

Restructuring the Financial Underpinning of the Charitable Food Space
An Investigation of Food Rescue Organizations' Role in Eliminating Food Deserts

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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Introduction

The United States has a food waste problem. Production is booming, with an unimaginably large quantity of food grown, processed, packed, transported, sold, and consumed—in the neighborhood of 200 billion pounds a year. But an equally astonishing amount, around 130 billion pounds, is lost along the way—plowed back into fields, landfilled, decayed in grocery store backrooms, or simply left to spoil in the sun at every step in the supply chain (Buzby et al, 2021). This accounts for between 30 and 40 percent of all food grown in the United States, including food that never even gets harvested from farms' crop fields (Baker et al, 2019).

As food rots away in various parts of America, other areas suffer acute food insecurity, defined as the lack of “access at all times to enough food for an active and healthy life” (Wunderlich et al, 2006, p. 1). These regions have recently been termed “food deserts,” which the United States Department of Agriculture defines as “an area in the United States with limited access to affordable and nutritious food, particularly such an area composed of predominantly lower-income neighborhoods and communities” (USDA, 2017, p. 1). The term includes rural, urban, and especially tribal communities (Northern Plains Reservation Aid, 2017). In food desert areas, strain on hunger relief resources has grown quickly since the beginning of the coronavirus pandemic, with estimations of one in six Americans facing food insecurity this year (Cohen, 2020).

Meanwhile, a host of third-party organizations make up the food rescue industry, which attempts to connect food waste streams to useful consumer markets. Food rescue is led by nonprofit organizations, and their operations depend on two key facts about food waste in the United States. First, most food that becomes waste is actually perfectly safe for consumption, at

least for a while. And second, the main cause of food waste early in the supply chain is that it is the most financially viable way for growers to handle surplus when primary markets are unavailable (Pitt, 2016). Food rescue organizations take advantage of these facts by providing logistical and financial support, usually by locating sources of food waste, assisting with transportation costs and coordination, and facilitating deliveries from producers to charitable distribution centers. Overall, the goal is to bring as much food as possible to communities in need via food banks, effectively bridging the gap between food waste and food insecurity in accordance with the USDA's Food Recovery Hierarchy (USDA, 2016).

Like most nonprofits or NGOs, logistics providers in the charitable food sector (also called brokers or facilitators—see the Appendix for terminology) are financially intensive to operate. Once food reaches the beginning of the charitable pipeline, someone has to physically move it from point A to point B, and more people are needed to sort, pack, load, unload and distribute it at either end. Transportation and labor are the largest barriers to reducing food waste in this country, and since prices for these services often swell into the thousands of dollars per truckload of food, the bills can build up too fast for grassroots donations and other fundraising efforts to keep pace (UShip, 2020).

No perfect solution to this problem has been implemented at a notable scale. This project aims to implement a tax-based financial structure for the charitable food pipeline that removes monetary barriers and supports the operational sustainability of suppliers, facilitators, and food banks.

Technical Background

The traditional model

Current financial systems backing the charitable food space are not particularly complicated. Generally, large facilitating organizations follow the diagram below—facilitators source produce from suppliers, who deliver it via a third-party logistics (“3PL,” which usually refers to a freight company) to the recipient. Facilitators then pay the 3PL’s service fees, and recoup the deficit with a combination of fundraising efforts and recipient membership fees (Care and Share Food Bank, 2016). Ultimately, in this system, the supplier breaks even, the facilitator also breaks even, and the recipient loses money on each delivery. Thus, the recipients are forced to decide which food options to pursue based on what precious resources they have allocated for procurement, rather than what options are most nutritious, culturally appropriate, or desired by clients (Feeding America, 2021). And since each delivery incurs additional resource losses, this loop is not easily scalable.

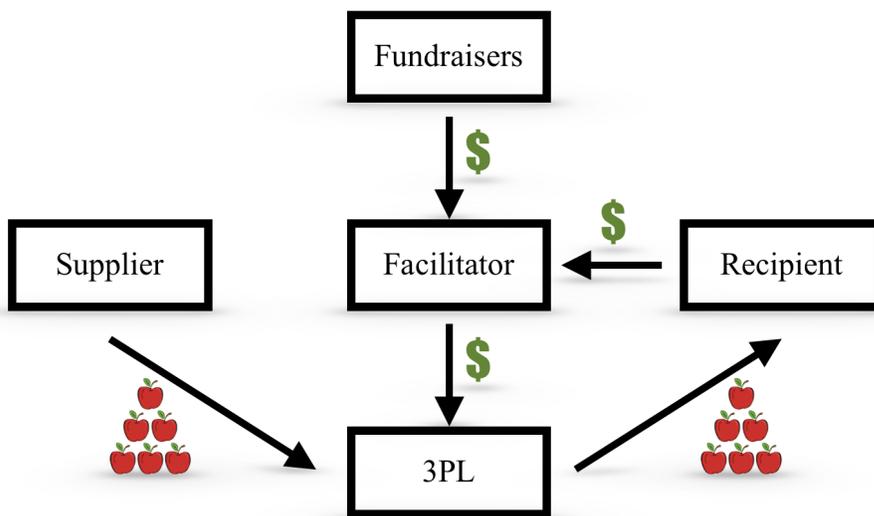


Figure 1. Concept map for the traditional financial model (Source: Partridge, 2021).

The charitable food space needs a new financial system—one that has design and implementation requirements established by the legal and financial needs of each stakeholding group, the individual preferences of the stakeholders, and the inertia holding existing systems in place. From a technical standpoint, this is not especially different from any infrastructure project a civil or systems engineer might work on.

Most of the theoretical design work for this new system has actually been done already. Based on research and analysis performed by myself and a small team of coworkers at The Farmlink Project, a facilitating organization in the charitable food space, the system will have the government cover facilitators' costs indirectly through tax benefits (IRS Publication 526). This “tax program” will allow facilitators to expand operations and increase the volume of food flowing through the charitable pipeline while reducing the financial burden on themselves and their recipients.

About the tax program

The tax program follows the concept map below. Here, the sourcing, delivering, and fundraising processes are the same as the traditional model, but facilitators fill their deficit differently. It all hinges on the fact that noncash charitable contributions are tax-deductible at the federal level, and there's even an “enhanced” deduction for agricultural crop donations (IRS Form 8283). Some states have their own incentives as well. All that is needed to take advantage of these tax benefits is information and documentation of the produce being moved (IRS Publication 526). In the diagram, this is represented by the box with three lines. If the facilitator can acquire and compile that information and submit it to donors' accounting teams, the government will subsidize the donor by reducing their tax liability. Then, the facilitator can take

a service fee from the donor to cover their 3PL costs, and as a result there is no need to paygate services to recipients. In all, the supplier makes money on each deal, the facilitator breaks even, and the recipient also breaks even.

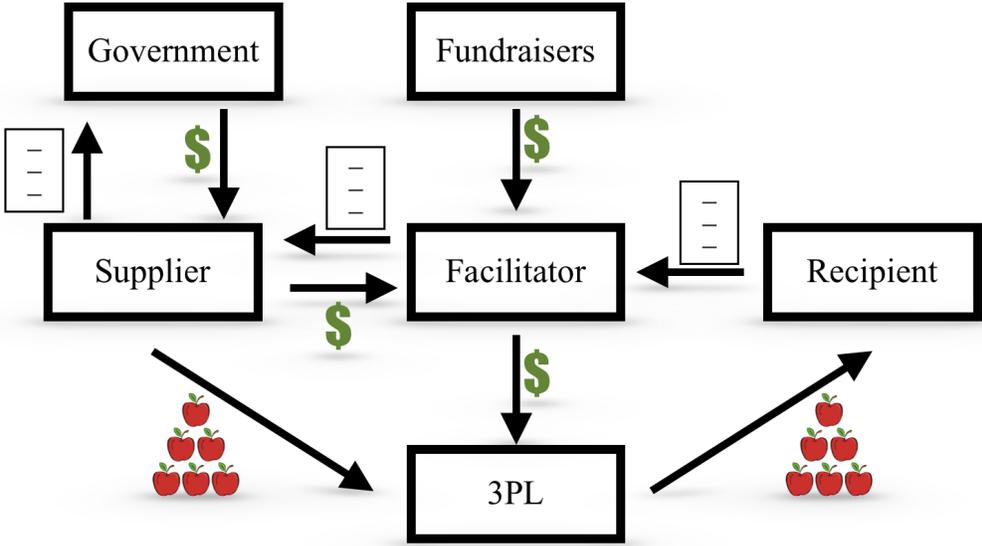


Figure 2. Concept map for the tax program (Source: Partridge, 2021).

There are two main benefits of this model. First, it is scalable—as facilitators move more food, they make more deals through the tax program, which increases their revenue, which allows them to send more food through the pipeline, and so on. And second, it does not require money to be exchanged between the facilitator and recipient, meaning that recipients have extra resources that can be used for labor and outside food sourcing operations.

Broadly, there are two facets to the development of this system. The first is client-facing, meaning all the elements of the program with which partnering organizations like farms and food banks will directly interact. Behavioral design and systems thinking define this challenge—as facilitators, it’s necessary to understand not only the textbooks’ worth of details on charitable contributions in the IRS tax code, but also to perform extensive user interviews and consultations

with lawyers, accountants, farm sales managers, directors of development, food bank owners, government representatives, and others. Each of these groups holds valuable information and feedback that needs to be implemented into the final version of the program. Further, the program also needs to be “pitchable,” in that it needs to be useful enough to partner organizations that they need our services, but not so involved that it oversteps our legal boundaries or scares potential partners away with convoluted details.

The other half of the equation involves the internal elements of the program. Behavioral design concepts can be used to build our documentation scheme into the existing systems that brokers use and to prepare internal members to become involved. In other words, the final “product” needs to be smooth, simple, and intuitive enough that internal usability does not become a blocker.

It is important to reiterate that the only real goal here is to move more food to more people who need it. Nothing more. The tax program should greatly increase the amount of food flowing through the charitable pipeline—however, it still relies upon the existing structures of the charitable pipeline itself, food deserts and all, to reach end users. This presents a new set of challenges, both social and technical.

Availability vs Access: Human Impacts of the Tax Program

The whole purpose of the charitable food space is to positively impact human lives by providing nutritious food, but like any system, it is deeply entwined with the social, political, and economic elements of the agriculture industry. There are a slew of ethical dilemmas that need to be considered in order to successfully implement the tax program into this socioeconomic canvas. For example, which suppliers should brokers engage with and attempt to onboard to the

tax program? Corporate mega-farms can donate the largest volume of produce, but they also contribute the most to food waste and agricultural greenhouse gas emissions. Are facilitators compromising away their commitment to sustainable agriculture by supporting these farms as partners? Again, there are many such situations that need to be responded to, but for the purposes of this paper, only one will be emphasized: removing financial barriers from the charitable food pipeline will increase the *availability* of food flowing through it, which has vast implications for users' *access* to fresh nutritious produce. It follows that a major overhaul of the charitable food space structure should make every effort to consider those implications, especially for under-resourced communities, and to that end the remainder of this paper will investigate the effects of the tax program on food deserts and other food access issues.

One tool that will help accomplish this is the theory of responsible innovation (RI) proposed in 2013 by a group of researchers led by Jack Stilgoe, a professor of STS at University College London. RI attempts to codify a moral compass into science and innovation, beginning with a simple, broad definition: “taking care of the future through collective stewardship of science and innovation in the present” (Stilgoe et al, 2013, p. 3). Stilgoe’s interpretation continues with what is essentially a comprehensive guide to ethical decision-making, proposing multiple lines of questioning that scientists must follow in order to ensure that their innovations are built and implemented responsibly. The four “dimensions” into which RI is developed are anticipation, reflexivity, inclusion, and responsiveness.

Anticipation prompts researchers and organizations to think critically about the intended and unintended consequences of their actions. What happens if something goes wrong? Whose responsibility is it to rectify mistakes? Which stakeholder assumes the most risk in all possible

outcomes, and in what ways? These questions encourage systematic thinking and aim to increase resilience, two concepts that are central to the implementation of the tax program.

Reflexivity refers to the practice of understanding the innovator's own place in the system they are designing for. How do innovators' identities, activities, assumptions, and commitments inform their decisions? How are they connected to or disconnected from their target audience? This topic will be especially useful to investigate in the context of the tax program, as it is critical that our services are collaborative with our partners rather than saviorist. In other words, those developing the tax program need to be introspective about their place in relation to others in the charitable food space.

Inclusivity challenges traditional "expert, top-down policy-making" by bringing as many voices to the innovation process as possible. It urges scientists and innovators to incorporate public dialogue into their committees and other decision-making bodies, particularly members of the public who would otherwise be skipped over. For tax program, we must ask: how can stakeholder feedback inform our design choices? Who can we include in discussions about the program whose opinion otherwise would not be heard?

Finally, responsiveness aims to overcome the inertia of existing economic and political systems that may hold back progress. In other words, as new information comes up—either supportive or restrictive—the proposed product must be able to "react and answer" accordingly. This includes social perspectives, views, and norms. The tax program absolutely must be flexible enough to respond to new developments in real time, especially given that it is in its pilot phase this year.

To conclude this investigation of human impacts, it is important to remember that quantity of food is not the solution to food insecurity. There is already more than enough

quantity produced in the United States to feed everybody—who claims ownership of that surplus, whether it's farms or charitable brokers, is not necessarily important unless there is sufficient *access* for communities in need. The technical design criteria described above focus on food acquisition, which on its own is not enough to mitigate food deserts. Hence, RI principles could represent the link between availability and access to fresh, nutritious food in under-resourced communities across the country.

Research Question & Methods

Given this background, we can now formulate the official research question for this thesis: how will an increase in volume of food in the charitable system affect access to fresh produce for under-resourced communities across the United States, and how can responsible innovation be leveraged to mitigate food deserts in those communities?

Being such a broad framework, RI presents a variety of potential methods for analysis. Some elements of the analysis may simply come down to academic research—for example, what changes to food deserts have been observed as the charitable food pipeline has grown since the mid-19th century (Isaacson et al, 2021)? There is already academic literature about RI in the agriculture industry specifically that can assist with this investigation, and past work on similar topics could provide case studies or other valuable lessons on how RI can be applied to the tax program. For one, “Agriculture 4.0,” which generally refers to 21st century agriculture practices like vertical farming and aquaponics, has been analyzed extensively through the RI lens (Klerkx et al, 2020). Research has also been performed from a social and environmental sustainability angle within the agriculture industry, with a specialized set of action points developed for that purpose (Herrero, 2020). (See the Appendix for details on these action points, some or all of

which will be addressed by the tax program down the line.) Generally, the Ag 4.0 and sustainability resources will provide additional structure to the baseline RI framework in the future of this project, adding more possibilities to the plan discussed earlier.

Other elements require user interviews with a focus on inclusivity and responsiveness rather than design criteria. While the design of the tax program itself depended heavily on interviews with agricultural suppliers, this series of interviews will rely on people in the recipient space—that is, food bank managers, coordinators, volunteers, and clients. These stakeholders have the best understanding of the impacts of volume fluctuations on distribution operations. To that end, contacts have already been made with such stakeholders at various food banks across the country, from the Blue Ridge Area Food Bank in Charlottesville, Virginia to the mega-bank Food Forward in central California, among several others.

Finally, basic observation of deal flow through facilitators can inform the RI analysis—for instance, does the tax program unintentionally exclude partners in certain geographical areas, socioeconomic strata, or other demographic categorizations once it is fully rolled out? I will have access to this information through nonprofit work, and will monitor it over the coming months to identify trends and changes. In fact, the technical team actually already has some of these success measures in place, and is prepared to continue working directly with stakeholders to pursue the best solution for all.

Discussion & Conclusion

The tax program is a technical project that will increase access to food for brokers in the charitable food space. Implementing that program in a responsible manner that addresses food deserts and incorporates the needs of America's most disadvantaged communities is a social

challenge, and the question of how to accomplish that is the subject of this thesis. One last point that should be mentioned is that charitable brokers are not the only stakeholders who are pushing for systemic change in the food system. Individual efforts (World Wildlife Fund, 2021), private industry movements (Kroger Zero Hunger | Zero Waste, 2021), and government legislation (McGovern, 2021) also contribute to the charitable food space in various ways. Collaboration between these efforts is the best way to spur transformative improvements in the agriculture industry—the tax program could be a major step in making that happen. On its own, the tax program includes contributions from individuals (such as publicists, social media teams, etc helping to spread the word), private industry (corporate suppliers participating in the program), and public officials (conference representatives, legal liaisons, etc). Together, this effort could make a huge positive impact on both food waste and food insecurity.

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Appendix

Terminology used in this paper

Charitable food space: the network of organizations that operate under the mission of reducing food insecurity and/or waste, as well as the communities served by those organizations.

Charitable (food) pipeline: the process by which food is sourced, moved, and distributed by actors in the charitable food space.

Facilitator/logistics provider/broker: a nonprofit organization that helps move food through the charitable pipeline by sourcing donors, scheduling deliveries, managing logistics, etc (examples: Feeding America, The Farmlink Project).

Supplier/donor: an organization (which does not need to be a nonprofit) that supplies food to the charitable pipeline. Most often this term refers to farms or agricultural processors.

Recipient/donee: a nonprofit organization who receives food from the supplier (via a delivery coordinated by the facilitator) and distributes it to clients. Most often this term is used to refer to food banks.

3PL (third-party logistics): An organization (which does not need to be a nonprofit) that provides a service somewhere along the charitable pipeline. Most often this is a trucking company such as Coyote or Uber Freight.

Tax program: the financial system proposed to the charitable food space that will allow facilitators to expand operations and increase the volume of food flowing through the charitable pipeline without placing financial burden on their recipients.

Food/goods/produce: the actual items that are moved through the charitable pipeline and are consumed by clients (potatoes, onions, greens, etc).

Food desert: an area in the United States with limited access to affordable and nutritious food, particularly such an area composed of predominantly lower-income neighborhoods and communities.

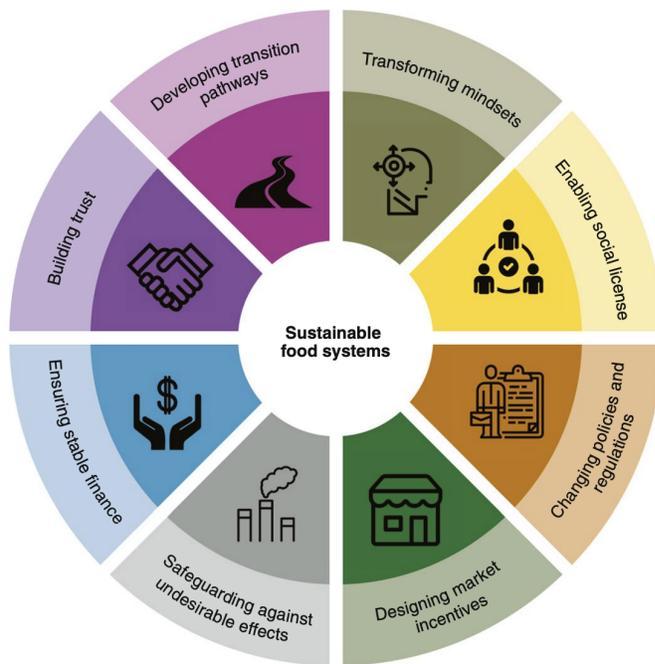


Figure 3. Elements for accelerating the systemic transformation of food systems (Source: Herrero et al, 2020)