



BEST PRACTICES:
HARVEST POTENTIAL
OF FORGOTTEN FOODS



Harvesting Potential from Forgotten Food: Food Rescue Organizations in North America

Prepared by

Alison Brown, Allison Dolan, Geoff Hutchinson, Xiaomeng Lyu, Candace Nickerson, and Jordan Yanover
Graduate Candidates, Dalhousie University's Faculty of Management

Laurel Schut and Lindsay Clowes
Co-Directors, FOUND Forgotten Food

About FOUND Forgotten Food

FOUND Forgotten Food is a food rescue organization based in Halifax, NS. Recently created by Dalhousie University alumnae Laurel Schut and Lindsay Clowes, FOUND aims to reduce food waste by organizing volunteers to gather leftover fruits and vegetables from farmers' fields, farmers' markets, backyard trees, and gardens. Research reveals that almost 20 percent of households in Halifax are food insecure: they struggle to access safe, nutritious, culturally appropriate food in amounts that allow them to maintain health and dignity (Halifax Food Policy Alliance, 2014; Activating Change Together for Community Food Security, 2014). FOUND has donated 89% of the fresh, nutritious food they have gathered to food banks and community groups (FOUND, 2016a). Some of the produce is sold to local cafes, restaurants, and wholesalers, generating income to support FOUND's work. "Less fresh" produce gathered from fields, markets, and food banks is transformed into preserves to be sold at local shops (FOUND, 2016b).

Acknowledgements

FOUND Forgotten Food would like to thank Dalhousie University's Faculty of Management for making this study possible.

A very big thank you to the 35+ food rescue initiatives in North America that participated in our online survey and/or a telephone interview.

Introduction

Every year, 1/3 of the food produced globally is not eaten: it is lost or wasted at points along the food chain from fields, farms, warehouses, markets, grocers, and kitchens (Food and Agriculture Organization of the United Nations [FAO], 2016). The labour, energy, and water resources used to grow that food are also wasted. It decomposes in fields or landfills as the largest component of solid waste, releasing 3.3 billion tons of greenhouse gases into the air each year (FAO, 2014).

Policymakers, researchers, farmers, businesses, and community organizations are beginning to respond to the growing concern for the astonishing levels of food waste, food insecurity, and environmental destruction: a new French law forbids supermarkets from throwing out food; two Danish grocery stores sell only products that have expired; neighbours share the bounty from their backyard fruit trees; community fridges offer leftovers in India, Spain, Germany, and United Kingdom; beer brewers bake bread from spent grains (Eggers & Benz, 2014; Finn, O'Donnell & Walls, 2014; Hall, 2016; Berry, Faber, Geller, & Jacobs, 2016). Food-rescue entrepreneurs and organizations have emerged as key players in tackling food waste. Though the organizations are as diverse as the communities they serve, they share the same ultimate goal: gather nutritious, edible food that would otherwise be wasted and ensure its delivery to those who need it (Lipinski et al., 2013; Finn et al., 2014; Berry et al., 2016).

However, for fledgling food rescue initiatives, there is little published information on the effectiveness of various food rescue organizational models, including a lack of established best practices and recommendations for their success. Some organizations have created documents about how they created their own food rescue programs, and the media continues to report on the story of food waste, but little research has attempted to establish best practices for food rescue and fruit sharing initiatives.

The purpose of this report is to gather information from North American food rescue initiatives to uncover the merits and drawbacks of various operational models, to understand the common barriers, and see how they are being overcome. We scanned the academic and gray literature, developed a North American food rescue organization inventory, and conducted 38 surveys and seven interviews with representatives from a variety of food rescue initiatives. Analyses revealed four main categories for consideration: *community-focused response and engagement*, *organizational structure*, *collaboration*, and *advocacy*. Our findings suggest that regardless of the size, structure, or barriers faced by an organization, food rescue initiatives are successful when they respond to the unique needs of their communities and foster community engagement.

Methodology

This report aims to understand the strengths and challenges associated with various operational models of food rescue and fruit sharing initiatives so to inform generalizable best practices for existing and future organizations. This section of the report outlines the research questions, data collection, and the data analyses undertaken to fulfill that purpose.

Research Questions

Three key research questions guided the creation of the research design:

1. What are the merits of various operational models of food rescue and fruit sharing initiatives?
2. What are the common barriers to success faced by food rescue and fruit sharing initiatives and how have they been sought to overcome?
3. Informed by the information gathered, what can be offered as generalizable best practices for food rescue initiatives?

A mixed method approach incorporating both quantitative and qualitative research allowed for “more complex, more insightful, even transformed evaluative understandings” (Greene & Caracelli, 1996, p. 5). Quantitative data provided a broad overview of the structure and activities carried out by food rescue initiatives, while qualitative data shed further light by providing nuanced, explanatory details and insights. Four data sources were used in this study: a literature scan, an inventory of North American food rescue initiatives, online surveys, and semi-structured interviews.

Data Collection

a) Literature Scan

We performed a scan of the academic and gray literature to inform and support the series of generalizable best practices and specific recommendations. Research papers, media articles, government websites, annual reports, white papers, guidelines, and toolkits were read, summarized, and shared among all members of the research team to provide a substantive introduction and overview of our research topic.

b) North American Food Rescue Inventory

We uncovered a variety of food rescue organizations and formed the basis of a North American Food Rescue Inventory. Websites were perused to establish the contact details and basic information (name, email address, website, location, organization type) of 94 organizations and businesses. Though not comprehensive, the inventory provided a snapshot of the range and breadth of initiatives active in North America and facilitated the survey and interview recruitment. See www.foundns.com/food-rescue-inventory for the collected inventory.

c) Surveys

We sent an online survey invitation to the 94 organizations and businesses we identified in our North American Food Rescue Inventory. Guided by the research questions, the survey was designed and developed to collect both quantitative and qualitative data from food rescue organizations. The survey contained both open and closed questions regarding the work of the organization, its structure and funding model, staff, volunteer, and community engagement, the perceived impact of the work, and the

challenges and enablers of effective work. Partially and fully completed surveys were exported into Excel for analysis. Please see Appendix A for the survey questions.

d) Interviews

Semi-structured interviews were chosen as an additional data collection tool because they provide a convenient framework within which participants can take the time to reflect and respond fully in a way that reflects their diverse perspectives and experiences (Leedy & Ormrod, 2016). As was the case with the survey, the interview questions were designed with the key research goals in mind: collecting data regarding the work of the organization, its structure and funding model, staff, volunteer, and community engagement, the perceived impact of the work, and the challenges and enablers of effective work. Please see Appendix B for the interview questions.

Invitations were sent via email to twelve North American food rescue initiatives and seven confirmed their availability and interest. Included in the email were the research goals, procedures, and letter of consent. After securing informed consent, seven interviews were conducted with founders or staff members of food rescue or fruit sharing initiatives: Boulder Food Rescue (nonprofit based in Boulder, Colorado), Hidden Harvest (social enterprise based in Ottawa, Ontario), Loving Spoonful (nonprofit based in Kingston, Ontario), Wtr Mln Wtr (business based in New York City, New York), 412 Food Rescue (nonprofit based in Pittsburgh, Pennsylvania), Fruit for Thought (nonprofit based in Regina, Saskatchewan), and Village Harvest (nonprofit based in San Jose, California). This population was chosen as they are best positioned to reveal the merits and challenges of various operational models, thus able to inform a set of recommendations. Interviews ranged from 30 min to 1 hour and all were conducted via phone or Skype, audio-recorded, summarized, and shared among all members of the research team.

Data Analysis

With four different data sources, different types of data analyses were required. Analysis was iterative as the different data sources informed one another. For example, when a common theme began to emerge from the interviews, survey data was reviewed for evidence of the same. Likewise, a literature scan was conducted to seek corroborating findings.

a) Quantitative Data Analysis

Excel was used as a data analysis tool to interpret quantitative data (e.g. years active, number of staff) collected from the surveys. Basic descriptive statistics and observation were used to find patterns, trends, and connections. Other statistical methods were not used as the small sample size and tremendous operational and geographic variation between organizations would render the results insignificant.

b) Qualitative Data Analysis

Thematic content analysis was conducted to label and link the qualitative interview data and the open-ended survey data to determine explanatory patterns and connections. Questions and answers were compared across interviews and surveys to look for both similarities and differences in responses. Responses were sorted and categorized to reveal six common themes.

Results

Analysis of the data sources, surveys, and interviews revealed that North American food rescue and fruit sharing initiatives vary greatly in size and form. Several organizations collect food from farmers, others from grocers, some from backyard gardens, others from municipal trees, still others from all these sources and more. Some initiatives are small, largely volunteer-run projects of other wider organizations, while some are hugely successful corporations. All organizations share a desire to feed people rather than landfills.

The questions guiding this research were designed to uncover the merits and challenges of various food rescue operational models. This section presents the findings from the two primary data sources: surveys and interviews. Of the 94 surveys sent, 24 fully completed and returned them, while a further 14 partially completed and returned them. Seven semi-structured interviews were conducted. The results are organized here by the themes that emerged during analysis: community-focused response and engagement, organizational structure, barriers, collaboration, and advocacy.

Community-Focused Response & Engagement

All interview respondents indicated that environmental and sustainability concerns for their community motivated their work while just under half also spoke of their desire to be part of an organization that works to alleviate hunger in their community. 43% emphasized that the effectiveness of any food rescue organization depends on understanding and responding to the unique needs and contexts of individual communities or areas. For example, Lindsay from Boulder Food Rescue pointed out that the environmentally sustainable method of collecting and delivering the donated food via bicycle works incredibly well for them in their city, but would not work in an area that did not support bike-transport infrastructure. 57% of interview participants remarked on the importance of establishing relationships with local agencies serving vulnerable communities to understand what types of food are appropriate for donation and how they can be delivered with dignity. One survey respondent said they stopped delivering apples to a shelter after discovering they were not being eaten.

When asked what advice they would offer to others starting or developing their food rescue organizations, interview respondents again recommended that those doing this work understand their community's needs and assets. They further recommended they engage that community widely and creatively on issues of food waste. 43% of interview participants indicated that they attended community events like rallies, markets, fairs, and festivals to directly engage community members face-to-face. Facilitating accessible, educational workshops for their community was also important for 43% of the interview participants. The majority of interview participants (all except for one) use social media. All interview respondents spoke of the "value-added" services

they provide to communities, helping to build awareness of the issues and strengthen relationships: workshops, community kitchens, book clubs, conferences. Loving Spoonful hosts popular monthly “unwasted dinners.” Survey respondents revealed the same methods for engaging with their communities: all who responded indicated they use social media and outreach at events. All survey respondents indicated they have strong or very strong support from their communities and that this is a key contributor to their success.

Organizational History

While some organizations are in their infancy, others have been operating for decades. Of the organizations surveyed, years active range from less than one to 35 years. Interview participants responded that they have been active between 1.5 to 15 years, with a mode of 5 years as the most common operational length.

Organization Type

From our interview respondents, 71% revealed they felt their organization had been successful in their efforts to this point, based on their choice of incorporating as a nonprofit, social enterprise, business, or charity. 28% of interview respondents indicated their organizations had faced problems stemming from their choice of incorporation, regarding inconsistent funding or organizational size.

57% of interview respondents indicated that their organizations operate as a nonprofit. Of these, half indicated that the primary motivation for this structure was based on availability of funding, and half indicated that the primary motivation was due to liability protection. Secondary motivations included funding, liability protection, size of the organization, and ability to accomplish organizational objectives of reducing hunger. One interview respondent indicated they are structured as a charitable organization with their primary motivation being to engage in political advocacy. 82% of survey respondents indicated they are incorporated as a nonprofit. Motivations included access to funding grants, mandate to educate, and a perception that nonprofits are less threatening to suppliers.

28% of interview participants reported that their organizations operate as for-profit businesses, with one of these designated as a social business enterprise (sometimes referred to as community interest company, depending on location). The primary motivation indicated by both participants was access to steady revenue sources. 9% of survey respondents operate as a social business enterprise.

Staff and Volunteers

Responses from survey and interview participants revealed that there is a large range in the number of paid staff and volunteers among food-rescue initiatives. 81% of organizations surveyed have paid staff, ranging from a sole individual to a team of 40. Survey respondents cited that staffing levels often change depending on the season. Staff positions included executive director, volunteer coordinator, project director, harvest coordinator, and delivery truck driver.

With the exception of Wtr Mln Wtr, all interview respondents indicated that they rely at least somewhat on volunteers. Survey respondents reported that some organizations have less than 10 volunteers while others have over 28,000. Interview respondents indicated a team of active volunteers ranging from 2 to 1,163. Volunteer roles included harvest leaders, food donation collectors, gleaners, food donations deliverers, administrative assistants, grant-writing, event coordinating, graphic design, community meal preparation, advocacy, outreach, and vehicle maintenance.

Revenue

Multiple funding sources and uses were identified by both survey and interview respondents. The two most common revenue sources cited by survey respondents were grants and donations. 71% of organizations surveyed said they receive grants and 68% receive donations. 57% of interview respondents indicated that donations contribute significantly to their revenue, and 71% of interview respondents reported that they have several revenue streams. 25 of the respondents that receive donations also receive grants indicating a large overlap of multiple funding sources. Budgets ranged from \$2,000 to \$2,000,000 annually. The most common expenditures indicated by survey and interview respondents were payroll, utilities, supplies, rent, and educational materials.

Technology

Both interview and survey respondents indicated they use technology to make their work more efficient. Three of seven interview respondents indicated their organization uses a purpose-developed application specifically developed for food-rescue work. Two use the same open-source application, the Food Rescue Robot, which automates volunteer scheduling. Other applications facilitate food distribution by alerting delivery drivers and recipients when and where food is available. Of the survey respondents, five organizations use their own website or application to track logistics. Both survey and interview respondents indicated the use of online tools such as a volunteer management system, Google Drive, social media, and Apricot Database.

Barriers

All respondents identified a range of barriers faced by both those donating the food and by those organizations determined to redistribute the food to those who need it. These barriers varied widely due to differing organizational size, geographic location, and other community-specific factors.

Food Donors

Of the 19 survey respondents, the most commonly cited barrier to engagement faced by food donors was logistics. Both survey and interview participants specifically stated the facilitation and timing of pickups for food was too time consuming. Boulder Food Rescue, Food for Tree, and Hole Food Rescue all indicated that grocers who donate food to them speak of the onerous effort to train staff with a large turnover and that food redistribution is not operationalized explicitly in staff training the same way as recycling. It is simply easier to throw things away. Additionally, the fear of liability was mentioned by seven survey participants, specifying that

large corporations were fearful of the possible liability issues surrounding donations of “near-expired” food. Organizations that collect food from homeowners mentioned that there are sometimes unreasonable expectations on the part of the homeowners with regard to how much of and how quickly or timely their fruit will be harvested. Those working with farmers also indicated that fear of liability is a barrier as well as untrained volunteer harvesters that then take time to manage.

Several of our study participants mentioned specific things that are helping food donors move past these barriers. Five of seven interview participants and 85% of survey participants indicated that the community’s supportive response to food recovery work has been a primary motivator for food donors. Various pieces of regulation and legislation also serve as enablers: municipal or state-wide food waste bans, local food acts, food waste acts, or food policies that include food waste management, state or provincial or federal liability protection, and tax credits. Strong networks, growing public awareness of the prevalence of food insecurity and environmental destruction, the socio-cultural push for companies to be sustainable, and the growing stigma associated with companies who produce food waste were additional factors cited by the survey and interview participants.

Organizations

When asked to imagine a magic wand that could remove the barriers most hindering their success, 32% of survey respondents and 47% of interview respondents indicated that financial struggles are their biggest concern. Three of seven interview respondents remarked that their budgets were not sufficient for their organizations’ needs. Respondents remarked on the challenge of relying on unreliable grants and that the large time required to try to secure those grants or otherwise raise money takes time away from the important work of food-rescue. One wished that there was a foundation whose sole purpose was to grant money to food-rescue initiatives. Boston Area Gleaners indicated that even if grants are secured, many stipulate that they cannot fund general operating expenses. Jay, from Hidden Harvest Ottawa, went further to remark that the social impact of food-rescue work is not being valued financially. He outlined how municipalities should be compensating food-rescue initiatives for the food waste management and food assistance services they provide.

Logistical and regulatory barriers were also cited by respondents. Many organizations face infrastructure challenges with transportation, refrigeration, kitchen and storage spaces. While many organizations have a large cadre of reliable volunteers, two interview participants and 50% of survey participants reported their struggle with finding, motivating, and organizing enough volunteers to keep up with the demand of harvesting or gathering food. Unclear or non-standard municipal, provincial/state, and federal legislation and regulations (particularly around health and safety liability, and who can profit from food donations) present challenges to organizations. Many spoke of their wish for strengthened, protective legislation, including two survey participants who advocated for a total ban on food going to landfills.

Finally, one interview participant and three survey respondents spoke of the politics and bureaucracy of the nonprofit world as something that placed constraints on their work. Feeding America, the largest domestic hunger-relief organization in the US, was specifically mentioned as a barrier for its inefficiency and monopoly on retail food recovery.

Collaboration

Food Donors: Those donating food to food-rescue initiatives range include backyard gardeners, farmers, municipal parks, grocers, and restaurants. Engagement with donors happens most successfully through face-to-face communication, but also includes phone calls, emails, social media, and community events. Among the seven interview respondents, three indicated that financial incentives are the primary motivator for food donors, in the form of compensation, tax breaks, and surplus food removal. Also cited as incentives or enablers by survey and interview participants were moral imperative, liability protection, social benefits, and marketing and promotional opportunities.

Volunteers: There is a large range in the number and role of volunteers per organization. 43% of interview participants emphasized that it is important to find people who are passionate about the work and that you make it easy and fun for them to do it. While most organizations have an adequate or abundant number of volunteers, one interview participant indicated that they struggle to have enough volunteers to meet the demand. 29% of interview participants spoke of the need to ensure that volunteer opportunities are accessible to vulnerable communities and that the invitation to volunteer be extended to those who receive the food. 35% of survey respondents indicated their volunteers are very engaged and 45% said they are mostly engaged.

Food Recipients: Organizations donate food to a large variety of places: food banks, farmers markets, community organizations that serve vulnerable populations, low-income housing units, daycares, volunteers, and private citizens. Donated food is sometimes sold as is, prepared as meals, or preserved to restaurants, farmers' markets, and grocery stores. Many organizations measure the food they deliver to recipients by the pound. This is not necessarily an accurate representation, given the varying weights of different foods (e.g. potatoes versus serviceberries). Interview respondents said they deliver between 2,400 lbs and 50 million lbs annually and survey respondents said they deliver between 2,000 lbs and 1.5 million lbs annually. Lindsey from Boulder Food Rescue highlighted that what sets them apart from many organizations, and contributes to their success is directly involving the food recipients in the operations and decision-making of the organization.

Community Partners: Most survey and interview participants spoke of their relationship with community partners. 85% of survey participants indicated they have community partners including libraries, houses of worship, locally owned cafes, restaurants, and pubs, schools, and universities. Cited benefits to strong community partnerships include shared storage spaces, event hosting, and shared supplies and equipment.

Advocacy

As reported above, food rescue organizations are challenged by unsupportive, restrictive, non-standard, or absent legislation, policy, and regulation. 43% of interview respondents highlighted the important role that food rescue organizations play in joining others to advocate for legislation and regulation that facilitates the donation of food surplus and the mitigation of food waste. Specifically, Jay from Hidden Harvest Ottawa spoke of the need for municipalities to recognize the social value of food rescue and to understand gleaning or fruit sharing as a food waste management solution. Lilith from Loving Spoonful added that food-rescue organizations should join others in promoting and lobbying for a reasonable living wage as part of the efforts to mitigate food insecurity.

Best Practices

Based on our primary data sources and explicitly supported by our secondary data sources, this study offers a set of best practices for food-rescue initiatives. Given the tremendous range in geographic locations (with their differing seasons, climates, populations, etc.), the differing size, type, and mandate of organizations, and the varying sociocultural contexts, it was challenging to delineate a set of meaningful guidelines, applicable to most. However, we feel that food-rescue initiatives would be well served to consider the best practices outlined below (and organized by the categories that emerged from our analysis), and continue to talk with and learn from one another.

Community-Focused Response & Engagement

Food rescue organizations must have a deep knowledge of the community they serve. Driven by the unique needs and context of different communities, the most effective responses and initiatives vary widely. To establish the most effective community, initiatives should consider the following activities:

- Complete a community asset map to discover levels of food surplus and hunger, as well as potential donors, recipients, and allies (Eggers & Benz, 2014; Berry et al., 2016).
- Establish a regional working group with all stakeholders: food assistance organizations, farms, restaurants, grocers, markets, government entities, and community food-related operations that are fighting hunger and food waste. A wider impact can be made by collaborating and sharing skillsets, resources, and networks (MacKenzie & Park, 2015; Chiu & CoDyer, 2012).
- Offer value-added services like community meals, film screenings, workshops (how to grow, prepare, and reduce food surplus), and community kitchen events to preserve fruits and vegetables, to benefit all community stakeholders, and increase awareness and support (MacKenzie & Park, 2015).
- Engage with the community through the lens of your individual organization's story or background. Most individuals and communities are eager to offer assistance when they are informed of the organization's story and goals. This can effectively be done through the storytelling capabilities of social media; engagement on social media is cost-effective, and benefits from the network effects of the communities active on the platforms.
- Shift the language of 'food waste' to 'surplus food' or 'forgotten food' to educate that the surplus food is not garbage; it is edible and nutritious.
- Measure your success beyond "pounds collected." Though many organizations effectively measure the weight of the food they have rescued, this number does not account for poor growing seasons, differences in food weights, food packaging, and the nutritional value of one food versus another. Shift your key performance indicators to numbers of harvest events, community partners and volunteers. In this way, you are measuring the social value of building community, reducing waste, increasing awareness, and increasing access to food, rather than simply how much food you have collected (Miroso, Mainvil, Horne & Mangan-Walker, 2016).

Organizational Structure

- Determine the most sustainable model for your specific community. There is no one “cookie-cutter” solution or structure that is best for all organizations; the organizations themselves must use the community knowledge they have to best determine which structure will allow them to best protect their donors and volunteers, while also maximizing access to funding and food. In this way, organizations must also understand the limitations of a charity, nonprofit, or community interest corporation structure in their community, as certain structures will make harvesting or donating food more difficult, but allow for revenue streams from business activities (Marshman, 2015; Berry, Faber, Geller, & Jacobs, 2016; MacKenzie & Park, 2015).
- Educate the public about who you are and what you do (which might mean explaining ‘social enterprise’ or ‘community interest company’) to manage expectations.
- If the organization is just beginning, break project down into manageable pieces and consider harvesting or gathering from one neighborhood or location at a time. Faster growth will require more funding and may unfavorably influence you to pursue unsustainable funding.
- Record and track harvest, donor, recipient, and volunteer data. This information is crucial for grant application. Multiple organizations have indicated that applying for grants and funding takes up an inordinate amount of their time, and having this information ready to provide the basis for a grant is important. This information also shows where the organization’s time and resources are concentrated, which may imply that a different structure would be more beneficial.
- Develop educational and procedural materials for donors, to encourage donations and reduce organizational time dedicated to partnership development.
- Use logistic and tracking software to organize volunteers and food donations, more efficiently use resources the organization does have, and manage growth and volunteer engagement in an organized fashion (Eggers & Benz, 2014; Berry et al., 2016).

Collaboration

Food rescue organizations must collaborate to be successful. This entails working with community organizations and leaders, donors, businesses, and the volunteer base that the organization has developed. A successful organization does not require thousands of volunteers, but it does require effective and steady collaboration with the people who have expressed an interest in working towards the same goal. Organizations should focus on developing the following relationships:

Food Donors

- Make collaboration easy, compelling, and fun. Donors are more willing to participate if you remove the barriers for them to do so. Consider the following measures: create packaged educational materials outlining your organization, relevant local legislation, regulation, and incentives; work with the donor to develop mutually beneficial procedures for donation (best pick-up times, where bins might be left etc.); ensure volunteers are well-trained, reliable, enthusiastic, skilled, and adaptable.
- Emphasize the benefits of donating: helping to increase access to nutritious food for those who are food insecure, reducing the environmental footprint for producers and food retailers, improving the

perception of corporate responsibility, and accessing financial incentives such as tax breaks and reduced trash expenses. For private citizen donors, highlight positive feelings when sharing food from a garden or fruit trees, and emphasize tax receipts if your organization offers these (Gunders, 2012; Miroso et al, 2016).

Volunteers

- Build your volunteer base for the long-term. Organizations are better served developing a smaller number of long-term volunteers and collaborators, as opposed to short-term, per engagement partners.
- Emphasize the benefits: satisfaction in being part of solution to surplus food and food insecurity, increased food literacy, community-building, physical activity, skill-sharing, and greater or renewed connection to food (Marshman, 2015; Beischer & Corbett, 2016; Miroso et al, 2016).
- Celebrate early and often. Show volunteers that their work is meaningful and appreciated to encourage them to continue working with the organization.
- Extend invitation beyond the ‘traditional’ volunteer demographic. Ensure that volunteering is an accessible, equitable experience. Encourage participation from individuals, corporate groups, university clubs, youth programs, restorative justice programs, school classrooms, community groups (Berry, Faber, Geller, & Jacobs, 2016). Those who are food insecure can volunteer and experience a dignified and empowered means to accessing food.
- Be inclusive of marginalized or at-risk populations who may want to volunteer but may not have access to popular methods of communication such as social media. Build relationships within the community to understand how to make volunteering accessible.

Food Recipients

- Work with community, rather than for them. An effective organization addresses the need for inclusion in the system and community more broadly. Make sure an effort is made to build relationships with those receiving the food, and listen to their ideas about how it should be delivered in way that most allows recipients choice and dignity (Beischer & Corbett, 2016).
- Develop a participatory model of involving recipients in all aspects of the food rescue process, from harvesting and gathering to organizational decision-making (Beischer & Corbett, 2016).

Community Partners

- Identify and build relationships with natural allies in your community. These might include those who share similar mandates or have similar goals and could share resources, funding, equipment, vehicles, or administrative and storage space (MacKenzie & Park, 2015; Chiu & CoDyre, 2012; Faber, Geller, & Jacobs, 2016; Beischer & Corbett, 2016).

Advocacy

Among the largest barriers faced by food organizations on a broad scope are regulatory concerns. These include access to funding, equitable treatment depending on organizational structure, and liability of potential food donors. Food rescue organizations should make engagement with the government a priority to address regulatory gaps or obstacles that prevent them from helping to solve food waste and hunger issues.

- Encourage municipalities to understand gleaning, harvesting, or food-rescue as a food waste management solution that can be integrated into a municipal food redistribution strategy targeting those who are food insecure (MacKenzie & Park, 2015). This ensures government funding outside of the grant model, while diverting food waste from landfills.
- Lobby for supportive donor and liability legislation. Our research found that, in Canada especially, organizations encountered resistance to participation from potential retail and corporate donors because they were worried they were not protected from liability for selling “near-expired” food. Removing liability as a barrier would greatly enhance the ability of organizations to do their work.
- Encourage governments at all levels to recognize the social value of food rescue and match that with funding in the same ratio that they support other social benefit initiatives (Miroso et al, 2016).
- Advocate for policies that promote a reasonable living wage and mitigate food insecurity. Explore, understand, and then make explicit the connections between poverty, food waste, and food insecurity. Help to educate the local community and government to understand the social, health, and environmental impacts of our broken food system, and how your organization can help mitigate those impacts (Lipinski, Hanson, Loma, Kitinoja, Waite, & Searchinger, 2013).

Conclusion

According to Goldenberg (2016), if the 1.3 billion tons of food that is wasted every year was tossed into regular, 20m³ dumpsters, it would fill 80 million of them. Stacked on top of one another, those dumpsters could reach the moon and circle it. Increasingly, it is understood that being part of the food waste solution is a social, economic, environmental, and moral imperative. A wide range of food rescue entrepreneurs and organizations have emerged as one part of that solution. Despite increased media focus and community support for their work, there has been little academic research outlining and examining the organizations’ merits, logistics, challenges, and enablers of success. This paper reported on the research that begins to fill that gap.

This study utilized surveys and interviews to explore how food rescue organizations are responding to food waste and food insecurity in their communities. We analyzed their responses and put forward a set of generalizable best practices for food rescue initiatives that fell under four broad themes: community-focused response and engagement, organizational structure, collaboration, and advocacy. The research findings reveal that across the multiple and varying types of organizations, success and sustainability is more likely for food rescue initiatives who understand and respond to the unique circumstances and needs of their communities, who can convey their social value, who foster a strong and committed volunteer base, and who advocate for supportive legislation and policies. It is our sincere hope that these findings will ignite conversations, spark alliances, prompt further and deeper research, and strengthen the work of those seeking food justice.

References

- Activating Change Together for Community Food Security. (2014). Making food matter: Strategies for activating change together: A participatory research report on community food security in Nova Scotia. Retrieved from <https://www.feednovascotia.ca/images/MakingFoodMatter.pdf>
- Agriculture and Agri-Food Canada. (2012). Socially conscious consumer trends: Sustainability. Retrieved from <http://www.agr.gc.ca/resources/prod/Internet-Internet/MISB-DGSIM/ATS-SEA/PDF/6308-eng.pdf>
- Beischer, A., & Corbett, J. (2016). Food justice as a response to hunger on our Canadian foodscapes: How a community-gleaning project is addressing depoliticized food insecurity through a food justice praxis. Retrieved from http://www.jssj.org/wpcontent/uploads/2016/01/JSSJ9_02_ENG.pdf
- Berman, P. (2015, June 18). Halifax considers mobile market to bring fresh food to “food deserts”. Retrieved from: <http://www.cbc.ca/news/canada/nova-scotia/halifax-considers-mobile-market-to-bring-fresh-food-to-food-deserts-1.3118321>
- Berry, R., Faber, J., Geller, A., & Jacobs, W. (2016). Vermont Food Rescue Toolkit. Retrieved from http://www.middlebury.edu/system/files/media/Vermont_FoodRescue_Toolkit_DM.pdf
- Bryden-Blom, S. (2016, May 19). Tax credit to offer incentive to NS farmers donating produce to food banks. Retrieved from <http://globalnews.ca/news/2712124/tax-credit-to-offer-incentive-to-ns-farmers-donating-produce-to-food-banks/>
- Cenname, A. (Photographer). (n.d.). Lettuce [photograph]. Retrieved from <https://unsplash.com/search/spinach?photo=5R2jmlmja3o>
- Chiu, G., and CoDyre, M. (2012). Farmer-Food Bank Linkages. University of Guelph Institute for Community Engaged Scholarship. Retrieved from https://atrium.lib.uoguelph.ca/xmlui/bitstream/handle/10214/9090/Chiu_et_al_FarmerFoodBankLinkages_2012.pdf?sequence=4&isAllowed=y
- Dyer, E. (2015, Nov 05). Liberal name changes for ministries signal a shift in focus. CBC News, Politics. Retrieved from <http://www.cbc.ca/news/politics/liberals-cabinet-names-1.3304561>
- Eggers, W., & Benz, C. (2014, August 1). Approaching food waste from all sides. Retrieved from https://ssir.org/articles/entry/approaching_food_waste_from_all_sides
- Finn, S. M., O'Donnell, T., & Walls, M. (2014). The time is ripe for food recovery. *Biocycle*, 55(8), 42-48. Retrieved from <https://www.biocycle.net/2014/09/19/the-time-is-ripe-for-food-recovery/>
- Food and Agriculture Organization of the United Nations. (2014). Food wastage: Mitigation of societal costs and benefits. Retrieved from <http://www.fao.org/3/a-i3989e.pdf>

Food and Agriculture Organization of the United Nations. (2016). Key facts on food loss and food waste you should know!. Retrieved from <http://www.fao.org/save-food/resources/keyfindings/en/>

FOUND. (2016a) Forgotten food statistics. Retrieved from <http://foundns.com/forgotten-food-statistics/>

FOUND. (2016b). What is FOUND? Retrieved from <http://foundns.com/about/>

Goldenberg, S. (2016, July 13). Half of all US food produce is thrown away, new research suggests. The Guardian. Retrieved from <https://www.theguardian.com/environment/2016/jul/13/us-food-waste-ugly-fruit-vegetables-perfect>

Government of Nova Scotia. (1994). Volunteer Services Act. Retrieved from <http://nslegislature.ca/legc/statutes/volnteer.htm>

Greene, J. C., & Caracelli, V. J. (1997). Defining and describing the paradigm issue in mixed methods evaluation. In J. C. Greene & V. J. Caracelli (Eds.), *Advances in mixed-method evaluation: The challenges and benefits of integrating diverse paradigms* (pp. 5-18). San Francisco: Jossey-Bass.

Gunders, D. (2012). Wasted: How America is losing up to 40 percent of its food from farm to fork to landfill. Natural Resources Defense Council, 1-26. Retrieved from <https://www.crrc.org/wp-content/uploads/sites/24/2014/03/wasted-food-IP.pdf>

Halifax Food Policy Alliance. (2014). Food counts: Halifax food assessment. Retrieved from www.cdha.nshealth.ca/system/files/sites/127/documents/food-counts-full-report.pdf

Hall, A. (2016, July 30). Greggs and M & S join movement to donate leftover food to solidarity fridges. The Guardian. Retrieved from <https://www.theguardian.com/sustainable-business/2016/jul/30/greggs-marks-spencer-food-waste-solidarity-fridges-from-germany-india-spain-uae>

Hic, C., Pradhan, P., Rybski, D. and Kropp, J. (2016). Food surplus and its climate burdens. *Environmental Science and Technology*. 50, 4269-4277.

Jacobs, R. (Photographer). (n.d.). Squash [photograph]. Retrieved from <https://unsplash.com/search/squash?photo=mSzdaujJOPE>

Kirkpatrick S, & Tarasuk, V. (2009). Food insecurity and participation in community food programs among low-income Toronto families. *Canadian Journal of Public Health*, 100(2), 135-9. Retrieved from <http://journal.cpha.ca/index.php/cjph/article/view/1771/1955>

Leedy, P. D., & Ormrod, J. E. (2016). *Practical research: Planning and design*. New York: Pearson.

Lemon, M. (Photographer). (n.d.). Blueberries [photograph]. Retrieved from <https://unsplash.com/search/blueberries?photo=k7xLp4wQW7s>

- Lipinski, B., Hanson, C., Loma, J., Kitinoja, L., Waite, R., & Searchinger, T. (2013). Reducing food loss and waste. Retrieved from http://www.wri.org/sites/default/files/reducing_food_loss_and_waste.pdf
- MacKenzie, A., & Park, A. (2015). Literature review and determination of best practices: Gleaning and edible gardens. Retrieved from <http://letstalkfood-ck.com/wp-content/uploads/2013/05/FINAL-CKPHU-Edible-Gardens-and-Gleaning-Literature-Review-and-Best-Practices-Final.pdf>
- Marshman, J. (2015). Gleaning in the 21st century: Urban food recovery and community food security in Ontario, Canada. (Unpublished doctoral dissertation). University of Waterloo, Canada.
- Mirosa, M., Mainvil, L., Horne, H., & Mangan-Walker, E. (2016). The social value of rescuing food, nourishing communities. *British Food Journal*, 118(12), 3044-3058. doi:10.1108/BFJ-04-2016-0149
- MWB. (2016). Project Description 16: Harvesting Potential from Forgotten Foods. Halifax: Faculty of Management, Dalhousie University.
- Neslen, A. (2016, July 13). Action to cut food waste gains momentum across Europe. *The Guardian*. Retrieved from <https://www.theguardian.com/environment/2016/jul/13/action-to-cut-food-waste-gains-momentum-across-europe>
- Nova Scotia. (2016). Community interest companies regulations made under Section 28 of the Community Interest Companies Act. Retrieved from <https://www.novascotia.ca/just/regulations/reg/ciccomminterest.htm>
- Nourish Nova Scotia. (2016). Food literacy. Retrieved from <https://nourishns.ca/program-resources/food-literacy>
- Rainville, B., & Brink, S. (2002). Food insecurity in Canada, 1998-1999. Applied Research Branch, Human Resources Development Canada. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.571.4076&rep=rep1&type=pdf>
- Reynolds, C. J., Piantadosi, J., & Boland, J. (2015). Rescuing food from the organics waste stream to feed the food insecure: An economic and environmental assessment of Australian food rescue operations using environmentally extended waste input-output analysis. *Sustainability*, 7(4), 4707-4726. doi:10.3390/su7044707
- Smith, N. (2016, July 6). An in-depth look at Nova Scotia's new community interest companies [Web log message]. Retrieved from <http://www.millerthomson.com/en/publications/communiques-and-updates/social-impact-newsletter-formerly-the/july-6-2016/an-in-depth-look-at-nova-scotias-new/>
- Statistics Canada. (2016). Economic indicators, by province and territory (monthly and quarterly). Retrieved from <http://www.statcan.gc.ca/tables-tableaux/sum-som/lo1/cst01/indio2a-eng.htm>

Trading Economics. (2016). Canada Minimum Hourly Wages in Ontario . Retrieved from <http://www.tradingeconomics.com/canada/minimum-wages>

World Food Program. (2016). Hunger Statistics. Retrieved from <https://www.wfp.org/hunger/stats>

Appendix A: Survey Questions

1. How long has your organization been active?
2. How many individuals do you have as paid staff? What are their roles?
3. How many volunteers do you have?
4. What is the average engagement level of a typical organization volunteer?
 - a. Very engaged; our volunteers always show up to our events and harvests.
 - b. Mostly engaged; our volunteers usually show up to our events and harvests.
 - c. Somewhat engaged; our volunteers sometimes show up to our events and harvests.
 - d. Mostly not engaged; our volunteers sparingly show up to our events and harvests.
 - e. Not engaged; our volunteers almost never show up to our events and harvests.
5. What is your organizational structure?
 - a. Nonprofit
 - b. Social Business Enterprise
 - c. Charity
 - d. For-Profit Business
 - e. Other (please specify)
6. Can you briefly explain why you chose this structure?
7. What are the primary uses of your budget?
8. How does your organization generate revenue? Please select all that apply.
 - a. Government grants
 - b. Foundation or other grants
 - c. Sales revenue
 - d. Donations
 - e. Membership fees/dues
 - f. Other (please specify)
9. Who are your suppliers? From whom is food rescued or harvested? Please select all that apply.
 - a. Farms
 - b. Orchards
 - c. Community Farms
 - d. Grocery Stores
 - e. Private Citizens
 - f. Public Land (which is not specified as community farming space)
 - g. Other (please specify)
10. How many harvest suppliers, or other producers, on average, do you work with per year?
11. How is food transported for distribution? Please select all that apply.
 - a. Personal vehicles
 - b. Trailers
 - c. Refrigerated trucks
 - d. Bicycles
 - e. Other (please specify)
12. To whom is the rescued or harvested food donated? Please select all that apply.

- a. Food Banks
 - b. Farm Markets
 - c. Charitable Organizations
 - d. Community Organizations
 - e. Volunteers
 - f. Private Citizens
 - g. Other (please specify)
13. To whom is the rescued or harvested food sold? Please select all that apply.
- a. Restaurant/Cafes
 - b. Wholesale producers
 - c. Grocery Stores
 - d. Markets
 - e. Other (please specify)
14. Does your organization have community partners? (Yes/No) If yes, who are they and what are their roles?
15. How is the community engaged with your work? Please select all that apply.
- a. Social media
 - b. Website
 - c. Marketing materials (brochures, posters)
 - d. Workshops
 - e. Mobile apps
 - f. Community outreach at events
 - g. Direct contact (door to door)
 - h. Other (please specify)
16. How are producers and suppliers engaged with your work?
- a. Phone Calls
 - b. Emails
 - c. Other (please specify)
17. From your perspective, do producers and suppliers face barriers to engagement? If so, please describe (e.g. negative perceptions in donating food “waste”, concerns for safety, facilitation of harvest/pick-ups takes too much time, etc.).
18. Are there particular technology-enabled solutions or innovations that support your work?
19. Are there external influences that you feel contribute to your organization’s success (community support, legislation, tax credits, cultural preferences)?
20. If we could wave a magic wand and remove three to five barriers you face in your work that are hindering your success in some way, what would they be? Go wild!
21. How much food have you recovered? (Approximately)

Appendix B: Interview Questions

1. Let's start by talking about your story a little. What led you to work within the food-rescue movement and to create or join your organization?
2. How long has your organization been active?
3. How many staff and volunteers does your organization have and what are their roles?
4. Your organization is structured as a [insert nonprofit, business, or social enterprise]. Can you talk about how that decision was made and if it is working?
5. Key to your work are the [farmers, suppliers, or community members with backyard trees and gardens etc.] and organizations to whom you donate the food. Let's talk about the farmers [or suppliers, community members etc.] first. How many do you work with? What is your relationship like with them?
6. What is used to motivate producer and supplier engagement? Do you feel they face any barriers?
7. How many community partners or organizations receive your food donations? What is your relationship like with them?
8. Do you know approximately how many pounds of food you collect annually? Does this number increase each year?
9. Do you have specific techniques that work well – or maybe aren't working so well – to engage your suppliers or community members?
10. Are there particular technology-enabled solutions or innovations that support your work?
11. What are the revenue streams that help fund your organization and what are the primary uses of your budget?
12. Are there external influences that you feel contribute to your organization's success (community support, legislation, tax credits, cultural preferences)?
13. If I could wave my magic wand and remove three to five barriers your organization faces that are hindering your success in some way, what would they be?
14. If you could offer three pieces of advice to someone looking to start up a similar organization or to strengthen an already existing one, what would that advice be?