



Improving Food Rescue in Seattle: What can be learned from a supply chain view?

Prepared June 2020

By  **SUPPLY CHAIN TRANSPORTATION & LOGISTICS CENTER**
UNIVERSITY of WASHINGTON
Urban Freight Lab

For  **Seattle
Public
Utilities**

Improving Food Rescue in Seattle; what can be learned from a supply chain view?

Seattle is one of the nation's fastest-growing cities, presenting both opportunities and challenges for food waste. An estimated 94,500 tons of food from Seattle businesses end up in compost bins or landfills each year—some of it edible food that simply never got sold at restaurants, grocery stores, hospitals, schools or dining facilities. Meantime, members of our community remain food insecure. It makes sense for food to feed people rather than become waste.

This is why Seattle Public Utilities continues to support efforts toward food rescue, where edible food that would otherwise enter the waste stream is gleaned from local businesses and re-distributed to local food programs. SPU has joined other cities, states, and regional coalitions in committing to cutting food waste by 50 percent from 2015 by 2030, leading with prevention and rescue. Since 2018, SPU has engaged more than 80 stakeholders from 50-plus organizations in a Food Rescue Innovation Initiative—a collaborative effort to better understand food rescue challenges and explore potential solutions. The initiative surfaced transportation and logistics as one of the key challenges.

To that end, SPU asked the University of Washington Supply Chain Transportation and Logistics Center (SCTL) to conduct foundational research into the logistics of food rescue in Seattle. This research forms part of SPU's broader work to identify barriers to making food rescue operations in Seattle as effective and efficient as possible—and work toward solutions to overcome those barriers with both the private and public sector. The SCTL research includes interviews with a representative cross-section of food suppliers, food bank agencies, meal program providers and nonprofit partners.

With this document, SPU seeks to inform the myriad businesses that donate food (and by doing so, reduce their waste costs); the wide range of nonprofit hunger relief partners who collect and redistribute donated food to community members in need; local government; and locally based companies with supply chain logistics expertise that could contribute solutions to this complex puzzle.

FOOD RESCUE AT A GLANCE

Donor businesses include grocery stores, restaurants, commissary kitchens.

Hunger relief agencies get the donated food in various ways: by picking up directly from businesses; picking up from a distributor like Food Lifeline or Northwest Harvest, which collects, consolidates and distributes large-scale food donations from various sources; or using a nonprofit delivery service.

Hunger relief agencies distribute donated food to the community in various ways. Meal programs use food donations to prepare daily meals in their kitchens that then are served to people in need. As such, they need donations packaged in larger volumes.

Food banks distribute food donations through services such as walk-in food pantries, pop-up food pantries, student backpack programs, and home deliveries. As such, they need donations packaged in consumer-scale volumes.



The SCTL research suggests that food rescue in Seattle operates less as a coherent, coordinated logistics system than as a loose network of largely siloed food donators and hunger relief organizations. And the findings challenge a commonly made assumption about food rescue in Seattle: That if only nonprofit hunger relief organizations had more trucks and more drivers, the food rescue network could operate at maximum effectiveness and efficiency, thereby rescuing more food and wasting less. While the SCTL research suggests that organizations often *do* face a shortage of both trucks and drivers, the research surfaces deep supply chain challenges that need addressing for food rescue to become as efficient and effective as possible.

Fundamental among these supply chain challenges—and a challenge that impacts virtually every step in the food rescue enterprise—is uncertainty.

By nature, rescuing food is dynamic and unpredictable in terms of who will donate; when and where the food will be available; the type, volume and state of the food received; the space, equipment and staff needed to transport, sort, store and redistribute food—all of which can change daily. Food donating businesses, in turn, often don't know what foods hunger relief agencies need and can use in the near-term; what storage limitations agencies have; and what costs and burdens—operational and logistical—are being placed on the nonprofit agencies in the food rescue process.

SCTL defines an effective supply chain system as one that tries to reduce uncertainty, because uncertainty is costly. As such, a pillar of an effective supply chain system is the collection, management, analysis and use of data so that logistics (and any kinks in the system) are transparent and can be improved.

But SCTL research shows the food rescue distribution system is especially uncertain and lacks key data. This challenge is compounded by the fact that many hunger relief organizations operate with limited budgets, staff, equipment and, therefore, rely on volunteer labor (including drivers). Yet virtually all the logistical and financial burden of food rescue is placed on nonprofit organizations distributing and/or receiving the food.

To be clear, hunger relief organizations exist to serve their communities the best way they can: Transportation and logistics strategy and implementation is simply the means to that end. Given that the agencies were not created with the goal of becoming best-in-class supply chain operators, it would be unreasonable to expect to find them functioning as such. And hunger relief organizations do not operate in a vacuum. Fundamentally, a supply chain is a partnership. In the context of the Seattle food rescue system, that partnership includes companies donating food (many of which themselves have supply chain logistics expertise) and the nonprofit hunger relief partners who collect and redistribute donated food to community members in need.

Below, SCTL defines four fundamentals of a successful supply chain and the related four key findings from the SCTL research. These best practices and research findings are for the sole purpose of identifying gaps in order to ultimately—and collaboratively—find the least resource-intensive ways to address them.

Per SCTL, partners in effective supply systems:

- 1. Understand the context in which each partner operates: specifically, what constraints, costs and benefits, and incentives and disincentives each partner faces.**
- 2. Communicate and collaborate based on shared data and common metrics.**
- 3. Standardize operations and procedures.**
- 4. Track and manage inventory and align supply to demand.**

KEY FINDING #1: Each hunger relief agency has unique ways of operating and a unique transportation network: There are no standardized operations and procedures.

Hunger relief agencies make pickups and receive deliveries of variously packaged goods, have varied operating hours, have varied transportation networks (locations and fleets), and rely on a combination of staff, third parties, and volunteers. While standardization and resource sharing are acknowledged as opportunities for gaining efficiency, the current state makes it more challenging to see how these efficiencies might be gained. It will require substantial effort to standardize—a first step to working together.

As to transportation, the study identifies three methods used to move food from donors to hunger relief agencies, which each agency uses in different circumstances and with varying frequency.

1. Hunger relief agencies can pick up donations from a food redistributor (Food Lifeline and Northwest Harvest)
2. Hunger relief agencies can pick up donations from grocery stores as assigned by a food redistributor or from a donor business arranged by direct communication with that business
3. Hunger relief agencies can receive food from redistributors via delivery from a nonprofit transportation group.

The agencies miss out on donations when they do not have the vehicles, staff, or volunteers available when a food donor requires a specific pick-up day or time.

Part of the reason hunger relief agencies have unique ways of operating and a unique transportation network is that they serve diverse populations with varying needs. Each organization may try to customize the types of foods to a specific community—or even individual client—needs, as well as offer myriad ways for clients to access food. The different resource and logistical requirements of these services further complicate the agencies' internal resource allocation decisions, adding to decision fatigue and increased need of capacity. Hunger relief agencies offer food through services such as the classic walk-in food bank, home deliveries, pop-up pantries, and a weekend backpack program. Home deliveries are for people unable to get to a physical food bank. This means items are sorted according to each individual client's specific need (vegetarian, allergies etc.). In addition to posing a challenge to standardization, this often results in a need for purchased food and extra truck/staff resources for delivery.

KEY FINDING #2: Seattle's food donors and hunger relief agencies do not have an effective communication system to share data and understand each other's needs and costs.

While some high level of understanding exists, important details are overlooked. This includes the cost of managing inedible (e.g. expired) or uneaten food, the cost of managing packaging, the desired foods at each location, and the expected nature of donations in the near term (e.g. the next few days.) This presents tremendous challenges to hunger relief agencies who want to honor donations, but must internalize all the extra direct costs, as well as manage the uncertainty for transportation and logistics management. The net result is the effective transfer of waste disposal costs (and the cost of de-packaging food and sorting each waste into compost, recycling, or garbage streams) from food donors to hunger relief organizations. Many agencies state that food packaging is not compostable, which adds to their garbage disposal costs. (Note that in addition to potentially reducing their waste disposal costs by donating food, businesses that donate

food can be eligible to claim a federal tax deduction.) Ironically, hunger relief agencies state that they have to manage high volumes of food waste weekly.

No written policies exist that could help clarify what food hunger relief agencies need, thus helping agencies avoid spending scarce staff time and valuable truck space on food that is unwanted or unusable. Food relief agencies state that they receive unusable donations—even fireworks—or large amounts of certain foods, such as beans, that they can't use, yet consume valuable storage space. Also, these agencies state that managing strategic relationships with donors and distributors is especially challenging since they have limited time.

One food donating business interviewed said it would prefer the agencies communicate what food they need and when, rather than simply accept whatever is donated. Yet hunger relief organizations repeatedly expressed discomfort with directly communicating their needs or rejecting any food donation (even when they lack the staff/truck to pick up or store the item that is not needed in the first place). This discomfort appears to be driven by agency concerns that the food donator will cease donating if the agency rejects a donation.

Current practice shows food donors often do not have visibility into who is consuming the food they donate, what their food needs are, and by what means the food is distributed. This can create inventory mismatches between what is donated and what hunger relief agencies can effectively use. For example, food donations often do not meet the needs of either the home delivery or backpack programs, but perhaps could supply more if the needs were clearly communicated and understood. (Hunger relief agencies report purchasing up to 95 percent of the food in weekend backpack programs, which provide meals and snacks to children at risk of going hungry on the weekend when free or reduced-price school meals are unavailable. All food must fit in a backpack and follow prescribed nutritional guidelines.) Notably, it's not just food donors and hunger relief agencies that lack an effective communication system to share data: Hunger relief agencies lack such a system to communicate with one another, too.

KEY FINDING #3: The Seattle food rescue system lacks standard data, terminology, and methodologies to quantify and share food, transportation, human resources and storage needs.

Documentation of foods donated and foods received are not universally captured in any data management system. Organizations that do capture this data use a number of different measures, such as pounds or packages. This data also varies in its detail: some might be logged as "produce" and others more specifically, such as "lettuce." Food redistributors communicate in terms of units of pallets. But hunger relief organizations do not know how many pallets their requests will require until the vehicle pulls into the distributor dock for pick up.

Inventory seems to be the scarcest data captured, both in terms of available storage space and its qualities (e.g. refrigerated) and in terms of food on hand (e.g. type of food and expiration.) This data gap surfaces with transportation too. While some agencies track vehicles and can produce data such as vehicle miles travelled or locations visited, no standard approach exists to allow for comparisons across agencies. All these data gaps make it exceedingly difficult to evaluate the food rescue network in terms of effort expended on food capture, management, and distribution, as well as system capacity and how that might be improved.

As neighborhood-scaled, resource-constrained entities, many hunger relief agencies have limited storage space. This can lead to food being wasted because the agencies can't properly store and effectively distribute the food being donated. Rapidly fluctuating food inventory presents a particular challenge for agencies trying

to utilize space efficiently. With unpredictable arrivals of potentially large volumes of food, many hunger relief agencies find it difficult to have the right amount and type of space available to receive and distribute effectively, limiting their ability to accept more food donations or bulk buy purchases; to sort and de-package efficiently; and to maintain adequate food safety conditions (e.g. refrigerated or frozen foods). This limited storage space makes inventory management tools all the more critical to maximize efficient use of that space.

KEY FINDING #4. Hunger relief agencies are small, neighborhood-scaled operations. As such, it is difficult for them to achieve transportation and logistics efficiency from scale.

Logistics systems benefit from operational scale: Increasing the volume of goods moving through a system, or part of a system, allows operators to do so at lower per-unit cost. Scale also allows logistics systems to reduce the impact of variation and better utilize equipment. With limited vehicle fleets to transport food, agencies are less flexible in assigning the right vehicle to the right demand. The nature of hunger relief organizations operating at a neighborhood level, with high variability in both delivery models and food donations, makes it very difficult to run logistically efficient operations. This challenge is exacerbated when food donors and hunger relief agencies do not clearly communicate about supply and demand, which can result in ineffective use of efficient routes and vehicles from a limited fleet. (A half-full truck means half the space in that truck is wasted.)

As noted earlier, the hunger relief agencies are open only some days of the week and have to rely on volunteers who may have irregular schedules. One hunger relief agency interviewed states that their limited fleet and volunteer availability mean they have to say no to food donations they are not able to pick up. These constraints translate into lost opportunities. One way the food rescue network could get the benefits of scale would be for hunger relief organizations to work together.

Conclusion and next steps

In summary, the SCTL research finds uncertainty and complexity are the norm in Seattle's food rescue network.

Hunger relief organizations often don't know when they will receive food donation delivery or be called to pick up food donations (which makes it difficult to plan staffing and vehicle needs); what type of food they will receive (which dictates how it needs to be stored); how much food they will receive (which dictates how much storage it requires); or how the food they receive will be packaged (which dictates how it might need to be de-packaged, sorted and re-packed to go to clients).

Food donating businesses, in turn, often don't know what foods and packaging formats hunger relief agencies need and can use in the near-term; what agencies' storage limitations are; and what costs and logistical burdens their well-intended donations may place on the already-stretched nonprofit agencies.

Given all this, SPU wonders what might be possible if Seattle's food rescue network could use existing principles of supply chain management. Could more food feed more people in need rather than be diverted to the waste stream? Clearly, many obstacles exist. And the SCTL interviews surfaced some fundamental findings to consider going forward. The food rescue system at its core is a redundant supply chain, creating a secondary food transportation and logistics system that replicates the existing system (e.g. grocery stores.) Hunger relief agencies know this, as evidenced in the SCTL interviews. Those interviews surfaced that agencies

wished that all people could shop at food businesses instead of going to food banks or meal programs. So, for example, could grocery stores sell food close to its sell-by date to customers at a significant discount, reducing the amount of food that would otherwise be wasted or donated (and thereby necessitating complex transport, storage and distribution logistics)?

SPU shares these SCTL findings and supply chain best practices in the hopes that they can inform discussions around next steps for all parties in Seattle’s food rescue network, food donating businesses and hunger relief agencies alike. Seattle is fortunate to have an abundance of private sector expertise in transportation and storage logistics, technology and data analysis—as well as philanthropic funding. SPU believes these are all critical ingredients to move Seattle forward in developing innovative and adaptive solutions that ensure nutritious food remains food—not waste—and that ensure Seattleites don’t go hungry.

Acknowledgments

The Urban Freight Lab research team is grateful to SPU for their support and sponsorship of the project to create a shared understanding of the logistics of food rescue in Seattle. We would like to thank the Seattle businesses and community nonprofits for generously sharing their time and insights.



SUPPLY CHAIN TRANSPORTATION & LOGISTICS CENTER

UNIVERSITY *of* WASHINGTON

Urban Freight Lab

SCTL CENTER

UNIVERSITY OF WASHINGTON

BOX 352700

SEATTLE, WA 98195

Phone: 206.221.6407

Email: sctl@uw.edu