

The Economic Impacts of Food Banks in Clallam County, Part 1

Prepared by the Center for Economic and Business Research

June 2021

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About the Authors

The Center for Economic and Business Research is an outreach center at Western Washington University located within the College of Business and Economics. In addition to publishing the Puget Sound Economic Forecaster, the Center connects the resources found throughout the University to assist for-profit, non-profit, government agencies, quasi-government entities, and tribal communities in gathering and analyzing useful data to respond to specific questions. We use a number of collaborative approaches to help inform our clients so that they are better able to hold policy discussions and craft decisions.

The Center employs students, staff and faculty from across the University as well as outside resources to meet the individual needs of those we work with. Our work is based on academic approaches and rigor that not only provides a neutral analytical perspective but also provides applied learning opportunities. We focus on developing collaborative relationships with our clients and not simply delivering an end product.

The approaches we utilize are insightful, useful, and are all a part of the debate surrounding the topics we explore; however, none are absolutely fail-safe. Data, by nature, is challenged by how it is collected and how it is leveraged with other data sources. Following only one approach without deviation is ill-advised. We provide a variety of insights within our work – not only on the topic at hand but also the resources (data) that inform that topic.

We are always seeking opportunities to bring the strengths of Western Washington University to fruition within our region. If you have a need for analysis work or comments on this report, we encourage you to contact us at 360-650-3909 or by email at cebr@wwu.edu.

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The Center for Economic and Business Research is directed by Hart Hodges, Ph.D. and James McCafferty.

Executive Summary

This study seeks to estimate the economic impacts of a food bank or network of food banks, with both the traditional analysis of spending impacts and with a more macro lens of how food banks impact housing in the surrounding area. The data used in this study was collected before the onset of the COVID-19 pandemic. Even though the pandemic impacted individual and family spending patterns, aside from social distancing guidelines, any potential changes to the operations of the food banks were not incorporated into this study. Additionally, the multipliers that were used quantify the impacts of the food banks were not impacted by the COVID-19 pandemic.

A food bank is a catchall term used to describe organizations that distribute food at little or no cost to community members who are otherwise unable to purchase or obtain an adequate amount of food. Food banks acquire the food they distribute in a variety of ways such as:

- From grocery stores or food producers of recently or nearly expired goods at greatly reduced prices or as a donation
- Individual donations from community members, food drives, etc.
- Government contributions and subsidies
- Purchased food from suppliers at a large discount

The food bank first ensures the food is fit for consumption and then distributes it to community members. The two food banks studied in this report are the Sequim and Port Angeles, WA food banks. The Sequim Food Bank purchases most of its food from local grocery stores and farms at a reduced cost. They served 2,000 households in 2018. The Port Angeles Food Bank also obtains a large percentage of its food as donations from grocery stores and provided food to 9,800 households in 2018.

Services offered by food banks can lead to net increases in community spending. When a grocery store donates food to a food bank, the tax benefits that the store receives will impact the store's profits by the same margins than if the food had been sold to paying customers. Additionally, when that food is donated to a family or individual in need, that also frees up valuable cash that can then be spent elsewhere in the economy, resulting in a net gain. This still holds, although albeit to a lesser degree, if the food bank purchases food from grocery stores at reduced prices.

For this study, both food banks collected data on what items households were receiving and then determined the average market value of the items. The Sequim Food Bank had an average weekly distribution of \$65 in market value per family, or \$1,570 per year. The Port Angeles Food Bank had an average weekly distribution of \$86 in market value per family, or \$2,064 per year. This amount constitutes the transfer payment value of the food distributed to each family, in essence allowing the family to spend the transfer payment on other goods and services.

Note

All dollar values in this report are inflation-adjusted to 2020 dollars

However, it is unlikely that households spent the total value saved by receiving food from the food bank, as by nature households who visit food banks often cannot afford that same food at market value. Therefore, the Center created three different impact scenarios where households spent 70 percent, 50 percent, and 30 percent of the value of the food received from the food bank.

The Center studied the average spending patterns of both Port Angeles and Sequim residents using data from ESRI. This was used to determine how households would spend the money saved by visiting the food banks. The Center then estimated the impact this would have on the surrounding area using IMPLAN.

The total direct value-added to the county's economy by the Sequim Food Bank is estimated between \$76,900 and \$178,800, depending on what percentage of the savings are being spent. This estimate, while not precise, is a reasonably accurate assessment of the potential range of direct economic impacts attributable to the Sequim Food Bank's activities; without their distributions of food, this spending would not otherwise occur. The Sequim Food Bank also adds somewhere between \$46,300 and \$108,000 to total labor income in Clallam County, through 1.5 to 3.5 jobs supported.

The total value-added by the Port Angeles Food Bank to the county's economy is estimated between \$149,400 and \$348,600 depending on the household spending scenario, just as with the Sequim Food Bank. The Port Angeles Food Bank also adds \$90,200 to \$210,600 to total labor income in Clallam County, through 3.0 to 6.9 jobs supported. It is important to note that these are the direct spending impacts – they do not consider the indirect or induced effects of that spending, such as job creation, health savings, etc. When these are included, we have an idea of the total impact to Clallam County's economy.

To further understand the impact that the Port Angeles and Sequim Food Banks have on Clallam County, the Center looked at the induced impact of both food banks (see Glossary). Total induced value-added by the Sequim Food Bank is estimated to be between \$13,600 and \$31,700. The Port Angeles Food Bank's total induced value-added is in the range of \$26,500 and \$61,800.

Additionally, the household spending calculated for the direct impact goes to other businesses and results in indirect effects (see Glossary). The total indirect value-added of the Sequim Food Bank is estimated to be between \$13,900 and \$32,400. The total indirect value-added by the Port Angeles Food Bank is estimated to be between \$27,100 and \$63,200.

To determine the total impact of each food bank, the Center combined the direct, induced, and indirect impacts. This determined that the food distributed by the Sequim Food Bank has a total value-added of between \$104,100 to \$242,900 to surrounding communities. The Port Angeles Food Bank has a total value-added between \$203,000 to \$473,600.

The Sequim and Port Angeles Food Banks exist and operate simultaneously; therefore, their impacts are felt by the community combined rather than individually. The combined total value-added by the operations of the two food banks ranges from \$307,100 and \$716,600 depending on what percentage of market value the food bank visitors are willing and able to spend elsewhere in Clallam County – accounted for in our 30%, 50%, and 70% scenario sensitivity analysis. The total direct labor income from the food banks was estimated to be between \$136,500 and \$318,500, through 4.5 to 10.4 jobs supported.

Table 1: Summary of Combined Total Impacts

	70% Impact	50% Impact	30% Impact
Combined Total Value-Added	\$716,600	\$511,800	\$307,100
Total Direct Labor Income	\$318,500	\$227,500	\$136,500
Total Direct Job Impact	10.4	7.4	4.5

The entire study is divided into two separate documents – Part I and Part II. This document, Part I, covers three main parts: first, we analyze the spending impacts of the food distributions by estimating the amount that food banks return to the local economy via these transfer payments. The impacts include the way those distributions of food affect food bank customer spending on health care, transportation, housing, and other items. Secondly, we model the impacts of the food distributions on various regional factors, such how those distributions influence local employment and sales. Finally, we analyze the impact that the Sequim food bank and Port Angeles food banks have on housing in the surrounding area. The analysis of the impact the food banks have on housing is contained in a separate report, Part II.

Glossary

- **Direct Impact:** The new dollars being spent by visitors to the food bank, in this case at businesses in Clallam County. This is the change that we are measuring.
- **Indirect Impact:** The result of Clallam County businesses needing to use additional resources to sustain new business levels due to the direct impact. This mainly flows from household spending at local businesses.
- **Induced Impact:** The household spending undertaken by the employees of businesses supported by both the direct and indirect impacts. This includes only household spending attributable to the first two levels of effects, nothing more.
- **Local Purchase Percentages (LLP):** The percentage of the direct effect that will be applied to the multipliers. In this instance, it means that the direct effect is reduced by the amount of any purchase that can be completed in Clallam County, to make results tailored to the local area. As Clallam County not an economic island, there are additional economic impacts due to the direct impact outside of Clallam that are not considered by this study.
- **Output:** The gross value of production in a calendar year.
- **Value-added:** This represents the difference between output and the cost of intermediate inputs. It is equivalent to the industry's contribution to GDP, or the net value of production in a calendar year.
- **Employment:** Full-time equivalent positions. The Center used annual averages, meaning 1 job lasting 12 months is equivalent to 2 jobs lasting 6 months. Similarly, a job that lasts one quarter of the year would be 0.25 jobs. Note that a person can hold more than one job, so the job count is not necessarily the same as the count of employed persons.
- **Labor income:** The total value of all forms of employment income paid. This does not include proprietor income, i.e., the income of business/capital owners.

Understanding Food Banks

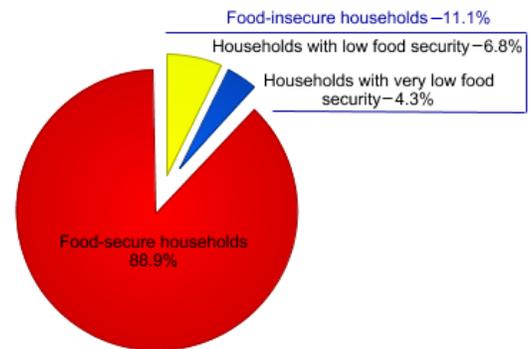
According to the United States Department of Agriculture (USDA), 11.1 percent of households in the US were food insecure in 2018. The phrase “food insecure” refers to households that have low or very low food security. Low food security households maintain regular eating habits, but in turn, may have diminished variation in diet or acquired food from a food bank. Some or all of the members of a very low food secure house often reduce their food consumption below typical levels because of the inability to access food due to insufficient funds (USDA 2016). Food stamps alone do not change a household’s food security (Pan 2008). A mixture of government programs like Woman, Infants, and Children (WIC) and Supplemental Nutrition Assurance Program (SNAP, formerly the Food Stamp Program) work in conjunction with food pantries and food banks to improve household food security. (Kicinski 2012).

Food banks often take on multiple roles within a community: inspecting, storing and distributing food to individuals or other organizations (governmental and/or private) that then distribute that food to individuals.

Food banks are often attached to other services or organizations, such as food pantries, soup kitchens, shelters, orphanages, schools, or religious institutions. Food banks are a source of social cohesion and healing that goes beyond providing meals (Cargill 2021). Many also provide other services, such as counseling, vocational training, medical help, temporary shelter, or employment services. The impact of these additional services reverberates throughout the community, with increases in public health, safety, and lower crime rates all being linked back to the presence of food banks. In fact, a percentage point increase in food insecurity has been shown to lead to a 12 percent increase in violent crime, meaning the services offered by food banks can directly impact crime levels in a community (Caughron 2016). The role of a food bank within a community varies widely between individual food banks and communities; in some areas, food banks may be stopgaps for those in temporary need, while in others, food banks may be the main source of nutrition for an entire community as well as a center of activity.

In this study, “food banks” will refer to local community services that distribute food at little to no cost to residents in need of food assistance that may also provide the services listed above. The North American Industrial Classification System (NAICS) has its own code for “Community Food Services” (624210) that follows this same definition.

Figure 1: Food Scarcity in the U.S.
U.S. households by food security status, 2018



Source: USDA, Economic Research Service, using data from the December 2018 Current Population Survey Food Security Supplement.

The Food Distribution Process

Food banks acquire food and other grocery items in several ways:

- From grocery stores or food producers of recently or nearly expired goods at greatly reduced prices or as a donation
- Individual donations from community members, food drives, etc.
- Government contributions and subsidies
- Purchased food from suppliers at a large discount

The food bank then inspects the food acquired, to make sure that it is fit for consumption, before distributing it to community members. Most food banks have a physical distribution space or “storefront,” typically referred to as food pantry, where individuals and households can either pick out food for a given week or receive a bundle with necessities and food intended to last until the next day of distribution. Many also have additional distribution methods, including but not limited to, “backpacks” for food-insecure children, school lunch supplies, soup kitchens, and homeless and migrant community outreach programs.

A common misconception is that food banks rely primarily on donations of food by community members or businesses. Because food banks buy in bulk and usually obtain food by “rescuing” it from grocery stores that could not otherwise sell it, they can obtain large amounts of food at very low prices. A community member buying food to donate will likely pay much more than the food bank would. That money would have gone much further as a direct donation to the food bank instead. By far, the most effective way to contribute to a food bank is through the donation of time (by volunteering to help with sorting, distribution, etc.) or money.

Sequim Food Bank

The Sequim Food Bank (located at 144 W. Alder St, Sequim, WA) is in Clallam County and provided emergency food for 2,000 individual households and 5,103 people in 2018. The Sequim Food Bank is available to anyone living within the Sequim School District boundaries. A household can visit twice a month and receives a selection of dry and canned goods, frozen meat, baked goods, milk, eggs and fruit, and vegetables.

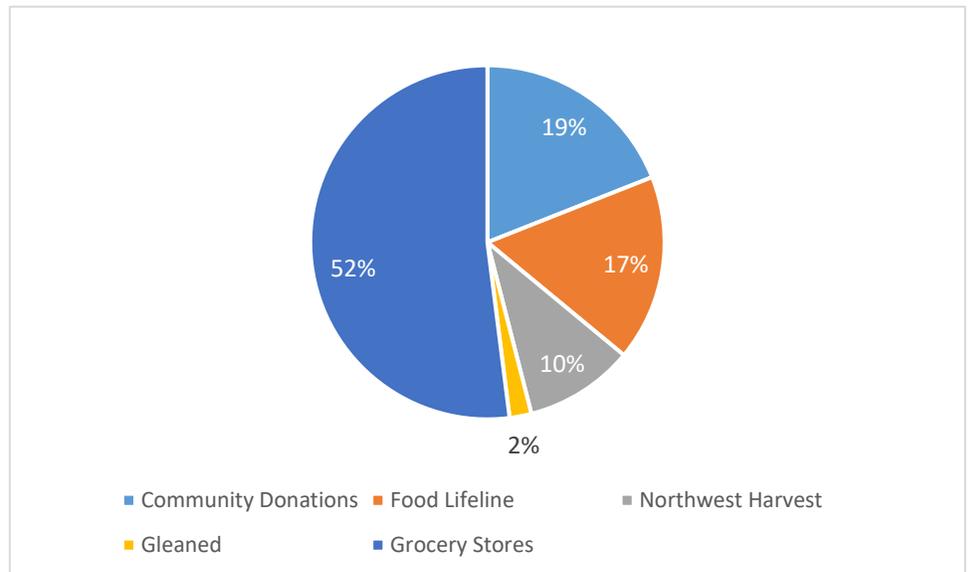


The mission of the Sequim Food Bank is “to provide food and assistance to individuals and organizations” based off their five core values:

- Compassion and Respect – Turn no one away from services and always encourage positive relationships with clients and the community.
- Stewardship and Sustainability – Be responsible stewards of our resources with a focus on providing a well maintained, safe facility and equipment, and minimizing waste as possible.
- Education & Prevention – Commit to promoting healthy eating while reducing hunger and striving to understand, eliminate, and prevent the root causes of hunger.
- Collaboration & Cooperation – Engage and involve a network of community members.
- Diversity & Multiculturalism – Understand the diverse individual and cultural needs in our community.

The Sequim Food Bank obtains food from a variety of sources, with the largest one being through “rescuing” food from grocery stores. They also obtain food from Food Lifeline, Northwest Harvest, and through community donations and drives. Of the purchases they make for food, 78 percent are from local grocery stores and farms. The remaining 22 percent comes from Food Lifeline, Northwest Harvest, and Charlie’s Produce.

Figure 2: Sources of food for the Sequim Food Bank



Port Angeles Food Bank

The Port Angeles Food Bank (located at 402 S. Valley St. Port Angeles, WA) is in Clallam County. In 2018 it provided emergency food to 9,800 individual households and is available to all Clallam County residents. A household can visit twice a month unless they are experiencing unstable housing, in which case they can visit weekly. Individuals receive a selection of dry and canned goods, frozen meat, baked goods, milk, eggs and fruit, and vegetables.



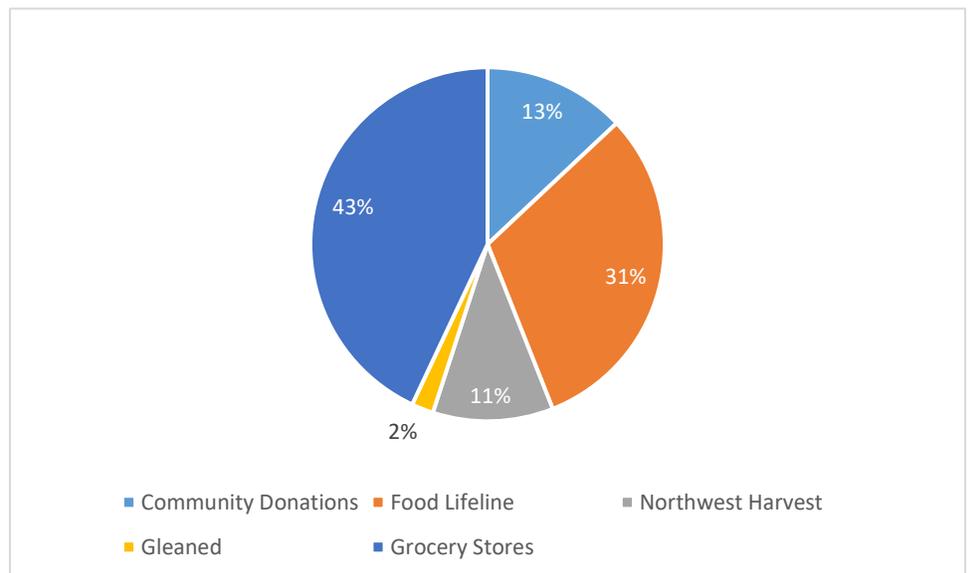
The Port Angeles Food Bank is set up similar to a grocery store, where clients can shop for themselves using points rather than dollars. Individuals get to choose what they 'buy' and are given 35 points per month for the first person and an additional 5 points for every additional person totaling up to 60 points. There are a few items that do not cost points such as Federal Commodities, Northwest Harvest's whole grains, produce, bread, and backpack snacks. Other items such as eggs and milk cost only 1 point (limited 3 per month), and meat less than 5 pounds costs 2 points.

The mission of the Port Angeles Food Bank is "Nourishing Our Community" based off their five core values:

- Excellence in Services: Provide services with compassion and respect with a commitment to promote healthy eating.
- Stewardship and Sustainability: Committed to conscientious stewardship of all human, natural, and financial resources both now and in the future.
- Collaboration: Educate and engage our community members through a network of partnerships
- Respect: We embrace and value the diversity, abilities, and multicultural needs in our community.
- Volunteer: We honor and provide opportunities for community members to share their time and skills in an accessible and positive environment.

The Port Angeles Food Bank obtains food from a variety of sources, with the largest being through "rescuing" food from grocery stores. They also obtain food from Food Lifeline, Northwest Harvest, and through community donations and drives.

Figure 3: Sources of food for the Sequim Food Bank



Direct Spending Impacts

Overview

This section of our study proposes to put a dollar figure on the *direct impact* of the Sequim Food Bank on the surrounding community through their distributions of food. In theory, because the Sequim and Port Angeles food banks are supplying families with food, the money those families would otherwise have spent on food is now free to be spent on other goods and services, such as housing, transportation, health care, entertainment, and recreation. Using the market price of food distributions, we can estimate the amount of money each family incrementally adds to their discretionary spending budget.

Then, using IMPLAN – an economic modeling software – to model the spending patterns of families in Clallam County, we extrapolate what portion of that additional discretionary spending would be devoted to certain goods and services. It is important to note that our analysis of Clallam County is not generalizable to other regions. The model and statistics we are using for this study are specific to Clallam County, and hence the same analysis performed on a different region’s data may be different.

Direct impacts:

By distributing food (worth some amount of money), a food bank essentially introduces new income to a community by freeing up income that would otherwise be spent on food (as food is a necessity). In our study, direct impacts are a measure of the value of that new income to the community, before any additional spending.

Methodology

By distributing food to households in need, Sequim and Port Angeles food banks are transferring the market value of the food they would have otherwise bought to each household. In other words, the food bank is essentially gifting a given household’s normal weekly food budget to that household. Each household is then free to spend this money elsewhere in the community – on housing, transportation, recreation, and other goods (See Figure 3). In economics, this sort of gift is known as a transfer payment. Therefore, we use the market value of the total annual food distributions for each food bank as an estimate of the total spending a food bank allows within a community. Our impact analysis does not incorporate each food bank’s expenditures or other services they may offer. The estimated impacts assume that any of the food purchased by the food banks is supported by donations. It is possible that those donations could have been made to other organizations in the surrounding area, but it is not possible to quantify those donations or know where else they could have gone. We will proceed using this method in this section (Part I) of our study.

Figure 4: Assumed distribution process for direct spending impacts, modeling distribution as a transfer payment worth the market value of household food expenditure



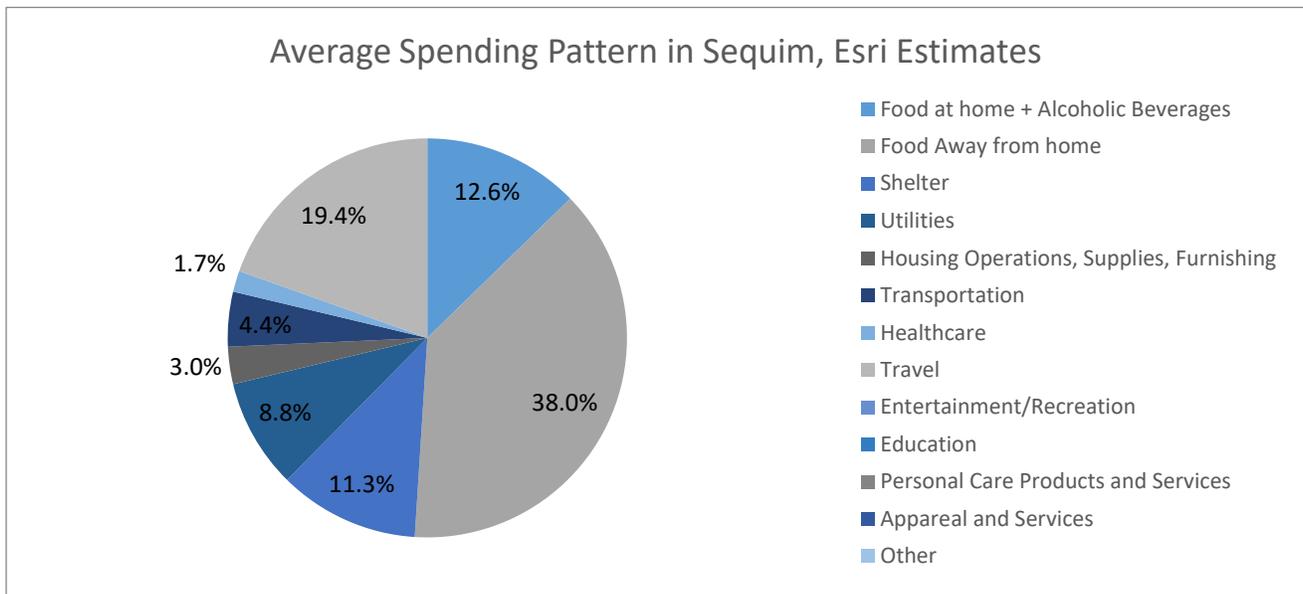
EXAMPLE: If consumers in the county on average spend 15% of their income on transportation, and a food bank distributes \$1,000 worth of food annually to a specific household, then transportation services receive \$150 of income per year as a direct impact of the food bank's distributions to that household if the household had the ability to spend the full value of the money they are given ($\$1,000 \times 15\% = \150). If there are 100 families, then the total annual distribution by the food bank is \$100,000, and the total contribution to transportation services is \$15,000.

The allocation of transfer payments to different industry sectors is based on the consumption patterns of the average Sequim and Port Angeles household. Based on these results, we believe that the underlying consumption patterns of the average household are statistically representative of households who are visiting local food banks.

We use this to estimate the impact of food distributions and transfer payments on specific industries. Since those who receive food from the Port Angeles and Sequim Food Banks spend according to the mean (average) spending pattern of the town, then each household will spend its annual transfer payment amount in roughly the same way. Thus, we can simply allocate the total market value of annual food distributions of each food bank as does the average consumer in the town. Of course, not all community members will choose to spend in the same way. A census to

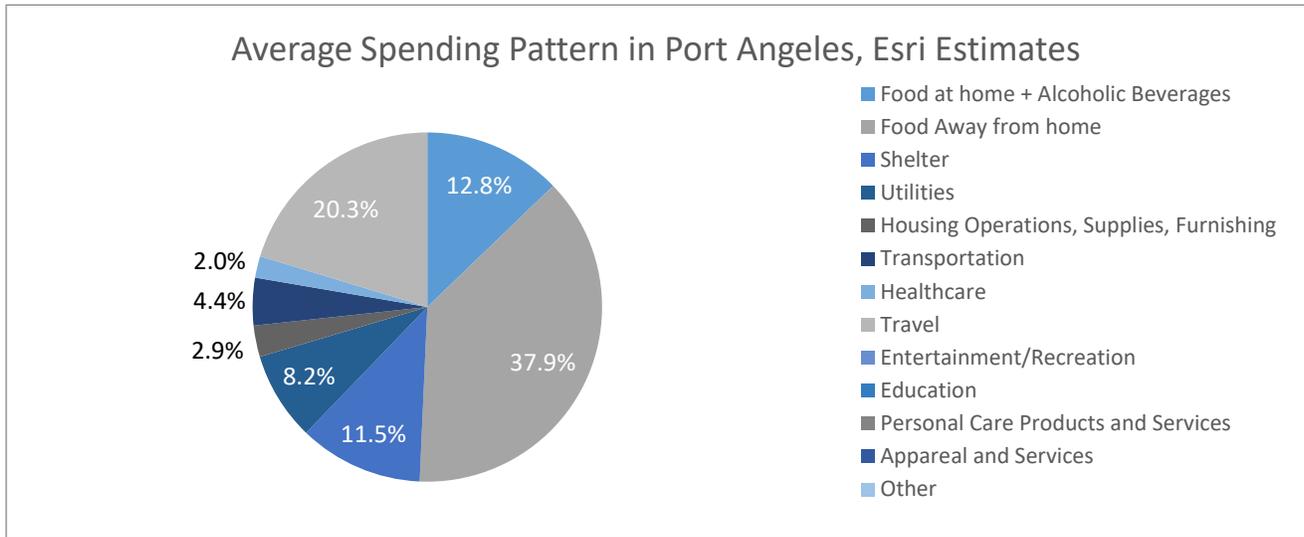
obtain this data would be expensive, difficult, and unnecessary; we reason that any outliers (those who spend relatively more or less of their in-kind transfer payment) cancel each other out in the aggregate. We begin by estimating the spending patterns of families in Sequim and Port Angeles.¹

Figure 5: Esri's GIS estimations of spending allocations for Sequim, Clallam County



¹ Esri's forecasts on Household Budget Expenditures for 2019 and 2024

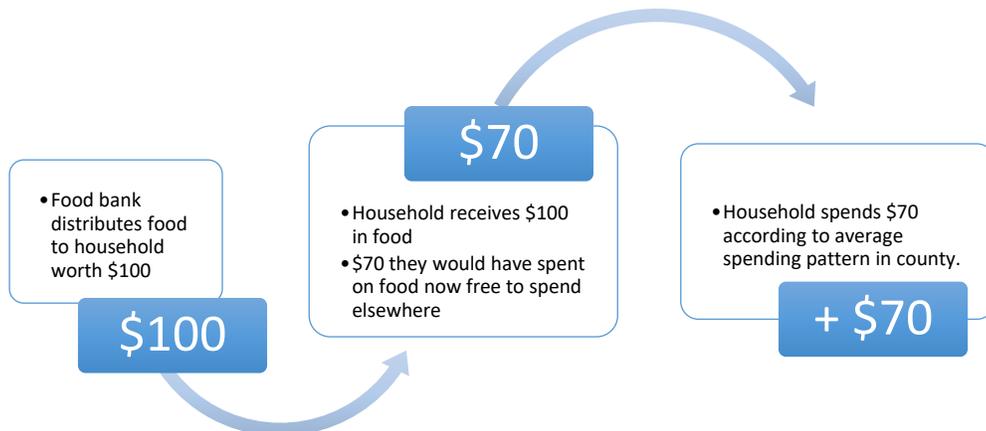
Figure 6: Esri's GIS estimations of spending allocations for Port Angeles, Clallam County



Before analyzing the diversion of discretionary income into goods and services, we must make a few assumptions. First, we assume that families that visit the Port Angeles and Sequim Food Banks follow the mean budget expenditure patterns for the general population of each town. This also means that families receiving food from the Port Angeles and Sequim Food Banks spend money on additional food items to supplement distributions.

We also note that families in need of food assistance may not be able to devote the entire value of a given distribution to other consumption choices. As an example, suppose a family in need spends \$70 per week on food but were given a gift of \$100 worth of food. This gift of food would therefore not free up its entire value (\$100 dollars) for consumption elsewhere, only what the household would have spent without the food given to them (\$70 dollars). Under this scenario, we would, therefore, need to “deflate” the value of the transfer payment by 70% ($70\% \times \$100 = \70 to spend elsewhere, see Figure 4). We, of course, do not know the exact deflation value to use but offer a potential range of possible average values (30%, 50%, and 70%). This will provide a more realistic estimate of the impact of food distributions.

Figure 7: Process of transfer payment and deflation from the above example.



The Port Angeles and Sequim Food Banks have provided the Center with distribution values for a recent month, thus determining the average distribution value per family served. The average distribution value will not be the same for every family served; however, it serves as a sufficient measurement of distribution value for our analysis.

The various food stamp and subsidy programs may play a role in the overall impact possible from a recipient. In essence, food stamps or other subsidies free up dollars for further household spending. These programs should not be minimized, their overall impact should be considered as part of the deflation strategy since it is unlikely that these recipients can secure an excess of subsidies from their expenses.

Finally, we will assume that those visiting the Port Angeles and Sequim Food Banks are not saving any of the transfer payments received through food distribution. Savings and investment are luxuries that many food bank visitors do not have. In the case of those who do, much of the variation in savings rates will be accounted for by the deflation process.

Using the ESRI data, the Center assumed that the households using the Port Angeles and Sequim Food Banks follow the same spending profile as the rest of Port Angeles and Sequim, including in their allocations for food. Therefore, we can divide corresponding portions of the increases in distributional value (from the food banks) as increases in commodity demand for those goods and services (by the households).

Table 2: Representative sectors for IMPLAN "forced" increased demand model.

Allocation	Sequim Percent of Expenditure	Port Angeles Percent of Expenditure	IMPLAN Commodity Code
<i>Shelter</i>	24.5%	24.8%	3440— Real-estate buying and selling, leasing, managing, and related services
<i>Utilities, Fuel, and Public Services</i>	6.8%	6.6%	3515— Business and professional services
<i>Housing Operations, Supplies, Furnishing</i>	6.7%	6.5%	3397— Retail services- furniture and home furnishing stores
<i>Transportation</i>	11.3%	11.5%	3412— Transit and ground passenger transportation services
<i>Health Care</i>	8.8%	8.2%	3475— Offices of Physicians
<i>Travel</i>	3.0%	2.9%	3466— Travel arraignment and reservations services
<i>Food at Home</i>	7.8%	7.9%	3400— Retail Services-Food and beverage stores
<i>Food Away from Home</i>	4.8%	4.8%	3501/3502— Full-service restaurant services/ limited services restaurant services
<i>Entertainment/Recreation</i>	4.4%	4.4%	3062— Maintained and repaired nonresidential structures
<i>Education</i>	1.7%	2.0%	3406— Retail Services-miscellaneous store retailers
<i>Personal Care Products and Services</i>	1.2%	1.2%	3405— Retail services- general merchandise stores
<i>Apparel and Services</i>	2.7%	2.8%	3403— retail services- clothing and clothing accessory stores
<i>Smoking products</i>	0.6%	0.6%	3111- Cigarettes, Cigars, Smoking and Chewing tobacco, and reconstituted tobacco
<i>Lotteries and Pari-mutuel Losses</i>	0.1%	0.1%	3495- Gambling recreation
<i>Legal Fees</i>	0.3%	0.3%	3447- Legal services
<i>Funeral Expenses</i>	0.1%	0.1%	3510- Death Care Services
<i>Accounting Fees</i>	0.1%	0.1%	3448- Accounting, tax preparation, bookkeeping, and payroll services
<i>Miscellaneous Personal Services</i>	0.1%	0.1%	3457-Advertising, public relations, and related services
<i>Pensions and Social Security</i>	9.9%	10.4%	3439-Funds, trusts, and other financial services

Results: Sequim Food Bank

Table 2 describes the direct spending impacts per household using the Sequim Food Bank estimations of a typical week’s distributions. Measured at the lowest substitutable retail price, distributions average roughly \$65 per family per week, or \$130 per month, and \$1,570 per year. This amount constitutes the transfer payment value of the food distributed to each family. We note that it is possible for a family to visit more than one food bank in a week; this could mean that these numbers potentially underestimated the direct spending impact at a given deflation level. However, it is reasonable to assume that the true direct impact will lie somewhere in between the deflation levels, meaning that the data still provides an accurate *range* of impacts.

Table 3: Estimates of allocation of additional spending from food distributions, per-household, per-year (Sequim Food Bank)

Allocation	Percent of Expenditure	100% Deflation	70% Deflation	50% Deflation	30% Deflation
Total	99.2%	\$1,570	\$1,099	\$785	\$471
Housing	38.0%	\$597	\$418	\$298	\$179
Shelter	24.5%	\$385	\$269	\$192	\$115
Utilities, Fuel, Public Service	6.8%	\$107	\$75	\$53	\$32
Housing Operations, Supplies, Furnishing	6.7%	\$105	\$74	\$53	\$32
Transportation	11.3%	\$177	\$124	\$89	\$53
Health Care	8.8%	\$138	\$97	\$69	\$41
Travel	3.0%	\$47	\$33	\$24	\$14
Food	12.6%	\$198	\$138	\$99	\$59
Food at Home and Alcoholic Beverages	7.8%	\$122	\$86	\$61	\$37
Food Away from Home	4.8%	\$75	\$53	\$38	\$23
Entertainment/Recreation	4.4%	\$69	\$48	\$35	\$21
Education	1.7%	\$27	\$19	\$13	\$8
Personal Care Products and Services	1.2%	\$19	\$13	\$9	\$6
Apparel and Services	2.7%	\$42	\$30	\$21	\$13
Other	15.5%	\$243	\$170	\$122	\$73

Table 4: Estimates of allocation of total additional spending from food distributions, per-year (Sequim Food Bank)

Allocation	Percent of Expenditure	100% Deflation	70% Deflation	50% Deflation	30% Deflation
Total	99.2%	\$922,906	\$646,034	\$461,453	\$276,872
Housing	38.0%	\$350,704	\$245,493	\$175,352	\$105,211
Shelter	24.5%	\$226,112	\$158,278	\$113,056	\$67,834
Utilities, Fuel, Public Service	6.8%	\$62,758	\$43,930	\$31,379	\$18,827
Housing Operations, Supplies, Furnishing	6.7%	\$61,835	\$43,284	\$30,917	\$18,550
Transportation	11.3%	\$104,288	\$73,002	\$52,144	\$31,287
Health Care	8.8%	\$81,216	\$56,851	\$40,608	\$24,365
Travel	3.0%	\$27,687	\$19,381	\$13,844	\$8,306
Food	12.6%	\$116,286	\$81,400	\$58,143	\$34,886
Food at Home and Alcoholic Beverages	7.8%	\$71,987	\$50,391	\$35,993	\$21,596
Food Away from Home	4.8%	\$44,299	\$31,010	\$22,150	\$13,290
Entertainment/Recreation	4.4%	\$40,608	\$28,425	\$20,304	\$12,182
Education	1.7%	\$15,689	\$10,983	\$7,845	\$4,707
Personal Care Products and Services	1.2%	\$11,075	\$7,752	\$5,537	\$3,322
Apparel and Services	2.7%	\$24,918	\$17,443	\$12,459	\$7,476
other	15.5%	\$143,050	\$100,135	\$71,525	\$42,915

Results: Port Angeles Food Bank

Table 4 describes the direct spending impacts per household using the Port Angeles Food Bank estimations of a typical week's distributions. Measured at the lowest substitutable retail price, distributions average roughly \$86 per family per week, or \$172 per month, \$2,064 per year. This amount constitutes the transfer payment value of the food distributed to each family. We note that it is possible for a family to visit more than one food bank in a week, and individuals who are experiencing unstable housing can go to the Port Angeles food bank weekly, not biweekly. This could mean that these numbers potentially underestimated the direct spending impact at a given deflation level. However, it is likely that the true direct impact will lie somewhere in between the deflation levels, meaning that the data still provides an accurate *range* of impacts.

Table 5: Estimates of allocation of additional spending from food distributions, per-household, per-year (Port Angeles food bank)

Allocation	Percent of Expenditure	100% Deflation	70% Deflation	50% Deflation	30% Deflation
Total	99.8%	\$2,064	\$1,445	\$1,032	\$619
Housing	37.9%	\$784	\$549	\$392	\$235
Shelter	24.8%	\$506	\$354	\$253	\$152
Utilities, Fuel, Public Service	6.6%	\$140	\$98	\$70	\$42
Housing Operations, Supplies, Furnishing	6.5%	\$138	\$97	\$69	\$41
Transportation	11.5%	\$233	\$163	\$117	\$70
Health Care	8.2%	\$182	\$127	\$91	\$54
Travel	2.9%	\$62	\$43	\$31	\$19
Food	12.8%	\$260	\$182	\$130	\$78
Food at Home and Alcoholic Beverages	7.9%	\$161	\$113	\$80	\$48
Food Away from Home	4.9%	\$99	\$69	\$50	\$30
Entertainment/Recreation	4.4%	\$91	\$64	\$45	\$27
Education	2.0%	\$35	\$25	\$18	\$11
Personal Care Products and Services	1.2%	\$25	\$17	\$12	\$7
Apparel and Services	2.8%	\$56	\$39	\$28	\$17
other	16.1%	\$320	\$224	\$160	\$96

Table 6: Estimates of allocation of total additional spending from food distributions, per-year (Port Angeles food bank)

Allocation	Percent of Expenditure	100% Deflation	70% Deflation	50% Deflation	30% Deflation
Total	99.8%	\$1,782,854	\$1,247,998	\$891,427	\$534,856
Housing	37.9%	\$675,702	\$472,991	\$337,851	\$202,711
Shelter	24.8%	\$442,148	\$309,504	\$221,074	\$132,644
Utilities, Fuel, Public Service	6.6%	\$117,668	\$82,368	\$58,834	\$35,301
Housing Operations, Supplies, Furnishing	6.5%	\$115,886	\$81,120	\$57,943	\$34,766
Transportation	11.5%	\$205,028	\$143,520	\$102,514	\$61,508
Health Care	8.2%	\$146,194	\$102,336	\$73,097	\$43,858
Travel	2.9%	\$51,703	\$36,192	\$25,851	\$15,511
Food	12.8%	\$228,205	\$159,744	\$114,103	\$68,462
Food at Home and Alcoholic Beverages	7.9%	\$140,845	\$98,592	\$70,423	\$42,254
Food Away from Home	4.9%	\$87,360	\$61,152	\$43,680	\$26,208
Entertainment/Recreation	4.4%	\$78,446	\$54,912	\$39,223	\$23,534
Education	2.0%	\$35,657	\$24,960	\$17,829	\$10,697
Personal Care Products and Services	1.2%	\$21,394	\$14,976	\$10,697	\$6,418
Apparel and Services	2.8%	\$49,920	\$34,944	\$24,960	\$14,976
other	16.1%	\$287,040	\$200,928	\$143,520	\$86,112

Analysis of Direct Impact

The total direct value-added of the Sequim food bank is somewhere between \$76,900 and \$178,800 for the 30 and 70 percent impact scenarios, respectively. The direct effect on employment ranges from 1.5 and 3.5 again for the 30 and 70 percent impact scenarios, respectively. This estimate, while not precise, is a reasonably accurate assessment of the direct economic impact of the Sequim food bank; without their distributions of food, this spending would not otherwise occur.

Table 7: Direct impacts of the Sequim Food Bank

Impact	Direct Employment	Direct Labor Income	Direct Total Value Added	Direct Output
70% Impact	3.5	\$108,000	\$178,800	\$342,800
50% Impact	2.5	\$77,100	\$127,700	\$244,800
30% Impact	1.5	\$46,300	\$76,600	\$146,900

The direct total value added of the Port Angeles Food Bank, ranges from \$149,400 to \$348,600 for the 30 and 70 percent impact scenarios, respectively. The direct employment impact ranges from 3.9 to 6.9 jobs with the dollar value of the direct labor income ranges from \$90,200 to \$210,600.

Table 8: Direct impacts of the Port Angeles Food Bank

Impact	Direct Employment	Direct Labor Income	Direct Total Value Added	Direct Output
70% Impact	6.9	\$210,600	\$348,600	\$669,900
50% Impact	4.9	\$150,400	\$249,000	\$478,500
30% Impact	3.0	\$90,200	\$149,400	\$287,100

Again, it is important to note that these are the direct spending impacts – they do not consider the effects of that spending, such as job creation, health savings, etc. *Indirect* and *induced* economic effects will be covered in the following section.

Induced and Indirect Impact

Overview

In this section, we will analyze the *indirect* and *induced* effects of food distribution via the Port Angeles and Sequim Food Banks. We demonstrate the effects of increased distributions of food by the Sequim and Port Angeles Food Bank on the surrounding community using IMPLAN modeling software. IMPLAN is an input-output region-specific economic modeling software designed by Minnesota Implant Group, Inc. (MIG). Based on this scenario modeling, we estimate the impact of the food banks on employment, income, and other macroeconomic factors. In addition to the direct spending impacts, this will allow us to study the total impact of the food banks on the regional economy. Again, it is important to reiterate that our analysis of Clallam County does not generalize to other geographic areas; our results are driven by region-specific spending statistics and multipliers that may not be true for other counties, municipalities, or areas.

Indirect Impacts:

When a sector experiences growth (or contraction), it will demand more (or less) goods and services from sectors that support it, encouraging those sectors to also grow (or contract).

EXAMPLE: Raspberry prices increase steadily over several years, prompting more farms to enter the market. These farms purchase specific equipment, prompting suppliers of that equipment to hire more employees to meet demand. Producers of the raw materials that go into making that equipment (steel, copper, etc.) also see growth.

Induced Impacts:

When a job is created in one sector, new income is introduced into a community in the form of wages paid to that employee. That employee takes that income and spends it on goods and services in other industries, in turn promoting growth and job creation in those industries as well.

EXAMPLE: A steel mill opens, hiring 100 workers at \$60,000 per year. Each worker spends some portion of this on groceries, increasing demand for food on local grocers, and inducing them to hire more workers.

Methodology

We used IMPLAN to analyze the effects of the Port Angeles and Sequim Food Banks on the greater Clallam region. It uses social accounting matrices (models of transactions between producers and intermediate and final consumers), local purchases percentages, multiplier effect models (accounting for direct, indirect, and induced effects), and zip-code specific statistics to quantify present economic structures and extrapolate the economic impacts of potential actions/projects. IMPLAN can help examine questions regarding the functioning of local economies, economic consequences of projects, and the effects of a given business on a community.

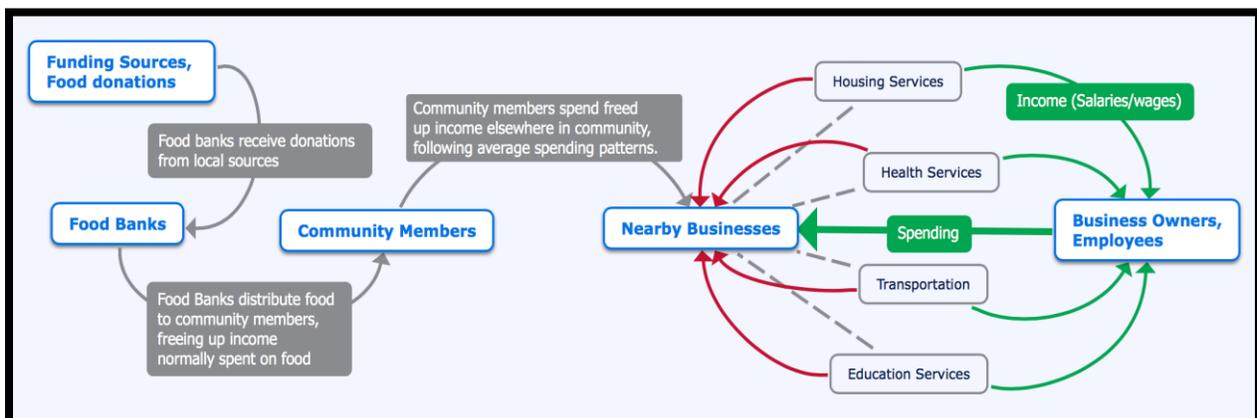
The most intuitive way to analyze the impact of local food banks may seem to be to model their removal from the community. However, this could have unintended consequences that would skew our model's results. The local economy has developed in the presence of the effects of these food banks and would have developed differently in their absence. To suddenly remove them from that economy (a rather unrealistic event to simulate) would therefore not be a reliable gauge of their total economic impact. Additionally, since our handle on the food banks' impact is based on the additional spending, their removal would equate to large decreases in aggregate spending in the region. Since IMPLAN accounts for transactions between entities within the county, this could trigger sudden changes in spending patterns, deflation, and other unrealistic outcomes.

Multipliers:

This is the total effect had on one factor (usually employment) resulting in a one unit increase in another. In our study, a multiplier will be the sum of the direct, indirect, and induced effects divided by the total effect.

EXAMPLE: A major construction project prompts the hiring of 20 workers. Each worker spends enough to support 0.25 other jobs in the community in retail, groceries, etc. Additionally, the construction company requires more equipment for each worker hired, enough to support 0.15 additional jobs locally. The total job multiplier for a construction job will be:
 1 (the construction job)
 + 0.25 (the induced effects)
 + 0.15 (the indirect effects)

Figure 8: Assumed food bank distribution process, both direct spending processes (grey), indirect (red), and induced impacts (green)



Induced Impact

To understand how the Port Angeles and Sequim Food Banks impact their immediate communities, we will focus on so-called multiplier effects. Multipliers are a standard item of analysis throughout economics. The underlying idea is that goods and services that are bought or consumed have additional economic impacts beyond their purchase value. For instance, a job created in one industry gives that new employee new income to spend as they desire, and hence support jobs in other industries in the region (an *induced effect*).

The induced output of the Sequim food bank is between \$24,200 and 56,600 for the 30 and 70 percent impact scenarios, respectively. The induced labor impact is somewhere between \$6,300 and \$14,700 (from the 30 and 70 percent impact scenarios, respectively)

Table 9: Induced impacts of the Sequim Food Bank

Impact	Induced Employment	Induced Labor Income	Induced Total Value Added	Induced Output
70% Impact	0.5	\$14,700	\$31,700	\$56,600
50% Impact	0.3	\$10,500	\$22,600	\$40,400
30% Impact	0.2	\$6,300	\$13,600	\$24,200

The Center found the induced employment from the Port Angeles food bank supports between 0.4 and 0.9 jobs for the 30 and 70 percent scenarios, respectively. The induced output is slightly higher than that of the Sequim Food bank ranging from \$47,300 to \$110,300 for the 30 and 70 percent impact scenarios, respectively.

Table 10: Induced impacts of the Port Angeles Food Bank

Impact	Induced Employment	Induced Labor Income	Induced Total Value Added	Induced Output
70% Impact	0.9	\$28,700	\$61,800	\$110,300
50% Impact	0.6	\$20,500	\$44,100	\$78,800
30% Impact	0.4	\$12,300	\$26,500	\$47,300

Indirect Effect

Additionally, other businesses that supply the sector that added a job also see demand for their services increase, creating more jobs (an *indirect effect*). Multiplier effects of this sort are found in many variables of interest, such as government spending (extra commerce encouraged per dollar spent), consumption of healthcare (dollars saved per dollar spent), and crime. These effects are important in decision-making processes as they report on the “return” of certain contingencies or undertakings and suggest the connectedness of industries and entities within a region. We will report on them as they relate to our study of food banks. IMPLAN accounts for these effects when generating its predictions.

The total indirect value-added of the Sequim food bank is somewhere between \$13,900 and \$32,400 for the 30 and 70 percent impact scenarios, respectively. The indirect effect on employment ranges from 0.2 to 0.6 jobs supported, again for the 30 and 70 percent impact scenarios, respectively.

Table 11: Indirect impacts of the Sequim Food Bank

Impact	Indirect Employment	Indirect Labor Income	Indirect Total Value Added	Indirect Output
70% Impact	0.6	\$18,500	\$32,400	\$70,600
50% Impact	0.4	\$13,200	\$23,200	\$50,400
30% Impact	0.2	\$8,000	\$13,900	\$30,200

Regarding the Port Angeles Food Bank, the indirect effect on employment, suggests 0.5 to 1.1 jobs are supported for the 30 and 70 percent impact scenarios, respectively. The dollar value of the induced labor ranges from \$15,500 to \$36,000

Table 12: Indirect impacts of the Port Angeles Food Bank

Impact	Indirect Employment	Indirect Labor Income	Indirect Total Value Added	Indirect Output
70% Impact	1.1	\$36,000	\$63,200	\$138,000
50% Impact	0.8	\$25,800	\$45,200	\$98,600
30% Impact	0.5	\$15,500	\$27,100	\$59,200

Total Impact

The total impact comes from adding the direct, induced, and indirect impacts. The total employment impact of the Sequim food bank would be somewhere between 1.9 and 4.5 with the total labor income being between \$60,500 and \$141,200 for the 30 and 70 percent scenarios.

Table 13: Total impacts of the Sequim Food Bank

Impact	Total Employment	Total Labor Income	Total Value Added	Total Output
70% Impact	4.5	\$141,200	\$242,900	\$469,900
50% Impact	3.2	\$100,800	\$173,500	\$335,600
30% Impact	1.9	\$60,500	\$104,100	\$201,400

The total employment of the Port Angeles food bank to be between 3.8 and 8.9 from the 30 and 70 percent impact scenarios. The total value added by the Port Angeles food bank falls somewhere between \$203,000 and \$473,600.

Table 14: Total impacts of the Port Angeles Food Bank

Impact	Total Employment	Total Labor Income	Total Value Added	Total Output
70% Impact	8.9	\$275,300	\$473,600	\$918,200
50% Impact	6.4	\$196,600	\$338,300	\$655,900
30% Impact	3.8	\$118,000	\$203,000	\$393,500

Combined Impact

Both the Sequim Food Bank and the Port Angeles Food Bank operate simultaneously. This means that the community feels the impact of both food banks rather than just one. Therefore, it makes sense to look at the combined impact of the two food banks. To determine the total impact that both food banks have on the community, we combined their impacts. As each activity in IMPLAN is considered separately, this is as simple as adding the impacts (direct, indirect, induced).

The combined total direct value-added of both food banks is between \$226,000 and \$527,400. The direct labor income is estimated to be between \$136,500 and \$318,500, or 4.5 to 10.4 jobs supported.

Table 15: Combined Direct Impact of Sequim Food Bank and Port Angeles Food Bank

Impact	Direct Employment	Direct Labor Income	Total Direct Value Added	Direct Output
70% Impact	10.4	\$318,500	\$527,400	\$1,012,600
50% Impact	7.4	\$227,500	\$376,700	\$723,300
30% Impact	4.5	\$136,500	\$226,000	\$434,000

The combined total induced value-added of both food banks is estimated to be between \$40,100 and \$93,500. The total induced labor income falls between \$40,100 and \$93,500, which represents 0.6 to 1.4 jobs supported.

Table 16: Combined Induced Impact of Sequim Food Bank and Port Angeles Food Bank

Impact	Induced Employment	Induced Labor Income	Total Induced Value Added	Induced Output
70% Impact	1.4	\$43,400	\$93,500	\$166,900
50% Impact	1.0	\$31,000	\$66,800	\$119,200
30% Impact	0.6	\$18,600	\$40,100	\$71,500

The combined indirect output of both food banks ranges from \$89,400 and \$208,700. The combined total indirect value-added is lower but ranges from \$41,000 and \$95,700. The indirect labor income from both food banks is between \$23,400 and \$54,500, or 0.7 to 1.7 jobs.

Table 17: Combined Indirect Impact of Sequim Food Bank and Port Angeles Food Bank

Impact	Indirect Employment	Indirect Labor Income	Total Indirect Value Added	Indirect Output
70% Impact	1.7	\$54,500	\$95,700	\$208,700
50% Impact	1.2	\$39,000	\$68,300	\$149,000
30% Impact	0.7	\$23,400	\$41,000	\$89,400

Conclusion

Based on the data collected by the two Food banks, the Sequim Food Bank had an average weekly distribution of \$65 per family or \$1,570 per year. The Port Angeles Food Bank an average weekly distribution of \$86 per family, or \$2,064 per year. It is unlikely that households would spend the total value saved by receiving food from the food bank, so it was necessary to do three different impact scenarios where households spent 70 percent, 50 percent, and 30 percent of the value of the food received from the food bank.

Both food banks provide food for households who are unable to purchase or obtain food and provides a vital service to the community that they serve. The food distributed by the Sequim Food Bank adds a total of \$104,100 to \$242,900 to surrounding communities. The Port Angeles Food Bank adds a total of \$203,000 to \$473,600.

Appendix A

Local Purchase Percentages

Local purchase percentages (LLP) represent the amount of the direct effect that will be applied to the multipliers. Therefore, the LLP is applied before indirect and induced impacts are calculated.

- An LLP of 100 percent represents that all industry sales are occurring within the region of interest
- Considerations of where employees live and shop should be taken into account.

Given the increasingly globalized world, we live in it does not make sense to assume that 100 percent of either food bank's impacts stay within Clallam County. However, doing an analysis using a 100 percent LLP is useful for setting an upper limit on the food bank's impact. Again, it is unlikely that 100 percent of the impact will stay in Clallam County.

100 Percent LLP Analysis of Direct Impacts

Using 100 percent LLP, the total direct value-added of the Sequim food bank is somewhere between \$130,500 and \$304,400 for the 30 and 70 percent impact scenarios, respectively. The direct effect on employment ranges from 2.5 and 5.9 again for the 30 and 70 percent impact scenarios, respectively.

Table 18: Direct impacts of the Sequim Food Bank

Impact	Direct Employment	Direct Labor	Direct Total Value Added	Direct Output
<i>70% Impact</i>	5.9	\$194,600	\$304,400	\$608,200
<i>50% Impact</i>	4.2	\$139,000	\$217,500	\$434,400
<i>30% Impact</i>	2.5	\$83,400	\$130,500	\$260,600

The 100 percent LLP total direct value-added of the Port Angeles food bank is somewhere between \$252,500 and \$589,100 for the 30 and 70 percent impact scenarios, respectively. The direct effect on employment ranges from 4.9 and 11.2 again for the 30 and 70 percent impact scenarios, respectively.

Table 19: Direct impacts of the Port Angeles Food Bank

Impact	Direct Employment	Direct Labor	Direct Total Value Added	Direct Output
<i>70% Impact</i>	11.5	\$375,700	\$589,100	\$1,181,000
<i>50% Impact</i>	8.2	\$268,300	\$420,800	\$843,500
<i>30% Impact</i>	4.9	\$161,000	\$252,500	\$506,100

100 Percent LLP Induced Impact

As stated previously, an indirect impact is when a sector experiences growth (or contraction), it will demand more (or less) goods and services from sectors that support it, encouraging those sectors to also grow (or contract). An Induced impact is when a job is created in one sector, new income is introduced into a community in the form of wages paid to that employee. That employee takes that income and spends it on goods and services in other industries, in turn promoting growth and job creation in those industries as well.

Regarding the Sequim Food Bank, the induced effect ranges on employment ranges from 0.4 to 0.8 jobs for the 30 and 70 percent impact scenarios, respectively. The dollar value of the induced labor ranges from \$11,400 to \$26,600 for the 30 and 70 percent impact scenarios respectively.

Table 20: Induced impacts of the Sequim Food Bank

Impact	Induced Employment	Induced Labor	Induced Total Value Added	Induced Output
70% Impact	0.8	\$26,600	\$57,300	\$102,300
50% Impact	0.6	\$19,000	\$40,900	\$73,000
30% Impact	0.4	\$11,400	\$24,600	\$43,800

With regards to the Port Angeles food bank, the induced employment impact ranges from 0.7 and 1.6 jobs for the 30 and 70 percent scenarios, respectively. The total value of the induced output for the Port Angeles Food Bank is somewhere between \$84,700 and \$197,600 depending on how much of the value the food bank is giving visitors is being spent elsewhere in the economy.

Table 21: Induced impacts of the Port Angeles Food Bank

Impact	Induced Employment	Induced Labor	Induced Total Value Added	Induced Output
70% Impact	1.6	\$51,400	\$110,700	\$197,600
50% Impact	1.2	\$36,700	\$79,100	\$141,100
30% Impact	0.7	\$22,000	\$47,400	\$84,700

100 Percent LLP Indirect Impact

The indirect employment impact of Sequim Food Bank ranges from 0.4 to 1.0 for the 30 percent and 70 percent deflation, respectively. The total indirect value added by the Sequim Food Bank is somewhere between \$25,200 and \$58,700. Again, this depends on what portion of the savings from the food bank, the visitors are spending.

Table 22: Indirect impacts of the Sequim Food Bank

Impact	Indirect Employment	Indirect Labor	Indirect Total Value Added	Indirect Output
70% Impact	1.0	\$33,800	\$58,700	\$127,500
50% Impact	0.7	\$24,299	\$42,000	\$91,000
30% Impact	0.4	\$14,500	\$25,200	\$54,600

The indirect employment impact of the Port Angeles Food Bank ranges from 0.9 and 2.0 for the 30 and 70 percent scenarios, respectively. The indirect value of the labor impact due to the Port Angeles Food Bank is somewhere between \$28,100 and \$65,600.

Table 23: Indirect impacts of the Port Angeles Food Bank

Impact	Indirect Employment	Indirect Labor	Indirect Total Value Added	Indirect Output
70% Impact	2.0	\$65,600	\$113,800	\$248,000
50% Impact	1.4	\$46,800	\$81,300	\$177,100
30% Impact	0.9	\$28,100	\$48,800	\$106,300