Feeding Mouths, Not Landfills: An Analysis of Food Recovery Efforts in Saratoga Springs

Melvin Alvarez, Jordan Chang, and Rebecca Fennel
Skidmore College
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Abstract

Food waste and hunger are two major issues today in the United States and internationally. This study explores the increasingly utilized practice of *food recovery*--a method of food redistribution that solves the two problems simultaneously. This paper presents archival research and our own field research from Saratoga Springs about food waste, food insecurity, and food recovery efforts. We interviewed many stakeholders along the food distribution line, including food retailers, food banks, hunger relief organizations, and clients who benefit from food donations. Our findings show that many parties are involved in reducing waste and hunger, but several logistical and economic barriers prevent food recovery from reaching its full potential in Saratoga Springs. Ultimately, we provide solutions that attempt to maximize the amount of food being diverted from the waste stream and instead redistributed to low-income community members.

Key words
Food waste, food security, hunger, food insecurity, food recovery, food rescue, food redistribution, food donation, food banks, food organizations.

Introduction

Food waste is a complex topic within the modern field of sustainable development, encompassing environmental, economic, and social factors. Approximately 40% of all food produced in the United States is uneaten, creating 72 billion pounds of waste every year (EPA, 2014). Wasting food contributes heavily to environmental degradation, including the overconsumption of natural resources and extremely high levels of greenhouse gas emissions. From an economic standpoint, the cost of food disposal is severe. Every year, billions of dollars are spent by producers, distributors, retailers, and consumers on food that will simply be sent to landfills. Ironically, despite the exorbitant amount of food getting trashed, almost one fifth of the U.S. population does not have enough food to eat (Feeding America, 2015). Clearly, action must be taken to solve these problems if we want to forge a more sustainable and equitable food system.

This research explores the potential to solve food waste and hunger simultaneously by employing a process called “food recovery,” or “food rescue.” Food recovery is a method of food distribution that takes food that producers and retailers will not or cannot sell and redistributes it to people who need it. Food recovery addresses the three pillars of sustainability in a positive and purposeful manner. First, it mitigates the environmental consequences of food waste by utilizing the energy and resources used in food production to feed society’s underserved populations. Additionally, diverting food from landfills decreases greenhouse gas emissions. From an economic perspective, donating food benefits retailers because it lowers the cost associated with trash collection and it includes financial benefits like tax breaks and an improved corporate image. And finally, food recovery feeds people in need. For these reasons, hundreds of organizations and institutions around the world have implemented the sound method of food rescue. Thus, there is a plethora of information and resources available that can serve as guidance for communities looking to incorporate food recovery into their food systems.

The purpose of this research is to analyze efforts being made in Saratoga Springs to redistribute edible food from retailers’ waste streams to people in need. We aim to evaluate the extent to which grocery stores, food banks, and local hunger relief organizations are participating in food recovery to feed the city’s individuals and families living below poverty levels and possibly food-insecure. As of 2013, 7.9% of people in Saratoga, or 2, 158 individuals, had incomes below the poverty level (Census Bureau, 2015). Using data collected through mixed methods of archival research, semi-formal interviews, and participant observation, we evaluate the successes and failures of food recovery in Saratoga Springs. Ultimately, we provide suggestions to stakeholders to increase the amount of food being diverted from the waste stream to feed underprivileged community members.

The following literature review provides a summary of the economic, social, and environmental complexities of food recovery in the United States and internationally.

Environmental Effects of Food Waste

Food waste is one of the many inefficiencies of the U.S. food system with multiple environmental consequences. In 2011, over 72 billion pounds of food was wasted, making organic food waste the single largest component in American landfills (EPA, 2015). This amount of food waste is equivalent to the volume of about 96 Empire State Buildings. Food waste is responsible for the emission of powerful greenhouse gases, as well as the overconsumption of limited natural resources like water, land, soil, and petroleum in order to produce food. When 40% of all food produced is wasted, 40% of the resources used in all food production, transportation, and storage are also wasted.

Food waste uses a massive amount of natural resources. First, food waste is responsible for 25% of freshwater usage in the United States (Hall, 2009). As droughts become more severe with climate change and groundwater levels fall, it is essential to halt this useless overconsumption of water. Additionally, the transportation of food that will ultimately be wasted by retailers and consumers wastes energy. In 2003, the transportation of food that was never eaten accounted for 300 million barrels of oil in the U.S., representing 4% of all oil consumed within the U.S. that year (Hall, 2009). Millions of acres of land are also used to grow uneaten food, which can decrease soil quality, leading to erosion and future food insecurity.

The current level of food waste in landfills has contributed to unnecessary increases in liquid sewage, or leachate, and greenhouse gas emissions of methane gas and carbon dioxide. Leachate, a mix of toxic chemicals, can infect nearby habitats and groundwater supplies. Methane is a particularly harmful greenhouse gas, as it is 25 times more effective at warming the

atmosphere than carbon dioxide (Hall, 2009). According the the U.S. Environmental Protection Agency (EPA), landfills account for about 20% of all methane emissions (2014).

Economic Impacts of Food Waste

Wasting natural resources to produce excess food has economic consequences, as well. The costs of producing, transporting, and hauling food waste costs billions of dollars to U.S. industries, distributors, retailers, and individuals every year (Rutten, 2013). Producers waste significant amounts of money on labor, fertilizer, water, gas, and utilities when the food they raise is wasted. Roughly $165 billion are spent each year on producing, transporting, and disposing of food that will never be eaten (USDA, 2014). The 300 million of barrels of oil used in the transportation of wasted food in 2003 is equivalent to about 15 billion dollars. A total of 161 billion dollars worth of retail sales are lost to the landfill every single year (USDA, 2014). Reducing food waste would save industries a significant amount of money and promote economic growth in other sectors.

Unfortunately, it is difficult to reduce the amount of food produced by farms and industries, as a shorter food supply would lead to higher food prices (Rutten, 2013). Conversely, a higher supply of food leads to the decreased cost of food, which explains why food is currently being overproduced. Thus, there is little incentive for farmers and producers to grow less food. High food costs push low-income Americans to depend on welfare programs for sustenance, on which taxpayers spend massive amounts of money.

The Social Issue of Food Insecurity

While the U.S. continues to produce alarming amounts of food waste, food insecurity is a major concern among many Americans. The U.S. Department of Agriculture (USDA) defines

food insecurity as not “having access by all people at all times to enough food for an active, healthy life” (Coleman-Jensen, Gregory, Singh, p.2, 2014). According to the most recent study by the USDA, 49.1 million Americans--or 14.3% of households--were food insecure in 2013 (Coleman-Jensen et. al., 2014). This equates to 1 in every 6 Americans (Feeding America, 2014). Most of these individuals and families are low-income and live at or below the poverty line. Despite small fluctuations in the yearly numbers of individuals facing food insecurity, a significant portion of the American population continues to struggle to bring food to the table.

Although hunger exists in every community in the nation, the rate of food insecurity varies greatly between urban and rural households, as well as among racial and ethnic groups. According to Feeding America (2014), 52% of counties with high food-insecurity rates are rural, whereas 24% of highly food-insecure counties are urban. Demographically, 26.1% of African American households and 23.7% of Latino households are food insecure as compared to 11.7% of Caucasian households (Coleman-Jensen et al., 2014).

When living under a restricted budget, individuals and households often are forced to make difficult decisions. According to a Feeding America 2014 report, people living with food insecurity often have to decide whether to buy food or paying for other necessities. Among these surveyed, 65.9% of households reported having to choose between paying for food and paying for medical care; 69.3% between food and utilities; 57.1% between food and housing; and 66.5% between food and transportation at some point in 2013 (Weinfield, Mills, Borger, Gearing, Macaluso, Montaquila, and Zedlewski, 2014).

There is an array of federal initiatives to address food insecurity in the U.S. The five largest programs that account for 96% of federal spending on food assistance are: the Supplemental Nutrition Assistance Program (SNAP); the National School Lunch Program

(NSLP); the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); the Child and Adult Care Food Program (CACFP); and the School Breakfast Program (SBP) (Anderson, 2013). These efforts are combined with a conglomeration of private food assistance programs operated by NGOs, such as food banks. Despite the availability of these support programs, people may be deterred to seek out food assistance because the programs may be considered burdensome, inconvenient, or humiliating. Research suggest that many Americans refuse to use these food assistant services because of the stigma attached to them (Anderson, 2013). The research suggest that hunger and food insecurity, though often portrayed as individual problems, are actually deeply social problems.

Existing Food Recovery Efforts Across the Nation

Food recovery addresses the environmental and economic costs associated with food waste while simultaneously providing the social benefit of mitigating food insecurity. Hundreds of organizations and networks already exist to collect, sort, and deliver food that producers and retailers cannot or will not sell. In this model, food flows down a "tripartite" distribution chain, from the retailer, which includes grocery stores, farmers markets, bakeries, etc., to food banks, to local hunger relief organizations, like food pantries and homeless shelters (Alexander and Smaje, 2008). Without the middle food rescue party, which facilitates movement of goods, it is often difficult for food to flow from the retailer to the the hunger relief organizations. However, direct donations between retailers and hunger relief organizations are common.

Federal agencies also play an important role food recovery. The USDA assists private, nonprofit, and corporate food rescue efforts in whatever ways they can. For example, the USDA guides state agencies that administer TEFAP (The Emergency Food Assistance Program) on how to best use funds to process, repackage, and transport rescued food (EPA, 1999). The EPA also

focuses on reducing food waste through recovery and redistribution. WasteWise, launched in 1994, is a partnership program between businesses, governments, and institutions that encourage waste reduction (EPA, 1999). The Department of Defense, Department of Labor, and other government departments also support food recovery in various ways (EPA, 1999).

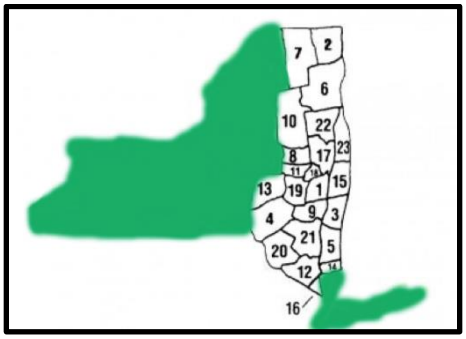
The U.S. Environmental Protection Agency outlines four ways to recover food: field gleaning, wholesale produce salvage, perishable and prepared food rescue, and non-perishable food collection (EPA, 1999). Field gleaning is the collection of surplus crops from farmers' fields; for farmers, it is not economically or logistically beneficial to harvest the crops. Wholesale produce salvage is the gathering of fresh fruits and vegetables at local or regional wholesale produce markets; generally, wholesale retailers donate the produce because they do not want to save a small amount for resale on the following market day. Perishable and prepared food rescue is the collection of produce, meat, dairy items, baked goods, and prepared food from grocery stores, restaurants, cafeterias, and catered events; the food will no longer be sold or served because it has reached its expiration date, or because it is bruised, wilted, or cosmetically flawed in other ways. Finally, non-perishable food collection is the gathering of shelf-stable processed food from retailers who cannot or will not sell the food due to expiration, mislabeling, or damaged packaging.

After gathering food waste, food recovery organizations organize and sort through items for quality. While food rescuers are required to sort food as thoroughly as possible to ensure the safety of the items being sent out, there are laws in place that grant legal protection to charities so that they do not get in trouble for unintended harm to food recipients. In 1996, Bill Clinton signed the Bill Emerson Good Samaritan Food Donation Act, a national legislation to protect food donors (individuals and organizations) from the liability of distributing potentially harmful

products (Public Law 104-210 §1, 1996). The bill does note, however, that this exemption of liability does not protect food handlers exhibiting gross negligence or intentional misconduct.

One of these food recovery organizations is the Regional Food Bank of Northeastern New York (RFB), which is located in Latham, NY, just 30 miles south of Saratoga Springs. The non-profit is responsible for redistributing food from retailers to hunger relief organizations, and it operates in 23 out of New York's 62 counties. Figure 1 displays this region.

Figure 1. Map of Regional Food Bank of Northeastern New York's Service Area



The RFB receives donations of food from farmers, manufacturers, retailers, and wholesalers who cannot sell the products due to overproduction, expiration, production flaws, product discontinuations, mislabeling, shipping errors, cosmetic damages, and other imperfections (RFB, 2010). After sorting through food using their unique conveyor belt system, the food bank repackages and delivers food to charitable organizations in 23 counties in northeastern New York, including Saratoga Springs. The food bank distributes approximately one million pounds of food each year to Saratoga County food pantries, soup kitchens, emergency shelters, youth programs, senior programs, and programs for the disabled, who serve food to women, men, and children in need in the form of groceries, hot meals, or reheatable meals. Most organizations have the capacity to serve dozens of people at a time, whereas the

food bank cannot provide this direct service. The RFB also runs backpack programs to feed food-insecure children in schools.

FareShare, a similar organization to the RFB, has been studied in England. FareShare aims to reduce waste and end hunger via the tripartite distribution model, which involves retailers, food banks, and hunger relief (Alexander and Smaje, 2008). Although FareShare redistributes large amounts of food, the study reveals that the organization often struggles to maximize donations. For instance, from a donation of 1,182 pounds from a retailer, FareShare rejected 230 pounds at the point of offer on the grounds that it was potentially unfit for human consumption (Alexander and Smaje, 2008). From the remaining 952 pounds taken to FareShare's depot, another 187 pounds was discarded. Of this, 112 pounds was delivered to a local animal shelter for animal feed and composting, and 75 pounds of food was sent to landfills (Alexander and Smaje, 2008). Thus, 765 pounds (64%) of the initial 1,182 pounds were distributed to people in need. The study shows that one of the biggest problems for food recovery organizations is ensuring that donated food is actually delivered to hungry community members rather than being thrown away.

Despite the national efforts to increase food recovery, 40% of all food produced is still discarded and millions remain hungry. Just 3% of food is actually diverted from landfills through food recovery and other waste reduction strategies (End Food Waste Now, 2013). Following the model of sustainable development, solving these environmental, economic, and social issues will rely on the investigation and employment of food recovery.

Methods

Through the archival research presented in our introduction, we have discovered that food waste and food recovery are gaining global acclaim. Consequently, we wanted to understand food waste patterns and food recovery efforts within Saratoga Springs, NY.

The purpose of this study is to explore the dynamics of food recovery in Saratoga Springs. First, we set out to analyze local retailers' attempts to reduce food waste through food donation. Then, we researched the Regional Food Bank of Northeastern New York's involvement in food recovery in Saratoga Springs, evaluating their effectiveness as a "middle man" of food redistribution. Next, we assessed community food outlets' role as recipients of food rescued from the waste stream. Altogether, the data shows the extent to which Saratoga Springs is participating in food recovery.

We resorted to archival research, participant observational research, and semi-structured interviews with local retailers, corporate representatives, hunger relief organizations, volunteers, and recipients of food to assess the issues of hunger and food waste from multiple perspectives. Although some stakeholders are located in Wilton and Ballston Spa, New York, they provide significant support to hunger relief efforts in the City of Saratoga Springs; therefore, our study includes three hunger relief organizations and two retailers that are physically located outside of the city limits.

To conduct archival research about stakeholder involvement in the reduction of waste and hunger in Saratoga Springs, we were able to access a multitude of reports and publications from many different websites, including: the Regional Food Bank's 2013 and 2014 annual reports, financial summaries, and other publications; the Saratoga Economic Opportunity Council's community assessment documents; other charitable organizations' reports; and food retailers'

reports and publications. We were able to get some information about the amount of food received, people fed, and money spent throughout the food recovery process.

Regarding participant observation, we volunteered at the Regional Food Bank in Latham, and spoke with M. E. Mazur, their Volunteer Coordinator. We also went on a food pickup from Hannaford with Roger, one of the Wilton Food Pantry's regular volunteers. Finally, we volunteered at the Franklin Community Center, which has a food pantry near downtown Saratoga Springs.

Our team conducted a total of 16 semi-structured interviews with local stakeholders involved in the food recovery process. We asked stakeholders to describe the logistics, successes, and challenges related to the food waste reduction and food donation process. The retail employees we interviewed were: Paul Gizzi, Assistant Store Manager and Sustainability Lead at the Hannaford on Weibel Ave. in Saratoga; a local Price Chopper Manager, who wished to remain anonymous; Bob Stickney, the Assistant Manager at the Wilton Walmart; Richard Frank, owner of the Four Seasons Natural Foods Market; and vendors at the Saratoga Farmers Market, namely Michael Kilpatrick, a farmer, and Rick Green, the Winter Market Manager. Since some store managers provided zero or very limited information in regards to their policies and procedures towards waste reduction and food donation, we interviewed the following corporate representatives: Kasey Harris, Hannaford's Sustainability Programs Specialist; and Joe Berman, Price Chopper's Manager of Corporate Social Responsibility. In addition, we interviewed the following representatives of local hunger relief organizations: Shelby Thomas, Saratoga Economic Opportunity Council (EOC) Community Resource Specialist; Gloria Laporta, EOC Soup Kitchen Manager; Shelters of Saratoga (SOS) House Manager Bonnie Potter; Wilton Food Pantry (WFP) Volunteer Manager, Dennis Towers; Julie Slovic, Food Program & Financial

Administrator at Franklin Community Center (FCC); and Erin Prendergast, the Regional Food Bank's Food Industry Relations Associate. We chose these retailers and hunger relief organizations because they are the main groups in the region involved in food recovery in Saratoga Springs. We also conducted an interview with John Reed, Manager of Procurement and Compliance at Food Gatherers, a food rescue initiative in Michigan, to obtain a perspective from another food bank. Additionally, we collected a personal anecdote from an individual receiving food from FCC and EOC to gain a better understanding of the situation of individuals receiving aid. We recorded these interviews using a voice recording device and later transcribed these interviews into a Microsoft Word document. The transcribed conversations can be found in Appendix A.

There were some limitations to the amount of data we were able to collect. First and foremost, we were often disappointed by the limited amount of information that retailers were able to give us about how much food they threw out and donated. The informants we interviewed could not provide us this information for a variety of reasons. Sometimes, the retailers did not track the amount of food they threw out and donated. But mainly, the retailer managers were legally bound to withholding certain information because the companies did not want to publicize their failures to reduce waste and feed the community. Also, it was difficult to get in contact with individuals receiving food because many of them were in a rush to pick up their food and get back home in time, and they could not afford to stop and talk with us. Additionally, we did not receive a reply from Casella Waste Systems, the local waste management company, from whom we had hoped to collect data related to retail food waste weights. This presented an issue to our research because we could not acquire information about how much food was being thrown out by Saratoga Springs grocery stores. Finally, we were constrained by time limits. We

would have spoken with many more stakeholders in the region if we had more than three months to collect data.

Despite the limitations, we believe that our economic, environmental, and statistical data, along with qualitative information from all stakeholders, succeeds at clarifying food recovery trends in Saratoga Springs. Using the collected data, the following analysis presents the barriers to waste reduction and hunger relief that retail and hunger relief sectors in Saratoga Springs are currently facing. We believe that the community should take our findings into consideration to target the issues and to create a more efficient food recovery program. We hope to inspire change that will minimize food waste and food insecurity.

Results and Discussion

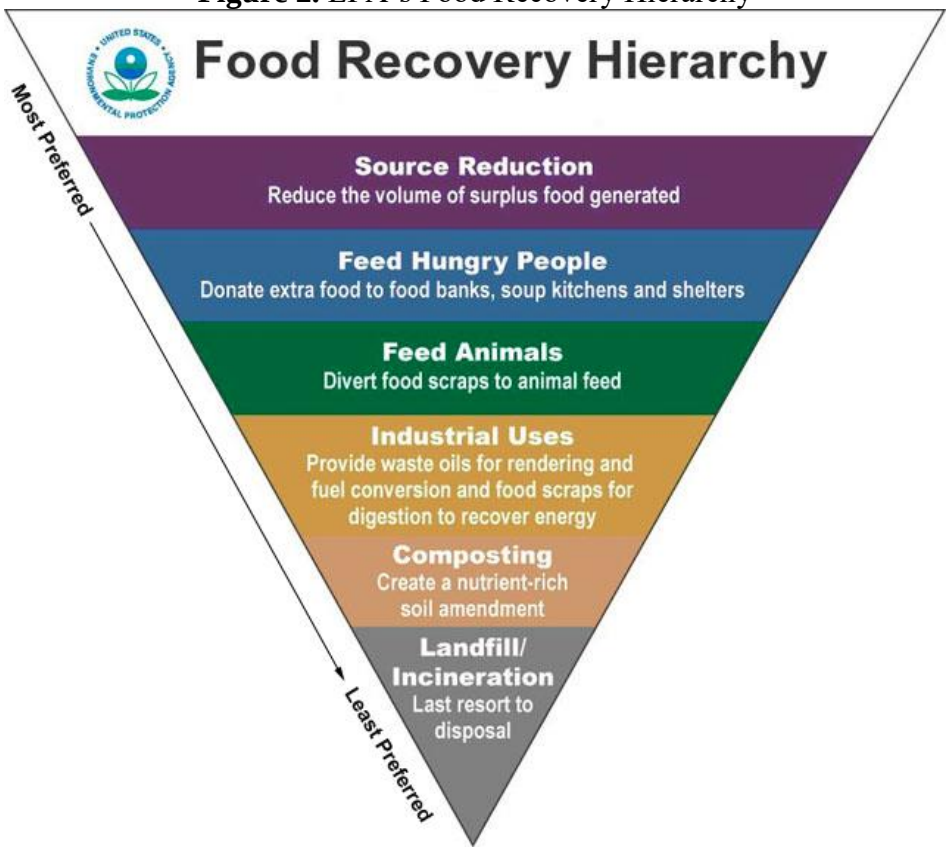
The following section outlines our findings from archival research, participant observation, and semi-structured interviews with stakeholders along Saratoga Springs' food distribution chain. First, we discuss the data we gathered from retailers about their efforts to reduce waste and feed the community in and near Saratoga Springs. Next, we detail the efforts of the Regional Food Bank of Northeastern New York. Finally, we explain the role of local hunger relief organizations in food recovery.

Retailer Involvement in Food Recovery

This section presents the details of retailer involvement in food recovery in Saratoga Springs. Our findings show that all of the retailers we interviewed are committed to some level of food recovery. The EPA's food recovery hierarchy is an essential tool for retailers involved in food recovery. When we refer to the hierarchy, or pyramid, we are referring to Figure 2 below. Following the first tier of the food recovery pyramid, many employ waste reduction practices

like strategic food ordering and price markdowns. Second, retailers follow the second tier of the pyramid, which is donating food to food-insecure humans. We focus primarily on this level of food recovery because it addresses the three pillars of sustainable development by mitigating social, environmental, and economic problems in Saratoga Springs. Next, we discuss the third level of the hierarchy, which is donating food scraps to feed animals. Then, we explain retailer involvement in converting waste into compost and other products. Finally, we address landfilled food waste.

Figure 2. EPA's Food Recovery Hierarchy



First Tier of the Food Recovery Hierarchy: Source Reduction Strategies

All the interviews showed that retailers try to end each business day with as little excess food as possible. This strategy follows the first tier of the food recovery hierarchy: "Source

Reduction," which means reducing the volume of surplus food generated. Retailers reduce food waste from the onset in a variety of ways. First, farmers who sell crops at the Saratoga Springs Farmers Market plant only what they expect will be sold. For example, Pleasant Valley Farm reviews records of what was sold at past markets; the records help them decide how much to plant for the each season. When they began to plant crops more strategically by using these records, they reduced their food waste from 3,000 to 1,000 pounds per year. Battenkill Valley Creamery also produces just enough milk to sell so that none goes to waste; their farmers market stand manager responded that they never produce enough milk for any of it to go bad. Similarly, Hannaford supermarkets reduce food waste by ordering food daily (as opposed to every other day) so that they can receive just the right amount of food to sell to customers.

Retailers have also found ways to maximize profits by keeping food items on the shelves for sale as long as possible. The Wilton Walmart and the Price Chopper in Saratoga Springs employ price mark-downs for food that will soon be out-of-date. Saratoga Springs Farmers Market vendors reduce waste by storing unsold crops in cold "root cellars," and reselling the food the following week. Four Seasons incorporates bruised or older produce into juices and hot meals to sell at their store-owned café.

Second Tier of the Food Recovery Hierarchy: Feeding Hungry People

Every retailer that we interviewed donates food, either directly to hunger relief organizations or to the Regional Food Bank, which then distributes food to community food outlets in Saratoga Springs. Most notably, Hannaford's food donation program provides up to 5,500 pounds of food per month to hunger relief organizations in the community. Other large grocery stores, like Price Chopper and Walmart, donate food as well, but not as much as Hannaford. Smaller retailers like the Four Seasons Natural Foods market and the Saratoga

Farmers Market are donating food, but their small size inhibits the amount of food that they can provide. Table 1 shows the types of food that each retailer provides to the Saratoga Springs community.

Table 1. Categories of each retailer's food donations

	Produce	Meat	Dairy	Deli Items	Bread	Desserts	Dry/Canned Goods
Hannaford	X	X		X	X	X	X
Price Chopper				X	X	X	
Walmart						X	X
Four Seasons	X		X				X
Farmers Market	X						

We found that the challenges that retailers face are related to coordination and logistics. All retailers struggle with taking the time to set aside food to be donated, getting volunteers to pick up food donations, and tracking the amount and types of food that they are donating. 60% of retailers also discussed that they would like to be receiving better tax benefits for their charitable efforts, and more publicity for their community involvement.

Hannaford: A Model Retailer for Food Donation

In 2014, the Hannaford supermarket on Weibel Ave. in Saratoga Springs was evaluated by a grocery stewardship certification program called Manomet for sustainability-oriented practices. Hannaford was awarded the certification, and the store performed even better on the

evaluation than they had hoped. Kasey Harris, Hannaford's Sustainability Programs Specialist, responded that Manomet has "repeatedly told us that we are lightyears ahead of a lot of grocery stores" (personal communication, 2015). Clearly, Hannaford is a leading grocery store in terms of sustainable business practices. In particular, the chain has achieved success in reducing their food waste. Hannaford's goal is "zero-waste," which means that they are trying to send zero garbage, including food waste, to landfills. To accomplish this goal, Hannaford began researching their waste practices in 2004. They investigated the weights of their dumpsters being hauled away, and they found that they were wasting money on pickups of dumpsters that contained just 5 tons of garbage, instead of the 12 tons that the 40-yard dumpsters could actually hold. Since each dumpster pickup adds up to $3200 per month to the company's expenses, Hannaford knew that generating less waste and scheduling pickups only when dumpsters were full were two necessary steps to lower costs. Kasey remarked,

> Just paying a little bit of attention to this is the right thing to do for the environment, the right thing to do for our community, and the right thing to do to save money, because we are a for-profit business. (Personal communication, 2015)

Each of Hannaford's 187 stores in Maine, Massachusetts, New Hampshire, Vermont, and New York employs a "Sustainability Lead" that coordinates the store's environmental efforts, one of which is food waste reduction. At the Hannaford on Weibel Ave., Paul Gizzi is the Sustainability Lead. Sustainability Leads like Paul work with representatives in each department (produce, meat, bakery, deli, dairy, and dry goods) to ensure proper food waste handling. A poster of the EPA Food Waste Hierarchy is hung up in each store so that every staff member is familiar with the best ways to deal with food waste.

Although Hannaford is strategic about how much food they order, they cannot predict exactly what they will sell. They try to deal with the excess food--or *shrink*--in the most economically and environmentally feasible ways possible. After marking down the prices of

items, they look to food donation to reduce their food waste and to feed the local community their remaining edible products. Each month, the Weibel Ave. Hannaford donates 3,500 to 5,500 pounds of frozen meat, produce, bread, dessert, and deli items. Hannaford is involved in tripartite distribution, setting aside donations that the Regional Food Bank picks up roughly once a week. The Regional Food Bank has also encouraged direct donation partnerships between Hannaford and local hunger relief organizations like the EOC's soup kitchen in Saratoga Springs, food pantry in Ballston Spa, the Wilton Food Pantry, and St. Clements Church in Saratoga Springs. The RFB works with the organizations to ensure proper refrigeration and food handling during deliveries and once the food arrives at the organizations.

Paul Gizzi, the Assistant Manager, oversees the food donation process, but there is a receiver in the back room at Hannaford that coordinates the food pickups. This employee sets aside food to be picked up, and interacts with volunteers and employees from the hunger relief organizations. Gizzi said that the biggest challenge with donating food is working with community volunteers, who have inconsistent schedules and availability to pick up donations. He explained, "You just gotta be open to their schedule--whoever's available, when they can get here. Certainly we would like to donate everything, but sometimes it isn't physically possible" (Gizzi, personal communication, 2015).

One other issue that Hannaford is working to solve in 2015 is donation tracking. Often, organizations receive food from retailers but do not make a note of how much they have received. In 2015, Hannaford is working with Feeding America, one of the nation's leading hunger relief organizations, to train the receiving organizations to track the amount of food that Hannaford has given them. This benefits Hannaford because they can get the tax credit they deserve for donating food to people in need. Harris mentions:

> We've got recycling down, we've got composting down, and we donate food, but I just don't think that we get all of the credit we should, and we don't have the best systems in place to track it all. So we're trying to get that all in place so that we have more of a standard practice and a standard procedure, and to have directions to follow to make it easier for us and the local organizations. (Personal communication, 2015)

Aside from some of the issues regarding food pickups, Paul Gizzi believes that his store is competitive with the other Hannafords when it comes to donating food. Kasey Harris agreed, stating that Hannaford as a corporation is "ahead of the pack," and that other grocery stores could improve their efforts. She also acknowledges,

> You never know what organizations are doing, and I think a lot of times it's not what they're talking about... In my experience, you're not really ready to tell the public until you're 110% sure you're really doing it in-house... And now, having been in this room for over six years, I know we're doing it. And so I have no problem calling a student and saying yep! (Personal communication, 2015)

Price Chopper

To learn about Price Chopper's involvement in food recovery, we interviewed an employee from a store in Saratoga Springs (who requested anonymity in this paper), and also with Joe Berman, Price Chopper's Manager of Corporate Social Responsibility. The store donates baked goods, overripe bananas, deli items, and shelf-stable canned and packaged goods to local hunger relief organizations. No produce, meat, or expired items are donated, as Price Chopper worries about liability concerns from serving spoiled food, despite the Good Samaritan Food Donation law that protects them.

The employee said that the store donates to the Saratoga Hospital and to the Salvation Army, although a representative at the Salvation Army told us that they do not get any food donations from retailers. When it comes to donating food, Price Chopper hands the responsibility of food pickups to the community food organizations. The employee responded, "We don't go out looking for organizations" (Anonymous, personal communication, 2015). We asked Joe

Berman if he thinks that Price Chopper should try to find organizations that would be willing to pick up food donations from the stores. He responded, “I don’t know what the implications are if we do that kind of outreach” (Berman, personal communication, 2015).

Each Price Chopper store operates differently depending on their sales volume. The employee said that they “used to work in another Price Chopper, where someone would come in every single morning for bakery stuff” (Anonymous, personal communication, 2015). The corporate side of Price Chopper would like to become more involved, making waste reduction strategies like donation more streamlined across the company’s 137 stores. But currently, although store managers receive training from corporate staff members, the decision to donate food is ultimately up to each manager’s discretion.

Joe Berman emphasized that Price Chopper gives away “tons and tons of food,” but the company’s level of involvement in food recovery seems consistent with his belief that “at the end of the day, we sell food. We’re not in business to give food away” (personal communication, 2015). He acknowledged, “There’s a real hesitation in the company to thump our chests and say ‘Look at all these things that we do,’” but he also mentioned that “we’re moving I think in a better direction where we’re more effectively communicating those kinds of things,” because publicizing the amount of food that the company donates “would be a compelling bit of information to give out publicly” (Berman, personal communication, 2015). According to the employee, “Price Chopper has always been known for being very helpful with the community” (Anonymous, personal communication, 2015). Better communication of their donation programs would be in line with their other charitable efforts.

Walmart

Like Hannaford, Walmart commits to a zero-food-waste policy. Items still fit for human consumption are donated to the Regional Food Bank, who picks up food every Monday, Wednesday, and Friday. They try not to donate bread products because organizations get so much bread and do not want more; instead, they donate many dessert products. Each donated item is scanned so that Walmart can receive a tax credit for their charitable efforts. Through donation programs like this, Walmart stores across the nation were able to donate over 571 million pounds of food to food banks in 2013 (Walmart, 2015). Walmart's sales inventory and waste calculator software how much food each store donates, composts, and feeds animals so that the company can improve their waste reduction practices in the future. Figure 3 shows the sales inventory and waste calculator software. Although Walmart donates food to the Saratoga Springs community, Bob Stickney, the Assistant Produce Manager for the Wilton Walmart, believes that Walmart's charitable actions could be better marketed to the public.

Figure 3. Display of Walmart's Sales Inventory and Waste Calculator Recording for 27 March 2015

According to Stickney, the Wilton store used to fill their dumpsters more than four times a month, and each dumpster pickup would cost them $1,200 to $1,300. Their sales inventory and waste calculator has helped them focus on waste reduction techniques, like composting, food donation, and recycling to reduce the amount of food in the dumpsters to close to zero pounds and to haul dumpsters less frequently. Stickney says, “I’m impressed by what Walmart is doing to make the environment safer and cut costs” (personal communication, 2015).

Four Seasons Natural Foods Market

Richard Frank at the Four Seasons market responded that while the market is unable to sell roughly 200 pounds of food per month, there is “next to no food in our dumpster.” Four Seasons is involved in a variety of waste reduction methods, including the aforementioned utilization of older produce in their café. The next step follows the second tier of the food recovery pyramid, which is to feed people. First, they send “middle-road” produce and leftovers home with their employees.

Next, Four Seasons donates food to people in need. Every Wednesday, one of the store employees delivers 15 to 20 items to a food pantry in Greenwich, New York. These items are technically out-of-date yogurt, cheese, and produce, but they are still edible for one to two weeks under the USDA’s extended date standards (USDA, 2015). Richard also packs up a delivery of food nearing its expiration date roughly four times a year, and he brings it to the Saratoga Springs United Methodist church. Four Seasons does not receive a tax break for donating food, but Richard mentioned a special tax break that could be an option for the business in the future. The break gives businesses a tax break for the food that they lost plus an extra 10% of cost of each lost item as a reward for donating the food. Richard said, “Something like that is an incredible incentive, right?...There is reason for me to track it, make sure it happens and get an

actual tax break" (personal communication, 2015). Unfortunately, Four Seasons does not currently get this tax break because it is no longer available. Richard believes that Saratoga Springs or New York State should facilitate a policy that reimburses businesses for donating food. In the meantime, Richard donates food because he believes that it is the right thing to do. He said, "Getting food to people who may not have access to any food, or just quality food, you know, that's probably the biggest benefit I see for the world" (Frank, personal communication, 2015).

Saratoga Springs Farmers Market

Due to the heat and humidity in the summer, Saratoga Springs Farmers Market vendors are unable to resell perishable crops like greens, tomatoes, and herbs. Michael Kilpatrick, owner of Kilpatrick Family Farm (KFF) in Middle Granville, New York, said that things grow so fast in the summer that they are unable to sell 10% of the food that they grow. Kilpatrick does not want to throw this food out, though, saying that "you grow the food, you invest time and effort to do it, so you don't want it to go to waste" (personal communication, 2015). In 2014, KFF allowed Rutland Farm and Food Link (RAFFL) to glean 5,045 pounds of surplus crops from their fields. RAFFL donated this fresh produce to 16 hunger relief organizations in the Rutland, Vermont area. KFF is already tax exempt, so they do not benefit financially from donating food. However, they like to give back to the community and reduce waste because they feel good about doing both. Pleasant Valley Farm in Argyle, New York also encourages organizations like the Glens Falls Food Pantry to glean unharvested produce from their fields. Pleasant Valley doesn't profit from donating food, but they feel good feeding people in need. Both of these farms are involved in the second tier of the food recovery hierarchy, which is reducing waste by feeding people. In the past, other farmers market vendors allowed the Saratoga Economic Opportunity Council

(EOC) to pick up unsold produce at the end of each market. EOC Community Resource Specialist Shelby Thomas stated that this does not happen anymore, but she does not know why. The EOC hopes to begin picking up farmers market produce once again so that their clients can have access to healthy, fresh produce.

Third Tier of the Food Recovery Pyramid: Feeding Animals

After donating food to people in need, many retailers give food unfit for human consumption to feed animals at local farms. Four Seasons Natural Market feeds wilting produce to pigs at a nearby farm. At Walmart, spoiled and moldy bread and produce are sent to local farms to feed animals. Hannaford donates excess food to local farms to feed pigs. According to Paul Gizzi, there are fewer farms in the Saratoga Springs area than in other rural areas, so it is often difficult for the farmers to drive all the way to the Saratoga Springs Hannaford to pick up donations. This means that not all of Hannaford's food scraps are utilized.

Fourth and Fifth Tiers of the Hierarchy: Industrial Uses of Food Waste and Composting

Walmart is heavily involved in turning food waste into usable resources. Inedible meat from Walmart gets picked up by a contractor called Quest Recycling Services LLC, which recycles the meat to make cosmetic products like lipstick (Stickney, personal communication, 2015). Walmart also composts inedible food that cannot be sold, donated, or fed to animals, giving rich soil local farms. Farmers from the Saratoga Springs Farmers Market reap the benefits of spoiled food, recycling nutrients back into their fields. The Hannaford and Price Chopper store managers that we interviewed did not mention composting, but Hannafords and Price Choppers in other areas that have enough space, people power, and money are able to compost. Kasey Harris responded that many Hannaford stores in Vermont are able to compost because there is a

better infrastructure for composting in the state than in New York. The Price Chopper employee we spoke with explained that a Price Chopper store that they used to work at was able to compost behind the building, but that composting was a time-and labor-intensive effort for the store employees; she was also not sure if the store was still composting. Price Chopper's Joe Berman responded, "The cost to compost is either comparable to or higher than the cost to landfill" because there is currently no large-scale compost infrastructure in place in this part of New York (personal communication, 2015).

Final Tier of the Food Recovery Pyramid: Landfilling Food Waste

While the above waste reduction strategies are in place in many of the retail stores, some food is still sent to the landfill. We were unable to obtain numbers about how much food goes to waste at each store, but it is clear that food cannot always be recovered, for a variety of reasons. At Price Chopper, all unsold meat, produce, and expired items are thrown into Price Chopper's 40-yard dumpsters, which are picked up once per week. Each item gets scanned, and the store in Saratoga Springs loses $3,000 worth of product to the dumpster every week, according to the general manager. The store does not donate these items because they fear the liability of donating spoiled perishable products. At Hannaford, some foods, such as bulk muffins, are thrown away because the hunger relief organizations cannot take unpackaged food items. Additionally, food scraps that Hannaford sets aside for farm animals are sometimes landfilled because farmers do not have the time to drive into Saratoga.

As mentioned, the smaller retailers such as Four Seasons and the farmers market are able to reduce waste to the point where hardly any food is thrown away. To reiterate, Richard Frank at Four Seasons explained that practically no food is in their dumpster because they donate food

and feed animals. Rick Green, the Manager of the winter Saratoga Springs Farmers Market, said, "Food waste, I don't know if there's a lot of it" (personal communication, 2015).

The Regional Food Bank of Northeastern New York: Fueling Hunger Relief Programs

The Regional Food Bank (RFB) practices food recovery in 23 counties along the eastern edge of New York. Saratoga is one of these counties. In 2013, Saratoga County hunger relief organizations received just over one million pounds of food from the RFB. The RFB convinces retailers to participate in the donation process by promoting the financial benefits of doing so. These include gains like tax breaks and a positive corporate image, which can attract customers. Over 100 retailers, like Hannaford, Walmart, and Price Chopper, donate food to the RFB. Moreover, the RFB receives food from food drive events and individual donors. The RFB also has its own farm called the Patroon Land Farm, complete with greenhouses; the farm grows 150,000 pounds of produce each year. The RFB also uses its fixed shared maintenance fees to pay employers on farms to glean unharvested crops or to buy high-demand foods such as milk from retailers. While all food contributions are notable, Erin Prendergast, the Food Industry Relations Associate from RFB said that "the vast majority of our donations come from retailers" (personal communication, 2015). In 2014, a total of 32.2 million pounds of food and other groceries were donated.

While most produce donations to food pantries are free, certain foods are not always available because of high demand or due to retailers' food safety policies, such as Hannaford's policy on not donating milk or baby food. These high-demand foods must be purchased from retailers or food distributors, so the RFB uses a shared maintenance fee with member hunger relief organizations. These foods will be sold at 16 cents per pound--regardless of the type of

product--to hunger relief organizations. These fees stay constant over time despite inflation, which ensures hunger relief organization's ability to serve a balance diet of food to those in need.

Donation Collection

Hunger relief organization staff and volunteers pick up food donations from the RFB's warehouse in Latham, New York. The RFB plans set dates and times for organizations to pick up food from their warehouse. The pickup schedule is rigid, so organizations need to be timely with their collections. Food-insecure people can also pick up food at the RFB warehouse. In addition, the RFB uses its refrigerated trucks to delivered food to a specific location in different cities through the Northeast region in order to make it more accessible to hunger relief organizations.

Guidelines for Food Donation

The RFB follows food safety guidelines from the New York State Department of Agriculture and Markets for extending the expiration dates of food items. Retailers do not sell foods past their expiration dates because most customers would not purchase them, but most foods are usually consumable beyond their expiration date. After all, keeping out-of-date food in one's personal fridge is a common practice. According to Julie Slovic at the Franklin Community Center, the nutritional value of a food item decreases slightly after it its expiration date, but it can nonetheless supply valuable nutrients and calories (personal communication, 2015). By following these guidelines, the RFB is able to utilize food that is not dangerous to eat, which reduces food waste and provides a huge amount of food to those in need. For example, meat can be preserved past its expiration date by freezing it. Prendergast explained, "Say you have hamburger meat that technically expired by midnight tonight. As long as that package of meat is frozen by tonight, it's still useable" (personal communication, 2015). Safe expiration date

extensions apply to products depending on the food category. For instance, canned goods and non-perishables are examined for severe dents or other aspects that may compromise quality, and then their dates can be extended up to two years. Dairy product expiration dates can be extended for 5 to 14 days, depending on the product. Perishables like fruits and vegetables are examined for spoilage before being donated. Volunteers and RFB staff sort, inspect, and organize foods.

Funding

The Regional Food Bank is funded by donations, grants, and shared maintenance fees. As of 2013, the RFB had a total budget of $7.3 million, with $3.6 million coming from private financial contributions. Donations come from fundraisers, capital donations, and gifts from individual community members, and the donations include monetary funds, trucks, machine installations, and even greenhouses. One notable contribution was Walmart's gift of refrigerated trucks, which have helped increase the RFB's speed and efficiency at moving food. Moreover, the RFB applies for government and private grants on a weekly basis. As mentioned, the money from shared maintenance fees helps the RFB purchase goods and pay for transportation fuel.

Successes at the Regional Food Bank

The RFB has thus far been successful in keeping up with the demand for food in Northeastern New York. Increased financial donations, sound management of food deliveries, aggressive grant applications, and an increase in volunteers have allowed the RFB to function efficiently and to serve millions of food-insecure individuals and families. The RFB's expanded infrastructure has created more room for volunteers, employees, and retailer donations, leading to better visibility and efficiency. Between 2008 and 2014, the RFB was able to increase the amount of food sent to hunger relief organizations from 19.5 million pounds to 32.2 million

pounds in food. In addition, more programs were able to be implemented; between 2008 and 2013, mobile pantry deliveries increased from 102 to 311 deliveries and backpack program sites increased from 2 to 46 sites. From an environmental perspective, the RFB reduces food waste not only through donations but through composting and converting food scraps into pig feed at the Patroon Land Farm. Lastly, the RFB offers cooking classes to help people use foods that they may be unfamiliar with, in order to further combat waste.

Barriers to the Success of the Regional Food Bank

While RFB is generally successful, it faces some challenges. Retailers have influence over how much food is recovered because each store decides the amount and type of food that it can donate. They are further limited by corporate policies that prevent retailers from donating certain highly demanded foods, including dairy products, peanut butter, and ground meats. Unless corporate policies change, the RFB faces difficulties obtaining certain food products. If the demand for food aid increases in the upcoming years, the RFB is limited by their monetary donations and grants, as they would not be able to pay for more employees, equipment, and warehouse space. Furthermore, limited funds can prevent hunger relief organizations from purchasing food through shared maintenance fees. The RFB can usually donate to food pantries who cannot afford the fee, but food pantries often need to be able to pay at least a moderate expense for food.

Hunger Relief Organizations' Involvement in Food Recovery in Saratoga Springs

Although Saratoga Springs carries an affluent image, in reality more than 2,000 Saratogians suffer from food insecurity. As a matter of fact, the number of food-insecure people in the area continues to grow, according to local hunger relief organizations who are seeing an

increase in demand for services. Although there are governmental programs trying to address the problem of hunger, many people in Saratoga Springs still cannot afford the cost of food. Kenneth Whitehouse, a senior citizen from Saratoga Springs, said that though he receives a retirement pension of $1,200 and $120 in food stamps each month, it is impossible for him to live on this budget alone. Whitehouse said that from the $1,200 pension "$800 is for my rent, which leaves me $400 in cash" (personal communication, 2015). Including the money from food stamps, he only has "a total of $520 for everything: gasoline, dog food, food for myself, toilet paper, laundry detergent, etc., etc., etc." He added that "$120 on food stamp breaks down to $25 to $35 per week in food. A salad is $3 per bag and you could possibly get 2 meals per bag, but if you want to eat salad and a healthy diet every day, then your food stamp is gone in 10 days." Whitehouse testifies that "you cannot live on food stamps. Without the food from the local food pantries, I would be beyond subsistence. I would be surviving of beans and toast." As Whitehouse and previous studies show, non-governmental hunger relief organizations play a fundamental role in complementing governmental programs to end hunger.

The number and size of local groups addressing the issue of food insecurity varies from large federally funded groups such as the Saratoga Economic Opportunity Council (EOC), to non-governmental organizations such as Franklin Community Center (FCC), churches such as the Presbyterian New England Congregational Church, and individual community members. Although each organization's sources of food, process of collecting food, and funding may vary, their combined efforts to feed people in need has been partially successful with keeping up with the increasing demand for hunger relief in Saratoga Springs.

Tripartite and Direct Distribution to Hunger Relief Organizations

Most of the organizations obtain the majority of their food from local retailers, community members, and the Regional Food Bank. Retailers and hunger relief organizations' partnerships are hierarchical: the retailers have all the authority and donate only food item that they can no longer sell. Therefore, the consistency of donations is unpredictable. Most organizations receive many baked goods, and would like to see more produce and protein donated; however, even bread products are sometimes scarce. The partnership with RFB, however, is more mutual. The RFB tries to maintain a constant food supply to its member organizations. Organizations have much more control over the food they obtain from the RFB since they can place food orders specifying their needs. Thus, organizations are able to obtain many different types of products, and potentially more nutritionally valuable foods than they get from retailers.

While working with the RFB is ideal for all hunger relief organizations, some organizations are unable to become RFB members because of their small size and lack of resources. Having the human and financial capital to travel to the RFB or its delivery points to pickup food is much less convenient than driving down the road to get donations from retailers (Potters, personal communication, 2015). Meat products, dairy, and fresh produce are often scarce in the donation line, so local hunger relief organizations and the RFB must purchase these essential products from retailers at full price. As indicated in Table 2, Hannaford and Price Chopper are the two main donors to local organizations, though Hannaford provides a more diverse and balanced list of products as shown in Table 1. Price Chopper and Hannaford also donate to the RFB. Because of its small size, Four Seasons donates less food, but still contributes to Shelters of Saratoga, which is located on Walworth St. in Saratoga Springs. Walmart also donates a significant amount of food to the RFB, but not directly to local hunger relief

organizations. Other retailers such as Healthy Living and The Fresh Market donate to some of the local organizations, though this data is not shown in Table 2 since we were unable to interviews them.

Table 2. Local Retailers' Donation to Hunger Relief Organizations

Organization	Hannaford	Price Chopper	Walmart	Four Seasons
Saratoga Economic Opportunity Council	X	X		
Shelters of Saratoga	X	X		X
Franklin Community Center		X		
Wilton Food Pantry	X			
Regional Food Bank	X	X	X	

Although retailers donate food to hunger relief organizations, each organization is responsible for picking up the food from the retailers. Organizations log all donations and report back to retailers the number of pounds they receive each month. Not all organizations, namely small or new groups, are trained to track and report food donations, and in some cases retailers have to show organizations how to track donations (Harris, personal communication, 2015). All retailers, except Four Seasons, require that organizations seeking donations are tax exempt in order to obtain a tax credit for donating food. Once the food is collected, the organizations store it in their pantries, refrigerators, and freezers to make the food last longer. The organizations try to budget their food to serve as many people and last as long as possible. Though hunger relief

organizations are operating under restricted budgets and are dependent on donations, thus far they have been able to maintain enough food on their shelf to feed the clients that visit their offices. However, it is important to note that while hunger relief organizations receive vast amounts of food donations at once, they can deplete rather quickly, particularly around Thanksgiving and other holidays (Potters, personal communication, 2015). When a hunger relief organization receives large donations or have excess food, it often communicates, coordinates, and shares the excess food with other local organizations (Potters, personal communication, 2015). Likewise, the RFB shares information and even delivers food to other food banks in New York at no expense besides transportation costs (Prendergast, personal communication, 2015). By sharing excess food, hunger relief organizations are able to prevent food from going to waste. In addition, most hunger relief organizations, including the RFB, donate food that is unfit for human consumption to local farms or residencies with animals.

Because local hunger relief organizations are associated with the RFB, each organization is required to follow the RFB's donation guidelines. This means that for every person seeking food at a pantry, the organization must provide three days worth of food from many different food groups (produce, protein, and grains) to the client according to the number of people in his or her household. All organizations said that they have never turned down a food request from a client, however clients must provide proof of residency (if possible) and proof of income to show that they qualify for the services. Food pantries are only able to serve a client every 30 days so that they have enough food for all individuals seeking food. Though a client can only obtain 3 days worth of food from one organization every 30 days, the client is encouraged to visit other food pantries if he or she needs more food within the 30-day period. Organizations operating soup kitchens function a bit differently. Soup kitchens employ volunteers and church groups to

prepare food and serve meals to anyone in need of a meal during their hours of operation, which vary by organization. EOC's soup kitchen, for example, is open 7 days a week for lunch. The number of people using both the food pantry and soup kitchen increases during the summer, which is largely attributed to the track season (Laporta, personal communication, 2015).

Role of Volunteers, Community and Religious Organizations

All organizations, including the RFB, rely heavily on volunteers to carry out their mission of ending hunger. Smaller organizations in particular rely on volunteers since they cannot afford to pay a large staff. The Wilton Food Pantry (WFP), for example, is run entirely by volunteers, while Shelters of Saratoga (SOS) staff six people and over 30 dedicated volunteers. Though the role of volunteers varies by organization and the day of the week, volunteers are in charge of collecting food from retailers, storing and organizing donated food, distributing and assisting clients, filling out paperwork, and doing general maintenance. Despite the great benefits of having volunteers in each organization, there are negative aspects of relying heavily on volunteers. The single most obvious challenge is reliability. While each organization has strong and committed volunteers to do their work every day, there are some volunteers that are less reliable, which makes it impossible for the hunger relief organizations to pick up food from retailers. According to Roger, a committed volunteer at WFP, some volunteers do a terrible job when storing food, to the point that they compromise the food packaging, allowing food to expire by misplacing products (personal communication, 2015). Dennis Towers, representative from WFP, adds that "while we have a core group of strong dedicated individuals who can be counted upon to work regularly, when they are unavailable, we can find ourselves in trouble" (personal communication, 2015).

Individuals in the Saratoga Springs community and local religious and educational organizations play an important role. Volunteers help organize food donations, serve food, and assist with fundraising efforts. Additionally, shoppers who buy extra food at the grocery store often drop it at the local food pantry or shelter. SOS and FCC, both of which obtain almost all of their canned goods from individuals and community donations, said they have a 24-hour food donation space for people to drop off food at their convenience. These individual community members are often the first ones to volunteer in the organizational efforts to mitigate hunger. According to SOS and FCC, church groups are one of the main contributors of canned goods and long-term and reliable volunteers. Churches and other religious organizations are also essential financial donors to local hunger relief organizations, excluding the RFB. Local education institutions, such as Saratoga Springs High School and Skidmore College, are fundamental providers of volunteers and, though less frequent, canned food donations. Although individual donations and food drives are essential to some hunger relief organizations, these donations are not as constant as the 2 to 3 times per week donations from retailers.

Funding and Resources

All of the organizations are nonprofit and independent groups that rely mainly on governmental and private donations and grants. Some organizations, such as WFP, operate almost entirely on individual and retailers donations and fundraisers. The EOC, SOS, FCC, and RFB also utilize local and federal government funding, as well as private grants, from Walmart, Bank of America, and many other private firms. Small hunger relief organizations who are members of the RFB have the benefit of receiving funding from the RFB, which is more likely to obtain more and larger amounts of grants from private firms. Julie Slovic, Food Program & Financial Administrator at FCC, said that she applies for operational and food grants through the

RFB (personal communication, 2015). The limited staff at hunger relief organizations prevents them from applying for many grants; this forces the organizations to operate under restricted budgets, and compromises their ability to function to the best of their abilities.

Challenges for Hunger Relief Organizations

Each organization has different challenges, but they all share some of the same difficulties. First and foremost is the inconsistent supply of fresh produce, dairy, and meat from retailers and even the RFB. All hunger relief organizations reported being unable to receive a constant supply of high-demand products from retailers. Lack of storage space and staff shortages are also pertinent issues for all of the hunger relief organizations, especially as the demand for food has increased. Reliability on volunteers and their inconsistent work schedule is also a major issue of hunger relief organizations in the area. Organizations in the City of Saratoga Springs have seen a significant increase in the number of food-insecure residents, in part due to the recent move of the EOC food pantry and main office to Ballston Spa. Julie Slovic said, “There are a lot of people who can’t travel to Ballston Spa” to reach the EOC (personal communication, 2015). Even for those who are able to travel, like Kenneth Whitehouse, “it is very, very difficult for people in my position” to go all the way to Boston Spa because “even though gas prices are cheaper now, you are wasting gas and money going to the EOC” (personal communication, 2015). While some organizations that are located in downtown Saratoga Springs are easily accessible via public transportation, other groups like the Wilton Food Pantry, are located in areas that are “not on a bus route” and walking “is quite dangerous” due to the lack of pedestrian walkways (Towers, personal communication, 2015).

Conclusions and Recommendations

Existing food waste reduction practices in the area have reduced a sizeable amount of greenhouse gas emissions. The RFB's waste reduction efforts prevented 32.2 million pounds of food from going to waste in 2014. Using Waste & Resources Action Programme's data on landfilled food waste emissions, we calculated that the RFB was able to reduce over 67,186 metric tons of greenhouse gas emissions (Wrap, 2011). In 2013, in Saratoga County alone, 1.1 million pounds of food was received from the RFB, in turn preventing over 2,295 metric tons of greenhouse gases from entering the atmosphere.

Laws that discourage food waste in the retail sector are lacking Saratoga Springs, leading to a continuation of landfilled food by grocery stores that have not made efforts to diminish their food waste. One example of a policy to reduce waste is Massachusetts' Commercial Food Waste Ban, implemented in October, 2014. The law forces retailers and businesses to reduce food waste weights to less than 1 ton a week (MassDEP, 2014). This has promoted an increase in composting within the region. Saratoga Springs could enforce a similar regulation to reduce waste. Moreover, the lack of a composting infrastructure in the Saratoga Springs area means that retailers either have to pay high costs to private composting companies, or to put in the time and labor-intensive effort to compost on their own. Improvement in composting infrastructure would help retailers to reduce the amount of food that they landfill.

Our findings also show that food recovery efforts have been partially able to keep up with the current demand for food. In Saratoga Springs, widespread increase in backpack programs in schools by the RFB have helped food insecure students, more trucks have lead to more donations to food pantries, and food pantries have been able to keep up with the number of those who come for food. However, there are some clear logistical challenges on both the retail end and among hunger relief organizations related to coordinating food donations. In comparison to the

FareShare program in England, food organizations that deal with Saratoga Springs appear to be more efficient in many regards. Volunteers at all organizations are trained with uniform standards set by the New York State Department of Agriculture and Markets, which has helped reduce the amount of inedible food received from retailers, maximizing donation efficiency. However, there has been a notable struggle to obtain enough volunteers for hunger relief organizations. Without consistent volunteer support, it is difficult to collect foods from donating retailers. Moreover, funding is another issue that prevents organizations from paying full-time staff, improving the transportation of food pickups, and other services. This makes it difficult for the organizations to obtain food donations on a consistent basis and serve people.

Local stakeholders could take a series of short-term actions to increase visibility, funding, donations, and volunteers. Primarily, stakeholders should increase the visibility of food recovery through marketing techniques. Hunger relief organizations could create a collective newspaper publication highlighting Saratoga Springs retailers' commitment to reduce hunger through food donations. These monthly publications would increase the visibility of the issue of hunger in Saratoga Springs, and also advertise the efforts of local organizations and stores. The publication would aim to target retailers who do not donate food by pushing them to compete with the retailers who are making strides in the field of food recovery. The publications would also benefit hunger relief organizations by attracting new and dedicated volunteers, and to increase funding from community members who were previously unaware of the organizations' efforts. Another similar marketing technique is a public service announcement of hunger relief organizations' efforts on local radio and TV stations like Skidmore's WSPN Radio and WNCE Look TV. These PSA's would increase the visibility the issue of hunger, organizations' causes, and hopefully recruit volunteers and donors. A third short-term initiative would bring food

recovery to the eyes of local and federal government representatives. Retailers should write a letters to officials to ask for better tax incentives for donating food. Richard Frank, the owner of the Four Seasons Market, suggested that a policy be created to provide retailers a tax break plus 10% of the cost to process each donated food item, as it would encourage retailers to increase donations. Finally, hunger relief organizations could reach out to college students and graduates to work as interns or AmeriCorps fellows. These interns could work for the RFB, but be stationed in Saratoga Springs in order to coordinate food recovery in this particular region. The AmeriCorps fellow would strengthen the partnership between retailers and hunger relief organizations to better organize the food recovery process, increase visibility, assist with fundraising, and encourage more food donation.

In addition to these short-term recommendations, we believe that the ideal solution in the long run is the creation of a branch of the Regional Food Bank, to be located in Saratoga Springs, to better coordinate food recovery. Like the RFB, the branch would be the "middle man" between retailers and local hunger relief organizations. Unlike the RFB, the branch would be able to focus intensively on the Saratoga Springs area. Forming close relationships with all Saratoga Springs retailers and hunger relief organizations would maximize the amount of food donated within the community. There would be a large warehouse where food from retailers could be stored and sorted before being delivered to the small community food outlets.

Currently, there are some hesitations and challenges among retailers regarding food donation. Staff at the branch would be responsible for encouraging grocery stores to donate more food by convincing the retailers of the economic, environmental, and social benefits of doing so. John Reed, manager of procurement and compliance at *Food Gatherers*, a food bank and food rescue initiative in Ann Arbor, Michigan, responded:

> The concept of supporting hunger relief is a pretty easy sell. The primary concern of most new food donors is food safety--are we going to protect perishable food donations from time/temperature abuse and contamination? We demonstrate our commitment to food safety to potential donors with our policy that every member of our Operations staff achieve ServSafe Food Protection Manager certification, and with our well-established procedures for documented safe food handling. (Reed, personal communication, 2015)

The non-profit in Saratoga Springs would commit to the food safety regulations that the RFB uses. Staff would serve as specialists in food safety and donation coordination so that retailers would be fully supported in making the transition to donating more food. When hunger relief organizations receive food, the branch would ensure that food weights are recorded so that retailers get the tax compensation that they deserve. The branch could also create more visibility for the retailers, advertising their charitable work during fundraisers.

At the moment, some hunger relief organizations, like Shelters of Saratoga, have not been able to get involved with the RFB. The new branch would maintain strong relationships with all local community food outlets to ensure that sufficient, nutritionally appropriate food was getting delivered on-time to feed the growing number of clients who come in to receive food. Additionally, local organizations struggle with having enough volunteers to pick up, sort, prepare, and serve food. The branch would recruit volunteers from local schools, churches, and other community groups to pick up donations from retailers, ensuring that all donations are recovered, and to deliver food to the hunger relief organizations, which would take the pressure off the organizations to find and coordinate volunteers. The new branch would also take over all hunger relief fundraising efforts. They would apply for grants and hold events to raise money from individuals and businesses in the community, and distribute the money to the organizations based on how much each one needed.

We believe that these solutions are the best ways to improve food recovery in Saratoga Springs. With commercial waste regulations, policies to incentivize donation, local publications

and media outreach, and a large coordinating body to increase, improve, and incentivize food donations, we believe that Saratoga Springs can reduce environmental impacts, reap economic benefits, and feed the growing number of food-insecure individuals in the community. These goals are aligned with the three pillars of sustainability, and we hope that improving food recovery in this region will be one of the major sustainable development initiatives that Saratoga Springs will take on in the upcoming years.

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