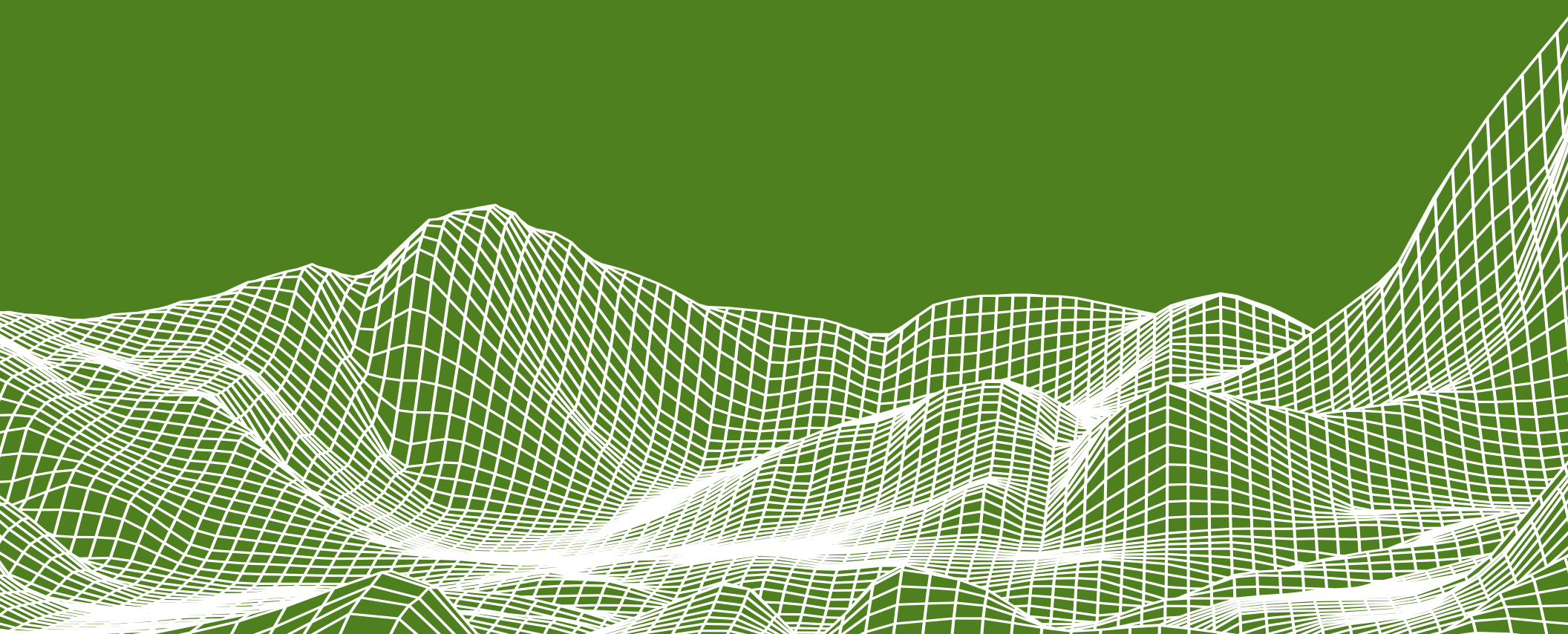
REACH ALLIANCE

Jalisco, Mexico: Addressing Food Insecurity



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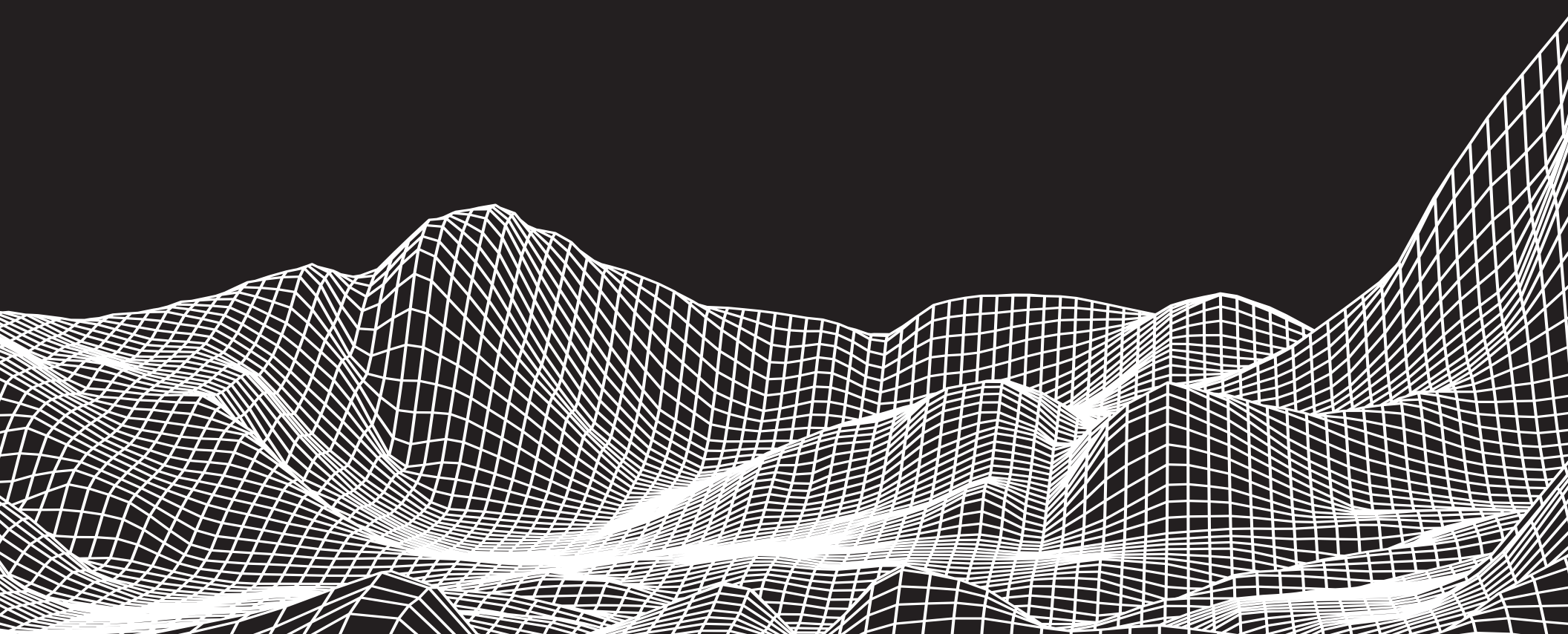
Jalisco Sin Hambre: A Statewide Campaign to Reduce Hunger



In 2016, 31.8 percent of people in the Mexican state of Jalisco lived in poverty (i.e., earned less than 3,225 pesos or 132 USD a month and could not access at least one basic need).[1] Similarly, 15.4 per cent of people in Jalisco experienced food insecurity that year, defined as having inadequate access to safe and nutritious food to meet their dietary needs and preferences in order to live a healthy life.[2] That is, approximately, 1,240,000 Mexicans in Jalisco were unable to reliably access three meals per day.[3] To address food insecurity, a state-wide campaign to eliminate hunger called Jalisco Sin Hambre (JSH) launched in 2017. JSH brought together various sectors and stakeholders including the state government of Jalisco, universities, and Bancos De Alimentos de Mexico (BAMX) which represents fifty-five food banks across Mexico.[4] In Guadalajara, the capital of Jalisco, the Guadalajara Food Bank (a member of BAMX) is an important player in reducing food insecurity in the region.[5]

Founded in 1991, it currently serves 252 communities and approximately 15,000 families biweekly, with more remote communities receiving deliveries once a month. The food bank operates from a rented warehouse in the center of Guadalajara, which houses its offices, food-sorting equipment, and trucks.

Through this report, we examine three primary aspects the food bank system has sought to improve: procurement, waste, and reach. Specifically, we aim to answer the following research questions related to each aspect:

1. How does the food bank procure a greater quantity of higher-quality foods?
2. How can the food bank reduce waste?
3. How can the food bank reach marginalized communities more effectively?

[1] José De Anda, Francisco Urrutia-De La Torre, and Morris Schwarzblat y Katz, David Foust Rodríguez, and Ana Teresa Ortega-Minakata," Implementing Innovative Strategies to Combat Food Poverty in Jalisco, Mexico," *Social Innovations Journal*, 27 June 2018. This article uses the Mexican definition of poverty which requires meeting two conditions: (1) earning below the poverty line which is 3,224.80 pesos (132 USD) per month per person for urban populations or 2,097.14 for rural populations; and (2) lacking at least one basic need as defined by the constitution: social security, access to healthcare services, education (nine years for adults), food security, or housing (including services such as water and electricity).

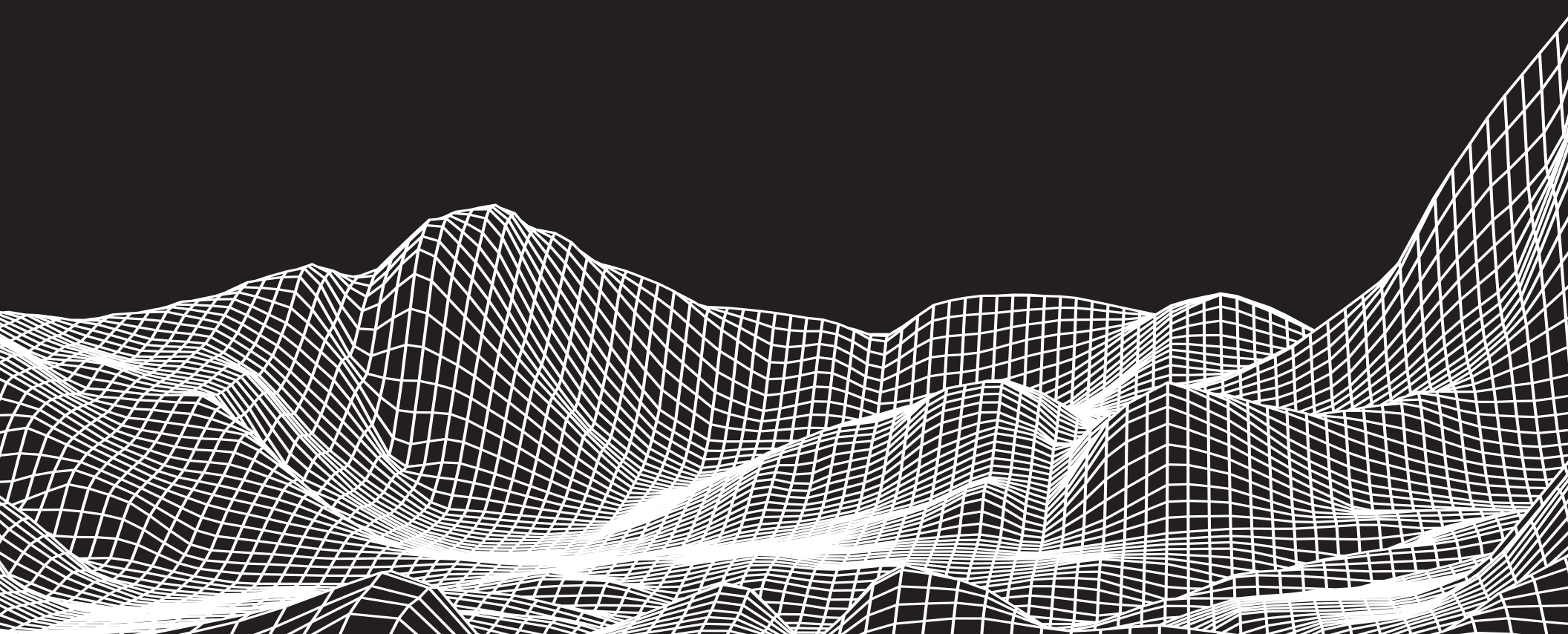
[2] Boratyńskaa, Katarzyna and Raqif Tofiq Huseynov, "An Innovative Approach to Food Security Policy in Developing Countries," *Journal of Innovation and Knowledge*, 2, no. 1 (2016): 39–44.

[3] De Anda et al., " Implementing Innovative Strategies."

[4] Jesus Plascencia, "Coordina El ITESO Jalisco Sin Hambre," Secretaría De Innovación, *Ciencia y Tecnología*, 8 March 2017.

[5] Bancos De Alimentos De México," BAMX.

Current Operations



The food bank warehouse distributes food to both nongovernmental organizations (NGOs), individual families, and communities. NGOs send a vehicle to collect donations from the warehouse. Individual families come to the main warehouse and request a food basket. Communities, by contrast, are approached by the food bank through an information session, and if the community is interested, they will establish a volunteer committee. Although each community operates differently, they each have an appointed volunteer committee. This includes a president and treasurer who coordinate the delivery of and payment for the food. This organized structure is essential for coordinating logistics and ensuring the continuity of the food bank's collaborations. Each family pays 10 percent of their food basket's market value (which is waived for those who cannot afford it) in order for the food bank to recuperate operating costs. But the token payment for food also raises the bar for food quality—when people pay for their food, they can demand a higher standard. (The food bank implemented this approach after receiving "donations" of rotten food.)

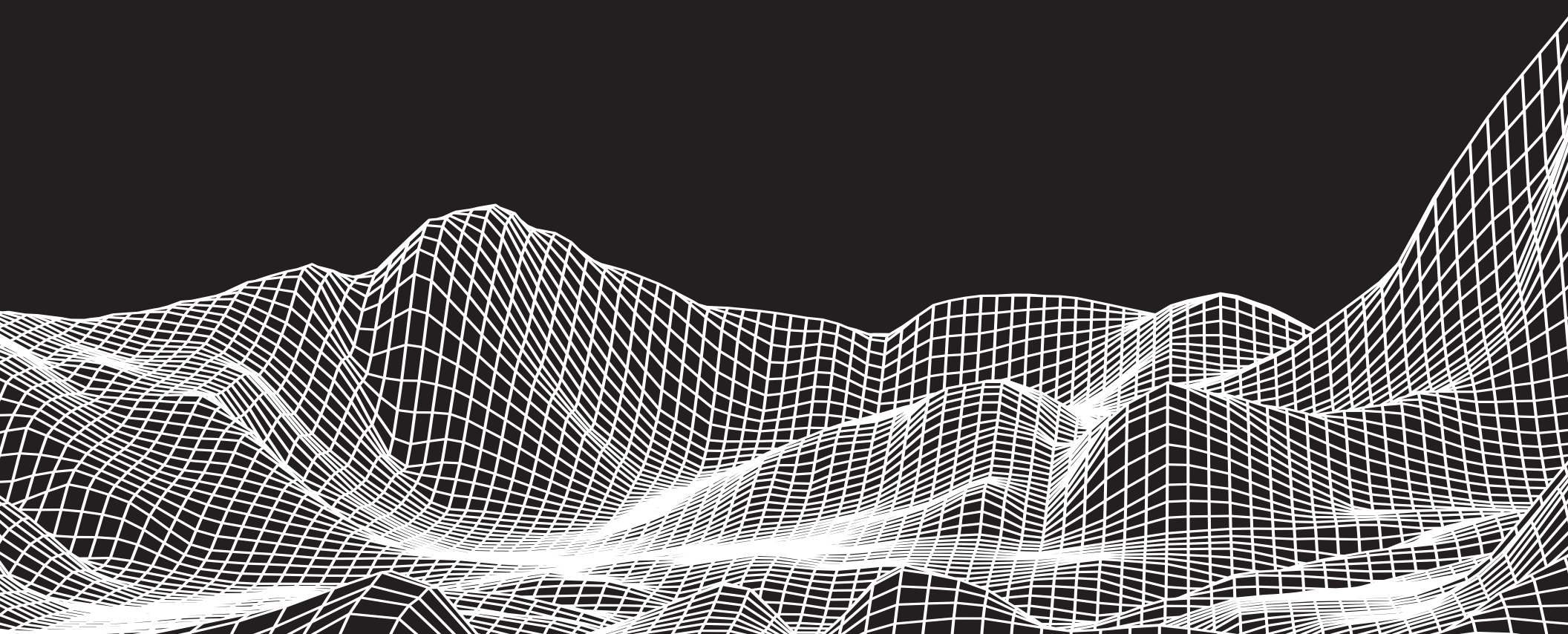
FIGURE 1. A food truck en route to making deliveries

Every registered family in a community receives a single uniform food basket. Baskets contain fruits, vegetables, grain products, tortillas produced at the food bank, and some ultra-processed foods like cookies or pop. All communities receive biweekly deliveries except for three remote communities that receive baskets once a month. The food is distributed at an agreed-upon community hub, such as a church or committee member's home with the volunteer committee's help. A social worker and a nutritionist accompany the deliveries to address beneficiaries' questions and ensure the equal distribution of food. The social workers and nutritionists are employees of the food bank who rotate between communities. Food bank staff also include a procurement team, an internal auditor, and transportation controllers. A board of directors helps to set goals for the bank which the staff carry out. The food bank owns the trucks used to collect food from donors but individual communities hire drivers and rent vehicles to deliver food from the bank to their communities. In addition to staff, the food bank relies on approximately eighty volunteers per day who are involved in sorting, packing, and cooking food within the bank. An estimated one thousand volunteers per month work in the food bank.[6]

[6] Information gathered through interviews.

FIGURE 2. Sorted food baskets ready for distribution

Procurement, Waste, and Reach



SOURCES OF FOOD DONATION

The Guadalajara Food Bank procures donations through four main sources: stores, factories, the central market, and farmer surplus.

1. **Stores**. Large retail chains, including Walmart and Oxxo (Mexico's largest convenience store chain) contribute sizable donations of processed foods and dried goods.
2. **Factories.** Prominent multinational corporations such as Coca-Cola, Nestlé, and Sello-Rojo donate processed foods ranging from pop to essential foods like yogurt and milk.
3. **Guadalajara Central Market (Central de Abasto).** The central market hosts many individual fruit and vegetable sellers who provide substantial amounts of bulk produce to industrial kitchens and restaurants. Individual grocers at the central market typically donate produce they are unable to sell that is approaching its expiration date.
4. **Farmers.** Trucks are sent to farms that have a harvest surplus to donate. This donation of excess harvest mitigates negative price effects incurred from flooding the market with surplus produce. Because the fruits and vegetables are fresh from the farms and have a longer shelf life compared to central market produce, the food bank values these types of donations the most.

FIGURE 3. Local farmers provide the food bank with an integral source of procurement

ALTERNATIVE DONATIONS

Apart from food donations, the food bank receives damaged but operable household items such as televisions which volunteers repair and sell to beneficiaries at a low price. This provides beneficiaries the opportunity to purchase household products that they could not otherwise afford. The bank relies heavily on governmental support, wealthy individual donors, and corporations. However, in recent years, large donations have decreased. Throughout our interviews, we heard that some of Mexico's anti-money-laundering laws have had the unintended consequence of deterring large monetary donations. An employee stated that when they receive a donation larger than 300,000 pesos (approximately USD 15,400), the food bank is obliged to collect more information on the donor for record-keeping purposes. Some key sources at the food bank expressed their belief that a decrease in large donations was a result of the additional work on behalf of the donor or privacy concerns related to audits.

PROCUREMENT METHODS: BOUGHT VERSUS DONATED

The majority of the food that is procured and distributed is sourced from the central market, chain retailers, and individual stores. One of the food bank's major challenges involves managing the trade-off between the food's cost and its quality. Because it is in the best interest of sellers at the central market to sell as much of their viable produce as possible, the food donated from the

central market is often not fresh. Retailers are often reluctant to donate nonperishable goods. When larger retailers do donate to the food bank, they often package ultra-processed foods alongside healthy products with the expectation that the food bank must accept both. This puts a burden on the bank to distribute these unhealthy products. The Guadalajara Food Bank relies primarily on donated rather than purchased foods. The items it does purchase are essential staples of the Mexican diet such as sugar, oil, soybeans, beans, lentils, and rice.

According to our key informants, other food banks in Jalisco incorporate more purchased products into their food baskets, while asking beneficiaries to pay more for each basket. While the Guadalajara Food Bank abides by the federal government guideline of charging beneficiaries no more than 10 percent of the food basket's market price, the Tepatitlan Food Bank (its neighbor and co-BAMX member) asks beneficiaries to pay 28 percent of the market price for a basket that contains more purchased fresh produce. The option of purchasing greater quantities of food ensures that higher-quality and fresher foods are distributed. However, raising the prices of these goods can lead to the food baskets being financially inaccessible to some families.

WASTE IN CURRENT OPERATIONS

Market Donations

In addition to the main food bank warehouse in Guadalajara, there is a warehouse within the central market. It has one employee. Food received from the central market can go directly to the food bank or remain stored at its central market warehouse first. The central market operates from 3:00 AM to 3:00 PM with the first call for a donation occurring between 6:00 and 7:00 AM. The warehouse receives donations daily and, on average, runs two or three trips per day (Monday to Saturday) to the food bank using a five-ton truck. Staff and volunteers try their best to fill the truck before sending it to the food bank. Since the central market is closed on Sunday, leftover donations pile up within the food bank's warehouse in the market until Monday and are not as fresh.

All agreements with the market's donors are made verbally. Although this increases the food bank's level of uncertainty, most donations come when the merchants have a surplus. Seasonal variation is an additional factor affecting the availability of donations. The rainy season, from June until September, causes flooding and lower crop yields. During the hotter and drier months, the food bank receives more donated items. While the warmer season is good for crops, the heat accelerates the ripening process for produce and increases food waste.

At the central market warehouse, an employee conducts a visual scan of the donations and inspects random samples in one or two boxes to better estimate the donations' quality. Donations with a high waste content (>30%) are excluded. Otherwise, the donation will be transported to the food bank's main warehouse to be further sorted and distributed. The warehouse's food waste is sold as compost or farm feed.

Farm Donations

The bank procures a smaller percentage of donations directly from farms within the metropolitan area of Guadalajara. This is referred to as "rescuing" produce that would otherwise be thrown out. This "rescue" approach is based on the understanding that hunger in Jalisco is not a result of food shortage—rather, worsening economic inequality and food waste are the main causes. In fact, Jalisco is currently the top province in Mexico in terms of food production, and yet an estimated 1.2 million of its people go hungry. The food bank thus "rescues" food, particularly fresh produce, which would otherwise have been wasted in the production and early distribution stages.

The food bank organizes three to five trips a week (or as many as six depending on the season) and picks up between thirteen and fifteen tons of food from farms. Quantities vary depending on the volume of the delivery truck. Driving outside of the state to rescue food from farms is also very common. Sometimes these trips last multiple days as the drivers procure donations from different farms.

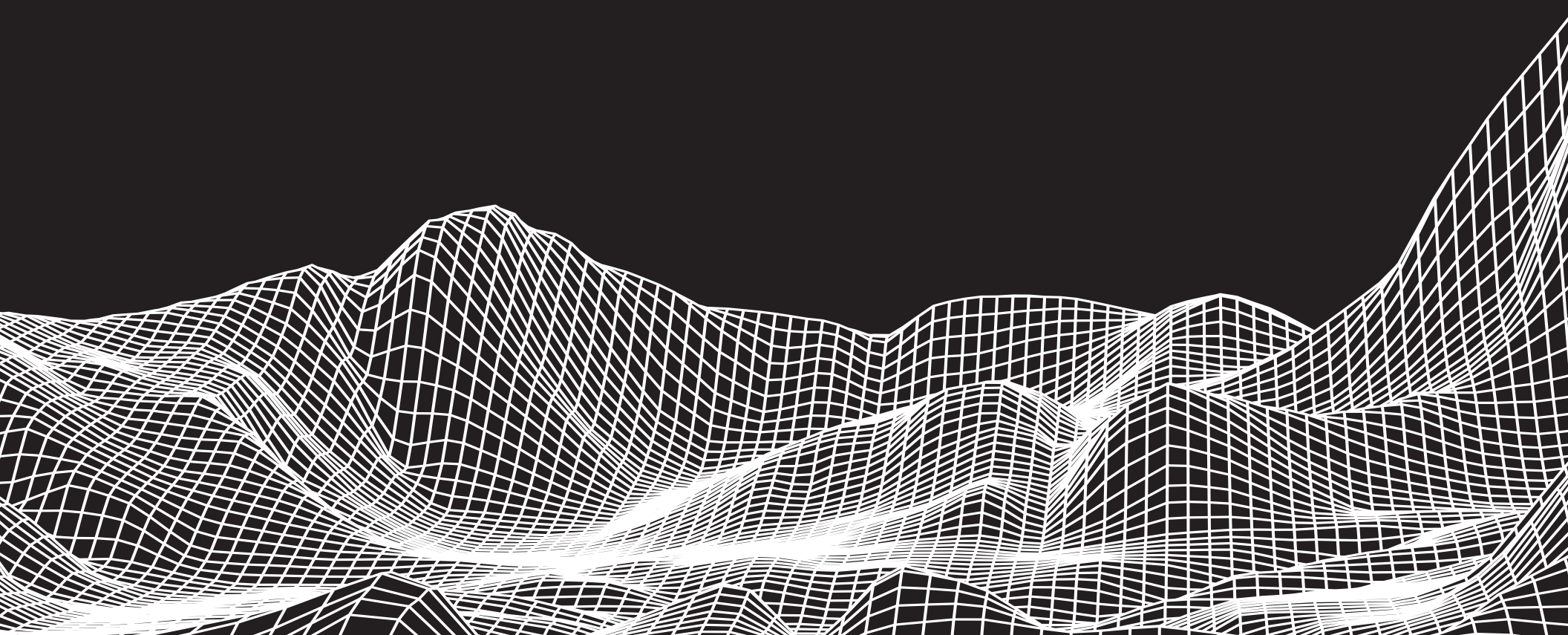
Corporate Donations

In interviews we were told that corporations sometimes intentionally spoil food that can no longer be sold. Rather than donate it, some corporate stores prefer to spoil the food and dispose of it. To maintain reliability with donations and circumvent these corporate practices of spoiling food, the food bank has established formalized agreements with corporate donors that are updated every two years. These agreements include notes on specific processes to follow for procurement. Estimates derived from interviews indicate that the food bank collects 135 tons of food each month. The bulk of the donations involve grain products. Internally, employees keep track of the type of food donated, how much is received, and which store donated it. The food bank both ensures reliable donations for itself and reduces food waste at large within the community through these arrangements with corporations.

Challenges with Quality Assurance

The Guadalajara Food Bank uses posters and images to advise volunteers on how to sort food and identify which produce is nearing expiration. The food is separated into either a clean bin or a waste bin. During the sorting process, rotten food will often remain in the warehouse for a number of hours prior to disposal or sale as compost. This presents a pest hazard. As an additional check for quality assurance, social workers inspect the food in the truck before it departs to the communities. However, owing to staffing shortages, these inspections commonly do not occur. The social workers are required to inspect the food when it arrives in a community for quality assurance and inventory inspection. Although workers are tasked with visiting multiple communities a day, challenges with traffic, scheduling, and distances between communities make it common for the social workers to arrive well after the food is received and sorted into baskets by volunteers. They are therefore unable to inspect it despite food bank policies. As a result, the organization cannot ensure oversight on food distribution and quality control at the community level.

Reaching Marginalized Beneficiaries with Food Bank Services



To determine who is eligible for the food bank's services, the bank's social workers administer a "socioeconomic test" to new individuals and families. There are a number of factors it takes into consideration, including but not limited to, education, access to housing, health, and income. The survey answers are uploaded to the SIGO software which BAMX requires all associated food banks to use for internal tracking. Eligible participants use the food bank for two years with the possibility of extending membership if needed. Extensions are granted typically to the elderly, those with chronic illnesses, and single mothers with multiple children. To be eligible for the program, participants must provide a permanent address. In recognizing that some participants may not have proof of address or they may live in informal housing, the food bank allows for accommodations. For example, participants can register using another family member's or neighbor's address. The president of the volunteer committee can also issue housing certificates to verify the address of an intended beneficiary.

The food bank aims to assist communities with lowering costs wherever possible. If there are two communities near each other, the food bank will inform their volunteer committees and assist them with coordinating the same pick-up date. Having two communities share the cost associated with renting a truck saves beneficiaries money compared to having two separate deliveries in a similar location.

JSH stakeholders emphasize transitioning beneficiaries out of poverty through skills-training programs. Long-term staff at the food bank remarked in interviews that this transition does not always occur. Although many of the participants still remain in poverty after two years of using the food bank's services, the economic situation slightly improves for approximately 60 percent of participants. Improvements are typically small and the food bank would still consider participants to be living in poverty.

Unlike the registration process for individuals, NGOs that work with the food bank do not require their beneficiaries to be assessed using this socioeconomic test. These NGOs often serve a marginalized community in the Guadalajara area. For example, they may serve migrants living in extreme poverty, homeless shelters, or neighborhoods affected by gang violence. The food bank allows these NGOs to collect food directly from the warehouse and distribute it to their beneficiaries at their discretion.

FOOD DISTRIBUTION IN COMMUNITIES

Communities rent trucks and hire drivers to pick up food from the food bank and transport it to the designated distribution locations. The distribution locations are typically community centers, churches, or a volunteer committee member's house. However, because some communities have security concerns with using an open public space, they pay for secure drop-off spaces. These spaces do not have refrigerators or storage areas since families are supposed to take their food basket within the first thirty minutes or hour of its arrival.

Once the truck arrives, the volunteer committee's treasurer pays the driver for their service. Each community has their own signed contract with their driver, with some paying a flat rate and others incurring itemized costs such as fuel. The volunteer committee unloads and separates the food into baskets on site. The food bank divides carefully accounted for amounts of food so that families receive identical baskets. Variations are permitted in cases where the bank receives donations specifically for elderly people and babies such as supplements or infant formula. However, these variations are not mandated and depend on whether such products are available. Generally, community volunteers are women who are program beneficiaries. Beneficiaries must make a security deposit of twenty pesos the day prior to pick up and will pay the remainder of the full price when the basket arrives. The majority of the communities receive deliveries biweekly. Remote communities, defined as being more than four hours away, receive one delivery per month. The food baskets are numbered so the volunteer committees can track which families have received their food.

If families include people with a disability or elderly members, they often face mobility issues in collecting their baskets. Other families may not be able to collect their baskets because the drop-off time coincides with their work hours. While other beneficiaries may help their fellow community members, the food bank does not have a structured plan to address these issues. For families that are unable to afford a discounted basket, the food bank has a program called Holding Hands which finds a donor to sponsor these vulnerable families and cover their food basket's cost.

HEALTH SERVICES

Many of the food bank beneficiaries suffer from chronic illnesses such as diabetes, obesity, and kidney disease. In 2019, 65 percent of the adult population in Mexico was overweight, 30 percent were obese, and more than 10 percent of the population had diabetes.[7] Higher rates of obesity are concentrated in families of lower socioeconomic status who have to rely on cheaper, calorie-rich, processed foods. There are also higher occurrences of kidney disease in Jalisco as a result of polluted drinking water and complications from diabetes and obesity. While the food bank has implemented some strategies to deter beneficiaries from accepting ultra-processed food (such as handing them out in red bags to indicate that these are unhealthy items) this practice is not implemented universally. According to nutritionists' observations, the population served by the food bank appears to show improvements in malnutrition but not in rates of diabetes and obesity.

The food bank aims to address some of the health issues in the communities by offering nutrition education programs. Nutritionists go to communities and host information sessions on topics such as diabetes prevention. These workshops highlight clearly and simply the effects of the disease, its causes, and ways to prevent it. Often these workshops include posters and interactive components to engage with community members of all ages and literacy abilities.

The food bank offers two programs that target populations with special dietary needs. First, it provides pregnant women with prenatal supplements such as folic acid which is essential to reducing the risk of neural tube defects at birth like spina bifida. Second, the food bank launched the Vitamin Angels program in June 2019 to provide vitamin A supplements to all children in beneficiary communities. On food delivery days, nutritionists inform parents of children aged six months to five years about the program. They take anthropometric measurements such as height and weight and provide the children with a powdered supplement of vitamin A. Follow-ups occur every fifteen days when food is distributed. Additionally, the food bank provides albendazole for deworming.

FIGURE 4. A collection of amenities are delivered to beneficiary communities

[1] Mathieu Levaillant, Gaëlle Lièvre, and Gabriella Baert, "Ending Diabetes in Mexico," The Lancet, 394, no. 10197 (2019): 467–68.

[2] Dean Karlan and Meredith Startz, "The Impact of Entrepreneurship Training for Women in Uganda," *J-Pal*.

They created a mentorship network for women who otherwise would not have access to these skills, with the hope that graduating women would later become mentors and ensure the sustainability of the project. The food bank played a role in promoting the program through their social workers in neighboring communities.

CUSTOMER FEEDBACK SURVEYS

In collaboration with ITESO, a customer feedback survey was administered to eighty-eight participants. The twelve survey questions were designed iteratively with the researchers and supervisors of both the ITESO and Reach teams. The survey took less than one minute to complete and assistance was available to those who could not read.

Over a period of three days in five different communities in the Guadalajara metropolitan area, the ITESO team distributed paper copies of the survey to the beneficiaries. The team was accompanied by the assigned social worker from these communities—Urbi, Educadores, Jardines del Prado, San Jorge, and Purisima—which were selected through convenience sampling to allow the teams to receive more responses when testing the beneficiary feedback survey pilot. For efficiency, the surveys were issued during the food basket pick-up. Completed surveys were dropped into a community-specific box and later analyzed for differences across communities. The researchers manually entered the eighty-eight total responses into Excel and analyzed the data using descriptive statistical parameters.

The results illustrated the varying experiences of families within the communities. Across all five communities, the majority of the beneficiaries who received the food baskets were unemployed. However, the data also showed that a significant portion of those receiving the baskets are employed either full time or part time (see Figure 5). Hours of employment may interfere with the designated pick-up time of the food baskets, resulting in stress and extra work for the volunteers and beneficiaries. One community volunteer reported that a beneficiary had work commitments and picked up their basket at midnight from the volunteer's house despite the distribution time being set for mid-afternoon.

Most respondents self-identified as women between the ages of thirty-six and sixty-four. Many of the beneficiaries did not have higher levels of education (see Figure 6). The most common family size was four people, but there were ranges from two to over seven (see Figure 7 for

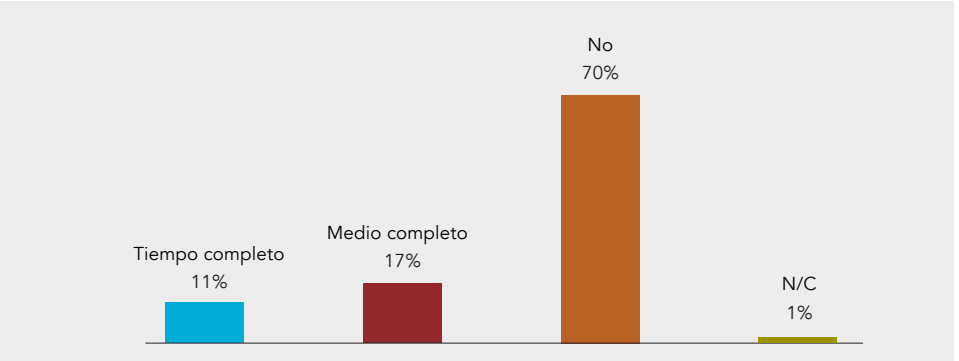


FIGURE 5. Percentage distribution of food bank clients' employment status: full-time employment (*tiempo completo*), part-time employment (*medio tiempo*), and unemployed (No)

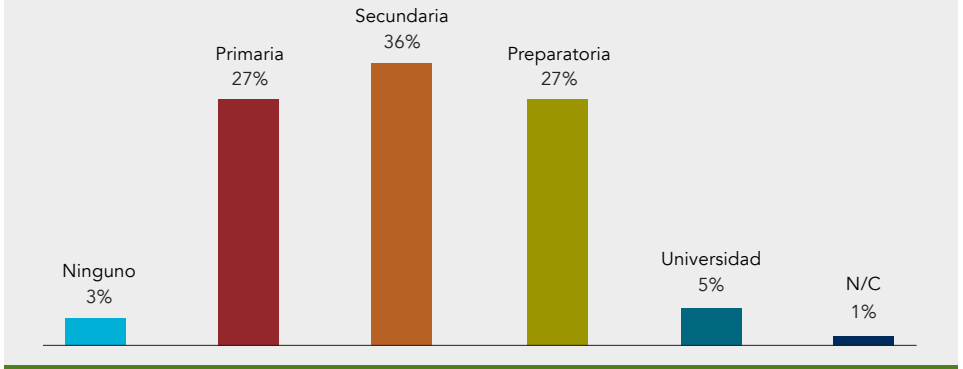


FIGURE 6. Percentage distribution of levels of education among food bank clients: no formal education (*ninguno*), primary education (*primaria*), secondary education (*secudaria*), high school (*preparatoria*), and higher education (*universidad*)

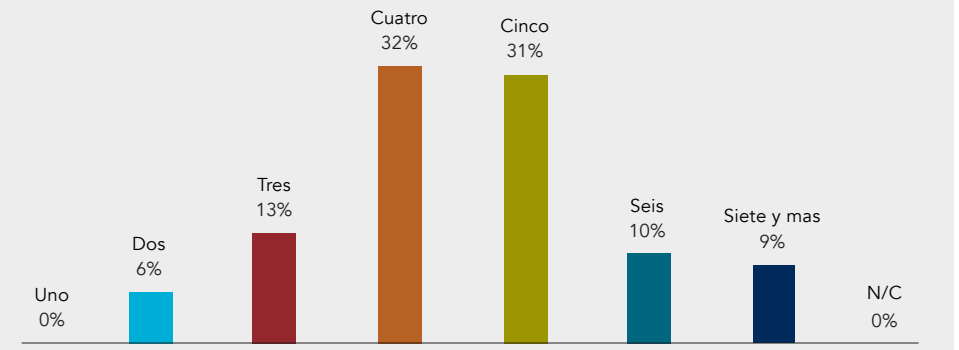


FIGURE 7. Percentage distribution of family size among food bank clients: individual (*uno*), two members (*dos*), three members (*tres*), four members (*cuatro*), five members (*cinco*), six members (*seis*), and seven or more members (*siete y mas*)

a graphical visualization). In aggregate 81.8 percent of families reported they were unable to refrigerate their food. This is an important statistic considering that Mexico has a warm climate and the maturation of produce is accelerated by heat. When separating the data by communities, we saw stark differences that paint a complex picture of how poverty manifests itself in Guadalajara. In three of the communities, 100 percent of respondents had access to refrigerated storage spaces, whereas 87.5 percent of the respondents in another community indicated that that they did not have access to a refrigerator.

Another interesting result from the survey was the variety of responses to the question pertaining to how long fruits and vegetables from the bank lasted in each household (see Figure 8). Almost 45 percent (44.7%) of respondents indicated that their fruits and vegetables lasted between five and seven days. However, 21.2 percent of respondents reported that their food lasted four days or less, and 34.1 percent of reported that their food lasted eight days or more. Surprisingly, there was no observable correlation between access to refrigeration and how long fruits and vegetables lasted. The most important factor influencing how long produce lasted was the size of the family. Households with seven or more people reported that the food would last less than four days. This makes intuitive sense because larger households require more food than smaller ones.

Limitations of Survey

The survey results were limited by their design and by the available time for distribution. The ITESO researchers were required to accompany a social worker. The social worker would sometimes arrive at communities after most food baskets were distributed and the beneficiaries had left. In addition, the surveys consulted only five of the 252 communities served by the Guadalajara Food Bank. Finally, this survey's data are self-reported. Therefore, there is potential for bias or the skewing of results since the beneficiaries are able to report or identify answers that may be false. Knowing that these non-identifiable data were voluntarily completed, there is no way to verify the answers provided. This is balanced by the understanding that anonymity may also confer more forthcoming responses from participants.

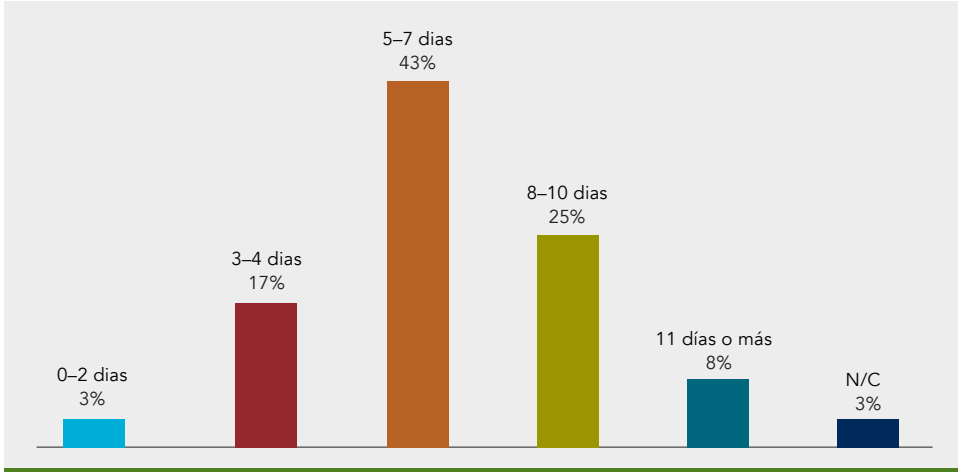


FIGURE 8. Percentage distribution for time fruits and vegetables lasted for each customer family: *dias* = days

SOFTWARE PILOT RESULTS

JSH developed the software Sistema Información Georeferenciado Admin Bancos (SIGAB), which tracks the food bank's inventory. The Guadalajara Food Bank currently does not use this software. To assess whether SIGAB is suitable for the food bank, a software pilot was conducted from 2 to 14 July 2019.

SIGAB is different from SIGO in that SIGAB was created by JSH for voluntary use while the SIGO was created by BAMX and is mandatory. SIGAB helps manage the food bank's inventory while SIGO is used primarily by the social workers to understand the socioeconomic profile of beneficiaries and communities by tracking information such as severity of food insecurity and poverty. To receive government funds via BAMX, food banks are obliged to use SIGO.

CURRENT DATA-COLLECTION PRACTICES IN THE FOOD BANK

The food bank currently monitors its inventory using CONTPAQi Commercial and Microsoft Excel. Truck drivers use a physical form to confirm the successful procurement of a donation. Most days, the bank receives approximately 37,000 kilograms of donations per day that can range from 60 to 833 different items. Next, volunteers and employees

working in the warehouse separate the incoming donations and weigh them. This weighing step is essential for determining the percentage of the donation that is viable food and waste. The data then are sent to the office to input the numbers into CONTPAQi Commercial. Finally, the data are exported as an Excel sheet that the food bank can further manipulate. The food bank does not capture expiration dates for incoming donations, nor does it evaluate the quality of donations or donors.

If the food bank could capture data more accurately it could streamline its operations. In capturing the volume and quality of food (percentage of donation that was weighed as waste) delivered from a single donor, the food bank can decide whether or not to prioritize collections from that donor in the future. Further data analysis could help the food bank better allocate its limited transportation resources to donors that give high-quality, low-waste donations.

SIGAB'S UTILITY

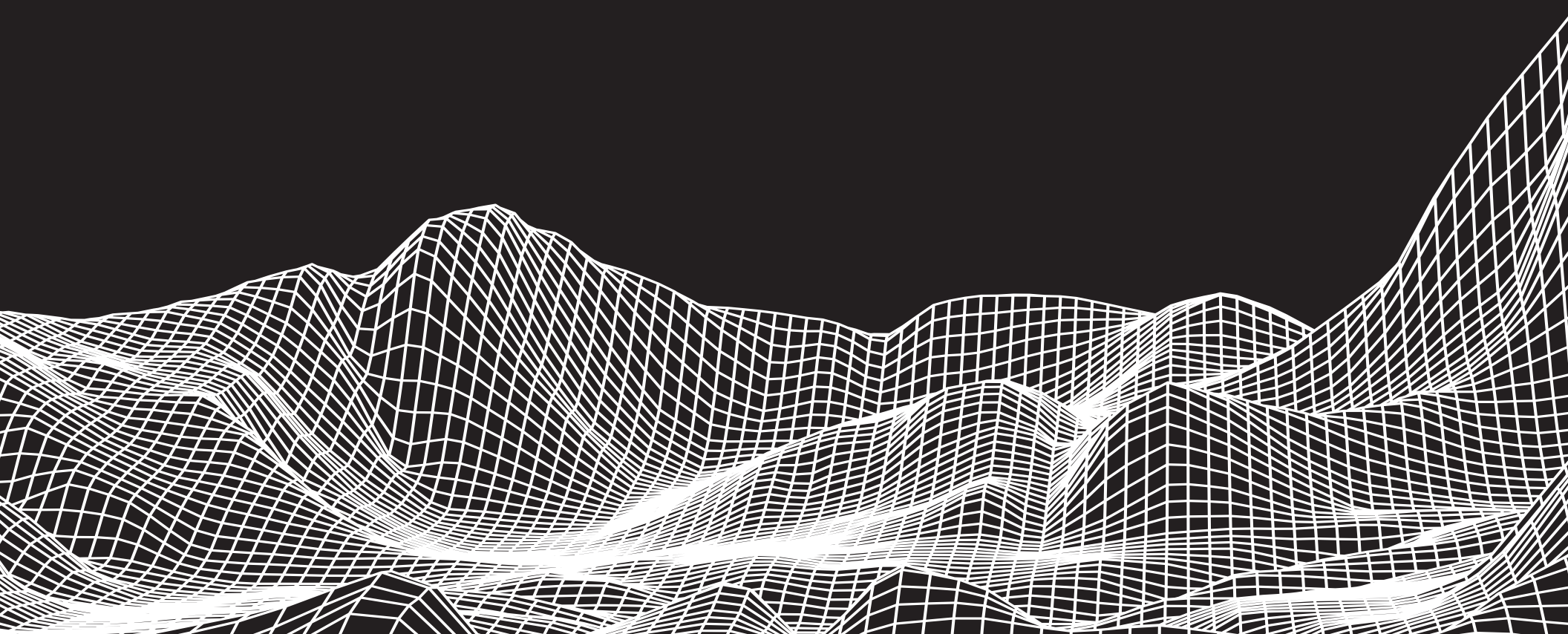
SIGAB collects data and tracks food bank inventory. Specifically, it

- tracks all donations as they enter and exit the food bank warehouse;
- estimates the cost associated with procuring items. Costs are accounted for by the parameters of diesel, driver salary, volunteer compensation, and vehicle maintenance and depreciation;
- grades the quality of donations and reliability of donors. This is an important metric because it can identify donors who consistently provide inedible waste and thus require educational interventions;
- manages the warehouse inventory and tracks food expiration dates. This can facilitate a first-in-first-out (FIFO) system that ensures donations entering the food bank earlier are prioritized for distribution to reduce the risk of food remaining in the warehouse and spoiling;
- maps all the drop-off locations of beneficiary communities; and
- facilitates communication between different food banks by allowing them to split large donations greater than fifty kilograms.

In the near future SIGAB may also include a matchmaking tool that grants food bank beneficiaries access to services and skills classes through local charities and NGOs. This feature is currently under development.

The software pilot concluded that SIGAB required further improvements to ensure its suitability for the food bank. The main issue was that it experienced technical glitches when data were input retroactively—it was designed to be used in real time. The food bank's operations do not occur in real time and the data pertaining to a given date are typically input one to two business days after the date. It can lag behind longer than two days if operations are interrupted by a weekend or holiday. Suggestions were compiled and shared with the software developers.

Lessons Learned



PROCUREMENT

1. **Bad food with the good.** Some larger chain retailers make their donation of healthier food contingent upon recipients accepting other unhealthy ultra-processed items. This puts pressure on food banks to distribute healthy foods with unhealthy items. Accepting donations without guarantees of what will be received means that the food bank cannot reliably meet its nutritional goals. Although nutritionists at the bank attempt to assemble baskets that are healthier, they are also required to distribute ultra-processed foods donated to the bank. There is a demand from food bank recipients for unhealthy foods including sweetened beverages and candy. Families enjoy receiving these products and will sometimes trade with other beneficiary families to acquire more of them. The food bank tries to discourage this tendency by offering cooking classes on how to use some of the healthy products and educating the communities about the negative health impacts of ultra-processed foods.

2. **Shelf life.** The food's shelf life is an essential marker of the donations' quality. Products donated to the bank may be nearing the end of their shelf life, which makes them difficult to distribute. Persuading donors to give better-quality donations through tax incentives and volunteering to collect food from the field could help mitigate some of these barriers.

3. **Resource misuse.** Several food bank employees have highlighted that accepting poor-quality donations—whether that includes donations approaching their expiration date or those that are unhealthy—wastes space, food-collection resources, and volunteer time that could be more productively reallocated.

4. **Infrastructure.** The physical infrastructure of the bank itself makes it difficult to acquire certain donations. Due to limited refrigeration space, the food bank cannot accept meat but it does accept dairy products. There are no refrigerated trucks available. However, there are plans to build a new warehouse outside of the city that the food bank would own. This would allow them to expand operations and ease some of those concerns.

WASTE

1. **Waste in transport.** Fresh food is vulnerable to damage during transportation and handling. Items that are damaged sometimes become inedible by the time they reach the food bank. Because of its location in the city, the food bank in Guadalajara is relatively fortunate that drivers do not have to travel far to reach the central market. One concern that transportation staff highlighted was the lack of durable containers that can keep food separated. Without strong containers, food can come into contact with contaminating material such as laundry detergent that renders it inedible. The staff requested that they receive adequate methods of keeping these goods apart and repairing existing containers.

   A member of the transportation team plans out the routes for each driver each day, prioritizing retailers that offer the largest quantities of donations. Trucks therefore may not have space to pick up donations from other vendors later in the day. The food that cannot be collected at the end of the route is a potentially wasted resource.

2. **Waste in the food bank.** Once the food reaches the bank, volunteers inspect it to sort what will be distributed to communities. Volunteers are given training and posters remind them with instructions on how to identify food that should be considered waste. While "ugly" food is included in food baskets, volunteers are instructed to consider whether or not they would serve a given item to their own family.

   The accumulation of waste in the bank presents several issues. First, since the warehouse is located within a neighborhood, the odor from the waste can be a nuisance to neighbors. The bank has been working to address this odor by maintaining higher sanitation and cleaning standards. Second, there are holes in the ceilings and walls that permit rodents and birds to enter the warehouse. These pests are attracted to the accumulating waste and risk damaging otherwise viable food.

   While the Guadalajara food bank has limitations on the improvements it can make to its rented warehouse, the Tepatitlan food bank has been able to invest in a pasteurizing machine to preserve its produce. The machine takes fresh food and heats, purées, and seals it into plastic pouches to increase its shelf life to one year without the need for refrigeration. However, because the Guadalajara Food Bank rents its current warehouse, staff were unable to build their own machine.

3. **Waste in farm fields.** We learned from our interviews that some farmers allow food to go to waste in the field rather than flood the market with a particular produce. This results in otherwise edible food going unharvested or

being left on the side of the road.

To reduce the operational costs of collecting this food, JSH stakeholders have been advocating for policy reform at the national level. They are advocating for government subsidies to reduce transportation costs and to serve as partial wages to seasonal employees who collect donated food.

DATA COLLECTION AND SIGAB

1. **Expiration dates.** Before the software pilot, the food bank did not capture expiration dates for incoming donations. It is important that the food bank track these data because they will facilitate a first-in-first-out (FIFO) system and are required by SIGAB. (FIFO is an asset-management and inventory-costing method that reduces the maturation of donations being stored at the food bank by first sending out the earliest donations received.)

2. **Inconsistent donor names.** Different departments in the food bank refer to the same donor by inconsistent names. Each donor should have a unique identity number used by all departments.

3. **Vulnerable and siloed data.** The food bank did not have a centralized system. Instead, each department had its own data set stored directly on a computer, rendering it vulnerable to a virus or hardware-related loss. Data should be regularly updated and stored on a secure server that all department managers can access.

4. **Delay.** The food bank's data-collection methods operate with a one- to two-day lag since the data are collected from truck drivers and the warehouse at the end of the day and processed the following day. This lag can be longer than two days if there is a weekend or holiday. SIGAB has technical issues and displays an error message when workers retroactively input data that are several days old.

5. **Time-consuming data processes.** The way SIGAB requires costs to be calculated is different than the current system the food bank uses. It is very time consuming to recalculate and input information from the food bank's Excel sheets into SIGAB. At times, there were more than 800 items to input.

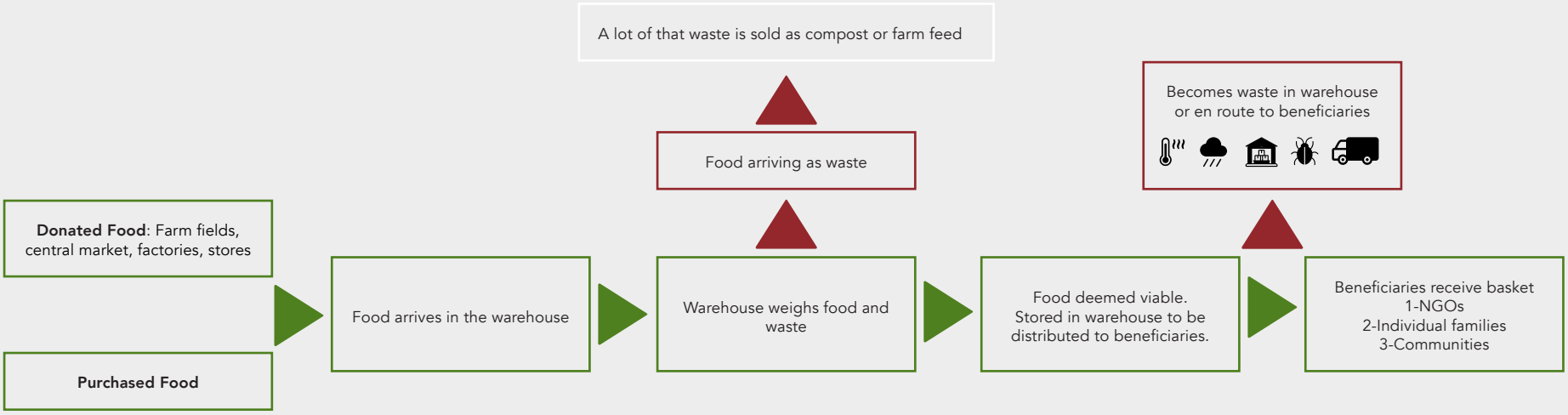
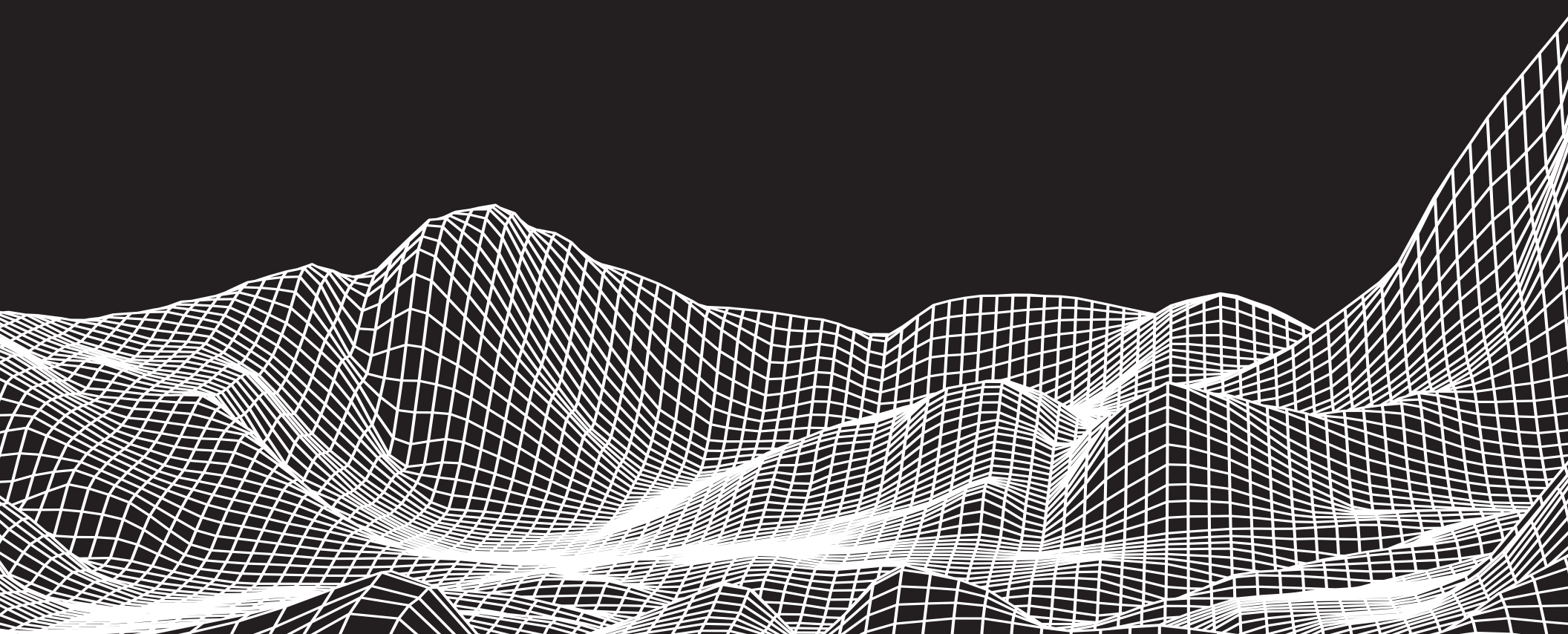


FIGURE 9. The supply chain from procurement to delivery. Red indicates waste along the supply chain.

Next Steps



The food bank had three research objectives in 2019 based on procuring the best possible products, reducing waste, and providing for the communities being served. Over nine weeks, the Reach team and ITESO collaborators undertook extensive research but additional topics merit further exploration.

- **NGO partners.** Our research focused exclusively on the communities the food bank partnered with. A more in-depth examination of how NGOs distribute goods and their relationship with the food bank will provide greater insight in terms of reach and impact.

- **Assessing unmet food needs.** The bank has ceased operations and services to certain communities because of violence and robbery at drop-off locations. Many of these communities are indirectly served by the food bank through partnering NGOs. These communities can be surveyed to identify unmet food needs and better ways to serve them. One of the clearest issues our survey found was that a one-size-fits-all policy isn't equitable. All families are given only one basket but not all families are equally sized—some have two people while others have ten. The greatest predictor for running out of food was family size, not access to a fridge, for example. We suggested that the food bank allow larger families the ability to purchase a second basket.

- **Evaluating ongoing projects.** By analyzing the results of Vitamin Angels and the training program at the community center, future research groups will be able to understand the benefits and drawbacks of these programs. They can also assess their effectiveness at reducing poverty.

- **Matchmaking tool evaluation.** Software to match food bank recipients with outside services and organizations is currently under development. This tool offers two more research opportunities: conducting a software pilot similar to the one on SIGAB and assessing how effective the matchmaking tool is at enhancing access to services.

- **New food bank innovations.** Many of the structural challenges the food bank faces stem from having a rented warehouse. Plans to build a warehouse that the food bank will own should bring opportunities to implement new innovations and inventions (e.g., a pasteurizing machine) that will help to reduce waste and serve communities better. Future research teams will be able to study the impact of these innovations and the food bank's efficiency.

- **The impact of COVID-19.** Recently, more beneficiaries have enrolled with the food bank following rising unemployment and food insecurity resulting from COVID-19. The food bank is operating under unprecedented circumstances. Further research can be done to analyze how they have adapted and expanded operations to meet increased needs.

RECOMMENDATIONS

Based on the results of the research, this report offers a number of recommendations. First, the food bank needs to improve upon the sanitation of their operations. This is a feasible endeavor resulting in the reduction of waste both in transportation and in the warehouse. Next, the food bank should improve their communication internally between their departments. Doing so will allow departments to accurately track data on where good/bad donations originate and improve cross-department decision making. In addition, the food bank should continue to develop and distribute customer feedback surveys for its beneficiaries. Continuing with the surveys allows for improved transparency and gives the food bank the capacity to both respond to issues and plan ahead. Finally, the food bank should allow for the differentiation of baskets to fit different family sizes. This will allow larger families to purchase enough food for everyone.

The Guadalajara Food Bank serves 252 communities and approximately 15,000 families, providing not only food but skills-training workshops, nutrition classes, and household items. By incorporating these changes, the food bank will be better able to provide for its beneficiaries and support its mission of addressing food insecurity in Jalisco.

RESEARCH TEAM

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FIONA CASHELL is a Master of Global Affairs graduate student from the Munk School of Global Affairs & Public Policy. She specialized in international development during her degree, with a particular interest in gender equality. After her experience with the Reach Alliance, she worked as an international partnership coordinator for Girls Who Code. She is interested in pursuing a career in a feminist international organization.

CURTIS WACKETT is a second-year Master of Global Affairs student at the Munk School of Global Affairs & Public Policy. He has professional experience in social development through an NGO in Greece, in entrepreneurship with a nutrition-based mobile application, and research experience in economic development and environmental governance. His academic and future professional interests lie at the intersections of social cognition, public health, economic development, and social intervention.

REACH ALLIANCE

The Reach Alliance began in 2015 at the University of Toronto as the Reach Project, a student-led, faculty-driven, multidisciplinary research initiative dedicated to investigating the pathways to success for innovative development programs that are reaching the world's most marginalized populations.

Inspired by the United Nations' call to eliminate global poverty by 2030 as part of a set of Sustainable Development Goals (SDGs), our mission is to pursue the full achievement of the SDGs by equipping and empowering the next generation of global leaders to create knowledge and inspire action on reaching the hardest to reach.

The Reach Alliance is housed at the University of Toronto's Munk School of Global Affairs & Public Policy with support from the Mastercard Impact Fund, administered by the Mastercard Center for Inclusive Growth.

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