leftover food this year's DCC. "Donate food leftovers to local nonprofit/food bank" is one of the explicit goals outlined in the GEG as part of the waste reduction section. Food donation would also contribute to the GEG's goals of achieving 50%, 75%, and 90% waste diversion, as the leftover food would otherwise be thrown away or composted. Local First Arizona lacked the necessary capacity to focus on food donation at this year's event, and as such, I took on the project as my culminating experience.

At an event like DCC, restaurants plan the amount of food they are bringing to the event in advance. They base their plan on figures such as previous years' sales and this year's ticket sales. Restaurants would rather have a surplus than sell out of food early in the day. Due to the lack of opportunity of source reduction at a one-time event like this, using leftover food to feed hungry people becomes the ideal leverage point to reduce waste. Composting is the fifth priority of six on the hierarchy, an act that the event is already doing through a partnership with Recycled City.

Project Partners

DCC is a weekend long food festival run jointly by Local First Arizona, the Desert Botanical Garden, and the Arizona Business Committee for the Arts, which serves as the culmination of a week-long series of events called Devour Week. DCC supports the development and promotion of the culinary and extended local food community and culture in Arizona. It brings deserved local and national attention to the state's food scene. It showcases over 95 chefs from around the state and over 10 local beverage companies, including wineries and coffee roasters.

Local First Arizona is one of the festival organizers, and was the organization through which I learned about this project. LFA is a nonprofit organization that supports, promotes, and advocates for a strong local business community, and raises public awareness of the economic and cultural benefits provided by strong local economies. Local businesses contribute to a sustainable economy for Arizona and build vibrant communities. One of their focus areas is on sustainability- environmental stewardship goes hand in hand with economic prosperity in ensuring that communities can look forward to prosperous futures for all of their citizens. They

work with local businesses and events to implement sustainable practices. Previous sustainability initiatives have included working to make their events zero waste, assisting local businesses and raising awareness of green businesses through volunteer teams, partnering with sustainable organizations, and helping increase the sustainability of business operations.

The partner receiving the food donations from DCC is Arizona Jews for Justice (AJJ). AJJ is a pluralistic Jewish group that provides a forum for Jews in Arizona to collaborate and foster social justice within the state. They connect community members and empower them to create positive change within the community. The current mission includes donating supplies to refugees that have just been released from U.S. Department of Homeland Security Immigration and Customs Enforcement (ICE) custody. According to the Universal Declaration of Human Rights (1948), “everyone has the right to seek and to enjoy in other countries asylum from persecution.” These are people who have made the journey from Latin American countries, fearing persecution in their home country, and are now seeking asylum in the United States. Those who have been released from ICE custody in the Phoenix area have family already here and have been allocated temporary release. They are awaiting court proceedings to evaluate their asylum status.

AJJ works with churches and other shelters to temporarily house refugees for the first few days after they have been released from ICE before they travel to be with their family. During their stay with ICE food is strictly rationed. Their meals usually consists of a small sandwich made of bread, meat, and cheese and a small apple. According to reports from a Victorville center, people say they are fed spoiled meat and milk, rushed out of the dining hall five minutes into their meals, and denied alternative meals requested for religious reasons (Brown, August 24, 2018). Furthermore, asylum seekers may have been traveling for weeks or months, eating very little along the way to the United States. The food being donated to this cause is often their first real meal upon being released from custody and making the long trek from their home countries to the United States. Not only does it nourish them, a hearty meal is a quick way to raise their spirits and remind them of the pleasure of food.

Analyzing the Problem

Rather than approaching one restaurant at a time, we can look at methods that reach a large number of restaurants at once. That would provide the ability to promote the message of food waste reduction and sustainability. One option is through outreach at food events and festivals. Events and festivals bring in performers, cuisine, arts, and attendees from around a region, or the world, depending on the scale of the event. Events and festivals have seen continuous growth over the past few decades (Jones, 2012). Due to the rise of food festivals, they represent an ideal opportunity to reach chefs and restaurant owners.

However, as events are on the rise, so too do they contribute our waste problem. According to Harris (2013), waste generation in the form of containers, food scraps, grey water, and sewage is one of the primary environmental problems that festivals are currently facing. The Zero Waste movement has been an attempt to counteract that problem. Many local-to-Phoenix events have adopted a Zero Waste mindset including the Waste Management Phoenix Open and Arizona Diamondbacks games.

Currently at DCC, restaurants are not required to recycle, compost, or donate their food. There are recycling and composting options available thanks to Local First Arizona, Recycled City, and the City of Phoenix. However, restaurants do not always follow the rules, as they are not strictly enforced. Waste generated by the restaurants are marked and must be sorted at the back of house, separating out items going to the landfill. There is no food donation at this exclusive event. DCC has made an effort to move towards zero waste in past years. In 2018, the event saw a 43% total waste diversion rate thanks to the overall efforts implemented at the event. While restaurants are not required to divert their waste, the “Towards Zero Waste” initiative organized by LFA includes composting, recycling, and reusing materials.

Food donation at events is particularly difficult for several reasons. First, there is a lack of assigned responsibility. The restaurants are simply vendors at an event organized by a committee. Each organization has a different leadership structure. There is no process for assigning responsibility for organizing food recovery. This may easily fall to the wayside unless one of the organizations takes on responsibility. Finding a partner willing to accept food for a one-time event, rather than a partner on a continuous basis, can be difficult. Lastly, finding an organization that is open during the hours necessary, often on the weekends and evenings, can be difficult, as most food pantries are only open during standard weekday business hours.

LFA is aware of the importance of food recovery at the events that it runs but it has not attempted it before. In the past, it has lacked the logistical support to make it happen. As a non-profit with limited capacity, priorities for running the events have fallen elsewhere. Therefore, the ability to organize and execute this project can act as a proof-of-concept for LFA, the other organizing partners, and for the restaurants. Lessons learned from this application can be applied to make the process easier in the future so that there are fewer barriers to reducing food waste at subsequent events.

After attending Savor Food Festival in Tucson, Arizona, on February 2, 2019, informal conversations with chefs opened up an understanding of several more barriers. Restaurants were not knowledgeable about the Bill Emerson Food Donation Act and the protections it entailed, and were worried about the logistics of passing on the food safety & handling of their product to another organization. Busy chefs who had heard of food recovery did not know who to contact and did not have the time to do the research and make their own connections.

Project Approach and Intervention Methods

This project employs a diffusion of innovation framework. This model (Rogers, 2003) is the process by which an innovation is communicated and adopted over time. This model has been widely used in numerous fields including agriculture, technology, and social change (Harper and Leicht, 2002). While using leftover food to feed hungry people may not seem like an innovation, an innovation refers to a new idea or practice that offers a relative advantage to the adopter. Since food rescue is not the industry norm, it qualifies as an innovation. The pace at which an innovation is adopted is also a function of other factors, including the extent to which the technology is compatible with existing values, is easily observed, can be tested, and is not overly complex (Rogers 2003: 265).

In this model, potential adopters are categorized into particular classes of adopters and the variable rates of behavioral change or adoption across time. The classification includes “innovators,” “early adopters,” (categorized together as opinion leaders) the “early majority,” the “late majority,” and “laggards” (Rogers 2003: 280). Importantly, research has found that interpersonal communication between opinion leaders and potential adopters is one of the most important avenues for inducing change and furthering the diffusion of an innovation (Rogers 2003). Using the platform of events represents an opportunity to bring together different classes of adopters to diffuse the innovation. This includes restaurants that might already be donating their food, restaurants that might know about it but lack the capacity to implement it, and those who are ignorant of or opposed to it. Importantly, events represent a leverage point and opportunity for intervention by opinion leaders and affiliated organizations (Inwood et al., 2008). In the case of my project, Local First Arizona and my project team will act as the opinion leaders in the case of food donation and recovery.

According to Brown (1981), barriers to diffusion include lack of access to (a) means of production, (b) public goods, (c) information, (d) capital, (e) skills, (f) education, and (g) public infrastructure. My project takes aim at lowering information, education, and public infrastructure barriers. At DCC the restaurants and chefs will receive information about food recovery, why it is needed, and who it benefits. They will be educated about the process, about potential barriers - including how the liability associated with food handling and food safety is covered by the Bill Emerson Food Donation Act. Follow up with interested restaurants will include further education tailored to their specific questions. Finally, access to infrastructure is a key aspect. Many food banks do not have the ability to pick up food from a number of restaurants. My job is identify the barriers that restaurants are currently facing and then use DCC and the project to overcome those barriers.

As this project has many dimensions, success is evaluated upon several different metrics. The first metric calculates how much the diverted food waste contributes towards the event’s zero waste goal. In 2018, DCC diverted a total of 43% of all waste. The baseline figure can be used to evaluate the impact that food recovery will have on the overall waste diversion picture. Furthermore, the combined weight of the food will be measured and compared to the sum of all waste streams (landfill, recycling, and compost) to evaluate the total percentage that the food recovery diverted from the streams. The sustainability implications of these findings will be evaluated.

The second evaluation measure is focused on the restaurants, and follows up on the diffusion of innovation framework. Taking a more qualitative approach, giving restaurants access to information, education, skills, and infrastructure to engage in food recovery will be evaluated on a case by case basis to understand the motives for donating and the barriers that prevented donation. While the end goal is to have restaurants adopt food recovery during the course of the project, laggards may not be prepared to do so yet. Therefore, providing them the tools and access to make the next step is an important aspect of the project.

Methods

Frequent communication was made with a subject matter expert, President/CEO of Urban Harvester, a food recovery non-profit organization in Los Angeles, CA, who advised on the project scope and logistics. After the project scope was established, progress on this project was quick. The first task was to find a donation partner who could both use the food to feed the food insecure and who would be able to help pick it up. I reached out to several potential partners including WasteNot, UMOM shelter, and Cornucopia Community Advocates (a food recovery program based in Yavapai County). However, the eventual donation partner was made through a personal connection with AJJ. A verbal agreement was made with the Director of Campaign Organizing to assist with logistics at the event and to provide the food to their shelter partners that house and feed refugees.

The following step was organizing the logistics for the day of the event. A call for volunteers was put out to School of Sustainability graduate students to assist with the food recovery on the Saturday and Sunday of the event. Several walk-throughs of the Desert Botanical Gardens with the tentative layout for the event took place. The tours allowed me to draft a plan to optimize access to restaurants and loading access points. I divided the event into three sectors based on where restaurants were located. I drafted a plan for the volunteers to each focus on one of the sectors in order to minimize confusion on the day of and keep everybody organized. Requests for materials from Local First Arizona and Desert Botanical Gardens were made, including carts and trays. Despite requesting that restaurants, Local First Arizona, and the Desert Botanical Gardens to provide trays and packaging, I bought supplies to ensure the day would run smoothly.

Written materials were drafted and submitted to Local First Arizona in advance of the event to be reviewed and distributed. The materials included a short blurb to be included in the informational packet that is delivered to all restaurants in the week leading up to the event. This can be found in Appendix A. Appendix B details the text on the flyer distributed to restaurants each morning of the event explaining the project and covering frequently asked questions about restaurants' liability of donated food.

For the event itself, every restaurant was visited before the event opened where the head chef was given the flyer and a short explanation of the project, tailored to their interest and accessibility. Volunteers arrived later in the afternoon and were briefed on their tasks, their assigned sectors, and educated about the project, the associated sustainability problems, and the expected impacts derived from this project. The volunteers were sent out in teams of two with packaging supplies 30 minutes before the end of the event to ask restaurants if they would like to donate their leftover food and if they would require supplies. Food was packaged and brought back to a central location before being loaded into my and volunteers' cars and delivered to the shelter where the refugees were being housed. A total of two volunteer hours were required per person at the event, with an extra 30 minutes for those who chose to help deliver the food. I was the main point of contact for any questions or issues that arose with the volunteers, restaurants, and LFA partners.

Outcomes

Devour Culinary Classic completed a waste audit to determine the total amount of waste generated at the event. A total of 15570 lbs was generated at the event. The total diversion rate was 45.15%. This included recycling, composting, and reuse. Approximately 500 lbs of food was rescued from restaurants across the two days. The breakdown of waste diversion by category can be found in Figure (2). Food recovery accounted for 7% of the waste diversion. The addition of food recovery helped increase the total waste diversion waste by 2% over 2018's rate of 43%.

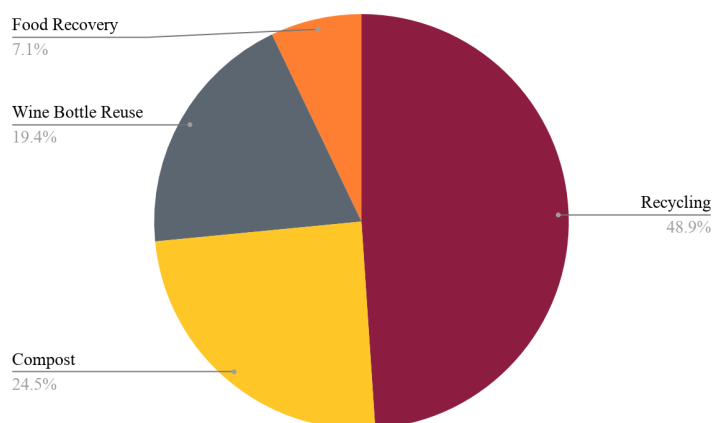


Figure (2): Waste Diverted by Category at Devour Culinary Classic

The amount of food waste that was donated represents 431 lbs of CO₂-e removed from the atmosphere, or 0.2 metric tons. This accounts for the prevention of food waste going to the landfill and the greenhouse gas emissions associated with that waste. The 431 lbs of CO₂-e is the equivalent of 2.5% of the average American household's food consumption, or approximately nine days.

A total of 24 restaurants donated food of the 70 restaurants present at the event. The same number of restaurants donated on day one as on day two. Many of the restaurants did not donate food because they had sold out or had already packed up by the time a volunteer reached their stall.

Food recovery provides a benefit for hungry people and the organizations that support them. The recovered food fed approximately 100 refugees for two days. As a non-profit organization AJJ relies on financial and in-kind donations from the public to provide assistance for the refugees. AJJ and their partner organizations spend, on average, \$8.50 per meal to feed the refugees that they house. The food donated represented a savings of up to \$5,000 for AJJ. This allows them to focus their budget on other essentials like clothing, hygienic products, and transportation.

The total costs associated with the project were approximately \$70 on supplies. Labor and transportation were both provided free of cost thanks to volunteer efforts.

Recommendations

For Local First Arizona, the most important aspect of this project was the project management and handling of the on-site food recovery program. Their secondary request was for a written document post-event to be used as a reference to organize food recovery at their future

events. Lastly, they requested a presentation be given at the LFA headquarters that summarized the results and analysis.

The document delivered consisted of three main parts. The first was a summary of the food waste problem that inspired the project and an overview of the results of the project. This section provided the background necessary for readers who are not intimately aware of current waste issues in our food system. It highlighted the project successes and can work as an outward-facing document to be used by LFA as promotional material.

The second portion of the deliverable was an overview of the project management involved with the project. If a different person is to run the project next year, LFA needs to know how it was organized in order to repeat it. Creating a document with the breakdown of the organization allows them to replicate the project without needing to reinvent the wheel. Included in this section was the “Local First Arizona Events Food Recovery Guideline”, a timeline that identified and explained all the actions that were involved in planning the project. This timeline started at two months before the event and included all significant milestones all the way through the end of the event and the food being donated. Also included in this document was a breakdown of supplies purchased and their costs.

The final portion of the document, and perhaps the most important, was a list of recommendations for future events. Due to this project being run as a pilot, there were many areas where it could be improved on. Input for these recommendations was provided by myself, the project partner lead, Helene Tack, and other volunteers involved with the food recovery. Recommendations were gleaned from the event and a series of debrief sessions occurring after the event. There were five recommendation categories: organization and logistics; marketing; communication; financial; and sustainability. A sample of the recommendations can be found in Table (1).

Organization and Logistic	Marketing	Communication	Financial	Sustainability
Integrate food recovery into Green Team Activities	Give restaurants who donate a sticker on DCC website	Ensure a dedicated walkie-talkie to food recovery lead	Find partners willing to make in-kind donations	Invest in reusable dishes and lids
Ensure dedicated cart for transportation	Give restaurants who donate a DCC/LFA sticker to go on their website	Ensure all volunteers have the project lead's phone number		Use partners close to the event to minimize transportation impacts
Ensure access to loading dock	Take pictures of the recovered food for promotional purposes			

Table (1): Recommendations to LFA to improve food recovery efforts at events

These six categories cover a wide array of areas that can be improved on in the future. Some of the recommendations come from direct experience, and represent a logistics and quality-of-life improvement, such as requesting a dedicated cart so that the volunteers do not need to carry around heavy trays of food across the venue. Others relate to the organizational structure of the project within the Green Team activities. This year, the food recovery efforts were separate from the larger Towards Zero Waste undertaking at DCC. In future years there is not expected to be a dedicated project manager, and as such, the food recovery should be bundled under the Towards Zero Waste initiative. Recommendations were made how to integrate this project into the existing management and organization structure to account for this change in management.

Lastly, recommendations are made on how to make this project more sustainable. While the pilot project used disposable supplies, continuing to do so into the future would produce more waste and not adhere to the Towards Zero Waste efforts. Investing in reusable storage containers is one way for LFA to align their operations with their overall message. This would require more coordination with a long term partner and would likely be predicated on an existing relationship. However, this also presents an opportunity to save money in the long term. Money would not need to be spent on disposable supplies for each event, allowing the up front investment to become a net positive with continued use.

Overall, Local First Arizona expressed great interest in continuing to implement food recovery at future events. It was a project they had been interested in putting into practice but had not had the resources to make it happen at previous events. Showcasing to LFA that this project can be a success, alongside the deliverables that delineate the management steps, can be the motivation needed to continue it in the future. While the pilot exemplified how food recovery

can be successfully implemented, it will be up to LFA to decide whether they have the resources to continue. Accounting for 7% of the diverted waste, it required a total of 5 volunteers per day with a dedicated project lead. As a non-profit organization reliant on volunteers, they must make the decision on how best to allocate their available human resources. Food recovery and waste management both occur at the end of the event and as such it is not possible to use volunteers for both projects, particularly because there does not want to be overlap between waste and food handling.

Events like DCC are a net financial positive for LFA and the other organizations on the committee, as such they are used as fundraisers for the annual budget. This presents a two sided coin. On one hand, this presents an opportunity to add food recovery into the budget. On the other hand, the importance of maximizing the financial returns was impressed upon me. Therefore, having a lean budget and cutting extraneous costs makes it more difficult to make the case for food recovery. Potential benefits include the avoided costs of hauling additional waste to the landfill.

Convincing the organizing team that they should undertake a project that represents a financial net loss, in this case, requires a sustainability champion who is able to make the case for it. For Devour, this comes in the Local First Arizona Sustainability team who manage the “Towards Zero Waste” operations for Devour and other LFA-hosted events. The recommendations given to LFA detail how food recovery can be more easily integrated into their existing events team structure. Furthermore, since DCC is the largest event they run every year, additional food recovery projects will be able to be on a smaller scale and require less coordination. Highlighting the emphasis on feeding hungry people, an additional benefit that their existing waste diversion strategies do not offer, and the marketing opportunities created for both the event and the restaurants are two avenues to make this project more appealing. Using the materials delivered to them as part of this report, they can show the success of this pilot project’s implementation and advocate for its benefits: sustainability, marketing potential, restaurant engagement, etc.

Discussion

While this project can be viewed as successful with regards to its sustainability impact, it was a one-time pilot project. Providing the capacity for Local First Arizona to implement food recovery in the future was a key outcome, but looking into how food festivals can be used to overcome barriers to food donation in the restaurant industry was also looked at as part of the project. Taking place at a food festival, this provided direct access to approximately 70 restaurants and chefs over the course of the weekend.

Likelihood to donate food did not align with the expectations of restaurants that would be more open to innovation - the innovators and early adopters. Rather, it was noted that likelihood to donate was predicated largely on logistical factors. A few key factors stood out. First, restaurants needed to have food left over at the end of the day. The majority of restaurants that turned down the opportunity to donate food were those that had simply sold out of their product earlier in the day. With high ticket sales and good weather (influencing high turnout) and

restaurants bringing a pre-planned supply of food, it is understandable that they would simply not have anything leftover to donate.

A second factor included the distance needed to travel to attend the event. While most restaurants were local to the Phoenix area, a few were from areas further across the state. Restaurants who had travelled from Sedona and Tucson were more interested in donating their leftovers so that they would not have to carry the food back with them, easing their burden when they arrive back at the restaurants.

Another interesting aspect noted was that restaurants that were grouped together tended to donate or not donate as a group. Peer pressure and social influence has been known to be effective in adopting sustainable change (Graziano and Gillingham, 2015). Food donation was not evenly spread out across restaurants and sections, rather it seemed to come in groups of adjacent restaurants. For example, on day two of the festival, only 2 out of 11 restaurants located in Sunset Plaza donated their food. Meanwhile, on Ullman Terrace, 6 out of 9 restaurants donated. The reason behind this is currently unknown. It is possible that sections of the festival were more and less frequented, leading to adjacent restaurants having more or less leftovers. However, it is possible that there was influence among restaurants upon seeing others donate. Further research on this topic would be necessary to determine the cause behind the trend and identify if this was a case of correlation or causation. If it is indeed a case of diffusion within the small network, then it might be beneficial to identify features of restaurants that are likely to donate and spread those restaurants throughout the event. That way, when they choose to donate their decision influences other restaurants to make a similar choice.

Meanwhile, the direct access with restaurants provided an opportunity to inform and educate them about food recovery practices. It was noticed that restaurants held a few common misconceptions about food recovery that might have prevented them from donating either at this event or in the future. The ability to speak directly with chefs and owners to clear up this misconceptions was valuable in changing their opinion about the practice. Notably, there were two misconceptions that reoccurred across various restaurants. One was that they were unable to donate food due to food handling and safety regulations. Written pamphlets and conversations detailing the Bill Emerson Good Samaritan Food Act and its protections provided the information necessary to dismiss their misconceptions. Some restaurant staff had never heard of the Act or that it completely protects the restaurants from liability when they donate food. Providing this information to them is one way to begin to open their minds to the possibility of donating food and removing a barrier that might prevent them from looking into it further.

Another misconception was that prepared food, cooked food, or ingredients were not acceptable to be donated. While this may be the case for food banks, who prefer non-perishable food to be distributed to hungry people to cook themselves, soup kitchens and shelters accept food of all kinds. These locations cook food to distribute as meals on-site. They generally are equipped with full kitchens and the capacity to accept prepared meals or ingredients that require storage and preparation. The ability to education restaurants directly on what food they can and cannot donate was vital to increase their understanding of the process and that they have more food than they had previously thought that can be donated. Changing their perception of leftover

prepared food from waste to a viable product that can be used by others is one way of diffusing barriers to implement food donation down the line.

Areas of Improvement

The project succeeded at its goal of diverting food waste from restaurants from the landfill and donating it to people in need. However, the project and its methodology could be improved in many areas. The recommendations section details many of the areas where the project management can improve to increase the efficiency and spread of food recovery for LFA. Festivals act as a centralized area for knowledge transfer across a group of stakeholders. The transfer of knowledge and education are important, as is the ability to inform stakeholders and potential adopters of change. They are not the only barriers that must be overcome to diffuse an innovation within a network. Unfortunately, food festivals do not provide the capital or infrastructure needed to solidify this practice on a more permanent basis. Educating the festival organizers about the benefits of food donation and presenting them with a solid business case can help break the business as usual mindset present within the sector and change their attitudes.

Future research and projects can find a way to integrate all of these barriers, using festivals as an entry point to follow up with restaurants and work with them directly to overcome additional barriers as they present themselves. Having a sustainability advocate assist the restaurants can be one way to address all the barriers from start to finish. Quantitative or qualitative data collection of restaurants' beliefs, attitudes, and reasons for donating are all areas that can be subsequently researched based on the work presented here. While this project used a framework of diffusion of innovation to understand how new ideas diffuse amongst a network, a community-based social marketing approach (Mckenzie-Mohr, 2011) may be helpful to use in future research to identify specifically how to take the theoretical knowledge and turn it in to an ability to foster sustainable change.

Food recovery is an important field given the number of people who are currently food insecure. However, it does not work to solve the root drivers that cause food insecurity or that contribute to the wasteful food system. While work in this field is important to utilize value streams as they currently exist, it is necessary to always think about the underlying systems and how they are contributing to sustainability problems and how we can work to solve the causes of these problems, and not merely the symptoms.

Conclusion

Overall, this project was a success from the perspective of waste diversion and food recovery. Over the course of a single weekend, 500 lbs of food was diverted from the waste stream and was used to feed 100 people. The project showed that food recovery can be successfully implemented at events and festivals on a large scale with the existing capacity and resources provided by Local First Arizona. There is potential for further engagement with students to refine the food recovery process and broaden its implementation at festivals. I am optimistic that the exciting success of the project will motivate LFA to include food recovery at future events.

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Appendices

Appendix A

DONATE:

Have leftover food at the end of the day? All usable food will be collected and donated to Arizona Jews for Justice for refugees. Food donations must follow safe food handling laws and be in containers that you do not need back (we will have some disposable containers if needed). Volunteers will come around at the end of the event to collect the food to donate.

Food donation service provided through collaboration with ASU. If you are interested in food donation at your restaurant, please contact Lexie Fields-Austin: lfieldsa@asu.edu.

Appendix B

Interested in donating your leftover food to a good cause and move Devour Culinary Classic and your restaurant Towards Zero Waste?

All food from interested restaurants at Devour Culinary Classic will be donated to asylum seekers currently sheltered in Phoenix with help from Arizona Jews for Justice.

Under The Bill Emerson Good Samaritan Food Donation Act (1996) restaurants hold no liability for food and grocery products donated to non-profit organizations. The law protects you from civil and criminal liability should the product be donated in good faith later cause harm to the recipient.

Please reach out if you would like to participate. You can leave containers behind at your stall or request it to be picked up. We can provide containers to package food upon request.

Want to learn more or continue to donate leftovers from your restaurant in the future? We can march you with partner organizations across the Valley that feed hungry people.