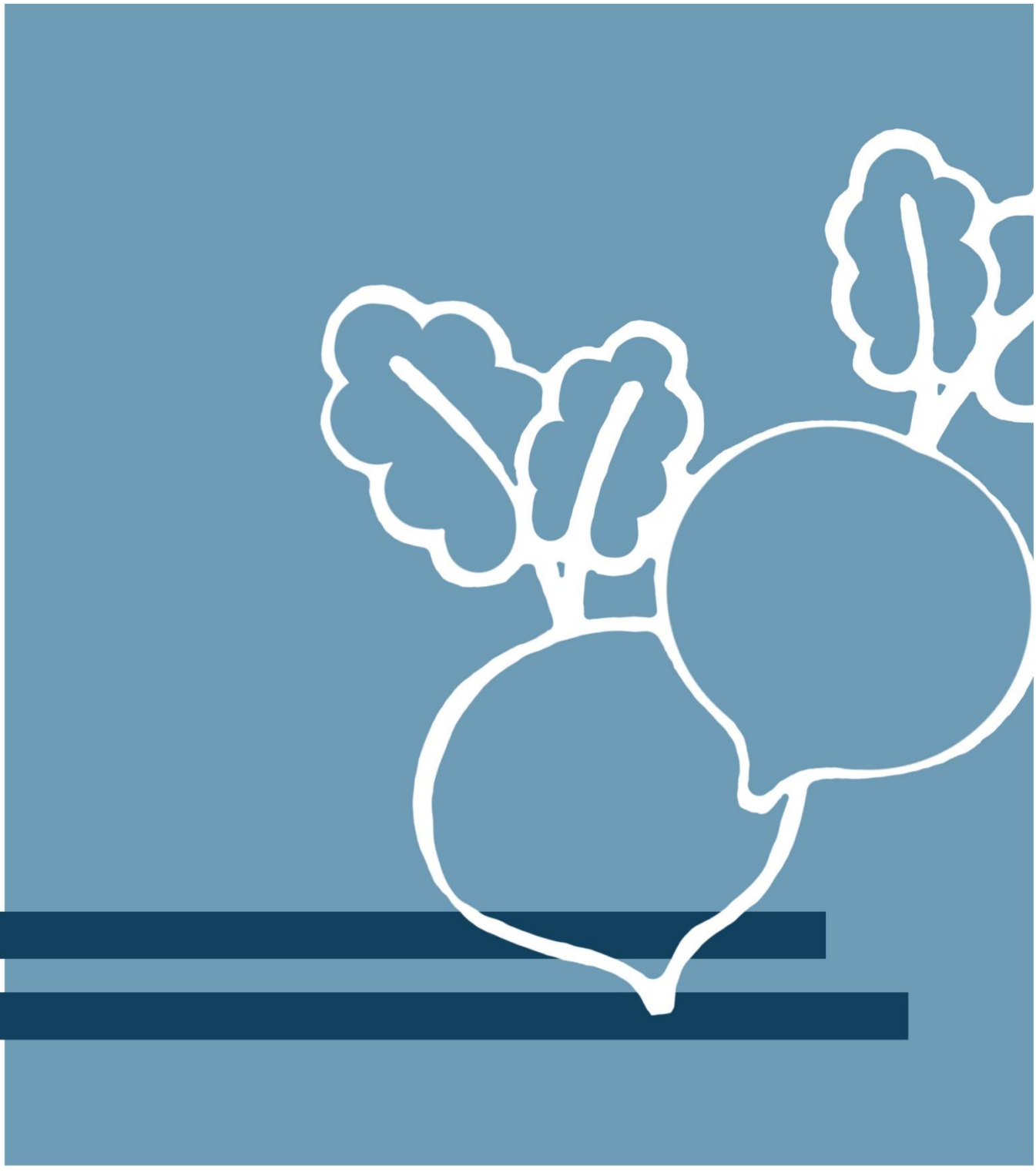
Walla Walla Valley
Food Hub Feasibility Study



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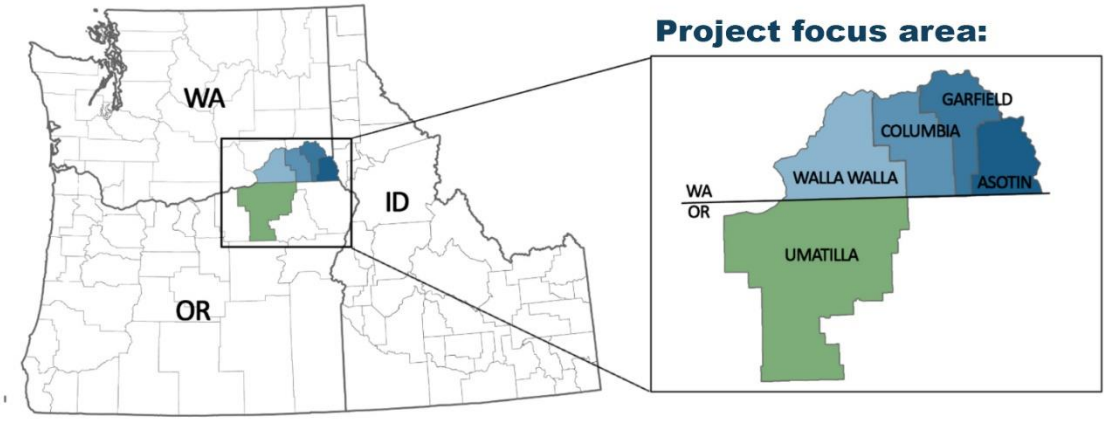
Project purpose: To evaluate options for developing food hub services that best fit the BMAC Food Bank's needs and that are compatible with its operations.



Results integrate new and available data from multiple sources, such as:

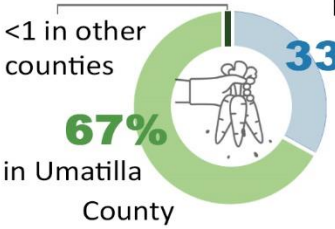
- Interviews with producers, grocers, distributers, food hubs, institutions,and other key informants
- Ag Census, US Census, other secondary data sources
- Survey of WWVFSC members
- Survey of suppliers
- Survey of grocery and institutional buyers
- Participant observation

Production Assessment

The Walla Walla Valley's capacity to produce high-quality vegetables, fruits, and associated value-added products is **well beyond** that needed for **many more business ventures of this scale.**

There's **a lot of agricultural land** in the five-county area. In 2017, there were:

62,743 acres of vegetables harvested



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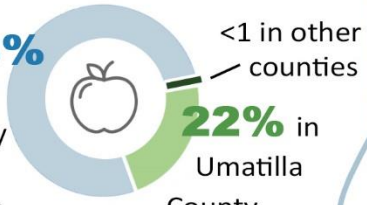
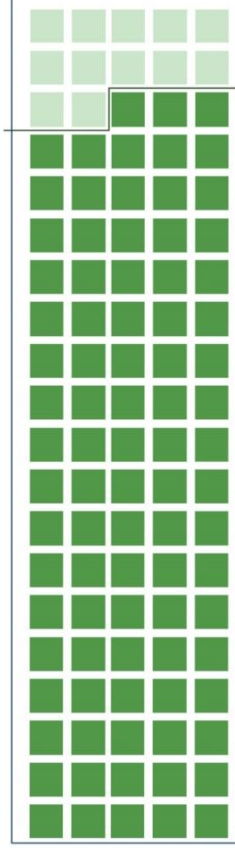
19,633 acres in orchards.



Together, supplier survey respondents represented **25,573** acres of farmland, **58%** grow vegetables and **52%** grow fruit (n=46).

There were **1,725** farms with **50 acres or less** within the five-county area in 2017.



88% are in Umatilla and Walla Walla counties.

Supplier survey respondents farmed from **2 acres to 10,000 acres,** but **59%** represented farms with **50 acres or less** (n=42).

Irrigation provides context for concentration of small-acreage farms & crop production:

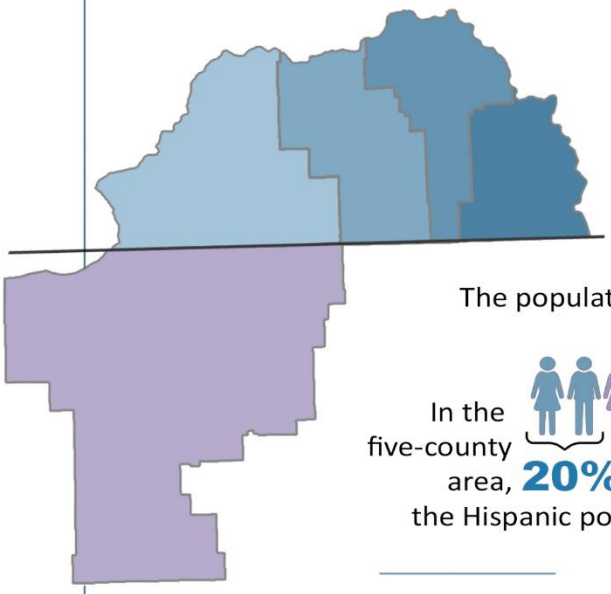
230,565 acres of crops were irrigated in 2017, **98%** in Umatilla & Walla Walla counties.

30% of current irrigation is used to produce fruits and vegetables.

Of supplier survey respondents (n=66)

The five-county area has a **great climate** to support a variety of crops and a **longer season** than many other areas in the Northwest.

Market Assessment



Many market opportunities exist to access sufficient buyers and consumers.

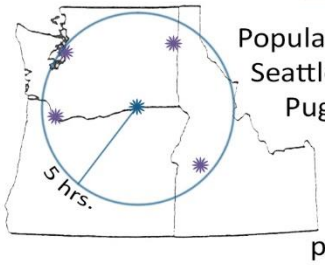
83% of the population within the five counties resides in Umatilla and Walla Walla counties.

The population in the five-county area grew **2.6%** from 2010-2018.

In the five-county area, **20%** of the population was Hispanic in 2017, and the Hispanic population grew **19%** from 2010 to 2017.

There are both high-end and limited-income consumers locally.

18% of households had incomes of $100,000 or more in 2017, but **29%** made less than $30,000.



Population centers of Seattle and the broader Puget Sound area, Portland, Boise, and Spokane are all within a 4-5-hour drive, providing access to regional markets.

13/14 buyers representing local grocery stores and institutions said they were **likely** to purchase food products from a food hub if one existed in the Walla Walla Valley.

Buyers expressed interest in a wide variety of local fresh, frozen, and other minimally processed food products.

Together, the buyers who participated in the study source **a lot** of food and represent **considerable purchasing power.**

Three product atributes that were most important for the greatest number of buyer respondents.

- **Produced in the Northwest**
- **Produced in the Walla Walla Valley**
- **In season**

Top-three challenges buyer survey respondents said complicate their ability to buy local:

- Price of products
- Lack of distribution system for local products
- Food safety concerns

Liability insurance, an easy ordering system, and delivery would increase buyer respondents' likelihood of using a food hub.

BMAC Food Bank

The BMAC Food Bank:

Has about **100** sources of food and distributes to **24** agencies in the five-county area

Annually provides
$173,575 in salaries and benefits,
$263,059 in gross regional product, and
$553,989 in sales.

Creates **6.1** jobs

Is growing **rapidly** in volume and impact

Contributes **$17,649** in taxes annually, including:
$5,420 in property taxes,
$10,092 in sales and excise taxes, and
$2,137 in other taxes.

Owns vehicles, a building, warehouse equipment, and other resources.

Needs:

- New refrigerated truck and van
- Electric forklift and palette wrapper
- More space for everything
- Separate public and warehouse space
- Cold, variable temperature, and dry storage
- Equipment for minimal processing (washing, drying, cutting, and trimming)
- Packaging (fresh, dry, and frozen foods; bottling)

The project assumes the Food Bank will expand to meet its own needs with room to grow regardless of what food hub develops.

Supplier Interests

88% of supplier survey respondents said they were **likely** to use a food hub if they had access to one in the Walla Walla Valley (n=61).

53% said Walla Walla is the most convenient location for a new food hub (n=57).

64% are interested in producing and selling processed or value-added food products in the future (n=67).

The markets supplier survey respondents currently most commonly access are:

However, many are "very interested" in increasing sales not only in these markets, but also with:

Scenario 1: Distribution

Aggregation, storage, distribution, sales, and marketing of locally produced products to local and regional markets

Strengths

- Strong synergy with the Food Bank
- Strong producer interest
- Qualifies for grants
- Local expertise available

Weaknesses

- Realistically needs $500,000 to $1 million to launch and fully scale up an operation from scratch
- Profit margins are still generally low even when successful
- No one currently committing to move forward
- Hard work to set up, make profitable, and keep profitable
- Can take 7-10 years to become profitable

Economic impacts

A distribution food hub would annually create **19** regional jobs, **$553,879** in salaries and benefits, **$1.17 million** in gross regional product, and **$1.9 million** in sales.

And annually contribute **$312,934** in taxes, including **$107,102** in property taxes, **$199,399** in sales and excise taxes, and **$6,322** in other taxes.

The breakeven point for a distribution food hub ranges from **$500,000** to **$1.2 million** in sales.

Scenario 2: Value-added processing

Value-added products—processing raw ingredients into a finished product that increases its value for local and regional markets.

Strengths

- Strong stakeholder interest and commitment—a group is already moving forward
- Highest return on investment and quickest path to breakeven
- Mutual benefit for the Food Bank
- Capital costs are relatively low and processing lines can be scaled to fit the size of farms and number of producers committed
- Compatible with farm schedule—can process value-added products in farming off season

Weaknesses

- Potentially capital intensive
- Competition with conventional products

We analyzed three example products: salsa, marinara sauce, and popsicles.

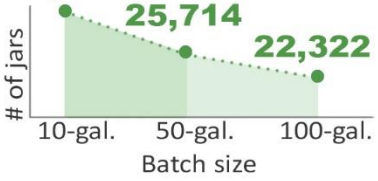
Salsa

Return on investment (ROI) increases with larger batches.

ROI by batch size:

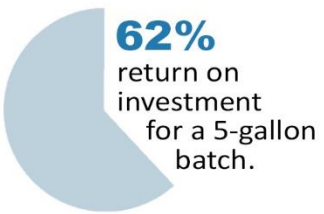
- **43%** 10-gallon batch
- **61%** 50-gallon batch
- **79%** 100-gallon batch

Breakeven point (16-ounce jars):

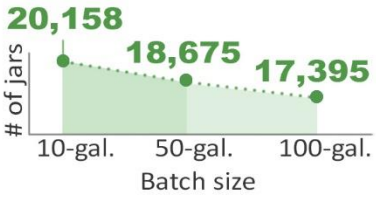


3-year payback period

Marinara

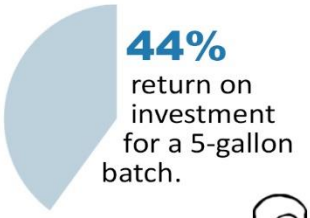


Breakeven point (12-ounce jars):

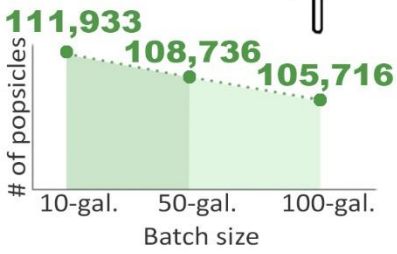


2-year payback period

Popsicles



Breakeven point:



3-year payback period

Economic impacts

Salsa and marinara sauce production had the same economic impact.

Both would annually create **12** regional jobs, **$448,479** in salaries and benefits, **$543,986** in gross regional product, and **$851,075** in sales.

And annually contribute **$31,926** in taxes, including **$9,372** in property taxes, **$17,447** in sales and excise taxes, and **$5,107** other taxes.

Popsicle production:

Would create **8** regional jobs, **$375,885** in salaries and benefits, **$528,749** in gross regional product, and **$889,001** in sales.

And annually contribute **$68,206** in taxes, including **$22,489** in property taxes, **$41,868** in sales and excise taxes, **$3,849** other taxes.

Scenario 3: Retail

Sells locally and regionally produced produce, meats, and other products to local consumers.

Requires:

5,000 - 15,000 sq. ft.
of retail floor space

To lease 10,000 sq. ft. would cost **$5,000 per month** or **$60,000 per year** at $0.50 per sq. ft.

$250,000 - $500,000
for equipment, freezer space, shelving, & other infrastructure

At least **$150,000** investment in food inventory to start

As much as **$500,000** investment in food inventory for scaled-up operation

Strengths

- Could qualify for grants
- Local expertise available
- Strong supplier interest in more retail outlets

Weaknesses

- Long lead time to make profitable
- Difficult to make profitable
- Likely incompatible with Food Bank operations
- Capital intensive
- No one currently committing to move forward
- Higher human capital required
- No suitable buildings available

Economic impacts

A retail food operation would annually create **60** regional jobs, **$1.9 million** in salaries and benefits, **$2.7 million** in gross regional product, and **$4.4 million** in sales.

And annually contribute **$535,525** in taxes, including **$179,066** in property taxes, **$333,377** in sales and excise taxes, and **$23,082** other taxes.

Scenario 4: Commercial kitchen

Provides access to equipment and resources to support business development.

Generally commercial kitchens are developed, managed, and supported by a local public agency.

A commercial kitchen's value is more as a support for food entrepreneurs than as a profit center for a food hub.

Strengths

- Leads to new food entrepreneur businesses
- Complements other food hub opportunities and operations

Weaknesses

- Not likely to be profitable
- No one in WWVFSC interested in leading the effort
- Perception it could compete with Blue Mountain Station
- Less compatible with Food Bank

Equipment costs range from **$15,000** to **$500,000**.

We estimated the cost at about **$130,000** for new equipment and facility modifications for a commercial kitchen.

Human & social capital

The **most important** enabling or limiting factor for all scenarios was the **engagement of people** with the knowledge and skills needed who are committed to making it happen.

Knowledge & skills

Most engaged participants had impressive experience and expertise sufficient to successfully launch the operations discussed.

Relationships

Those involved collectively had many relationships useful to a food hub with producers, distributors, buyers, and others important to these supply chains.

Interest & motivation

Those engaged throughout the process became most interested in value-added processing options. Motivated participants are committed and actively setting up a food hub.

More opportunity

We encountered many people who could step forward to join the effort or develop a new enterprise that complements the value-added effort and Food Bank.

Start-up plan

Producers in Walla Walla Grown are leasing space, developing recipes, and submitting grant proposals for equipment and the initial phases of development.

The plan:

- Pool resources to develop recipes and pay for initial expenses
- Write grants for start-up tasks and equipment
- Set up in leased space
- Start manufacturing and selling value-added products
- Become profitable as quickly as possible and scaleup
- Move into Food Bank building when it is ready

WWVFSC's preferred food hub organizational structure

- **For profit**
- **Triple bottom line**
- **Limited Liability Company**
- **Producer and employee partners**

Participant equity, equipment, energy, and financing

Shared use and matched resources

Grants

Revenues

Funding

$ $ $

Introduction

Overview

This feasibility study evaluates several options for creating a food hub in the Walla Walla Valley. For the purposes of this study, a food hub is a flexible concept that includes one or more functions that enable food producers and processors to reach new and more customers. Main types of services provided include aggregation, storage, processing, marketing, sales, and distribution.

This feasibility study builds on years of work by groups and individuals in the Walla Walla Valley. One outcome of the years of effort leading up to this feasibility study was the development of the Walla Walla Valley Food System Coalition (WWVFSC). The coalition includes the Blue Mountain Action Council (BMAC) Food Bank, which is currently planning to at least double its current space and add light processing activities, such as repackaging, food salvage, freezing, and packing. This facilities expansion provides an opportunity for the Food Bank to add additional space for a food hub to operate in the same building.

The purpose of this study is to evaluate options for developing food hub services compatible with the BMAC Food Bank's operations and that help it more effectively meet its mission. The new services should benefit everyone involved, including producers, consumers, employees, the Food Bank, and local communities. The project is intended to increase knowledge and support organizational development and coordination to benefit efforts in the Walla Walla Valley to expand local and regional food systems.

The project includes the following objectives:

- Objective 1: To understand the existing and potential supply for local and regional markets in the Walla Walla Valley.
- Objective 2: To identify local and regional market characteristics and opportunities.
- Objective 3: To identify and evaluate potential scenarios, configurations, capabilities, locations, and core business functions of a food hub.
- Objective 4: To identify and evaluate options and strategies for business structure, financing, organization, and development of a food hub.

Because this project was a next step in a community-based collaboration, the feasibility study became part of ongoing planning, with many of those most active in the effort joining the project steering committee. Those involved included a preponderance of small farms and supporters of local foods in the area.

Our intention is for this study to be useful to other agricultural business development activities in the Walla Walla Valley and greater Inland Northwest region. The project aimed to increase knowledge of feasible food hub options and strategies to increase access to local and regional markets. This includes developing information for planning needed to implement a successful food hub in the Walla Walla Valley that meets local needs, including those of the BMAC Food Bank.

Steering committee

This project included a steering committee made up of WWVFSC members who met regularly during the project to plan and to provide information and feedback on project activities. The WWVFSC steering committee includes:

- Emily Asmus, Welcome Table Farm
- Chandler Biggs, Hayshaker Farm
- Erendira Cruz, The Sustainable Living Center
- Jennie Dickenson, Port of Columbia/Blue Mountain Station
- Ammon Felix, Warren Orchards
- Chris Iberle, WSDA Regional Markets Program
- Jennifer Kleffner Miles Away Farm
- Shane Laib, Walla Walla Valley Food System Coalition
- Nolan Lockwood, Harvest Foods Supermarket
- Jeff Mathias, Blue Mountain Action Council (BMAC) Food Bank
- Lydia Caudill, Walla Walla Valley Food System Coalition
- Lynda Oousterhuis, Walla Walla County Conservation District
- Laura Raymond, WSDA Regional Markets Program
- Patricia Sacha, Hidden Garden Farms
- Darin Saul, Arrowleaf Consulting
- Beth Thiel, Walla Walla Valley Farm to School

Members of the WWVFSC volunteered their time by helping facilitate data collection, developing scenarios, coordinating two public events, developing communications tools such as flyers and a website, coordinating and attending meetings, developing maps, and other activities to support the project. Many people provided information and data and resources to make the project possible through conversations, meetings, interviews, and surveys.

Assessment methods

This assessment is based on existing secondary data and new primary data we collected through interviews, surveys, and participant observation in project-associated meetings, events, and activities. Specifically, data collection included the components in Figure 1. The project also included economic impact analysis that used both existing data and new data collected through project activities.

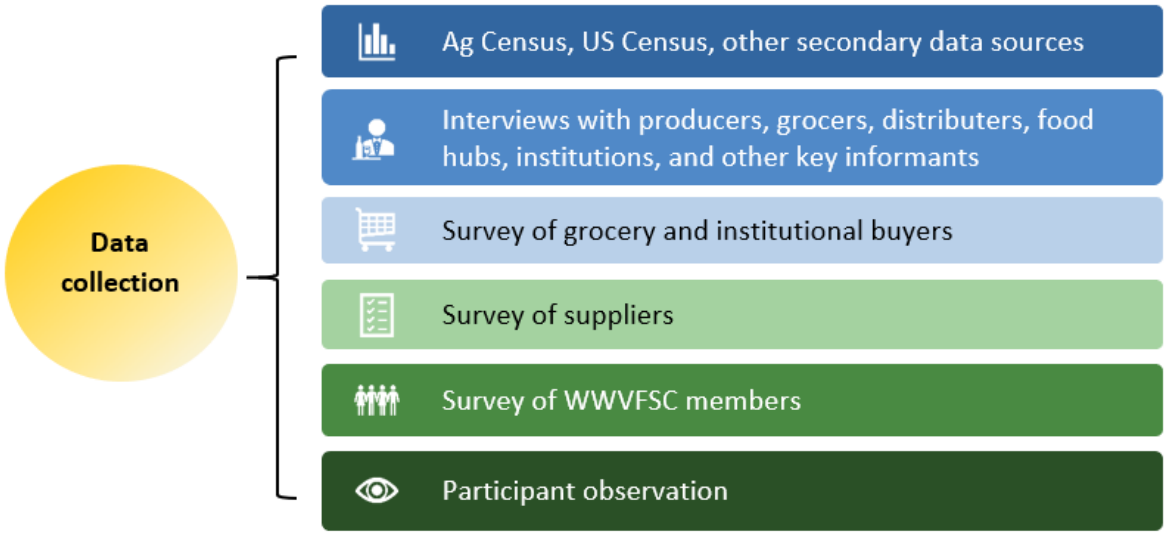


Figure 1. Assessment methods

Secondary data. We compiled and analyzed secondary data from federal, state, and nonprofit sources to characterize Walla Walla Valley's population and economic and agricultural trends. Major data sources include US Census Bureau, US Department of Agriculture, Economic Impact Analysis for Planning (IMPLaN) data, and Economic Modeling Specialists and International (EMSI) data.

Key informant interviews. From November 2018 to December 2019, we conducted 31 interviews with producers, distributors, food hubs, retailers, institutions, and other key informants involved with local and regional food supply chains in the Walla Walla Valley and throughout the Inland Northwest. Interviews were semi-structured with open-ended questions to gather information used in multiple parts of this study. Interviewed buyers include institutions, grocery stores, and regional food distributors. Restaurants were specifically excluded by the steering committee and WWVFSC to not disrupt and compete with established relationships.

Supplier survey. In November 2018 to February 2019, we conducted a web-based survey of potential food hub suppliers (i.e., farmers, ranchers, and value-added and processed food business owners) to identify their priorities, needs, and interests in participating. The survey gathered information on business characteristics, current markets and interest in expanding into new markets, level of interest in using select food hub services, and likelihood and conditions of participation. Members of the WWVFSC emailed an invitation to participate along with the survey link to their respective mailing lists. Participation in the supplier survey was also encouraged at the Food Producers' Workshop held February 12, 2019. A total of 67 potential food hub suppliers responded with useable data.

Survey of institutions and grocery stores. From April to November 2019, we conducted a web-based survey of potential food buyers representing institutions and grocery stores located within the Walla Walla Valley who currently buy or potentially could buy fresh food products, value-added/processed food products, or both from farms located in the Walla Walla Valley. The aim of the survey was to identify buyers' priorities, needs, and interests in purchasing food products through a food hub. The

survey included questions to gather information on business characteristics, products currently purchased, level of interest in buying local products, products of interest, importance of select product characteristics (e.g., certified organic), and challenges to sourcing local products. Members of the WWVFSC contacted buyers directly by phone or email to invite them to participate and then emailed those who committed to take it the link to the web-based survey. A total of 10 potential food hub buyers responded.

Participant observation. This project was unique in our experience in the depth of interaction between the consulting team and the WWVFSC steering committee. Many details, interpretations, and other feedback from the steering committee and the broader WWVFSC informed the development of the scenarios and analysis over the 18-month project. The consulting team and steering committee members presented their findings on a regular basis to the steering committee and the WWVFSC. Notes, information, and observations from these interactions informed and shaped project activities and enabled this feasibility study to move from a general analysis of feasibility to fine tuning the analysis to support in-process efforts to develop a food hub.

Economic impacts methodology. We created a multi-county 2017 greater Walla Walla regional IMPLAN (IMpact analysis for PLANning) model to estimate the economic impacts of the BMAC Food Bank and three food hub scenarios (distribution food hub, value-added processing, and retail). IMPLAN is the most widely employed input-output modeling software and data package for estimating economic impacts. Outputs were adjusted for inflation to year 2020. A more detailed description of the economic impacts methods is provided in Appendix A.

Project area and broader five-county region

The project area was defined by the steering committee to include Clarkston, WA, to the east (a market of interest to some and less than an hour from Blue Mountain Station in Dayton, WA); Hermiston, OR, to the west, and all of Umatilla County that falls within the Walla Walla Valley to the south (Figure 2).

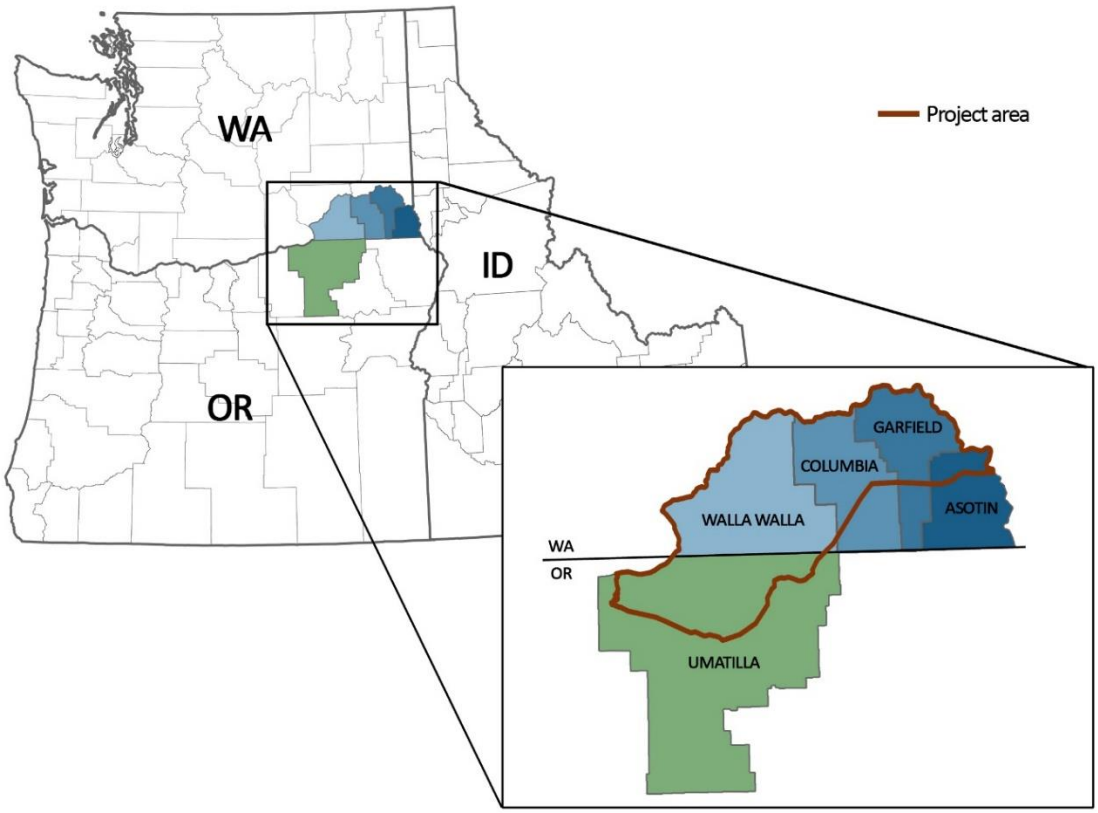


Figure 2. Project area map

The Snake River, which has few river crossings in this area, provides the northern boundary. While neither the existing data nor the data collected through interviews and surveys fit neatly in this area, it provided a useful frame for understanding likely producer participants and nearby markets for local foods

Production assessment

Production assessment introduction, overview, and conclusions

An overview of production provides insight into potential supply and helps determine the feasibility of strategies and scales for a food hub. In this section, we provide an overview of potential supply, drawing on Agricultural Census data for Asotin, Columbia, Garfield, Walla Walla, and Umatilla counties along with data we collected through the supplier survey and interviews with producers and other stakeholders. The Agricultural Census data provides an overview of the study area and what is theoretically possible while the survey and interview data grounds the study in actual potential suppliers' characteristics and stated interests.

A more detailed profile of the study area production characteristics based on Agricultural Census data is provided as Appendix B. The final section of Appendix B reports Agricultural Census data on the fruit and vegetable crops grown in the five-county area in each census from 1934 to 2017, providing a historical context for current production capacity, an indication of what has been grown in the past, and the consistency of production over time. In summary, the historical data presented in Appendix B shows the Walla Walla Valley region has long produced a variety of fruit and vegetable products.

Overall, the data show the Walla Walla Valley has a diverse farming sector that includes farms of all sizes that grow a wide diversity of commodity and specialty crops and has significant portions of irrigated land. While potentially farms located in all five counties (and the greater region) could supply a food hub, fruit and vegetable production is currently concentrated in Walla Walla and Umatilla counties where irrigation water is most available. Small-acreage farms (i.e., those of less than 50 acres) are also concentrated in these two counties, especially Umatilla County.

The climate varies within the study area between elevations close to the Snake and Columbia rivers at a few hundred feet elevation to the foothills of the Blue Mountains closer to 2,000 ft above sea level. This diversity means the area is perfect for growing a wide variety of crops over a longer growing season than much of the Northwest: from perfect cantaloupe-growing conditions in one area to the cool nights and elevations needed for high-quality varietal fruit in others.

The Walla Walla Valley region's overall capacity to produce high-quality vegetables and fruits and associated value-added products is well beyond that needed for many more business ventures of the scale this feasibility study evaluates. For example, only a very small portion of the fruit grown in the Walla Walla Valley would be needed to supply any particular food hub product. This section also suggests many food hub configurations could be feasible based on the production capacity and interest of potential suppliers who participated in the survey.

Irrigation

We begin this production assessment section with an overview of irrigation capacity in the five-county area because irrigation provides important context that helps explain the location of farms and crops.

According to the Agricultural Census data, in 2017, 1,668 farms (50% of all farms) in the five-county area had irrigation for a total of 214,082 irrigated acres. More of this could be converted if vegetable or fruit production became a better option. Irrigation water availability is concentrated in Walla Walla and

Umatilla counties where farms have access to Walla Walla River resources. Asotin, Columbia, and Garfield counties have very little irrigated farmland in comparison, except along some of the creeks and rivers (for more information, see Appendix B).

Figure 3 is one of the most important maps in this assessment. It gives a sense of how ubiquitous water is in Walla Walla County but not the rest of the Washington part of the study area. Umatilla County is even more densely populated with small- and mid-acreage farms with water. Almost all irrigated mixed vegetable production areas are in these two counties with “hot spots” along the creeks in the rest. This is an indication of the location of likely production over the long run. If a food hub were to scale up to a model that requires large quantities of produce, the area adjacent to Milton-Freewater and Walla Walla would a good location.

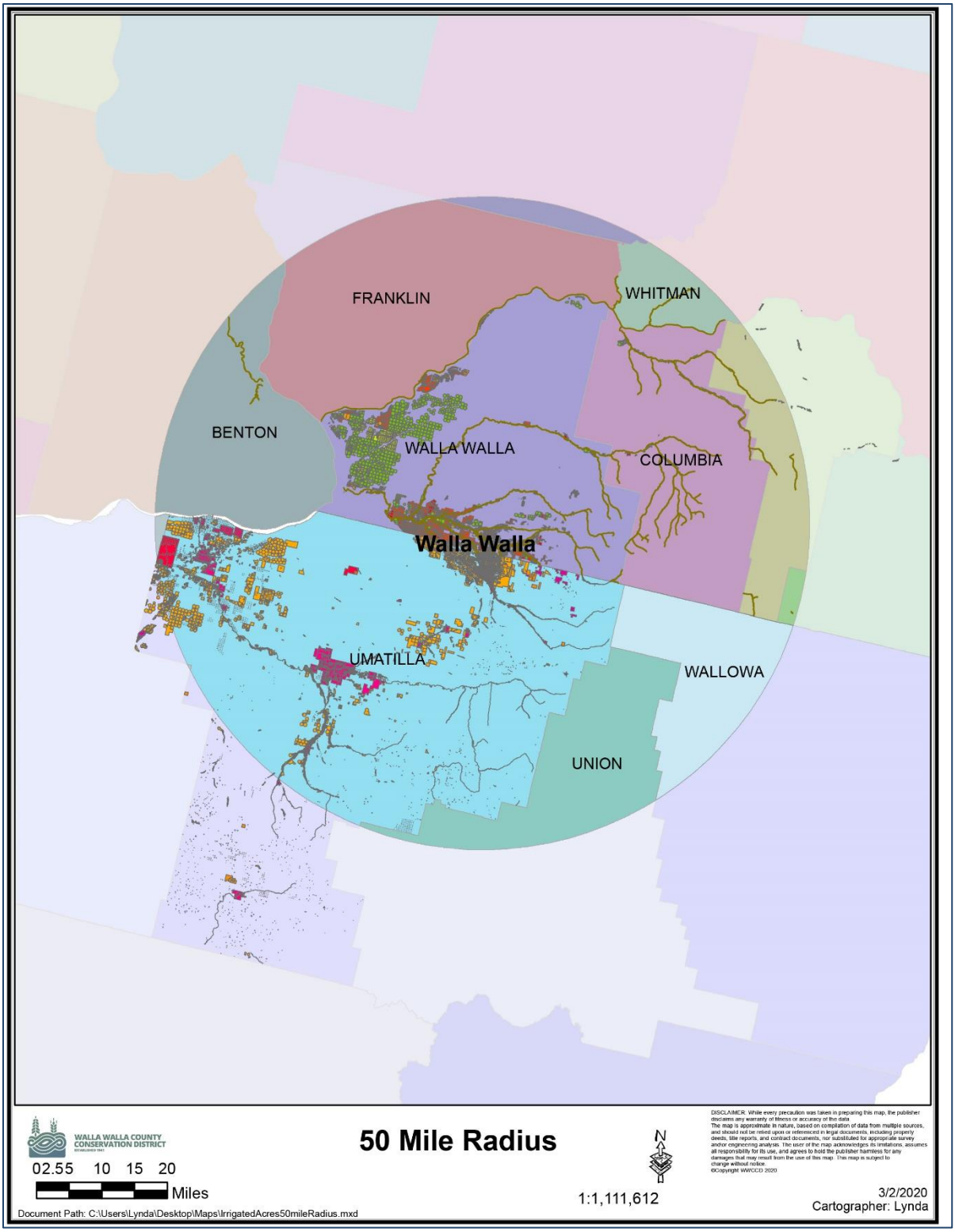


Figure 2. Irrigated land. Map shows land with irrigation with streams and rivers in the background. The 50-mile radius is centered on Walla Walla. The map is meant to convey the amount available and location of irrigated land. The colors of the irrigated parcels are not relevant to this study.

Farm locations

Table 1 shows the number of farms in the five-county region in 2007, 2012, and 2017.[i] While some fluctuation occurred across counties and census years, the overall number of farms remained relatively stable. Farms in the region are concentrated in Walla Walla and Umatilla counties where irrigation water is most available: in 2017, 52% of all farms were in Umatilla County and another 27% were in Walla Walla County.

Table 1. Number of farms, by county, 2007-2017

Region	2007	2012	2017	% change (2007-2017)
Asotin	192	185	205	6.8%
Columbia	283	308	257	-9.2%
Garfield	239	211	226	-5.4%
Walla Walla	929	943	903	-2.8%
Umatilla	1,658	1,603	1,724	4.0%
Five-county total	**3,301**	**3,250**	**3,315**	**0.4%**
Washington State	39,284	37,249	35,793	-8.9%
Oregon State	38,553	35,439	37,616	-2.4%

Figure 4 is a map showing the concentration and location of the 52 supplier survey respondents who provided their zip code. Supplier survey respondents were dispersed throughout the Walla Walla Valley and periphery; however, Asotin or Garfield counties were not represented, and supplier respondents were concentrated in Walla Walla and Columbia counties.

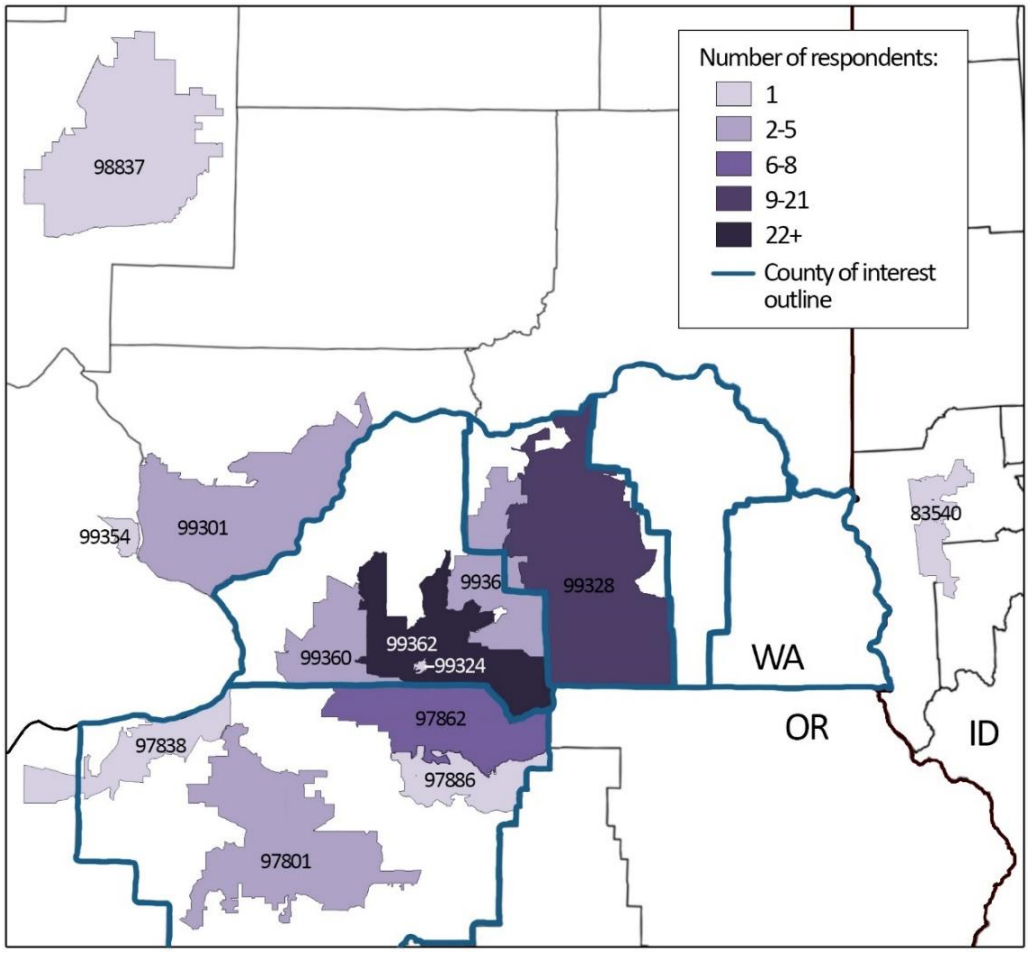


Figure 3. Number of supplier survey respondents, by zip code (n=52)

Most (45 out of 66) supplier survey respondents were farmers or ranchers (Figure 5). Much of the survey data we present in this chapter is specific to those who indicated their business includes farming/ranching; however, the other types of food business respondents are included as relevant.

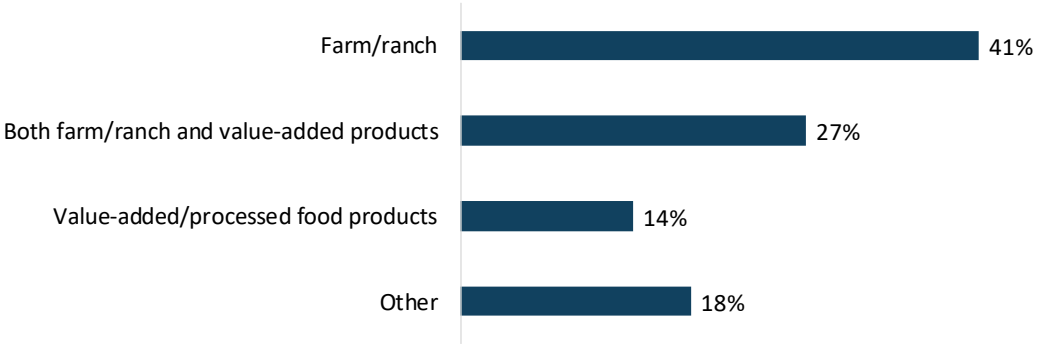


Figure 4. Supplier survey respondents' business type (n=66)

Farm size

The 2017 Agricultural Census data shows all five counties have farms that range in size from smaller than 50 acres to more than 1,000 acres (Figure 6).[ii] However, in addition to having more farms than the other counties in the study area, Walla Walla and Umatilla counties stand out as having many more farms that are smaller than 50 acres.

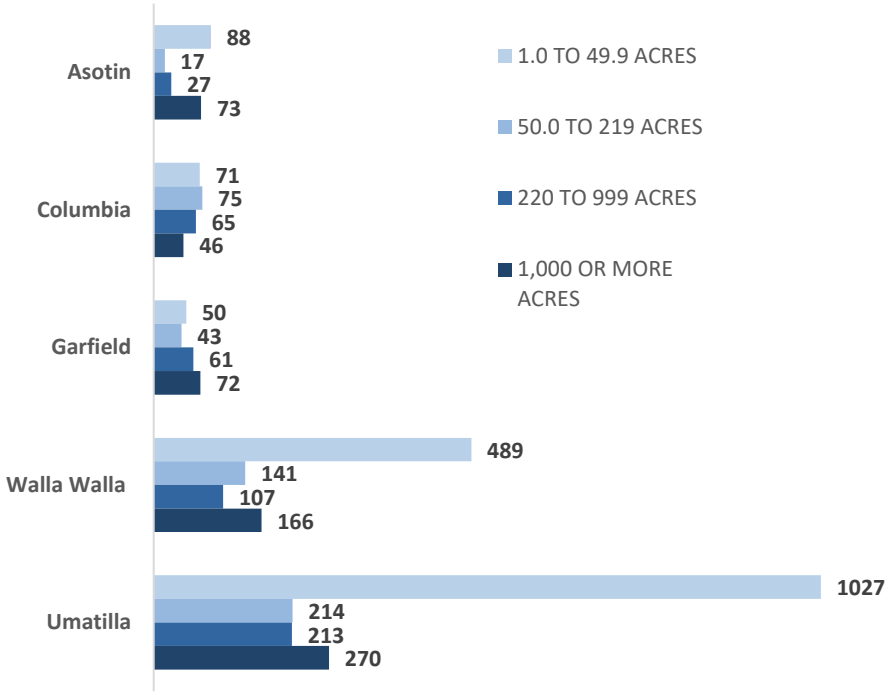


Figure 5. Total number of farms by farm size and county, 2017

Supplier survey respondents farmed an average of 652 acres. However, they ranged from farming 2 acres to 10,000 acres and most were considerably smaller than the average: 59% of respondents represented farms with 50 acres or less (n=42). Table 2 shows the distribution of respondents across farm acreage size categories. The median[iii] farm size for supplier survey respondents was 18.5 acres and the mode[iv] was 4 acres. Together, supplier survey respondents represented approximately 25,573 acres of productive farmland.

Table 2. Supplier survey respondents' total acres farmed

Total acres	n	%
1-10 acres	16	38%
11-50 acres	9	21%
51-100 acres	3	7%
101-500 acres	7	17%
501-1,000 acres	2	5%
> 1,000	5	12%
Total	42	

In summary, the Walla Walla Valley includes a mix of small-, mid-, and large-acreage farms, with most acreage in large farms (data presented in Appendix B show the number of farms with 1,000 acres or more is decreasing, but large-acreage farms still encapsulate the greatest number of acres overall in the five-county area). At the same time, considerable diversity at all farm scales exists. Interest in a food hub has been largely from small- and mid-acreage diversified vegetable and/or fruit farms rather than large operators. Small-acreage farms with less than 50 acres are increasing in both number and combined acreage across the study area. The exception is in Columbia County where, although the total acreage of farms in this size category increased, the total number of farms decreased, suggesting some consolidation of farms has occurred (Appendix B).

Since most producers that participate in food hubs represent small-acreage farms, the large and growing number of small-acreage farms and their combined acreage provides a considerable pool of potential producers from which to recruit participants for a food hub.

Business annual sales

In addition to acreage, we asked supplier survey respondents to report their annual sales to get an idea of the scale of businesses interested or potentially available to participate in a food hub venture as well as the capital they may represent. Many supplier respondents (39%) represented small businesses with annual sales less than $10,000 in 2017, although another 32% represented businesses with annual sales between $50,000 and $249,999 (Figure 7).

Figure 8 shows supplier survey respondents' annual sales in 2017 by business type. Respondents in each business type fell into a range of annual sales categories except for those who indicated they had an "other"-type business, all of whom fell into the less than $10,000 annual sales category.

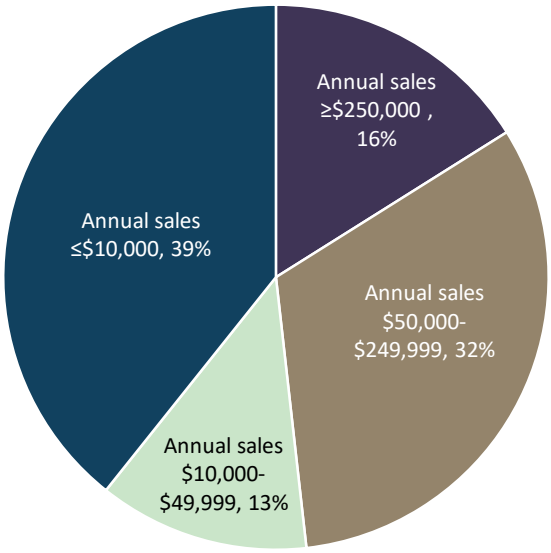


Figure 6. Supplier survey respondents' annual sales, 2017 (n=56)

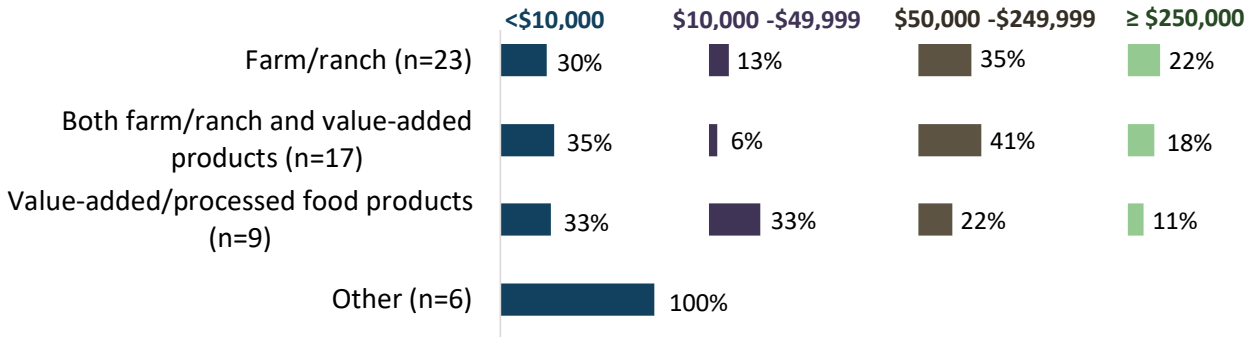


Figure 8. Supplier survey respondents' business annual sales by business type (n=55)

Types of products grown

The Agricultural Census data shows the study area produces an impressive diversity of fruits and vegetables, both historically and currently (for more detail than summarized in the following section, see Appendix B).

Collectively, supplier survey respondents have approximately 335 acres dedicated to growing fruit, approximately 1,113 acres dedicated to growing vegetables, and 4,030 acres in pastureland or rangeland dedicated to raising animals. Figure 9 shows the percentages of supplier survey respondents who produce select types of food products for sale: more than half said they produce vegetables (i.e., row crops), fruits (e.g., berries and tree fruits), or both and more than a third produce field crops (e.g., wheat, barley, dry peas, dry lentils, hops). No respondents said they produce fish for sale and only 2% sell dairy products. Most respondents produce food products in multiple categories.

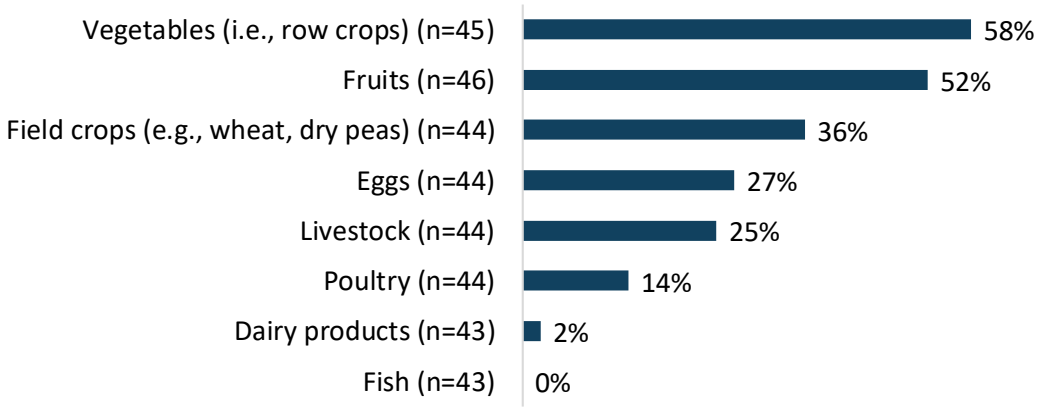


Figure 7. Percentage of supplier survey respondents who produce select types of food products for sale

Vegetables

According to the Agricultural Census, in 2017 there were 157 farms producing vegetables in the five-county area, 60% of which were in Umatilla County and 33% were in Walla Walla County.[v] Table 3 reports the total number of acres of vegetables harvested in the region (only four counties are represented in the table because no vegetable production data was reported for Garfield County in the 2017 Agricultural Census). Most of the vegetables harvested were processed into value-added products rather than directed to fresh markets.

Table 3. Total acreage of vegetables harvested, 2017

	Asotin	Columbia	Walla Walla	Umatilla
Total	**14**	**4**	**20,456**	**42,269**
For fresh market	14	3	2,323	6,995
For processing	0	1	18,133	35,274

Table 4 shows the top-five crops in terms of the total number of acres harvested in the five-county area in 2017.[vi]

Table 4. Top-five vegetables grown in the five-county area based on the number of acres harvested, 2017

Top 5	Crop	Total Acres Harvested
1	Potatoes	20,652
2	Green Peas	18,853
3	Sweet Corn	10,302
4	Dry Onions	4,043
5	Carrots	1,011

The Agricultural Census data suggest farms producing vegetables may have consolidated in recent decades: the total number of vegetable farms decreased between 2002 and 2017 while total acreage in vegetable production increased 44.3% to 62,743 acres. This amounts to 29% of irrigated land in the study area. This trend could also suggest farms are changing from other types of crops to vegetables due to market opportunities or other factors. Unsurprisingly based on irrigation capacity and concentrated farm locations, the vast majority of acres in vegetable production were in Umatilla and Walla Walla counties. In 2017, 85% of farms producing vegetables in the study area had irrigation. The number of acres irrigating vegetables in the five-county area has more than doubled over the last 15 years (108% increase).

Table 5. Supplier survey respondents' acres of vegetables farmed, by acre

Vegetable acres	n	%
0.1-10 acres	19	73%
11-50 acres	3	12%
51-100 acres	1	4%
101-500 acres	3	12%
501-1,000 acres	0	0%
> 1,000	0	0%
Total	26	

Most supplier survey respondents who grow vegetables represented small-acreage operations. Supplier survey respondents had an average of 43 acres dedicated to vegetable production (median = 3 acres, mode = 0.5 acres, range = 0.1-500 acres). Of the 26 respondents who indicated they have land dedicated to growing vegetables, 73% had 10 acres or less dedicated to vegetables (Table 5).

Fruit and nuts

Table 6 reports the number of operations, number of acres, and number of irrigated acres (as available) for orchards, tree nuts, and berries in the five-county area in 2017.[vii] This Agricultural Census data show most fruit and nut production is concentrated in Umatilla and Walla Walla counties, and nearly all orchard and berry production is irrigated.

Table 6. Number of farms, total acres, and irrigated acres in orchards, tree nuts, and berries in the five-county area, 2017

	Asotin	Columbia	Garfield	Walla Walla	Umatilla
Orchards					
Number of operations	8	6	9	103	142
Number of acres	42	182	(D)	15,405	4,228
Irrigated acres	42	182	(D)	15,205	3,677
Tree nuts					
Number of operations	0	0	2	9	7
Number of acres	0	0	(D)	4	24
Berries					
Number of operations	2	3	n/d	47	18
Number of acres	(D)	(D)	n/d	240	112
Irrigated acres	(D)	(D)	n/d	240	112

Table 7 shows the number of farms producing specific types of fruits and nuts in each census year since 2002.[viii] Fluctuation occurred in the number of farms growing some of these products across years. Notably, the number of farms growing apples decreased while the number growing grapes increased overall. In 2017, the greatest number of farms were producing grapes, sweet cherries, and apples in the five-county area. While the number of farms growing apples declined from 2002 to 2017, apples are still one of the fruits with the greatest number of acres dedicated to their production (Appendix B).

Table 7. Number of farms with specific fruit and nut production in the five-county region, 2002-2017

Fruit/Nut Type	2002	2007	2012	2017
Apples	133	95	92	80
Apricots	17	12	15	28
Cherries, sweet	84	82	98	94
Cherries, tart	1	1	8	23
Grapes	94	84	119	114
Kiwifruit	0	0	0	5
Nectarines	9	8	8	9
Peaches	24	21	26	38
Pears	23	17	25	31
Plum/apricot hybrid	0	2	1	3
Plums & Prunes	28	35	32	29
Almonds	0	5	0	6
Chestnuts	0	1	1	3
Hazelnuts	1	0	1	7
Walnuts	3	8	7	7

In 2017, 70 farms grew berries on 352 acres in the five-county area. Walla Walla County had the most berry production, containing 67% of the farms growing berries and 68% of the total acres of berry cropland. Garfield County had no berry production reported in the Agricultural Census in 2017. Figure 10 shows the number of farms growing berries by berry type in 2017.[ix] The greatest number of farms grow blueberries and raspberries. Farms growing blueberries doubled in the five-county area to 42 farms

between 2012 and 2017 (Appendix B). The number of farms producing raspberries stayed constant over this time period at 35 farms.

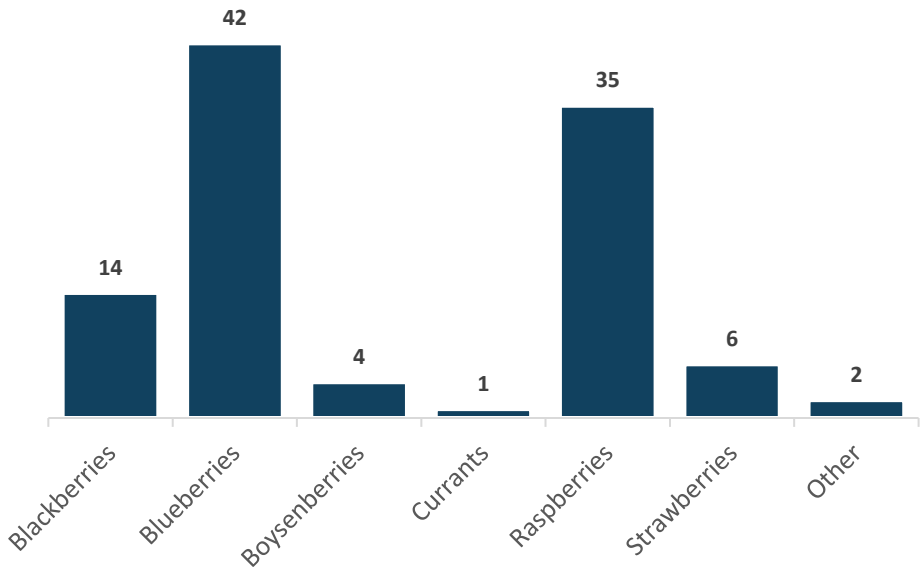


Figure 8. Number of farms growing specific berries, 2017

Supplier respondents who grow fruit had an average of 14 acres dedicated to fruit production (median = 2.5 acres, mode = 1 acre, range = 0.1-100 acres). Supplier respondents collectively had the lowest number of acres in fruit production. Of the 23 respondents who indicated they have land dedicated to growing fruit, 87% had 10 acres or less dedicated to fruit (Table 8).

Table 8. Supplier survey respondents' acres of fruit farmed

Fruit acres	n	%
0.1-10 acres	20	87%
11-50 acres	2	9%
51-100 acres	1	4%
101-500 acres	0	0%
501-1,000 acres	0	0%
> 1,000	0	0%
Total	23	

Animals and bees

The steering committee was not interested in exploring livestock or animal enterprises in this feasibility study; therefore, these were not a focus. However, we asked supplier survey respondents to report the number of acres they dedicate to animal production and some steering committee members were interested in honey, so we report relevant data for those ventures here.

Supplier survey respondents who indicated they have pastureland or rangeland had an average of 221 acres dedicated to raising animals (median = 11 acres, mode = NA[x], range = 0.25-3,000 acres). However, most of the supplier survey respondents raising animals represented small-acreage operations: of the 23 supplier survey respondents who indicated they have land dedicated to raising animals, 48% had 10 acres or less dedicated to animals and another 26% had 11 to 50 acres dedicated to raising animals (Table 9).

Table 9. Supplier survey respondents' acres dedicated to raising animals, by acre category

Pasture/range acres	n	%
0.1-10 acres	11	48%
11-50 acres	6	26%
51-100 acres	2	9%
101-500 acres	3	13%
501-1,000 acres	0	0%
> 1,000	1	4%
Total	23	

We did not directly ask supplier survey respondents if they produce honey; however, the Agricultural Census data provides insight. The number of farms in the five-county area producing honey grew 131% between 2002 and 2017, from 16 to 37 farms (Figure 11). Together, Umatilla, Garfield, and Columbia counties produced 787,902 pounds of honey in 2017, which represented $1,528,000 of honey sales. Most (92%) honey production was in Umatilla County, with 8,087 bee colonies across 19 farms.

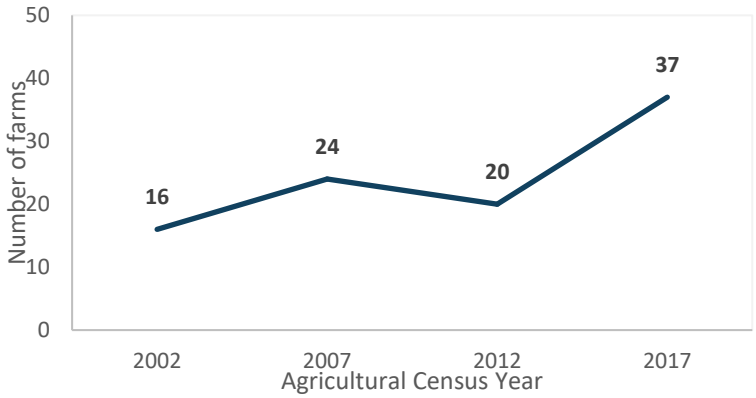


Figure 9. Number of farms with productive bee colonies[xi]

Season extension

Season extension can be an important strategy to help producers scale up production to increase available quantities of product and meet demand for a longer season or throughout the year. Use of hoop houses, green houses, and other season-extending systems is an indication of how consistent local supply to a food hub could be and, to some extent, of potential volume. Forty-five percent of farmer respondents said they currently use hoop houses, green houses, or some other strategy to extend their growing season (n=40) (Figure 12).

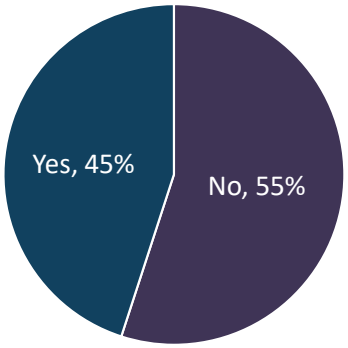


Figure 12. Percentage of farmer supplier survey respondents who currently use hoop houses, green houses, or another strategy to extend their growing season (n=40)

Market assessment

Demographic overview

Here we provide a brief description of the demographic characteristics of the population that lives within the five-county area based on US Census data. A more detailed description can be found as Appendix C. The purpose of this demographic overview is to highlight some of the characteristics and trends relevant to developing a food hub and associated enterprises.

The US Census data show **83% of the population resides in Umatilla and Walla Walla counties** where the majority of small-acreage fruit and vegetable production is happening. This co-location of markets with production can offer several advantages, including generally less distance, time, and expense required for transportation to local markets and value-added processing—potentially reducing costs and increasing product quality. While smaller, the other counties in the five-county area offer potential markets as well (Figure 13). Specifically, in 2018, the five-county area had a population of 167,354, with 77,516 people in Umatilla County and 60,922 people in Walla Walla County. Asotin County had 22,610 people, Columbia County had 4,059 people, and Garfield County had 2,247 people.

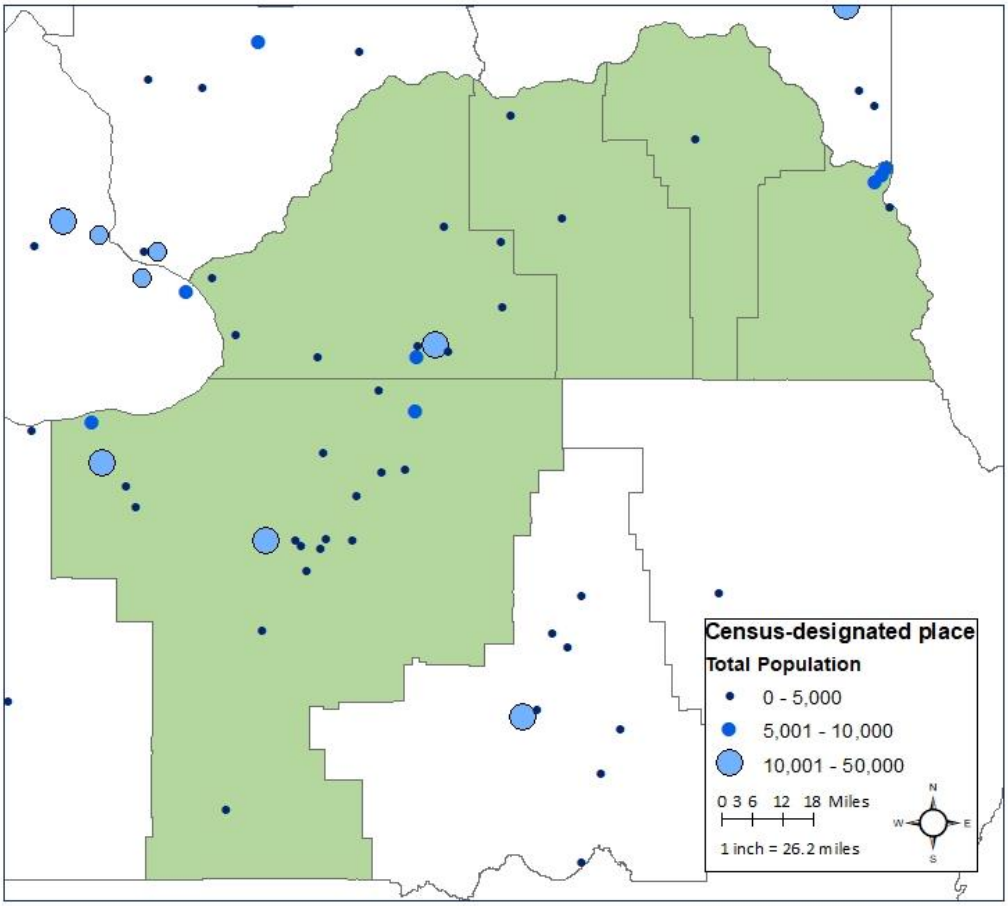


Figure 103. Population by location, 2018

Figure 14 shows that overall **the population in the five-county area is slowly growing**, especially in Asotin and Walla Walla counties. The five-county area experienced a 2.6% growth rate between 2010 and 2018. Asotin, Walla Walla, and Umatilla counties saw population growth while Columbia and Garfield counties decreased slightly. In 2019, the region's population had increased 2% since 2014, growing by 3,282, which is substantially below the regional average. Emsi expects the region to increase by only 1.7% between 2019 and 2024, (2,833 people). In contrast, Washington State has grown by 8.3% since 2014, and Idaho has increased by 9%. While population growth is slow in the five-county area, in general local markets are also likely growing and although the demand potential will ultimately be shaped by the product and services offered, Walla Walla Valley food entrepreneurs are not constrained by local markets. That is, products can be marketed beyond the five-county area.

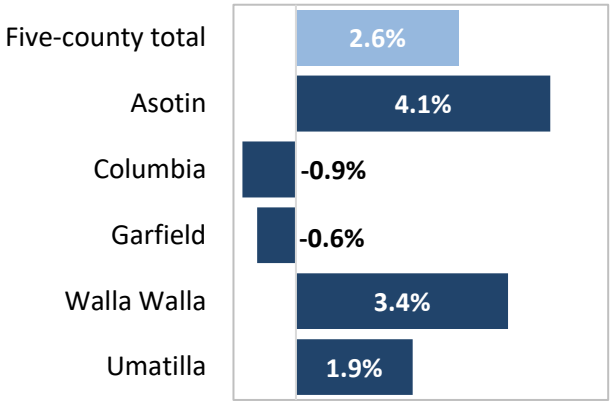


Figure 14. Change in population, 2010-2018

There is **a sizeable and growing Hispanic population in the five-county area** (20% of the population was Hispanic in 2017), with Umatilla (26%) and Walla Walla (21%) counties having the highest percentages and numbers. In fact, **Hispanic population growth accounted for most of the total population growth** observed in the five-county area from 2010 to 2017. The Hispanic population grew 19% in that period, whereas the non-Hispanic population decreased 0.1%. From 2010 to 2017, Hispanic population growth was greater than 18% in every county except Garfield County, whereas the non-Hispanic population had a maximum growth of 3.4% in Asotin County and decreased in both Columbia and Umatilla counties (see Appendix C for more information). For the purposes of a food hub, this trend suggests culturally specific food needs and local market demand that food hub enterprises could meet.

There is also **a substantial number of Spanish speakers in the five-county area**. In 2017, 22% and 16% of the population spoke Spanish at home in Umatilla and Walla Walla counties, respectively. The implications of this observation are twofold: 1) fully reaching the local Hispanic market may require advertising in Spanish and 2) including Hispanic entrepreneurs in the food hub endeavor may require outreach tailored to this demographic.

Figure 15 shows the population in the five-county area skews toward a greater proportion of middle and low-income households, although many households are in the higher income categories as well. While 18% of households had incomes of $100,000 or more in 2017, 29% made less than $30,000. Implications for food hub enterprises include that there is likely an affluent population to market higher-end products to but also many people in the local and regional market who likely do not have the income to regularly purchase higher-end food products.

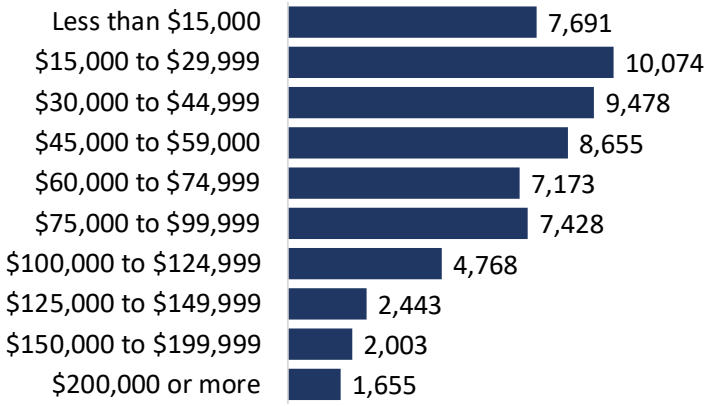


Figure 15. Number of households by income level, 2017
Source: US Census

While there is potentially a strong market for higher-end fresh and value-added products in the five-county area, **many people are also experiencing poverty and food insecurity**. Table 10 summarizes poverty and food insecurity data for the five-county area in 2017. Households with income below 185% poverty level are eligible for federal food programs: 82% of all households in the five-county area met this eligibility criteria in 2017, when just over 19,000 food-insecure people lived in the five-county area, resulting in a food insecurity rate of 11.6%. This food security data gives a sense of the scale of food insecurity in the study area and reflects the importance of the ongoing need for the food hub to not only be compatible with Food Bank operations but to be synergistic in its efforts.

Table 10. Poverty level and food insecurity characteristics, 2017

Characteristics	Asotin	Columbia	Garfield	Walla Walla	Umatilla	5-county total
Households with income below 185% poverty level	82%	84%	80%	78%	85%	82%
Food insecurity rate	12.5%	12.9%	12.8%	11.1%	11.5%	11.6%
Estimated number of food insecure individuals[xii]	2,790	520	290	6,640	8,830	19,070

Source: Feeding America, Map the Meal Gap

Regional population

As expected, the population in the region is concentrated in urban areas, specifically Seattle and the broader Puget Sound area, Portland, Boise, and Spokane. Almost all the population in the region is within a 4-5-hour drive from Walla Walla, making delivery or pick up feasible within a single day (Figures 16 and 17). At the scale of all options discussed during this project, there is virtually an infinite market in terms of accessible intermediated market buyers and consumers.

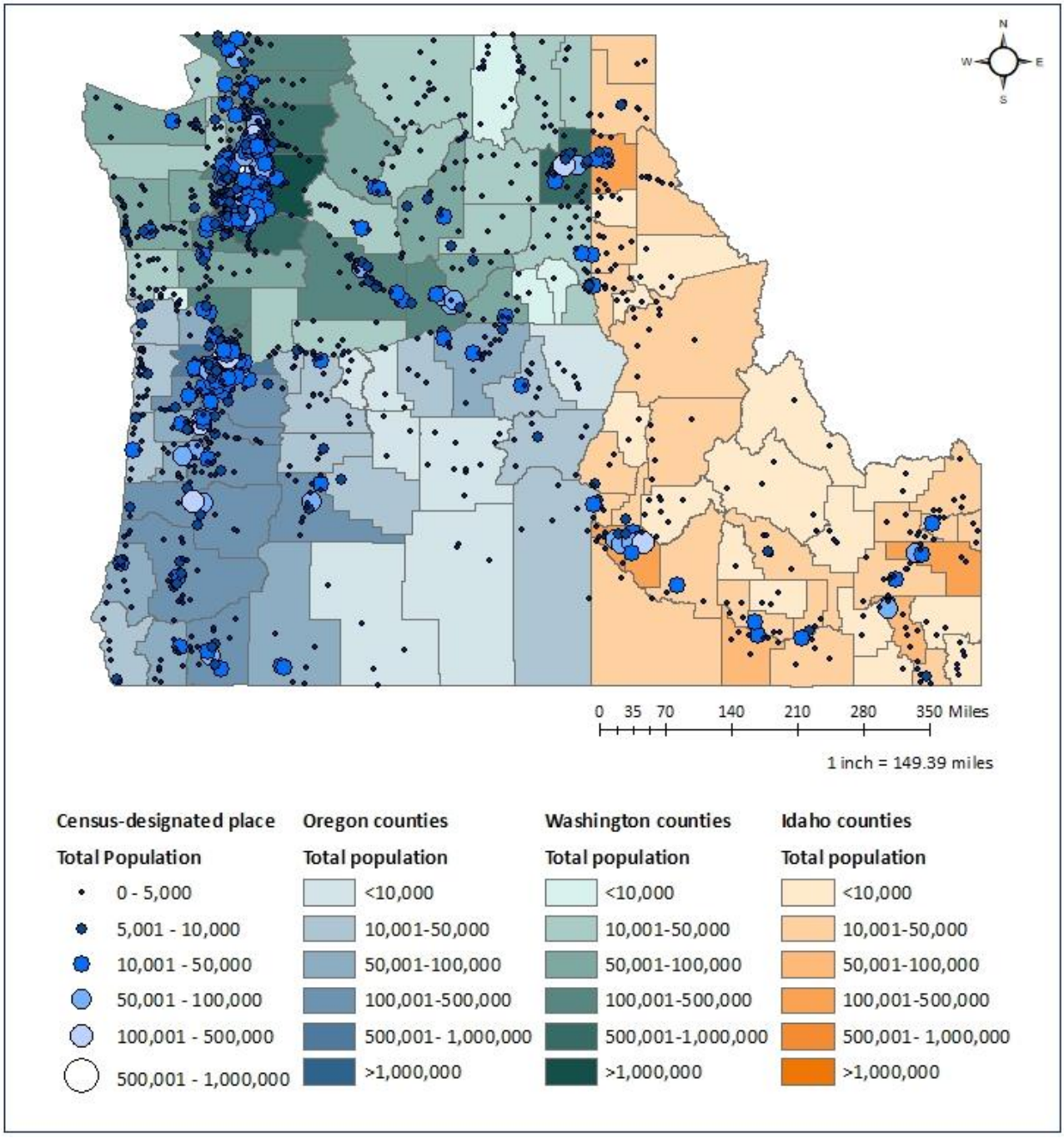


Figure 16. Regional population by county and place, 2018
Source: U.S. Census Bureau

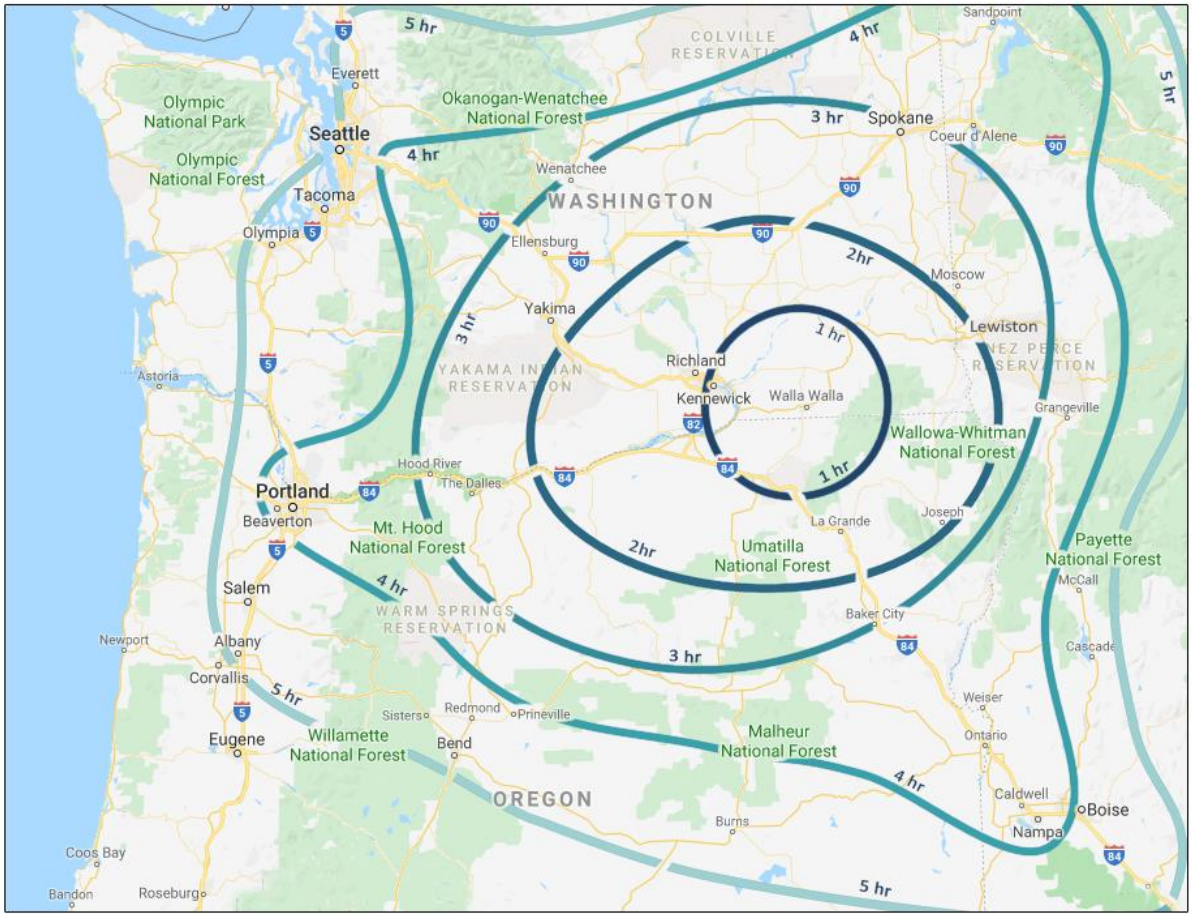


Figure 1711. Estimated drive time from Walla Walla, WA

Regional economy

Overview

This section shows the five-county area is in transition.[xiii,xiv,xv] It has robust agricultural/forestry (8,362 jobs) and agricultural processing (4,230 jobs) sectors. The greater Walla Walla Valley area has become a major wine producing region with 181 wineries (660 workers) and has a robust tourism sector as well as an emerging craft beer industry.[xvi] The five-county area has sizable healthcare and higher education sectors and a small but emerging technology sector. The region has a substantial number of both high and low-wage jobs. Poverty is a problem in the region, but the economy is gradually transitioning to higher-paying occupations.

Labor force

In 2019, the overall labor force in the five-county area was 82,791 people with 78,872 filled jobs.[xvii]

Cost of living

The five-county region's cost of living index was higher than expected at 116.6, as compared to Washington State 114.3, Oregon 114.9, Montana 102.0, and Idaho 99.4.

Gross regional product

The gross regional product was $7.15 billion with imports (i.e., out-of-region purchases) of $11.1 billion and out-of-region exports (i.e., sales) of $12.5 billion.

Industry growth

An industrial overview is presented in Table 11. The region's largest employer is federal, state, and local government at 15,529 jobs. Second is health care at 10,522 jobs. Third is agriculture (mostly production agriculture) with 8,362 jobs, fourth is manufacturing including agriculture processing with 8,099 jobs, and retail trade with 7,027 jobs. The fastest growing industry from 2014 to 2019 was arts and entertainment (28%) followed by construction (20%), accommodation and food service (12%), and manufacturing (11%).

Table 11. Industry overview of regional economy

Description	2014 jobs	2019 jobs	% change	2019 Location quotient	Earnings per worker
Government	15,500	15,529	0%	1.32	$72,588
Health Care/SA	9,753	10,522	8%	1.05	$54,421
Agriculture, Forestry, tec.	8,333	8,362	0%	9.09	$40,442
Manufacturing	7,314	8,099	11%	1.30	$61,199
Retail Trade	6,886	7,027	2%	0.90	$34,763
Accommodation/Food Services	4,759	5,341	12%	0.79	$22,036
Other Services	4,107	4,277	4%	1.15	$22,604
Educational Services	3,240	3,478	7%	1.71	$29,251
Construction	2,853	3,423	20%	0.76	$57,781
Transportation/Warehousing	3,093	3,257	5%	1.11	$65,354
Wholesale Trade	1,665	1,797	8%	0.62	$62,924
Administrative/Waste Management	2,039	1,796	-12%	0.37	$34,228
Professional, Scientific	1,560	1,574	1%	0.30	$59,189
Finance and Insurance	1,612	1,528	-5%	0.48	$67,306
Arts, Entertainment/Rec.	747	957	28%	0.69	$22,509
Real Estate	651	707	9%	0.53	$47,158
Information	641	685	7%	0.48	$64,479
Utilities	351	345	-2%	1.29	$148,119
Management	121	113	-7%	0.10	$72,639
Mining	50	46	-8%	0.14	$63,593
Total	**75,277**	**78,872**	**5%**		**$51,185**

Source: Emsi

Location quotient

The location quotient (LQ) for agriculture was 9.09, indicating it is a primary exporter and income creation force in the regional economy. If the location quotient is greater than one, then there is proportionally higher employment in that industry than the national average and can indicate an export industry, bringing new monies into the regional economy.[xviii] Other important industries with relatively

high LQs include government (1.32), educational services (1.71), utilities (1.29), manufacturing (1.30), transportation (1.11), other services (1.15), and health care (1.05).

Average compensation

Table 11 has a measure of average compensation called earnings per worker. Overall, the region had $51,185 per worker per year, which is below the regional and US averages: Washington State ($70,100), Idaho ($53,100), and the US ($60,300). The highest wage industry is utilities at $148,119 per worker, followed by management ($72,639), professional ($67,306), and mining ($63,593). The lowest wages are in accommodation and food service ($22,036), arts and recreation ($22,509), and other services ($22,604).

Unemployment rates

In December 2019, the unemployment rate for Asotin County was 3.9%, Columbia County was 5.7%, Garfield County was 6.0%, Walla Walla County was 4.8%, and Umatilla County was 3.9%. Washington State had an unemployment rate of 4.3%, Idaho was 2.9%, and the US rate was 3.4%. The overall five-county regional unemployment rate was 4.13% for 2019 (Table 12).[xix] Given the national economy is near the peak of the business cycle, overall unemployment rates are very low.

Table 12. Labor force breakdown, 2019

Characteristic	
Population	167,900
Total Working Age Population	136,344
Not in Labor Force (15+)	53,553
Labor Force	82,791
Employed	79,369
Unemployed	3,422
Under 15	31,556
Regional Unemployment Rate	4.13%

Source: Emsi

Table 13 presents unemployment rates by industry. The highest unemployment rate is in manufacturing (15%), followed by construction (13%), agriculture (12%), and health care (11%). There were 3,422 unemployed workers in October 2019. It should be noted that the highest unemployment rates are in the industries with the most jobs and relative turnover.

Table 13. Unemployment by industry

Industry	Unemployed (10/2019)	% of regional unemployment	% of national unemployment
Agriculture, Forestry, etc.	399	12%	3%
Mining	6	0%	1%
Utilities	32	1%	0%
Construction	430	13%	10%
Manufacturing	513	15%	13%
Wholesale Trade	126	4%	4%
Retail Trade	294	9%	9%
Transportation/Warehousing	150	4%	4%
Information	32	1%	3%
Finance and Insurance	58	2%	3%
Real Estate and Rental and Leasing	28	1%	2%
Professional, Scientific	76	2%	6%
Management	2	0%	1%
Administrative/Waste Management	132	4%	11%
Educational Services	227	7%	3%
Health Care and Social Assistance	370	11%	10%
Arts, Entertainment, and Recreation	42	1%	1%
Accommodation and Food Services	180	5%	6%
Other Services	133	4%	3%
Government	133	4%	2%
Other	59	2%	7%
Total	**3,422**	**100%**	**100%**

Source: Emsi

Agriculture

The regional economy has a robust and vibrant agricultural sector. Crop production alone directly employs 5,397 workers (Table 14). Overall, production agriculture employs 8,362 workers with an average total compensation package (earnings-per-worker) of $40,442. Agricultural processing employs 4,230 workers with an average compensation package of $54,119. Clearly agriculture is one of the region's most important employers.

Table 14. Production agriculture and agricultural jobs and salaries

Description	2014 Jobs	2019 Jobs	% Change	Location Quotient	Avg. Earnings
Production agriculture sub-total	**8,324**	**8,362**			**$40,442**
Crop production	5,840	5,397	-8%	14.05	$39,434
Animal production	471	602	28%	2.90	$47,928
Logging	47	60	28%	1.75	$44,109
Fishing	32	29	-9%	2.13	$65,565
Support activities for crop production	1,886	2,195	16%	9.02	$40,072
Support activities for animal production	27	25	-7%	1.16	$31,585
Support activities for forestry	22	48	118%	4.54	$59,979
Other		7			
Food processing sub-total	**3,699**	**4,230**			**$54,119**
Animal Food Manufacturing	<10	22	--	0.71	$46,576
Flour Milling and Malt Manufacturing	13	13	0%	1.37	$104,061
Chocolate and Confectionery Manufacturing	24	44	83%	2.12	$30,158
Frozen Food Manufacturing	1,021	982	-4%	22.51	$54,022
Fruit and Vegetable Canning	88	201	128%	5.07	$64,655
Animal Slaughtering and Processing	1,388	1,608	16%	6.37	$58,626
Bread and Bakery Product Manufacturing	32	106	231%	0.86	$24,237
Cookie, Cracker, and Pasta Manufacturing	46	14	-70%	0.53	$98,252
Snack Food Manufacturing	272	360	32%	12.77	$50,150
Coffee and Tea Manufacturing	<10	21	--	1.75	$63,508
Seasoning and Dressing Manufacturing	16	16	0%	0.78	$62,504
All Other Food Manufacturing	250	145	-42%	3.34	$48,918
Soft Drink and Ice Manufacturing	<10	14	--	0.29	$65,072
Breweries	27	<10	--	0.21	--
Wineries	521	660	27%	19.39	$47,624
Distilleries	0	<10	--	0.16	--
Other		24	--		
Total Ag. and Ag. Processing	**12,023**	**12,593**			

Source: BEA and Emsi

Agricultural production is nearly a $900 million-dollar regional industry. Table 15 presents the agricultural cash receipts by county. Most production agriculture is in Walla Walla County, followed by Umatilla, Columbia, Garfield, and Asotin counties.

Table 15. 2018 agricultural cash receipts, by county

County	Cash Receipts
Asotin	$ 23,397,000
Columbia	$ 47,564,000
Garfield	$ 35,723,000
Walla Walla	$ 442,831,000
Umatilla	$ 326,651,000
Total	$ 876,166,000

Source: BEA

Table 16 provides a current snapshot from the Emsi database on the top regional employers in terms of company profiles and unique job postings.

Table 16. 2019 business characteristics summary

Top Companies	Profiles
Walla Walla University	354
Whitman College	284
Walla Walla Community College	243
Providence St. Mary Medical Center	231
Wal-Mart Stores, Inc.	230
Walla Walla School District 140	206
United States Department of the Army	185
Key Technology, Inc.	158
Conagra Foods, Inc.	141
Banner Corporation	132
Top Companies Posting	**Unique Postings**
HealthCare Employment Network	826
Wal-Mart, Inc.	653
Providence Health & Services	527
Teach For America, Inc.	355
CRST International, Inc.	352
HomeAdvisor, Inc.	352
United States Department of the Army	268
Doordash	250
Army National Guard	236
Amazon.com, Inc.	220

Source: Emsi

Buyer perspectives

Buyer characteristics and contact information

We interviewed and surveyed potential buyers of food hub products to understand their interests and constraints. We interviewed 8 potential buyers, including representatives from Harvest Foods, Andy's Market, Providence St. Mary's Medical Center, Walla Walla School District, Washington State Penitentiary, Willow School, Walla Walla University, and Perione's Produce. Of those interviewed, two represented retailers, five represented institutions, and one represented a regional distribution company.

Walla Walla University (Table 17) and Providence St. Mary's Medical Center (Table 18) provide examples of the scale interviewed and surveyed institutions represent.

Of the 10 buyer survey respondents, three represented supermarket or grocery stores, two represented colleges or universities, two represented hospitals, and two represented K-12 schools (Table 19). While we cannot generalize results beyond those who participated, most of the buyer survey respondents and those interviewed represented relatively large-scale institutions and grocery stores in the area with considerable buying potential, especially collectively.

Table 18. Overview of Walla Walla University

Overview
• Vegetarian campus
• Provides meals seven days per week
• 1,000-1,400 meals per day
• 300 breakfasts, 475-500 lunches, and 475-500 dinners M-Th. Much less on weekends.
• Cater to large events (400-700 people) and other activities
• Under contract with Sodexo
• Prefer non-GMO and organically grown. They support vegan students and need vegan ingredients.

Table 17. Overview of Providence St. Mary's Medical Center

Overview
• Serves about 1,000 meals a day
• 800 transactions on normal weekday, which they count as meals
• 60-70 average patients a day with 3 meals on average
• Cancer Center averages 12 trays a day for lunch
• Meals-on-Wheels: 3 days a week, 15-17 meals
• Juvenile Justice Center: 3 meals a day for an average of 15-20 people
• Catering: hospital parties and events
• Contracted with Thomas Cuisine
• Order through US Foods, Sysco, and Charlie's Produce
• Currently sourcing as much as they can from local farms/companies

One respondent indicated they were a restaurant chef. More restaurants were not included in the buyer survey results because the steering committee thought restaurants should not be a target market for a food hub. Respondents described their position in their business or organization as chef, chef director, chief operating officer, culinary arts instructor, owner, store manager, and superintendent. Five respondents said their business or organization zip code was 99362 (Walla Walla area), one respondent said 97862 (Milton-Freewater area), and one respondent said 99328 (Dayton area).

Table 19. Types of businesses and organizations represented by buyer survey respondents

	%	n
Supermarket or grocery store	30%	3
College or university	20%	2
Hospital	20%	2
K-12 school	20%	2
Restaurant	10%	1
Total	100%	10

Eight buyer survey respondents said they are interested in the Walla Walla Valley Food System Coalition contacting them to explore opportunities to buy locally and regionally produced foods when the study is completed. Six out of eight survey respondents said they would like us to identify their business or organization in this final project report as one that expressed interest in exploring opportunities to buy locally and regionally produced food. The contact information for those buyer respondents is provided in Table 20.

Table 20. Buyer survey and interview respondents who are interested in exploring food hub opportunities and gave permission to be identified in the report

Name	Business or organization	Phone number	Email address
Duane Sorensen	K-12 food service		Duane.sorensen@compass-usa.com
Norman Shaw	Providence St. Mary's M.C. (Thomas Cuisine)	509-897-2802	norman.shaw@providence.org
Ray Nygard	Safeway	541-938-5341	s1590c90@safeway.com
Jay Entrikin	Wine Country Culinary Institute	509-540-0511	jay.entrikin@wwcc.edu
Greg Schnorr	Walla Walla Community College	509-524-5150	gregory.schnorr@wwcc.edu
Nolan Lockwood	Walla Walla's Harvest Foods	509-529-5000	NLockwood-wwhf@outlook.com

Interest in sourcing from Walla Walla Valley farms

Overall buyer survey and interview results reinforce the finding that there are considerable institutional and retail markets locally for food products sourced from Walla Walla Valley farms. Most buyer survey respondents and interviewees already source food products from Walla Walla Valley farms, especially vegetables and fruits. Figure 18 shows the percentage of buyer survey respondents who currently source select types of food products from farms located in the Walla Walla Valley. Their interest in buying locally probably at least partially explains their motivation to participate in the buyer survey. Only one institution interviewed had little hope of being able to work with a food hub: Walla Walla Penitentiary. They were interested and supportive of the effort but are very constrained by their procurement system. Even within those constraints they indicated that they were buying apples locally but thought it would be hard to expand to anything else.

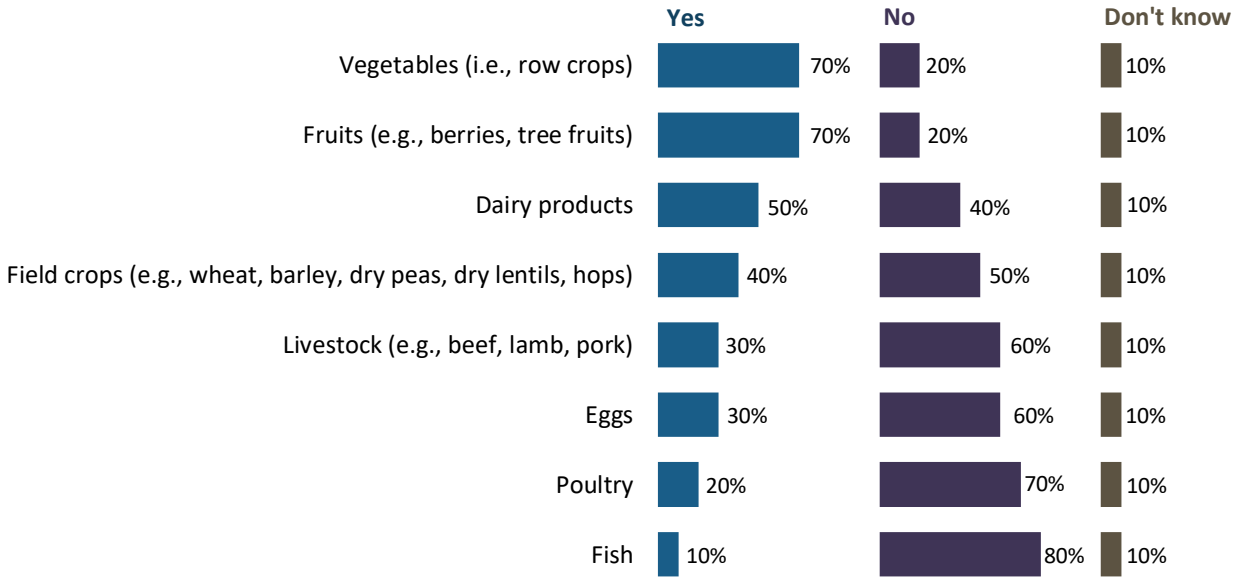


Figure 18. Percentage of buyers who currently source select food products from Walla Walla Valley farms (n=10)

Figure 19 shows the number of farms with whom buyer survey respondents said their business or organization currently has direct buying relationships. Few buyer respondents who are sourcing local food products currently get them delivered through a third-party distributor. Two out of eight buyer respondents said their business or organization purchases food products from within the Walla Walla Valley through a private or cooperative distributor while 50% said they do not (Figure 20).

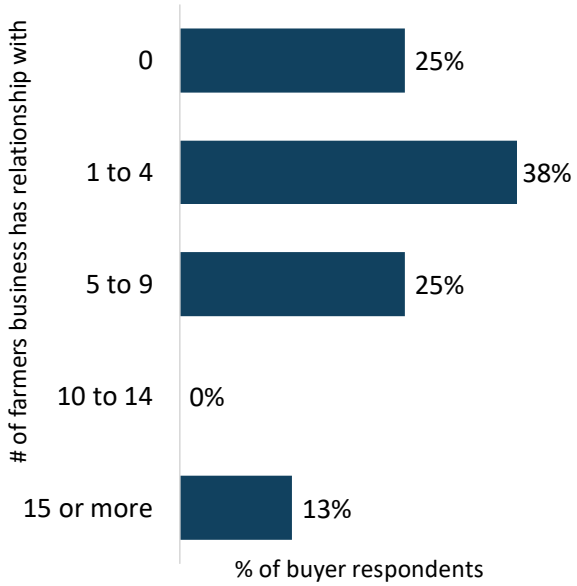


Figure 19. Number of farmers in the Walla Walla Valley that buyer survey respondents currently have direct buying relationships with, % of respondents (n=8)

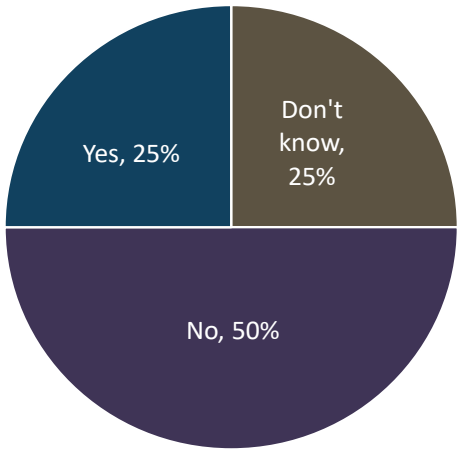


Figure 20. Percentage of buyer survey respondents who currently purchase food products from the Walla Walla Valley through a private or cooperative distributor (n=8)

Figure 21 reports buyer survey respondents' level of interest in sourcing select types of food products from farms located in the Walla Walla Valley. Comparing Figures 19 and 22, greater percentages of buyer survey respondents said they are "very interested" in sourcing all the products we asked about than are currently buying them. For example, while only 30% currently source local eggs (n=10), 71% of buyer respondents said they were "very interested" in doing so (n=7) (although eggs were also the product the highest percentage of respondents said they were "not at all interested" in sourcing from Walla Walla Valley farms). All buyer respondents indicated they were "very interested" in sourcing local fruits. That the majority of buyer survey respondents indicated they were "very interested" in sourcing all the products we asked about from within the Walla Walla Valley could indicate that those who were motivated to take the survey were those most inclined to support local and regional producers and food system development. Nonetheless, it demonstrates demand from many potentially large-scale institutional and grocery buyers located within the study area. One respondent wrote in the "other" category that they would be interested in "anything 'local'" and went on to list the examples of "wine, spirits, and miscellaneous."

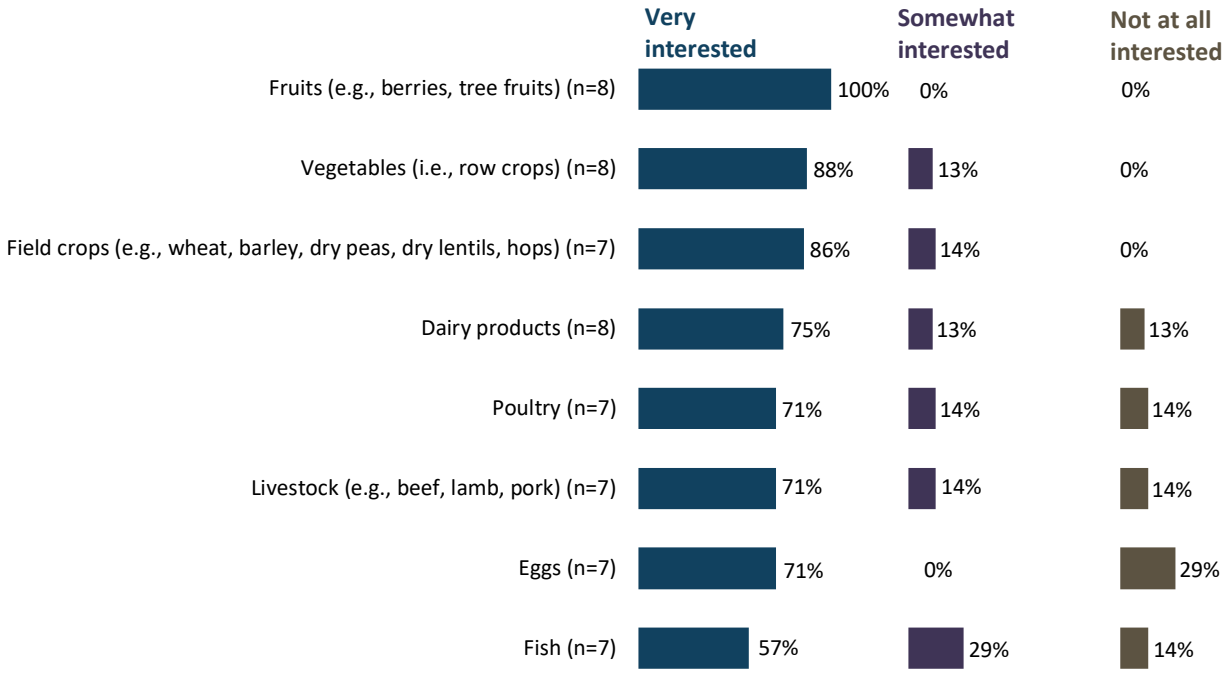


Figure 21. Extent to which buyer survey respondents' business or organization are interested in sourcing select food products from Walla Walla Valley farms

We asked buyer survey respondents to indicate if they were interested in purchasing fruits and berries, vegetables, meats, and herbs in several forms (i.e., fresh, frozen, canned, and dried). Table 21 shows the greatest number of buyer survey respondents were interested in fresh products compared to frozen, dried, or canned (with the exception of meats where slightly more were interested in frozen over fresh); however, buyers indicated some level of interest in products in all forms except for canned meats and canned herbs.

Table 21. Percentage of buyer survey respondents who said they were interested in purchasing select products from the Walla Walla Valley, by product and form (n=8)

Product	Form	Percent interested
Fruits & berries	Fresh	100%
	Frozen	50%
	Canned	38%
	Dried	63%
Vegetables	Fresh	100%
	Frozen	38%
	Canned	38%
	Dried	50%
Meats	Fresh	63%
	Frozen	75%
	Canned	0%
	Dried	38%
Herbs	Fresh	100%
	Frozen	13%
	Canned	0%
	Dried	63%

Buyer survey respondents had the opportunity to list the value-added or processed food products their business or organization is interested in sourcing from producers located in the Walla Walla Valley. Five respondents provided an answer. Common products they listed included processed meat, washed and cut produce, sauces, and flour:

- "All of the above."
- "Processed meats, flour, baked goods."
- "Washed and cut produce, processed meat, pesto, flour, bread, wine, beer, cider, soup mix, jam, sauces, yogurt, jerky, chips, cookies, breads."
- "Washed and cut produce, whole fruits and veggies, perhaps some jams, sauces."
- "Washed/cut produce, flour, bread, sauces, yogurt."

Interviewed buyers were also interested in a wide diversity of products. Items identified included vegetables, fruit, dairy and eggs, and meats, as well as minimally processed foods and value-added products. Providence St. Mary's Medical Center is an example of an institution interested in a wide diversity of products in a variety of forms, including fresh, diced, sliced, frozen, and dried (Table 22). Walla Walla University presents one of the biggest opportunities for both diversity and volume of needs. Butternut squash, garbanzo beans, salad mixes, and ready-to-cook tomatoes are examples of food products they need daily (Table 23).

Table 22. Providence St. Mary's Medical Center interest in select products

Products wanted
Unique, with color
Fresh herbs
Vinegars
Cucumbers
Tomatoes
Summer squash
Lentils
Cauliflower
Zucchini
Onions
Potatoes
Carrots (diced)
Dried fruit
Single-serve juices
Eggs

Several institutions were interested in long-term planning. Walla Walla University was interested in developing a local source, which could include contracts, for specialty vegetables, "like African vegetables that aren't normally grown around here." They were interested in participating in a pilot to see what worked. They were also interested in contracting for butternut squash, especially for supply later in the winter and spring. Butternut squash is one of their highest volume and most important ingredients that they want year-round. Diced, cubed, and frozen squash might be an ideal way to fill

out a year-round supply. Other institutions interviewed were also interested in long-term planning and contracts, especially for high-volume products.

Table 23. Walla Walla University interest in select products

Products wanted	
10 cases of salad mix twice per week	Acorn squash
Salad blends: spinach (triple washed), spring mix (triple washed; 5 big bags per day), romaine (including whole romaine heads)	Butternut squash
	Purple cabbage
	Asparagus
Kale	Peas
Collard greens	Any kind of berry and fruit (including dehydrated apples)
Tomatoes	
Grape and cherry tomatoes	Red and green grapes
Sauces without herbs	Cantaloupe, honeydew, watermelon, and other melons (daily)
Tomato paste	
Tomato sauce	Garlic (peeled)
Diced tomatoes prepped for sauces	Garbanzo beans (precooked, 10 gallons Per day)
Cucumber	
Peppers	Black beans, split peas, barley, quinoa, lentils, "we definitely like beans, any kind of beans…"
Onions	
Broccoli	
Potatoes	Cheeses (whole, shredded, and sliced)
Carrots (various sizes, colors, and types; including shredded and cubed)	Milk
	Soy Milk
Celery	Yogurt
"All the herbs"	Sour cream
Eggplant	Butter
Polenta	Cottage cheese
Soymilk, sometimes almond, and coconut milk	Cage-free eggs (liquid and shell)

Importance of specific product attributes, such as certified organic and non-GMO

We asked buyer survey respondents to indicate how important select characteristics are when they purchase food products for their business or organization (Figure 22). Regionally and locally sourced food was important to buyer respondents. The three characteristics the greatest percentages of buyers said were "very important" were 'produced within the Northwest,' 'in season,' and 'produced within the Walla Walla Valley.' No respondent said these attributes were "not at all important" to them. Thirty-eight percent of buyer survey respondents said grass fed was "not at all important" to their food purchasing decisions and 63% said grass fed is "somewhat important;" however, no one said this attribute was "very important" to them (n=8).

Also**, only one respondent out of eight (13%) said certified organic was "very important" to them compared to 63% who said it was "somewhat important" and 25% who said it was "not at all important**." While being certified organic does not appear to be very important overall, all eight buyer survey respondents said pesticide free is "very important" (38%) or "somewhat important" (63%) and only one respondent said certified naturally grown is "not at all important." Together these findings suggest that official third-party certification may not be essential, but many buyers do value the product qualities and standards the certification label captures. In other words, many buyers may rely on their personal relationship with and trust in the local farmer they are working with in lieu of third-party certification.

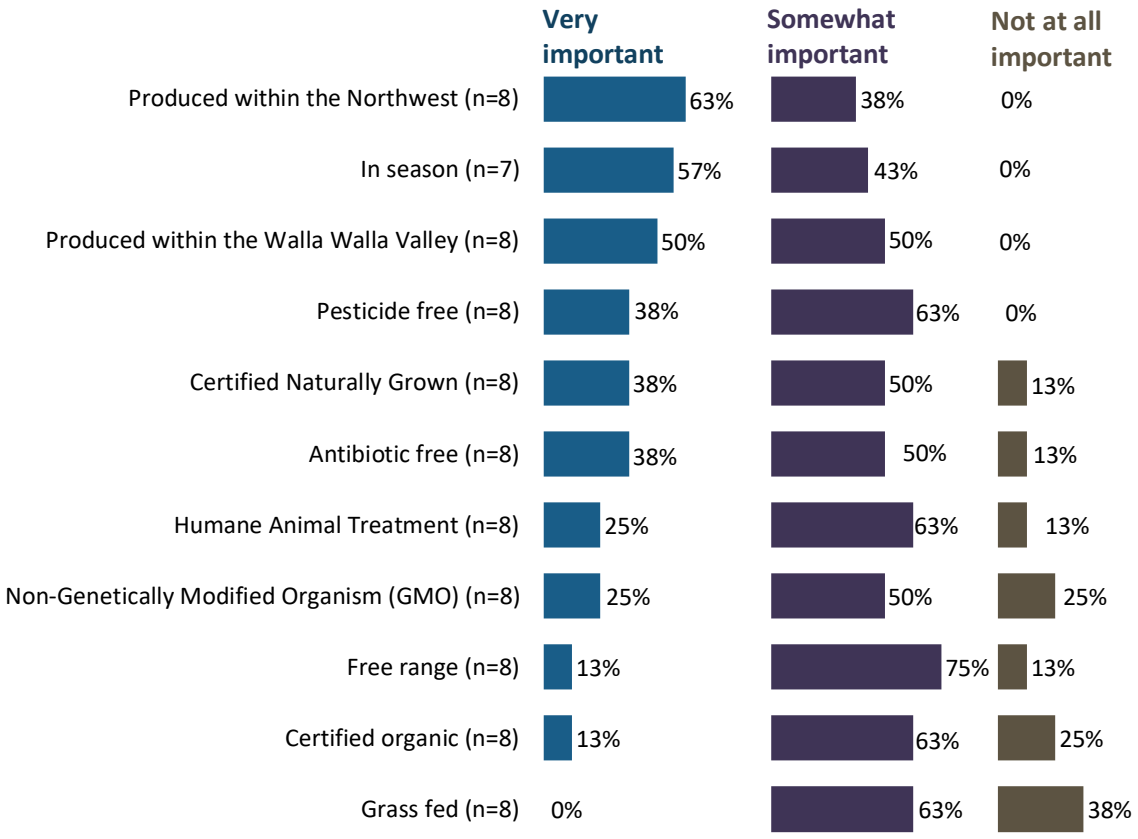


Figure 22. Level of importance of select product attributes to buyer survey respondents

Challenges to buying food products from Walla Walla Valley farms

When asked to indicate the extent to which several factors challenge the ability of their business or organization to purchase food products from the Walla Walla Valley, **price of products, lack of distribution system for local products, and concerns about food safety were the top-three factors the greatest percentages of buyers said were "significant" challenges** (Figure 23). All survey respondents identified the lack of a distribution system for local products, unavailability of specific products, and inability to access products when needed as at least "moderate" if not "significant" challenges (i.e., no buyers said these are only minor challenges or not challenges at all).

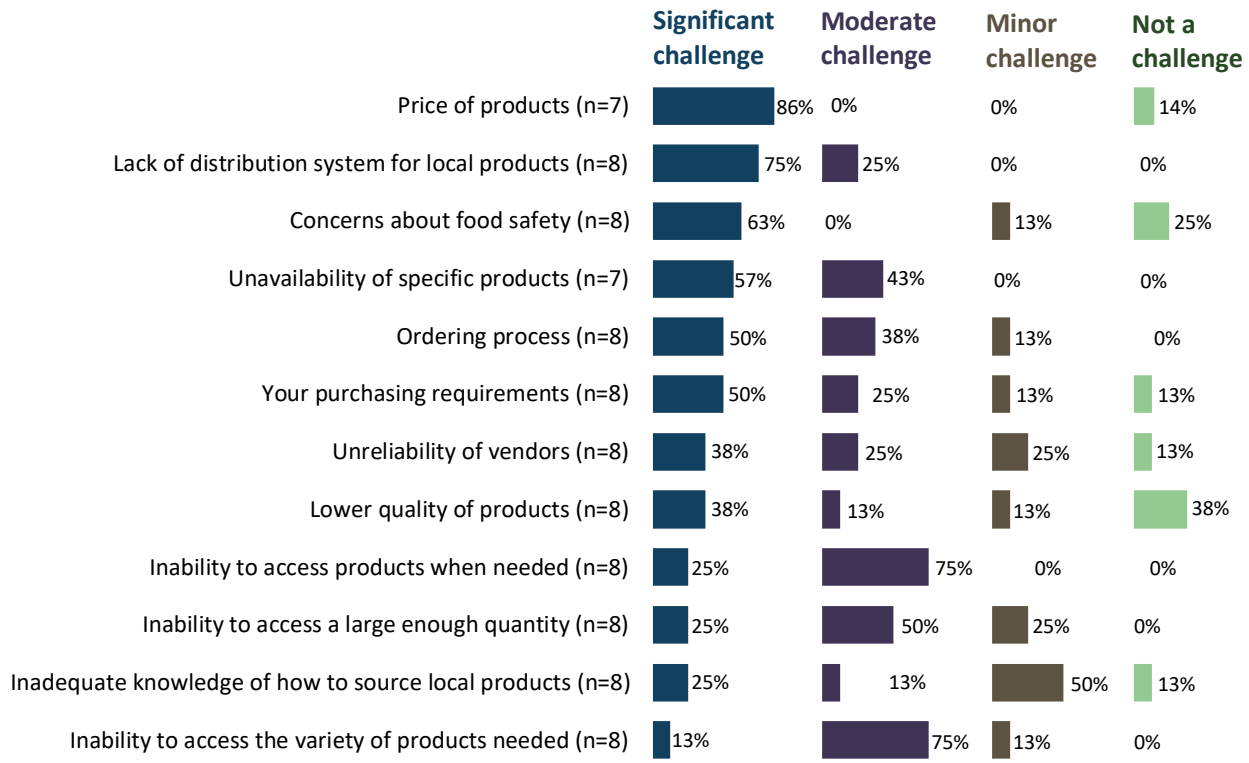


Figure 23. Extent to which buyer survey respondents experience select challenges to purchasing food products sourced from within the Walla Walla Valley

In addition, many buyers identified interest in a collective fresh sheet, which is a list of products to communicate to buyers what is available. For some institutions, like school districts, it would provide multiple bids in a single place, easing the burden of the bidding process. Another request was for long-term fresh sheets, preferably online. Many institutions plan their menus and purchasing months in advance rather than each week.

Several buyer interviewees also wanted someone to coordinate local farmers and organize the available local supply. Most buyers interviewed were interested in the role of a food hub in providing access to products from multiple farms. Several mentioned that online ordering similar to that used by conventional distributors would help integrate purchasing from a food hub with their other systems.

These current challenges identified by survey respondents suggest food hub enterprises will need to be sensitive to price constraints for many local institutional and grocery buyers. Those interviewed also identified cost as a potential constraint, although they indicated they had some flexibility and were optimistic about being able buy from a food hub. Survey respondents also suggested a need for a distribution system for local products, or that individual producers need to transport their own products to the buyer. Some food hubs (for example, Puget Sound) require participating farms to have liability insurance and licenses (e.g., Master Business License and applicable specialty licenses). Requiring licenses and individual insurance coverage (or providing group-level coverage) could help address buyers' food safety concerns thereby opening markets for food hub products and services.

Likelihood of purchasing through a food hub

Figure 24 shows that **all buyer survey respondents said they were somewhat or very likely to purchase food products from a food hub if one existed in the Walla Walla Valley**.

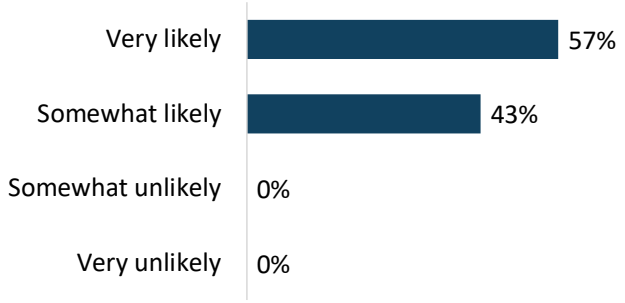


Figure 24. Buyer survey respondents' likelihood of purchasing food products through a food hub if one existed in the Walla Walla Valley (n=7)

Three buyer survey respondents explained their level of likelihood of purchasing food products through a food hub if one existed in the Walla Walla Valley. Two buyer respondents who indicated they were "very likely" to purchase through a food hub if one existed provided the following comments:

- "As a Culinary Arts Program we use foods in every shape, size and quantity imaginable."
- "Depends on pricing and availability."

One respondent who indicated they were "somewhat likely" to purchase through a food hub said

> "We like to support local farmers but the challenges they face trying to get adequate insurance coverage and jumping through the hoops to get us the product is often a barrier to doing business, it is also challenging to juggle different manual ordering processes to ensure we have what we need for our menu."

An **easy ordering system and delivery would increase many buyer respondents' likelihood of using a food hub**. The following are all seven responses to the question of what, if anything, would increase their likelihood of purchasing local food through a new food hub if one were developed in the Walla Walla Valley:

- "Delivery."
- "Distribution to our site."
- "Easy to use order guide, easy payment process and ability to work with our corporate purchasing structure."
- "One produce order form."
- "Single contact."
- "Gap Certified."
- "Hours of operation."

Asked what, if anything, would **decrease their likelihood** of purchasing local food through a new food hub if one were developed in the Walla Walla Valley, respondents provided the following answers:

- "Quality of product and safe delivery trucks."

- “Quality/availability.”
- “Cost.”
- “Hours of operation.”
- “Inability to respond to our business needs.”
- “None.”

All buyers interviewed except for Washington State Penitentiary were likely to buy from a food hub in Walla Walla. In general, they were optimistic about the prospects for local and regional food and indicated strong consumer demand and willingness to pay a price premium. **While each had their own process and constraints, all expressed a willingness to be flexible and to work through constraints to make a relationship with a food hub work.**

To understand needed services, we also asked the buyer survey respondents about what would help local farmers sell to businesses or organizations like theirs (Figure 25). Eighty-eight percent (88%) of buyer respondents said liability insurance and product distribution were “very important” (n=8). Providing food buyers a single point of purchase was “somewhat important” to 63% of respondents and “very important” to the other 38% (n=8). Importance of value-added products was more mixed: 25% said it was “very important,” 50% said it was “somewhat important,” and 25% said it was “not at all important” (n=8).

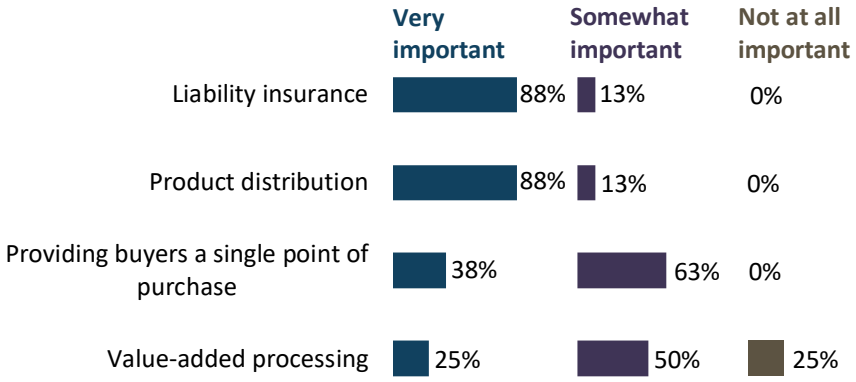


Figure 25. Importance of select factors for helping food producers located in the Walla Walla Valley sell to buyer survey respondents’ businesses or organizations (n=8)

Supplier interest in a food hub

Food hubs and commercial kitchens suppliers currently use

Figure 26 shows the current use of food hubs and commercial kitchens by those who took the supplier survey. About a quarter of respondents use Blue Mountain Station, but few use LINC Foods or Pasco Specialty Kitchen. Four supplier survey respondents listed other commercial kitchens they use that we did not include in the closed-ended survey question. They identified the Elks, First Congregational Church, and private commercial kitchens.

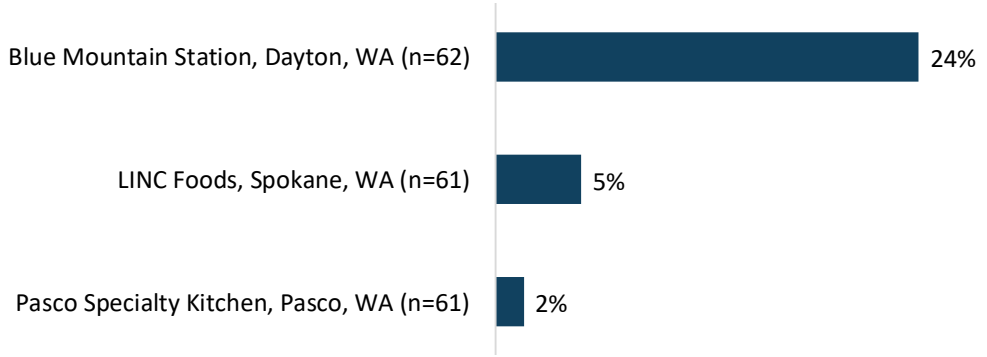


Figure 26. Percentage of supplier survey respondents who currently use the following food hubs and commercial kitchens

Current and potential value-added products

Twenty-seven supplier survey respondents listed the processed or value-added food products they currently produce for sale. Their responses included canned products (e.g., tomato sauce, tomatoes, pickles, honey, jams, jellies, mustard, and salsa), spices, distilled spirits, candy, frozen products (e.g., berries and meats), smoked meats, baked goods, and packaged fresh meats.

The supplier survey asked respondents who currently produce value-added and processed food products to estimate the percentage of the ingredients they source for these products that come from the Walla Walla Valley. The results for this question are presented in Table 24. Thirty-seven percent of those who produce value-added food products source 100% of their ingredients from the Walla Walla Valley, which could be because they have a single-ingredient product (e.g., lamb) or because they grow all the needed ingredients themselves. As one respondent said, “We grow what we use.”

Table 24. Percentage of value-added food ingredients supplier survey respondents sourced from the Walla Walla Valley

Percentage of ingredients sourced from the Walla Walla Valley	n	%
0%	3	10%
1%-25%	3	10%
26%-50%	2	7%
51%-75%	4	13%
76%-99%	7	23%
100%	11	37%
Total	30	

The supplier survey also asked respondents who currently produce value-added and processed food products if there is anything they currently source from outside the Walla Walla Valley for their value-

added products that they would source locally if it were available. Many skipped this question or said "no"; however, four respondents provided the following answers:

- "Hot peppers, heritage rolled oats."
- "Pineapple, vinegar."
- "Tea and some herbs for mixes."
- "USDA Box Type Meat, Cheese (larger size than 5 lbs.)."

Interest in supplying ingredients for someone else's product

Production from multiple farms may be necessary to provide enough volume of Walla Walla Valley-sourced fruit, vegetable, or other raw ingredients needed to support production of a value-added product. Asked to what extent they would be interested in supplying ingredients at wholesale prices for someone else's value-added product, most supplier survey respondents expressed at least some level of interest (Figure 27).

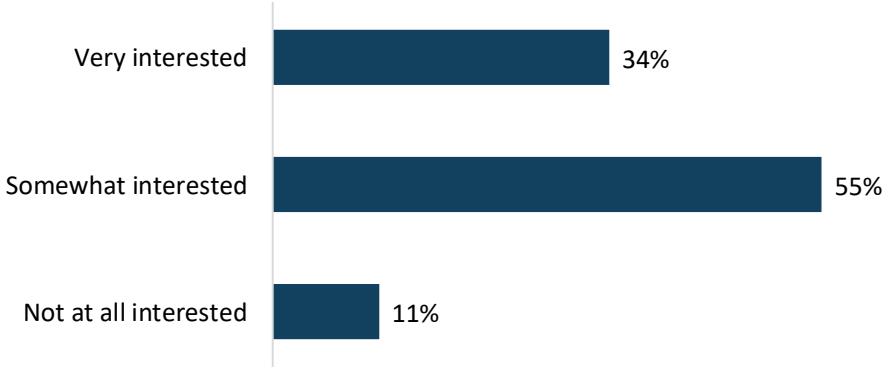


Figure 27. Supplier survey respondents' level of interest in in supplying ingredients at wholesale prices for someone else's value-added product(s) (n=56)

Markets suppliers are currently accessing and interested in accessing

Supplier survey respondents currently sell to a variety of markets: direct to consumer, retailers (e.g., grocery stores), and restaurants or caterers were the most common (Figure 28). Respondents also described other markets they sell to. Their responses included "direct to distributors," "hummus manufacturers," "Internet," "wineries," and "Northwest Grain Growers and it gets shipped to Asia."

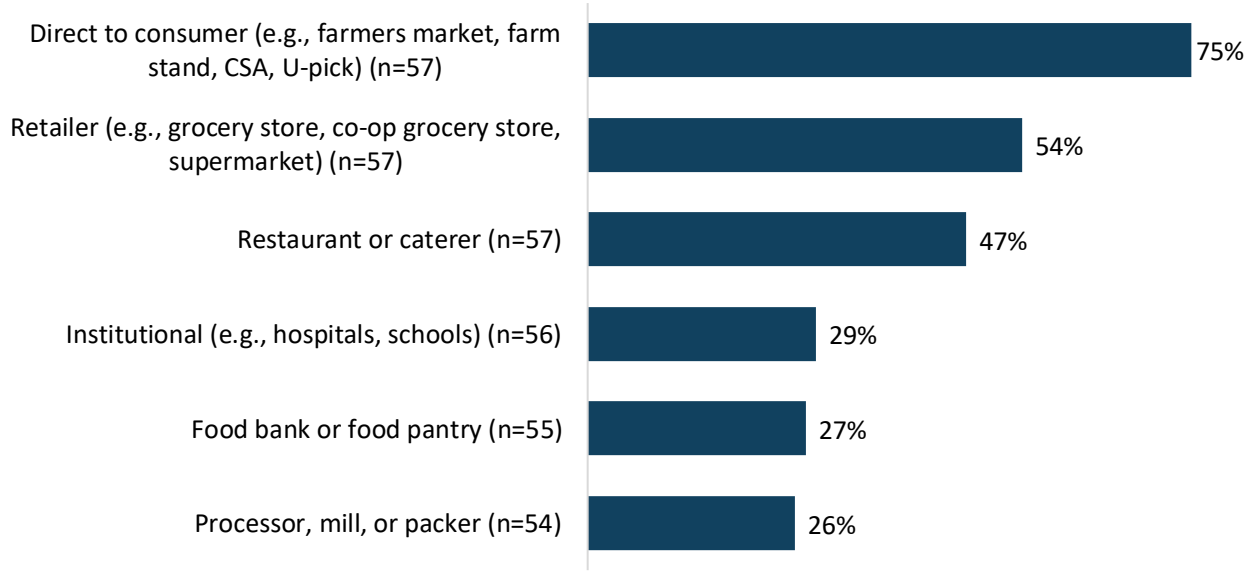


Figure 28. Percentage of supplier survey respondents who currently sell products through select markets

Many supplier respondents said they were "very interested" in increasing sales to the markets we asked them about (Figure 29). For example, in addition to the markets many are already commonly selling to (i.e., direct-to-consumer, restaurant, and retail markets), 46% said they are "very interested" in increasing sales to institutions and 35% said they are "very interested" in increasing sales to food bank or food pantry markets. Many others said they are at least "somewhat interested" in increasing sales to these markets.

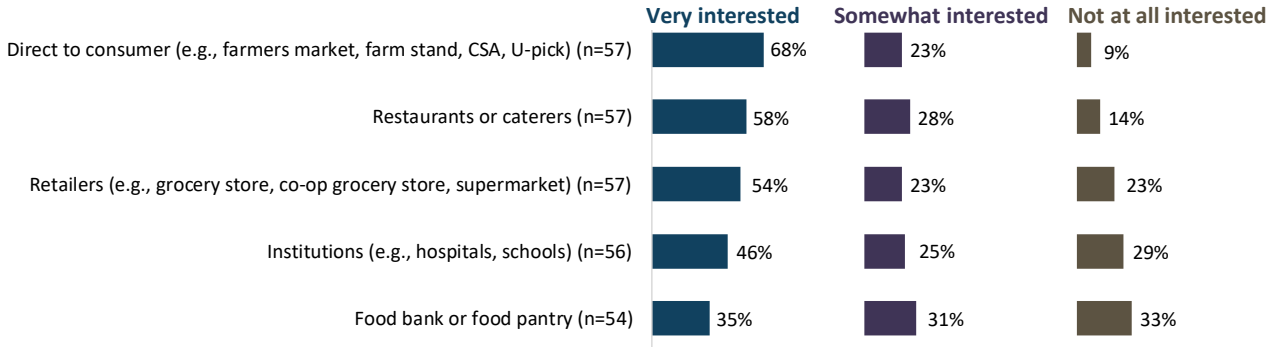


Figure 29. Supplier survey respondents' level of interest in increasing sales to select

Supplier project participants expressed interest in growing, processing, and selling a wide diversity of value-added products. Figure 30 shows the percentage of survey respondents who said they are interested in producing and selling processed or value-added food products in the future (whether they currently are or not). Thirty-six survey respondents listed the processed or value-added products they are interested in selling in the future. Their responses included canned tomatoes, tomato sauce, pickled products, cider, hard cider, gluten-free baked goods, vegan goods, mixes, flour from various grains, dried fruits, dried meats, frozen vegetables, honey, ice cream, cheese, jam, mustard, spices, pre-packaged frozen entrees, and fresh meat products.

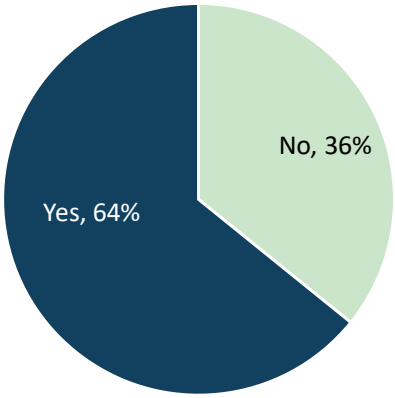


Figure 120. Supplier survey respondents interested in producing and selling processed or value-added food products in the future (n=67)

Interest in specific food hub services

Food hubs can offer a variety of services. Out of these options, people must settle on a few or one to start. An important part of feasibility is knowing what people want to do.

The supplier survey asked respondents how interested they would be in using a variety of food hub services if new services were available (Figure 31). Of those included on the survey, retail, marketing, and product distribution were the services supplier respondents expressed the most interest in while office space, cool storage, and dry storage garnered the least interest. Overall, respondents expressed at least some level of interest in many potential food hub services.

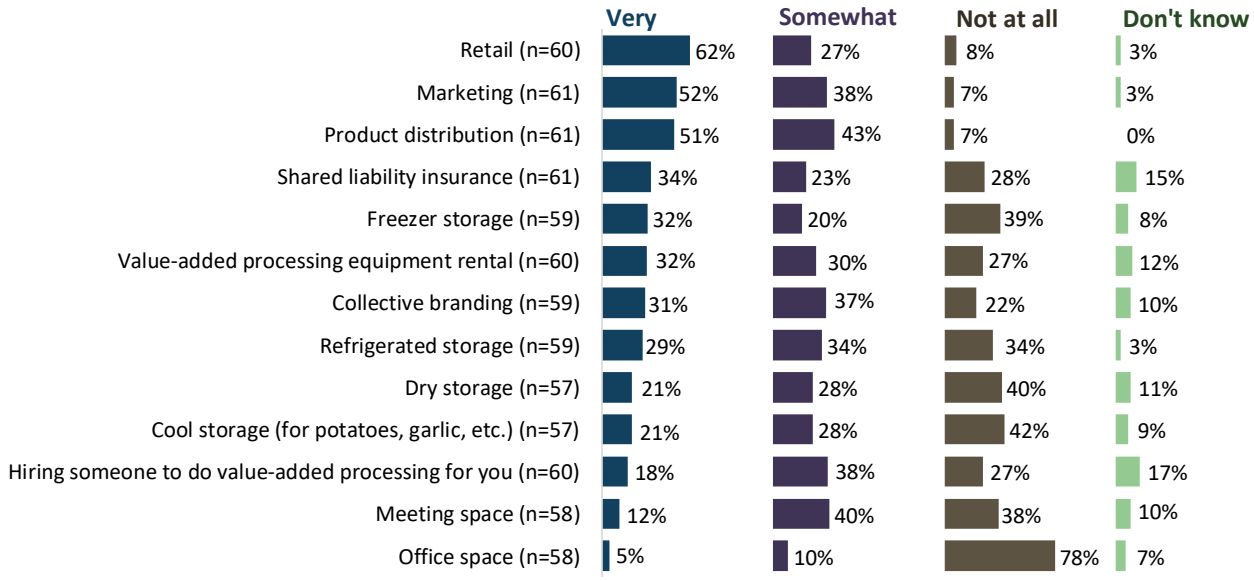


Figure 31. Supplier survey respondents' level of interest select food hub services

In the course of the assessment, many producers and other food entrepreneurs said distribution is a barrier. For example, interviewees pointed to several businesses in Dayton and Walla Walla to illustrate how some entrepreneurs had developed strong products but were unable to fully access markets

because they did not have distribution that met their needs. Although interviewees identified existing distribution options, almost everyone indicated that more and better options were needed. In addition, several of the interviewees representing institutions wanted a single point of contact for purchasing and scheduling deliveries.

The main interest of one interviewed producer was for collaborative marketing, for example, signs that promote a fruit or vegetable variety. Another suggested developing "creative collaborative alliances" for marketing and sales. The general consensus was that producers want to keep their own farm brand rather than join a collaborative brand. One idea was to include labeling that identifies both the producer and the food hub similar to the approach Western Montana Growers Cooperative has adopted.

Food hub location

Most of those interviewed thought the food hub should be in or near Walla Walla. One suggested College Place. Almost everyone thought outside of downtown was best, somewhere with good access to the two main highways (highways 11 and 12). Since Blue Mountain Station (BMS) is in Dayton and most of the production is in Walla Walla and Umatilla counties, several thought it makes sense to locate the food hub somewhere along the Washington and Oregon border between College Place and Milton-Freewater, while others suggested near Myra Road near Highway 12. The discussion of location included the idea that the ideal location for most services would not likely be compatible with retail. Many interviewees and steering committee members thought a location outside of town was ideal to avoid congestion and reduce cost. Others pointed towards the potential need for city services such as water and sewage as very important to site selection.

The Port of Walla Walla did not seem interested in leasing a food hub space, according to several steering committee members who presented the project to them. The Port of Columbia is ready to facilitate this type of activity, as evidenced by BMS. BMS has plenty of room for new buildings for a food hub, but this location does not serve the Food Bank well. Several interviewed producers, especially those on the other side of Dayton from Walla Walla, thought a farmer drop-off location at BMS that includes a cooler and other space for storage would be useful.

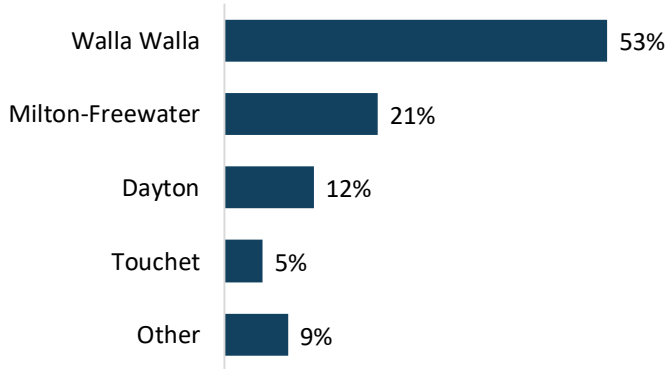


Figure 3213. Most convenient location for a new food hub or commercial kitchen for supplier survey respondents (n=57)

When asked where the most convenient location for a new food hub or commercial kitchen would be, 53% of supplier survey respondents said Walla Walla and 21% said Milton-Freewater (Figure 32). Nine percent answered that an "other" location would be most convenient. They provided the following responses:

- “Either Dayton or Walla Walla.”
- “Moses lake.”
- “Tri-Cities.”
- “Tri-cities for best freight options, or Walla Walla would be 2nd choice.”
- “Waitsburg.”

On average, supplier survey respondents said they were willing to travel 22 miles to use a new food hub or commercial kitchen (median = 20 miles, mode = 20 miles, range = 0 to 70 miles). The largest percentage of respondents said they would be willing to travel 11 to 20 miles (Figure 33).

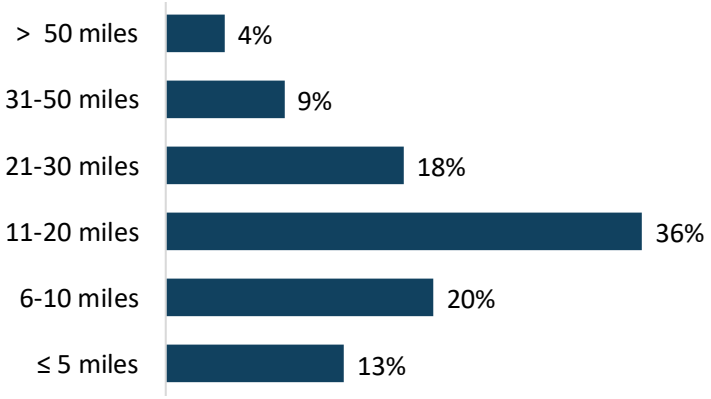


Figure 33. Miles supplier survey respondents said they would be willing to travel to use a food hub or commercial kitchen (n=45)

As several project participants pointed out, the location of the food hub is likely to be wherever the Food Bank locates. If the Food Bank expands its existing building, then the current location of the Food Bank will be the future food hub site. If the Food Bank moves, then the food hub location will need to be ideal for the Food Bank as well. Those interviewed indicated that no or few suitable buildings exist in Walla Walla for a food hub or for a combination food bank/food hub. Several buildings were discussed or identified in interviews, each of which was not suitable upon further investigation or discussion. Suitable sites to lease to launch food hub services while the Food Bank fundraises and buys or expands its facilities were identified in the area.

Guiding principles

Several guiding principles emerged during interviews, producer meetings, and steering committee meetings. We present the primary guiding principles that stakeholders emphasized throughout the project here:

- **Complementariness.** The food hub needs to fit a need not currently met by others; it needs to complement rather than compete with existing businesses and relationships and produce something no one else has produced at high quality.
- **Economic viability.** The food hub needs to be economically viable, ultimately, if not initially, and without relying solely on grants. It needs to be able to scale up to a level to have employees for long-term sustainability. Multiple people indicated that the food hub needs to be consumer driven in the sense of focusing on what people want to buy and eat rather than what people want to grow.

- **Fairness.** All those participating need to be treated fairly, including everyone in the supply chain, from producer, to warehouse worker, to buyer, to consumer. Farmers and employees need transparency and opportunities to participate in decision making and ownership. Several of those interviewed said that it takes a lot of time to give everyone a voice, but it is worth it to build needed relationships.
- **Inclusivity.** Farmers interested in participating, including those active in the project steering committee, use a variety of practices including both organic and nonorganic. To accommodate those most interested in participating, the food hub will need some flexibility. A common conclusion was that the food hub needs to cast a wide net while having high product quality and stewardship standards, but not necessarily require participating farms to be organic. One reason mentioned was the difference in cost: for example, a number of those interviewed indicated that equipment for organic processing needs to be cleaned or separated from that for nonorganic. Another conclusion was that this discussion could wait for later parts of the food hub development process.

Suppliers' likelihood of participating

For a food hub to be successful, not only do people have to want to buy its products, but producers must want to use its services. Figure 34 shows **most supplier respondents said they were "very" or at least "somewhat" likely to use a food hub** if they had access to one in the Walla Walla Valley. As with the buyer survey, many potential suppliers were likely motivated to take the survey because they are interested in participating.

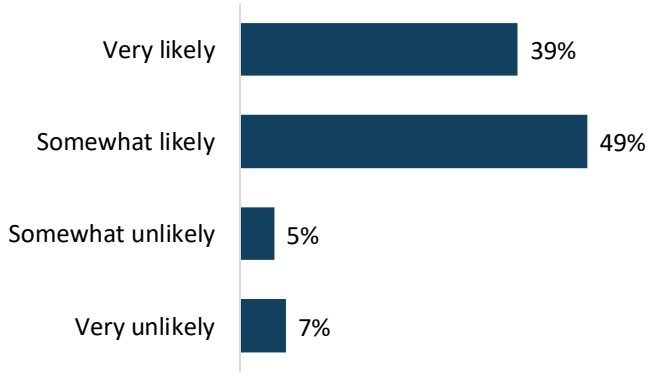


Figure 34. Supplier survey respondents' likelihood of using a food hub if they had access to one in the Walla Walla Valley (n=61)

Figure 35 shows the likelihood supplier survey respondents would use a food hub if they had access to one in the Walla Walla Valley by business size in terms of annual sales. Supplier survey respondents represented a range of business scales, including some with annual sales of $250,000 or more in 2017. Four of the nine respondents with businesses of $250,000 or more annual sales in 2017 said they would be "very likely" to use a food hub and another four said they would be "somewhat likely." The one business at that scale that was "very unlikely" to use a new Walla Walla Valley-based food hub explained they already had access to their own private resources. Overall, this figure illustrates **interest in a food hub from potential suppliers representing a range of capacities and scales.**

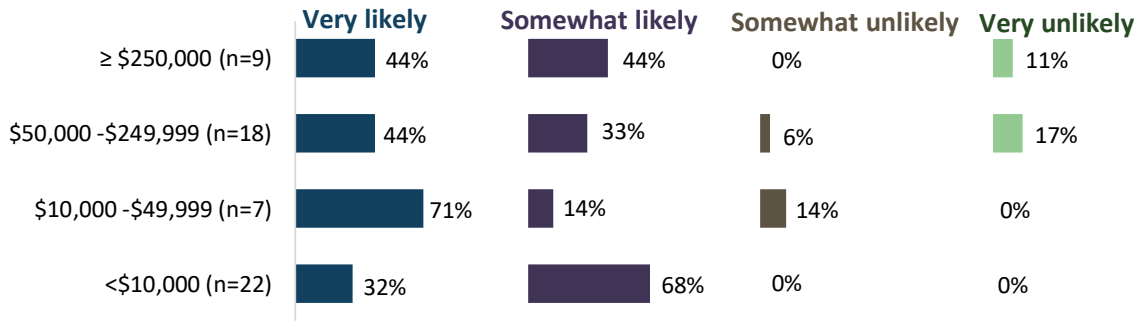


Figure 35. Supplier survey respondents' likelihood of using a food hub if they had access to one in the Walla Walla Valley, by annual sales (n=56)

Forty-two supplier respondents provided explanations for their likelihood (or unlikelihood) of using a new food hub if they had access to one in the Walla Walla Valley. Those who indicated they were **"very likely**" to use a new food hub were commonly **motivated by the hub's proximity to their farm and customers; opportunities for processing, storage, and retail space; and the potential to facilitate access to new intermediary markets, such as institutions**. Supplier survey respondents' explanations for their level of likelihood of using a new food hub can be found in Table 25. The supplier survey asked respondents what, if anything, would increase their likelihood of participating in a new food hub if one were developed in the Walla Walla Valley. Responses to this question are presented in Appendix D.

Table 25. Themes in what supplier survey respondents said would increase their likelihood of participating in a new food hub if one were developed in the Walla Walla Valley

Theme	Example Quotations
Fit of equipment/services	"At least 500 square feet of available freezer/cold storage space." "Availability of the right equipment for my needs. Reasonable rental fees. "Commercial kitchen." "Commercial kitchen, keeping my brand, shared distribution opportunities." "Distribution, STORAGE, collective marketing." "Establishment of a commercial kitchen." "Overhead door and community forklift. Help with increasing distribution would be a nice benefit." "Staff to assist retail."
Facilitating access to new markets	"Thoughtful leadership, quality space, opened new markets." "Increasing ability to enter new retail markets/opportunities." "Opportunity to have more direct sales." "Ability to cross-pollinate marketing strategies, especially to reach out to the tourists coming to town, giving them options to branch out of wine tasting to enhance their overall experience." "Sustained availability of fresh product."
Convenient location	"Very affordable and in Walla Walla." "Location, pricing, hours." "Cost and distance from home. Hours available." "Distance from town (MF, CP area). Cost vs building my own facility. Privacy of dedicated production space (process IP)."
Convenient hours of operation	"Hours open in the evening." "Convenience of the time schedule. We have a routine and want access processing when we're ready for it."
Profit	"Price received for our produce." "Having excess produce and help. I am not familiar with how a food hub would work or the kind of prices we could get for our produce. Getting sufficient prices for our produce and a demand for high-quality organically grown produce would be great." "Increased Revenue."
Affordable for suppliers	"Low cost or free." "Affordability and location." "Price, support, accessibility."
Production practices	"A focus on organic/regenerative production. A bilingual approach to include all of WW's populations." "If the new hub is focused on regenerative farming practices and organic, non-GMO crops and products."

The supplier survey also asked respondents "What, if anything, would decrease your likelihood of participating in a new food hub if one were developed in the Walla Walla Valley?" Common themes related to what would **decrease** suppliers' participation in a food hub **included prohibitive costs, travel distance, and poor management.** Responses to this question are presented in Table 26.

Table 24. Themes in what supplier survey respondents said would decrease their likelihood of participating in a new food hub if one were developed in the Walla Walla Valley

Theme	Example Quotations
Poor fit between supplier and offered equipment/services	"Exclusive emphasis on existing infrastructure & systems." "Expensive lease. No overhead door or trench floor drains. No community forklift for pallet freight." "Lack of a commercial kitchen." "Not having the right equipment. Lack of certification/recognition of kitchen by state/federal authorities."
Cost prohibitive to participate	"Availability and price." "Costs." "Facility use pricing." "Financially not feasible. Too far from farm to make it worth it." "High cost, limited access."
Inconvenient location	">15 distance to food hub." "Distance." "If it was located away from Walla Walla. Increased competition for existing and developed markets." "If it was not near Walla Walla or College Place."
Poor management	"How many hands are in the pot." "Poor chemistry of leadership, lack of marketing savvy." "Squabbling over organic vs. conventional. Poor tracking, poorly documented shrink, mishandling, priority management of like produce."
Inconvenient hours	"If it was only operating during the hours I need to be in the field."
Production practices	"If it is designed to use conventional methods that produce waste, toxins, and trash that clogs the environment."

In contrast to the 39% who said they would be "very likely" to use a new food hub, when asked about their likelihood of using a new commercial kitchen if they had access to one in the Walla Walla Valley, only 13% of supplier survey respondents said they would be "very likely" to use it (n=61) (Figure 36). Figure 37 shows how likelihood of commercial kitchen use breaks down by respondents' business size in terms of annual sales (2017). Likelihood responses are generally distributed across annual sales groups.

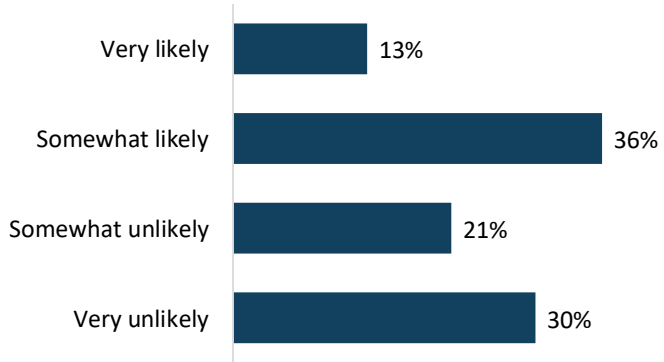


Figure 36. Supplier survey respondents' likelihood of using a new commercial kitchen if they had access to one in the Walla Walla Valley (n=61)

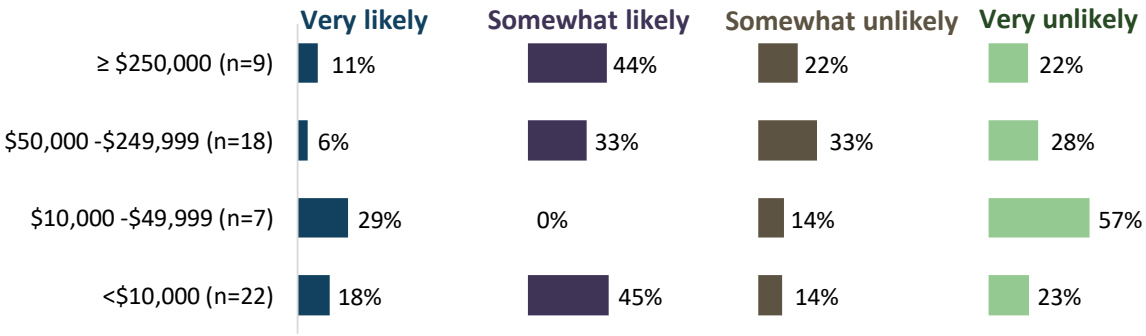


Figure 37. Supplier survey respondents' annual sales, by likelihood of using a new commercial kitchen if they had access to one in the Walla Walla Valley (n=56)

The supplier survey respondents' explanations for their likelihood (or unlikelihood) of using a new commercial kitchen if they had access to one in the Walla Walla Valley are provided in Appendix D.

Lessons learned: Food hub case studies

Case study overview and summary

We developed case studies of several existing food hubs within the Northwest to understand some of the potential models for a food hub in the Walla Walla Valley. The project originally looked at five examples: Puget Sound Food Hub, Local Inland Northwest Cooperative (LINC) Foods, Mission Mountain Food Enterprise Center, Western Montana Growers Cooperative (WMGC), and Pasco Specialty Kitchen. We picked these five operations to study based on discussions with the project steering committee and key informant interviews. To develop the case studies, we interviewed representatives of the food hub and gathered information from websites of each operation. The purpose of the case studies was to provide lessons learned for the steering committee to consider as part of scenario development. This includes an operational overview, a sense of territory and scale, services provided, equipment and facilities, management or business model, funding sources, and contact information.

In addition to the five food hubs we developed into case studies, we interviewed representatives of five more operations to inform our scenario development, analyses, and recommendations: Kraay's Market and Garden, Blue Mountain Station, and three food hub development efforts that did not succeed. The three we interviewed that did not succeed were Idaho's Bounty, which operated for a number of years before failing, a proposed food hub in Gem County, Idaho, and an effort in northeast Oregon that conducted a feasibility study but was unable to gain enough political and funding support to progress. We use these to supplement the discussion of the case studies.

Food hub models

The case studies included different models of services provided. Tables 27 to 31 summarize each case study food hub operation. Puget Sound Food Hub is an example of a food hub that offers marketing, aggregation, and distribution services. In this report, we call this a distribution food hub, since core operations are similar to regional food distribution companies. Located in the Skagit Valley, the Puget Sound Food Hub has access to population-dense markets and many suppliers. LINC Foods and WMGC are also distribution food hubs. LINC Foods is also an example of a hybrid food hub because it is developing a value-added operation. Mission Mountain Food Enterprise Center and Pasco Specialty Kitchen are examples of local agency-led food hubs that support food entrepreneurs with commercial kitchens and business support services. Mission Mountain Food Enterprise is another example of a hybrid model. It includes multiple value-added processing services, a well-developed commercial kitchen facility, and training and business support.

Puget Sound Food Hub

Table 27. Case Studies: Puget Sound Food Hub Case Study [xx,xxi,xxii]

Operation Overview
Feasibility assessed in 2006, operation began in 2009
Administrative office and distribution facility in Mt. Vernon, WA
Satellite drop site in Everson, WA
52 members, including groups (e.g., Lummi Island Wild)
4 employees
Farm-to-business/institution model
Market: restaurants, grocery stores, food co-ops, food manufacturers, campus dining services, commissaries, schools, childcare centers, and hospitals

Territory and Scale
Serves Whatcom, Skagit, Island, San Juan, Snohomish and King counties)
Distributes 3,000 lbs./week of produce, meat, dairy, flour, and other products
$1.4 million in sales in 2017, $2.4 million in sales in 2018

Services
Marketing, aggregation, and distribution
Buyers and sellers have an online account where buyers place orders and sellers update their inventory, pricing, and profile.
Farms pack and deliver to the Skagit warehouse or Whatcom County drop site
Direct delivery to customers
Tuesday/Friday deliveries
Real-time invoices upon delivery (one invoice even if multiple farms' products included in delivery)
Farmers paid weekly

Equipment and Facilities
8,000 ft^2 facility with 2,000 ft^2 refrigerated space
Rentable dry, cold, or freezer space ($125/pallet/month)
Five 16 ft delivery trucks
Online ordering and management software

Management Model
Farmer-owned cooperative
Farmer board meets monthly
Non-profit 521 corporation
Farm co-ops or associations can list products under one organizational name

Other Key Characteristics
Products are source identified (and hub does not own product)
Farms pack their own boxes traceable to the source farm
Farms develop and maintain customer relationships and negotiate their own prices
Farms required to have $1M/$2M liability insurance, a Master Business License, and applicable specialty licenses
Farms required to follow WSDA marketing guidelines and size/scale standards
Farms required to have ≥1-year wholesale experience
Products not directly produced by the farm must be approved in advance
51% of ingredients in value-added foods must be produced by the farm selling

Funding Sources
$250 refundable membership investment and $100 annual membership dues
Grants to expand freezing and refrigeration capacity

Contact information
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Tel.: 360-336-3727 Fax: 360-336-3751
General Inquiries: info@pugetsoundfoodhub.com
Terri Hanson, General Manager Terri@agbizcenter.org
Scott Morris, Operations Manager Scott@pugetsoundfoodhub.com, 360-399-8302
Joan E McIntyre, Sales and Marketing Manager JoanE@pugetsoundfoodhub.com, 360-399-9196

Local Inland Northwest Cooperative (LINC) Foods

Table 2258. Case Studies: Local Inland Northwest Cooperative (LINC) Foods[xxiii,xxiv]

Operation Overview
~50 farmer members
Distributes to wholesale buyers
Includes CSA
Malting at LINC Malthouse for brewers and distillers
Markets for fruits, vegetables, grains, legumes, meats, cheeses, and eggs: wholesale (e.g., universities, hospitals, restaurants, and grocers) and direct to consumer via LINC Box Microbrewing and distilling markets for malt (starting in ~2016)

Territory and Scale
Territory bound by Cascade Mountains to west, Rocky Mountains to east, Blue Mountains and Wallowa foothills to south and SE, and Canada to north
Farmer members must be within a 3-hour driving radius from Spokane
Serves greater Spokane, WA area with some distribution links in Walla Walla Valley, Palouse, and western Montana

Services
General
Web-based ordering system
Farmers drop off at LINC site
Minimal processing for fee
$5 million product liability insurance policy
Pays farmers by check within 15 days after delivery to LINC
Inspection upon farmer delivery to ensure quality and that matches farmer's online description
LINC Box
LINC Box members pick up weekly
Two seasons: June-Thanksgiving and Winter Box
Half $25, full $50 (Winter $40)
Can add value-added products
Pickups at one site for Winter Box
Pickups at 5 sites during primary season (2 in Spokane, 1 Coeur d'Alene, 1 Cheney, 1 Airway Heights)

Services cont.
Wholesale
Fresh sheets sent to wholesale buyers Tues. and Fri. mornings
Orders due by 11pm Wed. and Sun
Direct deliveries Tues. and Fri. mornings
Buyers pay by check or through credit card or ACH payment

Equipment and Facilities
Evolved over years. Started using cold storage in a Comfort Inn Hotel, then partnered with Second Harvest Food Bank for one palate each cold, freezer, and dry storage
Malting facility

Management Model and Other Key Characteristics
Worker and farmer-owned cooperative
Sourced primarily from farmer-members
Members required "to put into place a basic food safety program and agree to not use pesticides, herbicides, chemical fertilizers, and genetically modified organisms" (exception is malt grain producers)
Farmers set their own prices

Funding Sources
Annual $100 refundable membership
LINC receives 25% of the revenue earned through sales)
Hired 1st employee with Specialty Crop Block grant
Moved to own warehouse with Value-added Producers grant (2017)
$25,000 University of Washington Business Accelerator funding to pay employees and start malting facility
Financing for malting facility

Contact information
Billing Address: 3808 N. Sullivan Rd, BLDG 12P, Spokane Valley, WA 99216
General Inquiries: info@lincfoods.com
Beth Robinette, beth@lincfoods.com, 509-990-4247
Joel Williamson, joel@lincfoods.com, 509-230-1223
Brian Estes, brian@lincfoods.com, 509-521-0606

Mission Mountain Food Enterprise Center

Table 29. Case Studies: Mission Mountain Food Enterprise Center

Operation Overview
Started in 1998
Food processing, research, and development facility
Through grants and projects developed a $4.5 million facility
Most equipment bought with grants
Program funding keeps it growing not revenues
Currently revenues support costs of facility and processing staff
Technical assistance supported on grants
Main client is $5M per year growers cooperative

Territory and Scale
Lake County, MT
Technical assistance programs are regional and statewide

Products and Services
Business assistance services include grant writing and helping secure loans
Support to form a cooperative
Co-pack—process raw commodity into value added
Four value-added processing lines
Food safety technical assistance, training, and education
Rent equipment and storage
Developing own brand
Test runs of value-added product to test market

Equipment and Facilities
Extensive list

Management Model
Nonprofit started by and partnered with an economic development agency
Originally food hub and technical programs separate; now merged as one nonprofit
$180K operational base and approximately $500K total with programs

Other Key Characteristics
4 full-time employees in co-pack operation
1 food safety employee

Funding Sources
Kellogg Foundation funded first community assessment
USDA Rural Cooperative Development Program funded hiring a staff member
Another grant to buy commercial kitchen equipment
Coordination at state level secured Agriculture Innovation Center Grant through USDA for 4 years

Contact information
Billing Address: 407 Main Street SW | PO Box 128 Ronan, Montana 59864
Tel.: (406) 676-5901 Fax: (406) 676-5902
General Inquiries: info@lakecountycdc.org
www.lakecountycdc.org
Jan Tusick, Director

Western Montana Growers Cooperative (WMGC)

Table 30. Case Studies: Western Montana Growers Cooperative

Operation Overview
Started in 2003
40 farms in western Montana
Distribute to institutions (11%), restaurants (21%), grocery stores (18.2%), natural food stores (38.4%)
$3.4 million in sales in 2018

Territory and Scale
Farms from western Montana, markets include all of Montana with a focus on western Montana and Missoula

Products and Services
On farm pick up
Cold and freezer storage
Distribution in Missoula (43%), western Montana, and with partners all of Montana
CSA

Equipment and Facilities
4 trucks, forklifts and warehouse equipment

Management Model
Farmer cooperative: aggregation, distribution, marketing and sales

Other Key Characteristics
Profitable once reached $.5 million in sales
2 large dairies and 2 large egg producers provide 50% of sales and stabilize year-round cash flows

Funding Sources
Grants, member loans, bank loans, member equity, revenues

Contact information
Billing Address: 1500 Burns St Suite C, Missoula MT 59802
Tel.: (406) 546-3960
www.wmgcoop.com
Jim Sugarek, Accounting

Pasco Specialty Kitchen

Table 31. Case Studies: Pasco Specialty Kitchen

Operation Overview
Started in 2003
Licensed by WA Health Department
Part of Pasco Main Street Program for economic development
Meant to be a business incubator
Rent starts at $20/hour (max. rent = $800/month for unlimited hours), also minimum monthly fee to encourage only food businesses and discourage hobbyists
Available 24 hours a day, 7 days a week, 365 days a year
Capacity for 9+ businesses to use at a time
Currently have ~39 clients (13 with storefronts and 26 without storefronts)
2 employees: operations administrator and office administrator

Territory and Scale
Serves Tri-Cities and surrounding region

Services
Commercial kitchen
Web-based scheduling and billing (Food Corridor)
Storage space
Street-facing retail space
Technical assistance
Commercial Foods Academy partnership with Pasco High School
Food truck leasing program
Free vendor space at Pasco farmers' market and other events

Equipment and Facilities
12,000 ft^2
3 kitchens (main, center, prep)
Extensive equipment list available at www.downtownpasco.com/psk/facility-details/
Scalable, modular equipment and facilities
Meeting area

Management Model
Managed by the City of Pasco
One employee manages operations, and another does office administration

Other Key Characteristics
Has adapted over the years to changing "food industry trends" by retooling equipment, changing billing structure, and so on
Use requirements:
City of Pasco business license
Food handler's permit
Health permit
Insurance
Signed agreement with Pasco Specialty Kitchen
$25 application fee
51% of ingredients in value-added foods must be produced by the farm selling

Funding Sources
Rent (but below the market rate) and minimum monthly fee
City of Pasco owns the building
US Department of Commerce Economic Development Administration (EDA) Program
Community Development Block Grant (CDBG) program, WA Dept. of Housing and Community Development

Contact information
Kristi Correia, kcorreia@downtownpasco.com, 509-545-1172

Case study conclusions

The distribution services food hubs (LINC Foods, WMGC, and Idaho's Bounty, for example) in general had a long hard path to become profitable. Idaho's Bounty went out of business and LINC Foods is still struggling its way towards profitability. Both LINC Foods and WMGC have been challenged by the seasonality of agricultural production in the region. LINC Foods has added a value-added operation—malting—to try to create a higher-margin, year-round operation to stabilize the business and make it profitable. WMGC has increased its distribution of eggs and milk to provide year-round sales and distribution. These are the two main strategies identified in the case studies and interviews to try and overcome the low margins and season volatility of the food hub distribution model.

While not everyone had success in value-added ventures, almost everyone recommended starting there rather than with general produce distribution. The exception was WMGC, which tried to develop frozen food product lines and did not like the experience. Their feedback was to not merge value-added and distribution functions because they represent different types of businesses, which did not turn out to have enough synergy to work in their experience.

Among food hubs studied, we found a variety of startup stories and financing models, which were largely shaped by who was the lead in starting and running the operation (Figure 38). We found several models of private efforts, including private cooperatives and family businesses. Others were started and managed by public agencies. Table 32 provides a description of each.

Figure 38. Model by lead entity for case studies

Table 32. Food hub startup stories and financing models

Type	Description
Bootstrapping	This startup and financing model included little or no startup funding and heavy reliance on resources from generous partners. In these cases, founders volunteered their time during start up, sometimes for years, and some had a heavy reliance on grants for scaling up. The startup approach was to focus on creating transactions—selling some products to get the process started as the food hub puts the resources together to scale up or stabilize the operation. The best example of this type that we studied is LINC Foods, which started out of the trunk of the founders' car and borrowed cooler space from generous community partners (including a food bank). LINC Foods is a private employee-producer cooperative in which those working at the food hub can become members and receive equity shares same as member producers. Other examples include starting out with the equipment the food hub can afford, scaling up the operation until the equipment is inadequate, and then upgrading once the food hub has built enough supply chain to leverage to the next scale.
Expanding on an established business	Food hubs can also develop as a next step in a well-seasoned business that has been successful in compatible activities and now is adding food hub services as a next step in their development. Kraay's Garden and Market near Bellevue, Idaho, is a good example of this. Building on their successful organic farm and farm stand, they expanded into distribution to retailers, restaurants, and institutions and home delivery for their own farm as well as over 50 other farms in the area. They built their food hub up from their own existing private resources without debt or grants. As they launched food hub services, they built upon their relationships with producers and buyers established through their successful farm stand.
Private producer cooperative	Another model is the private producer cooperative. Western Montana Grower's Cooperative is a good example of this. They pick up, aggregate, store, market, and distribute products from approximately 40 farms in western Montana primarily to buyers in Montana. They started with member equity, loans, and in-kind services. Grants were important to their scaling up, but they have successfully completed equity drives and have received traditional financing, including bank loans in addition to revenues from operations.
Public agencies or nonprofit	The other operations we studied were either run by public agencies or nonprofits started and managed by public agencies. These included a city (Pasco Specialty Kitchen), a county port (Blue Mountain Station), and a county economic development agency (MMFEC). These operations focus on creating business and economic development opportunities. All of these were heavily subsidized if not largely supported by public funding, including grants but also generous amounts of agency staff time. Funding for these types of operations included using existing land, staff, and other resources for startup, in-kind staff for management and operations, and grants, subsidized or guaranteed loans, and local bonds.

All the operations studied generated revenues, which supported or helped support their operations. Private operations used grants to start up and scale up operations but tended to be more focused on building their revenue towards profitability. The public agencies were attempting to be as self-sufficient as possible within the context of heavily subsidizing the efforts through in-kind staff, grants, and other public resources. Commercial kitchens are a good example of this type of effort. All studied (Pasco Specialty Kitchen, Mission Mountain Enterprise Center, Blue Mountain Station-) were heavily subsidized by grants and other public funding and did not pay for themselves. At best, they generated enough fees to pay for some time for someone to provide scheduling and some management.

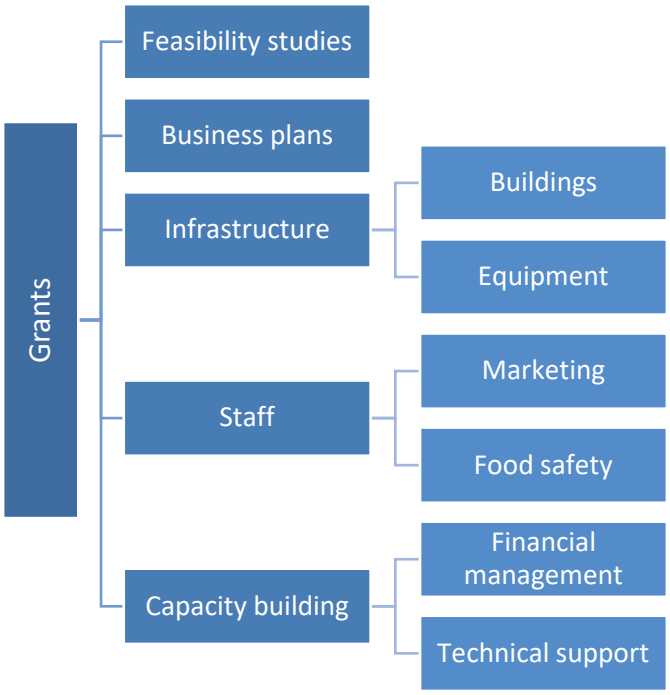

Figure 39. The role of grants in food hub development

In general, grants played several roles at different points of business development (Figure 39).

For the food hubs studied, the type of group starting the food hub also determined the resources available to them. Private cooperatives and family businesses relied upon their own resources and the resources of their members (equity drives and loans) and used grants to supplement and enable scaling up. Grants were useful and important but were seen as limited in scale and length of impact. The exception is Idaho's Bounty (a nonprofit producer cooperative), which according to two previous board members interviewed, was too focused on grants as central to their business model. In this example, those interviewed indicated that the overreliance on grants masked problems with their business model (i.e., not being profitable and being too geographically extended in rural areas in their distribution), which led to eventual collapse. This was the only negative example of use of grants as a funding mechanism identified by those interviewed. For the public agencies on the other hand, a steady stream of large grants or in-kind staff was central to their business model.

Almost everyone indicated that it took a lot of flexibility and good will among their partners to make their effort a success. Most of the private efforts as well as the public agency efforts indicated a strong, supportive network of nonprofits and public agencies providing resources, technical support, and access to funding. Almost everyone indicated having gone through rapid adaptation based on experience. No one interviewed described developing a plan and then having it work out as originally envisioned. Once they had started, they adapted to the resources available, changing circumstances, and new opportunities. Numerous people mentioned the importance of patience and persistence. It took longer than almost everyone interviewed expected with more setbacks, obstacles, and frustrations than originally envisioned.

A key lesson, identified by a number of those interviewed for the case studies, was to start with value-added processing as a key operational component rather than distribution. The lesson learned was to start with the highest margin operation and then spin up other services based on that success, rather than developing them later as a means of supplementing low-margin services.

Major partners

Blue Mountain Station

An important partner for a future food hub in the Walla Walla Valley is the Blue Mountain Station (BMS). BMS includes multiple operations (i.e., business incubation, cooperative retail, and a commercial kitchen), of which the most prominent is building and leasing incubator space to food and alcohol production businesses.

BMS also provides shared resources and considerable business support, including joint marketing, business trainings, and individual business coaching and support. They have paid for some marketing expenses, connected businesses with distributors, and helped them try to find a loan if they need funding. A shared forklift is just one example of shared resources available to lessees (see sidebar).

Everyone interviewed agreed it is very important for a new food hub to complement and collaborate with BMS rather than compete with it. This view was also strongly reiterated in the WWVFSC and project steering committee meetings throughout the feasibility study process.

BMS: Business incubator space and support services

There is a strong demand in Dayton for building space, and in general, BMS has businesses waitlisted for space. BMS has been successful both in developing and leasing facilities and in providing a launch pad for food and alcohol entrepreneurs. An important asset is that BMS is built to current food safety standards. While the Walla Walla Valley has buildings available, few (if any) are suitable for small-scale food processing without extensive remodeling, which makes them impractical for all but the largest efforts. Several of those interviewed were interested in leased incubator space and business support services, but no one advocated that this be the role of the food hub.

BMS: Cooperative retail

BMS also provides an example of a cooperative retail operation. Blue Mountain Station Co-op is a private business that leases space from BMS. They sell local and regional products from as far away as Moscow, ID, including fresh and value-added products. They have 45 local and regional vendors that sell through the store. The local produce section of the store continues to grow, while growth in other sections was flat in 2019. Blue Mountain Station Co-op operates on consignment for a 25% fee.

Blue Mountain Station: Commercial kitchen resources & characteristics

- 1,152 square feet
- Food-grade wall covering (FRP) to a height of 6 feet; 10-foot ceilings
- Type 1 exhaust hood over 6 burner propane stove/oven combo
- Electric convection oven
- Under-counter commercial dishwasher
- 8’ x 8’ walk-in cooler
- 8’ x 8’ walk-in freezer
- Floor mixer, cutting boards, and miscellaneous kitchen items
- Stainless steel 3 compartment sink, separate vegetable washing sink
- Janitor’s closet with mop sink
- Floor drains
- Glass front entry door and windows to the south
- Double doors to rear of the building (service and delivery area)
- Access to public restroom
- Serving counter/window into shared retail area
- Opportunity to sell product in shared retail area
- May be leased by the hour occasionally or on a regular basis.
- Rates, rules, and user agreement available at www.bluemountainstation.com

BMS: Commercial kitchen

BMS has a well-developed commercial kitchen that it continues to upgrade to meet user needs. The BMS commercial kitchen is heavily used by Walla Walla producers, caterers, and other food business entrepreneurs as well as those closer to Dayton. BMS rents out its commercial kitchen by the hour. It is at capacity for use during the day but still has additional capacity at night. The Port of Columbia handles all the rental paperwork and money.

The commercial kitchen is one area of BMS's operations that could be hurt by competition if more facilities are developed elsewhere in the Walla Walla Valley. At the same time, as Jennie Dickinson, BMS director, expressed, some competition is not necessarily a bad thing, and growth of a local and regional food business cluster in the Walla Walla Valley could increase use of BMS as well as support additional food hub and private development in the area. Therefore, new commercial kitchen development is not necessarily competitive but would need to be very carefully planned.

BMS has established infrastructure and a lot of land. BMS would love to be the location of the food hub or otherwise be a part of it. BMS makes great sense as a partner of a distributed system in the Walla Walla Valley and as a center of gravity for the northern portion of the study area. Compared to Walla Walla, Dayton is also a better location to pull in business from Lewiston, Clarkston, Pullman, and Moscow.

Blue Mountain Action Council Food Bank

Meeting the needs of the BMAC Food Bank is a primary driver of this project. The Food Bank is currently constrained by the size and format of its building. For a variety of reasons, including an increased emphasis on nutrition and health and a revitalization of local vegetable farming, the Food Bank is distributing more fresh produce and dairy, which require additional storage and space for handling. The Food Bank also receives donations that need to be minimally processed before they can be distributed to consumers.

The Food Bank distributes to 24 agencies in a five-county area. In any given month it has about 100 sources of food. USDA provides 44% of the total food it receives. The scale of need is large and not going away, and the Food Bank is growing rapidly in the volume of food distributed and overall impact. Food Bank programs are expanding, especially for youth and seniors.

From interviews with Jeff Mathias, the BMAC Food Bank Director, the Food Bank operates out of a 5,000 square foot, BMAC-owned building in a good location and on a lot big enough to more than double the building size. The idea is that when the Food Bank remodels or moves to a new building, it will include some extra space for a food hub, which will provide complementary and supportive services. The current lot is large enough for a building expansion adequate to anything planned during this project.

The Food Bank has many resources that could be useful to a food hub (see sidebar). For example, the Food Bank owns and operates a refrigerated truck, a van, and a pickup in the five-county area on a regular basis. It also regularly sends and receives trucks from the Seattle/Tacoma area and picks up donations at local grocery stores five days per week. Vehicles are usually empty driving one direction or the other; therefore, Food Bank vehicles could help in the transportation and distribution of food hub products.

Food Bank Existing Resources

- Electric forklift
- ½ ton pickup
- 2-ton cargo van
- 6-ton refrigerated truck (fits 10 pallets)
- Network of providers
- Other buildings
- BMAC is a big operation, some synergies with other programs

Food Bank vehicles are lightly used and could be available for use by a food hub to rent or buy into as the Food Bank would like to upgrade its vehicles soon. Ideally, a partnership would enable better, newer, and more vehicles to make a more efficient transportation system and reduce costs for both.

Food Bank routes and current producers

The Food Bank runs five routes each month throughout southeastern Washington, four of which currently return from the drop-off location with empty trucks (Table 33 and Figure 40).

Table 33. BMAC Food Bank shipping route schedule, 2018

BMAC shipping routes to…	Date of month	Return load
Pasco, Connell, Basin City	First Tuesday	Empty
Clarkston	First Wednesday	Empty
Pasco	First Thursday	Full
Pomeroy, Clarkston	Third Tuesday	Empty
Waitsburg, Dayton	Third Wednesday	Empty
Miscellaneous shipments		**Capacity**
Dayton volunteer pickup	Every Tuesday	1,100 lb.
Burbank	First Wednesday	1,500 lb.
Walla Walla grocery store pickups	Weekdays	

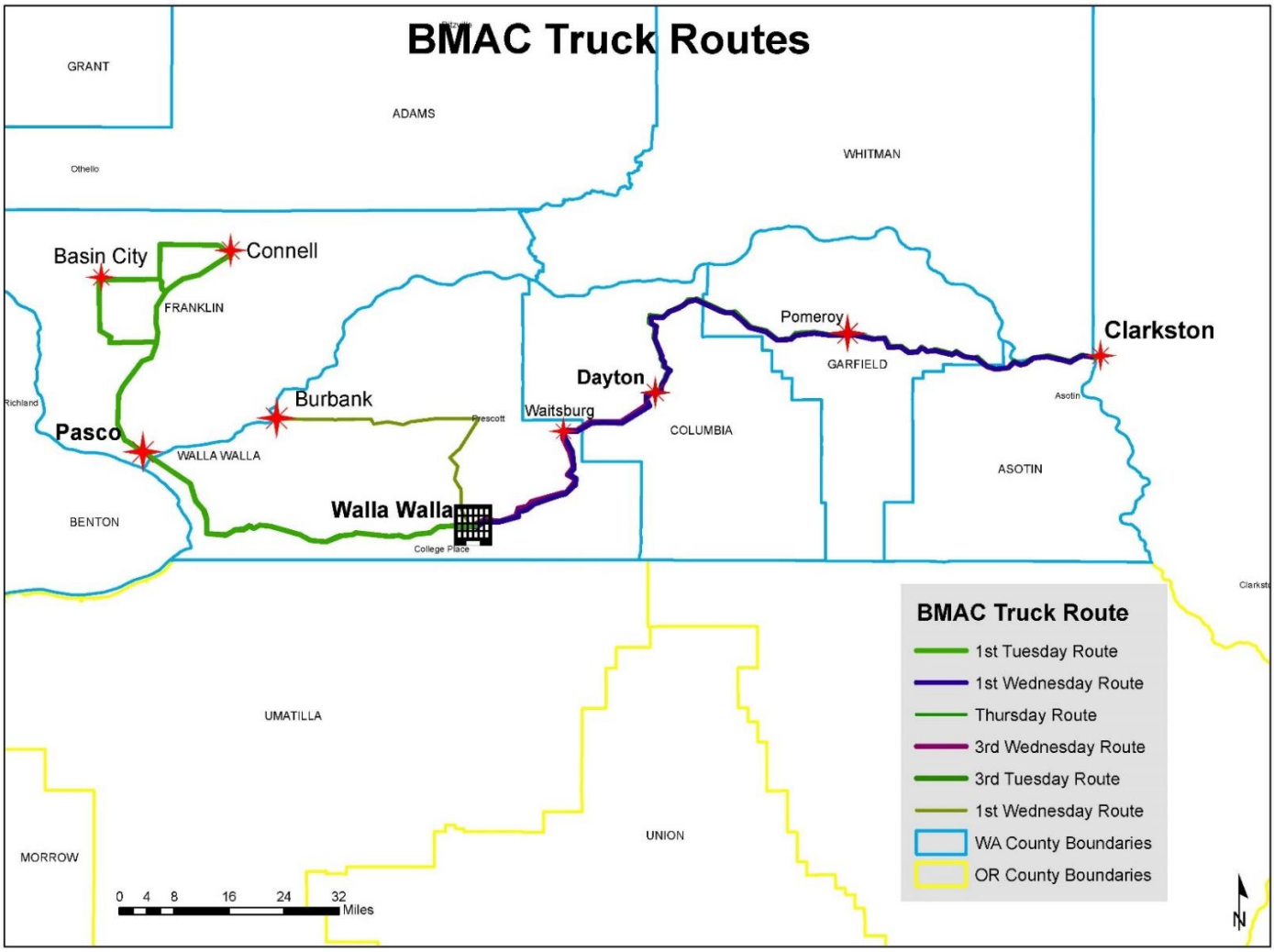

Figure 40. BMAC Food Bank shipping route map, 2018 (Map provided by Walla Walla Conservation District).

The Food Bank currently has refrigerated and freezer space, although not adequate to its current needs. These can be built upon as part of a more comprehensive system to better meet Food Bank and food hub needs.

Another advantage of partnering with the Food Bank for a food hub is that the Food Bank already receives donations from a large pool of farmers in the area, some of whom would be potential participant farmers in a food hub as well. The food hub will also likely bring new producers to the mix, some of whom will also provide food to the Food Bank.

Food Bank needs

A basic premise of this feasibility study is that the Food Bank needs to expand to meet its current and future needs, regardless of the food hub effort. The following is a list of what the Food Bank needs.

- **More space.** The Food Bank needs to double its building space, more than double its cooler and freezer capacity, and add some minimal processing capabilities. All storage space needs to be set up for forklift use with racks three pallets high, including freezers and coolers. It needs more office space, warehouse space, staging areas, a better kitchen, and more loading docks.
- **Space for volunteers and education.** The Food Bank needs space for volunteer and educational activities, including a community room, a teaching kitchen, and some educational space. These could be in a separate building from the warehouse and distribution functions.
- **Separate public and warehouse space**. The Food Bank needs to separate public services such as donation drop-offs from working areas. The constant flow of people dropping off donations or for volunteer activities pose safety problems in a warehouse with large trucks, forklifts, and other operations attempting to run as efficiently as possible.
- **Minimal and value-added processing.** Minimal produce processing—including washing, trimming, and packaging—would help the Food Bank salvage more of the donations it receives. Value-added processing, such as turning tomatoes into canned sauce, would extend shelf life and reduce waste.
- **Reuse waste.** Receiving and processing food donations generates a lot of waste. The Food Bank needs a good waste system. Composting, feeding it to animals, and generating bioenergy are all options that were discussed.
- **A partner to share costs.** The Food Bank has existing trucks and equipment, which can be shared or leased. Sharing equipment costs and use with a food hub would enable better equipment at a lower cost for everyone.

Table 34 summarizes estimated Food Bank space and equipment needs.

Table 26. Summary of BMAC Food Bank facility needs

Specific functions	Requirement
Storage (forklift ready)	
Cold storage for fruit	400 sq. ft
Cold storage for vegetables	800 sq. ft
Variable temperature cold storage	400 sq. ft
Freezer	800 sq. ft
Dry storage	5,000 sq. ft
Equipment for minimal processing	
Sinks and equipment for washing and drying	2 triple sinks
Equipment for cutting and trimming	
Palette wrapper	
Vacuum sealer	
Packaging	
Fresh vegetable and fruit	
Dry goods	
Frozen	
Bottling	
Vehicles and other equipment	
New refrigerated truck	6 ton
New refrigerated van	2 ton
Existing pickup	1/2 ton
New electric forklift and charging station	
Building requirements	
Public receiving area: one loading dock	600 sq. ft
Non-public receiving area: two loading docks	1,200 sq. ft
Non-public shipping area and staging area: two loading docks	1,200 sq. ft
ADA parking lot	3,600 sq. ft
Three staff offices	500 sq. ft
Volunteer/community room	900 sq. ft
Area for equipment and processing	2000 sq. ft
Education and demonstration kitchen area	400 sq. ft
Staff and volunteer kitchen area	200 sq. ft
Bathrooms	200 sq. ft
Utility room	200 sq. ft
Supply room	100 sq. ft
Space for waste separation, storage, and processing	400 sq. ft
Floor drains	Yes
Room to grow!	3,000 sq. ft

Food Bank's current and potential economic impacts

The BMAC Food Bank has a highly successful distributive operation stretching over five counties and headquartered in Walla Walla County. The Food Bank has an approximate $372,000 annual operating budget. For this assessment, we assumed that in the absence of the Food Bank, most of its funding would have moved to other cities in the state or out-of-state.

The Food Bank creates a total of 6.1 regional jobs, $173,575 in salaries and benefits, $263,059 in gross regional product, and $553,989 in sales (output), including multiplier effects. In addition, it contributes approximately $5,420 in property taxes, $10,092 in sales and excise taxes, and $2,137 in other taxes, for a total of $17,649, including multiplier effects (Table 35).

Table 35. Economic impacts of the BMAC Food Bank

Impact type	Employment	Labor income	Gross regional product	Output
Direct effect	4.8	$127,109	$174,952	$381,088
Indirect effect	0.7	$22,077	$41,641	$91,154
Induced effect	0.6	$24,390	$46,466	$81,747
Total effect	**6.1**	**$173,575**	**$263,059**	**$553,989**

The Food Bank has many opportunities to expand both by itself and in cooperation with the proposed food hub. If its revenues were to increase from $381,088 to $930,000 in five years, for example, the employment impacts would increase from about 6 jobs to 15 jobs, paying out $422,415 in labor income, $640,180 in gross regional output, and $1.353 million in sales (output). The tax contributions would increase to $42,950 in state and local taxes. If one of the food hub scenario opportunities fully develops, the job impacts could increase to more than 50, depending on the enterprise (Table 36).

Table 36. Economic impacts of the BMAC Food Bank under theoretical expansion

Impact type	Employment	Labor income	Gross regional product	Output
Direct effect	12	$309,333	$425,763	$930,000
Indirect effect	2	$53,725	$101,338	$222,980
Induced effect	2	$59,355	$113,080	$199,808
Total effect	**15**	**$422,415**	**$640,180**	**$1,352,788**

Food Bank partnership conclusions

The Food Bank needs a new or expanded facility as soon as possible. BMAC can fundraise the building expansion, which would allow the Food Bank to maximize efficiencies and handle considerably more volume than it does now. The expansion could also include space for community and educational needs. Food Bank interests, needs, and resources are a critical strength of this food hub development opportunity and provide a basis for making many food hub scenarios feasible.

Putting it all together: Food hub scenarios

Scenario introduction

We developed four scenarios to explore feasibility and tradeoffs of food hub development options. **Scenario 1** describes an aggregation, storage, distribution, and marketing food hub like LINC Foods or Western Montana Growers Cooperative. We refer to Scenario 1 as a distribution food hub, since most of its services are like those offered by regional food distribution companies. **Scenario 2** explores value-added processing options based on three products (salsa, marinara, and popsicles), **Scenario 3** examines a retail operation, and **Scenario 4** focuses on a commercial kitchen option. All scenarios assume the BMAC Food Bank will remodel its existing building or buy a new building regardless of whether a food hub develops, and meeting the requirements of the Food Bank is considered under all scenarios.

These scenarios were developed through an iterative, multi-stage process. We developed the initial scenario descriptions and frameworks based on information generated from key informant interviews, case studies, the 2019 Food Producers' Workshop, and steering committee meetings. We then presented the resulting preliminary scenarios to the project steering committee and updated and further refined them based on their input and feedback.

Overall, many scenarios are feasible for developing a food hub. What is actually built will largely be determined by the energy and vision of those who participate and the resources they are able to bring to bear. Through the feasibility study process, the steering committee settled on value-added products as the scenario they wanted to focus on for several reasons. Importantly, key informants from case study food hubs and other organizations recommended skipping the many years of struggle to make a distribution food hub work and focus from the start on value-added processing as a better path to profitability and sustainability. Being a part of an ongoing planning process was an important aspect of this feasibility assessment. Steering committee members along with additional producers were very interested in taking steps to start producing a value-added product as soon as possible and did not want to stop and wait for the completion of the feasibility report. To maintain their momentum towards setting up one or more value-added processing lines, members of the steering committee called other value-added processors, toured operations, attended conferences, and otherwise actively began narrowing down the options. What they learned was integrated into Scenario 2.

Scenario 1: Distribution food hub

Scenario 1: Description

Many suppliers and buyers wanted additional distribution options to move local food products both within Walla Walla Valley communities and to broader regional markets. This distribution scenario leverages many Food Bank resources and services since a main function of the Food Bank is aggregating and distributing food.

The core assumption in this scenario is that the distribution food hub would be co-located with the BMAC Food Bank in their newly expanded building in Walla Walla and the two entities would share some docking, processing, storage, meeting, and other space as well as some equipment and trucks. Table 37 presents the equipment and space that a distribution food hub would need for its exclusive use and the resources that could be shared between the two entities.[xxv] "Shared use" in Table 37 means the food hub would buy into the resource (e.g., trucks and processing equipment) with the Food Bank rather than having to buy the resource on its own. Everything not identified as "shared use" in the table are the resources the food hub would have to invest in independently or lease from the Food Bank.

Table 37. Needs of distribution food hub in addition to Food Bank needs addressed in Table 34

Specific functions	Requirement
Aggregation	
Farmer drop-off	
Storage (forklift ready)	
Cold storage for fruit	400 sq. ft
Cold storage for vegetables	800 sq. ft
Variable temperature cold storage	400 sq. ft
Freezer	2,000 sq. ft
Dry storage	1,000 sq. ft
Equipment for minimal processing	
Triple sink for washing and drying	1
Equipment for cutting and trimming	Shared use
Packaging	
Fresh vegetable and fruit	Shared use
Dry goods	Shared use
Frozen	Shared use
Bottling	Shared use
Vehicles	
New refrigerated truck	Shared use
New refrigerated van	Shared use
Pickup	Shared use
Other Equipment	
Electric forklift and charging station	Shared use
Palette wrapper	Shared use
Vacuum sealer	Shared use
Building	
Loading docks	1 more dock
Non-public shipping and staging area	600 sq. ft.
ADA parking lot	400 sq. ft
Staff office	300 sq. ft
Volunteer/community room	Shared use
Space for equipment and processing	500 sq. ft
Cool storage area	500 sq. ft
Education/demonstration kitchen area	Shared use
A staff/volunteer kitchen area	Shared use
Breakroom with lockers	400 sq. ft
Bathrooms	Shared use
Utility room	Shared use
Supply room	200 sq. ft
Waste separation, storage, and processing	100 sq. ft
Floor drains	Shared use
Room to grow	1,000 sq. ft

Scenario 1: Additional options

Processing

Participants in the first public meeting and steering committee members discussed three processing options for the distribution food hub:

1. Farm drops off products to the food hub building ready to be delivered to the customer (i.e., the farmer cleans, processes, and packages their own products, as necessary, themselves before they drop them off at the hub).
2. Farm brings unprocessed products to the food hub and pays a fee to use food hub equipment to do any needed processing themselves.
3. Farm brings unprocessed products to the food hub and pays the food hub to do any needed processing (e.g., cleaning, trimming, cutting, packaging). The Food Bank could also pay the food hub for the processing services it needs.

On-farm pick up

This scenario assumes farms would transport their products to the food hub themselves, at least to start. Participants in meetings and interviews thought on-farm pickup would be a useful service for a distribution food hub but was unnecessary. They thought on-farm pick up is a service that could be added in a later phase of development.

Pick up at Food Bank distribution sites

Another possibility is for farmers to drop off their products at Food Bank distribution sites outside of Walla Walla from where Food Bank trucks currently return empty, such as Pasco, Clarkston, Dayton, and Waitsburg, to be hauled to the food hub on their return to Walla Walla.

Sales, marketing, and communication

Many farmers wanted a food hub employee to handle sales and marketing; therefore, the food hub could do some collective marketing for the organization and could manage relationships with buyers. Adding a full-time salesperson would be a short-term goal, but not necessarily feasible as part of the initial startup. Communication to buyers could also include a food hub fresh sheet to communicate what is collectively available in short-term (e.g., weekly) and medium-term (e.g., months or seasons) timeframes to facilitate access to institutional markets.

Farm-identified products and collective branding

Farmers involved in the feasibility study wanted two layers of branding: products would continue to be farm identified, as desired, but the food hub would have its own branding to use for marketing and, as applicable, packaging. That is, the shared food hub branding would be more at the level of a marketing point, like being Salmon Safe, for farm-identified products.

Community Supported Agriculture (CSA)

Some farmers were interested in a food hub facilitating access to direct-to-consumer markets, especially through development of a collaborative CSA. The idea was the CSA could offer a wide variety of products, including vegetables, fruits, dairy, meats, value-added products like jams and sauces, and non-food items like flowers. To improve distribution efficiency and build a customer base, another idea was

for the CSA to serve customers at workplaces with many employees, such as Key Technologies or institutions. Smaller-scale farms especially liked this idea, including one who had had their own CSA and had struggled to keep up with it.

On the other hand, many farmers did not think a CSA was a good idea for a food hub. In particular, the idea of adding a CSA operation to the food hub tended to be unpopular among those already operating successful CSAs (or other types of direct-to-consumer-focused operations). One guiding principle adopted by the feasibility study steering committee was that the food hub should not compete with its own producers. While there was some support for including a CSA, the decision was made to focus on other activities for the food hub start up and leave discussion of a CSA for a later stage of development.

Scenario 1: Financial considerations

The distribution food hub model requires considerable bootstrapping (i.e., use of existing resources), capital investment, or both to launch. Case study and other findings show distribution food hubs have very low operating margins (i.e., profitability once the cost of goods sold and operating expenses are considered) and, even when successful, generally take 7-10 years to become profitable. The breakeven point for this type of food hub ranges from $500,000 to $1.2 million in sales for a typical enterprise and grants are usually needed to facilitate the scaling up needed to reach profitability.

A distribution food hub also would require many employees. Table 38 breaks down the number of employees needed for even a mid-scale operation.

Using Western Montana Growers Cooperative (WMGC) as an example, a fully scaled up distribution system would have seven full-time employees and 15 part-time employees during the summer. The start-up process for WMGC took about $400,000 in government and member loans and use of member resources. Realistically it would take between $500,000 and $1 million dollars to launch and fully scale up an operation from scratch as warehousing, transportation, and refrigeration costs are substantial. WMGC had about $3.56 million in sales in 2018, with 49% of their sales in dairy and eggs.

Table 38. Job positions and number of employees needed for distribution food hub

Job position	Number needed
Salespeople	2
Manager	1
Truck drivers	3
Warehouse workers	6

The Walla Walla effort has an advantage because much of what is needed to start a distribution food hub could be initially met by collaborating with the Food Bank.

Scenario 1: Economic impacts

To understand economic impacts, we modeled a fully operational aggregation-distribution enterprise such as LINC Foods or Western Montana Growers Association. We assumed $1.5 million in annual gross revenues and 10 full-time and part-time employees. We employed a modified IMPLAN wholesale sector shock to the economy. We assumed that most of the sales are out-of-region throughout Washington State.

Factoring in the multiplier analyses, the distribution food hub would annually create a total of 19 regional jobs, $553,879 in salaries and benefits, $1.17 million in gross regional product, and $1.9 million

in sales (output), including multiplier effects. In addition, the enterprise would contribute approximately $107,102 in property taxes, $199,399 in sales and excise taxes, and $6,433 other taxes, for a total of $312,934, including multiplier effects (Table 39).

Table 39. Economic impacts of a distribution food hub

Impact type	Employment	Labor income	Gross regional product	Output
Direct effect	15	$384,186	$901,632	$1,430,470
Indirect effect	2	$74,701	$128,685	$260,580
Induced effect	1.9	$74,992	$142,918	$251,386
Total effect	**19**	**$533,879**	**$1,173,235**	**$1,942,436**

Scenario 1: Conclusions

The Walla Walla Valley food hub effort has tremendous advantages over any of the other similar distribution food hubs studied in the region because of the opportunity to collaborate with the Food Bank. While a number of producers and value-added processors wanted this option, and while a market and a pathway to a profitable operation clearly exist, no one in the steering committee, WWVFSC, those interviewed, or known of by those participating in the project thought it was a good option to pursue for the start up. A main reason referred to by many was the need to focus on what is most profitable from the beginning. This was a lesson learned expressed by a number of those interviewed from existing food hubs. A distribution food hub is a lot of work, difficult to make profitable, and once it becomes profitable, it is still a lot of work and difficult to keep profitable.

One alternative would be to work with other developing local distribution businesses and regional food hubs to meet this need. It may be possible for LINC Foods, for example, to expand in the Walla Walla Valley as an alternative to establishing an independent local network.

Scenario 2: Value-added processing

Scenario 2: Description

Interest in and need for processing, especially for crops not currently picked or seconds was an interest of almost everyone interviewed, including the Food Bank, making it an important opportunity with potential food security benefits. Interest in value-added processing was also strong among those who took the supplier survey, of whom 64% said they are interested in producing and selling processed or value-added food products in the future (including new, expanded, or different products for those already selling processed or value-added products) (n=67). Value-added processing can increase profits for producers, create more options for consumers, and build the local economy and food system.

For the purposes of this report, value-added processing is understood to be at a scale larger than using a commercial kitchen and that requires multiple producers or staff beyond what a single farm can support. However, it is smaller than many conventional food-processing operations in that it is sized to be optimal for small and mid-sized farms. This means the goal, at least initially, is at most to process hundreds of acres of produce, not tens of thousands.

The processing lines analyzed are sized to use a few acres worth of produce and can be scaled up as sales increase. A wide variety of options were identified for minimal processing, such as wash-and-cut vegetables for sale to institutions and retail markets to salsas and marina sauce processing lines for larger-scale production targeting regional markets.

This value-added processing scenario developed through many conversations and meetings both in and outside of the steering committee over the length of the project. We considered many options, some of which resonated, and most of which did not. Flash freezing, juicing, root washing, and co-packing, for example, were brought up multiple times in interviews and by the steering committee but found no advocates over the long run of the feasibility study process.

As the conversations evolved, three value-added product options (i.e., popsicles, salsa, and marinara sauce) solidified as those of most interest to the stakeholders ready to move forward. Specifically, members of Walla Walla Grown developed a plan for developing these products primarily because these three value-added products met the following criteria:

1. The raw ingredient need was at the scale of their production.
2. The product is sized at a small fraction of the market opportunity.
3. Main ingredients were ones produced by participating farmers.
4. Capital costs are low enough that the current group of interested producers could launch the enterprise.
5. The product line directly aligned with Food Bank needs and was synergistic and mutually beneficial with the Food Bank.

The ideas for these products come from producers in the steering committee and in Walla Walla Grown, whose members where active in the effort well before this feasibility study. Salsa and marina where both identified by the Food Bank and institutional and retail buyers as of interest as well. Our analysis suggests these products also have the greatest chance for success in the future in part because they have the greatest interest among the most active food coalition participants. Food coalition members have already completed substantial preliminary work to develop these value-added lines.

Scenario 2: Financial analysis framework and approach (caveats)

In this section we present financial analyses for the three value-added product lines prioritized by the WWVFSC: 1) salsa, 2) marinara sauce, and 3) popsicles. Data availability was greatest for salsa manufacturing; therefore, we used the salsa option as a template to evaluate all three products.

The financial analysis presented in this report is a starting point for moving forward in the future. It will need to be adjusted according to experience during the actual start up. Our approach does not account for significant likely efficiencies; therefore, it overestimates costs. Reflecting the available data, the core basis of the analyses are small-batch operations involving a 10-gallon process with some labor-intensive operations (i.e., more at the scale of a large commercial kitchen or test batch size). A 50-gallon or 100-gallon batch size is preferable, both of which were considered as options. We expect substantial economies of scale to develop through mechanization and learning-by-doing as the operations are scaled up. Since the equipment identified by Walla Walla Grown is the 100-gallon option, we used capital and startup costs for that equipment line in all value-added scenarios. This likely dramatically overestimates capital costs for popsicles, for example, although there are likely additional costs in distribution and sales that may offset less expensive processing equipment.

We evaluated each value-added product as standalone for-profit enterprises for the purpose of clarity and simplicity of analysis. Most likely, product lines will combine to share expenses, equipment, and facility space. This could dramatically reduce cost per unit of production across multiple units and encourage economies of scale among the different products and services created by the food hub. Another important factor is that initial capital costs may be at least partly covered by the Food Bank or grants. The analysis also does not account for the scaling up operational period and the ultimate capital costs of acquiring a new facility in the long run.

Pricing and distribution

The prices presented in these analyses are the net prices received by the producers. It does not include the distribution markups that will be reflected in the final prices to the consumers. Those markups can average from 30% to 45% in traditional largescale retail distribution systems. Markups can be much less for other types of distribution systems, including venues such as farmers markets where producers will sell directly to the consumer. Online sales are another avenue with lower or zero markups but will incur additional shipping and handling costs. At a 30% markup, for example, the base case price of $10/bottle of salsa would sell for $13/bottle to the public. The market prices (to the public) of both salsa and marinara range from about $5.00 per unit to over $18 per unit. On average, prices range between about $8 per bottle to $10 per bottle for both salsa and marinara. There was also a considerable range in the price of popsicles, which is dependent on the quantities included in the package. The base case prices used in this simulation were $10 per bottle for salsa (16 ounces), $11 per bottle for marinara (12 ounces), and $3 per popsicle based on the recommendations of the steering committee.

Specialty gourmet products

The product mix are specialty and gourmet high-end products. The expectation is they will command a price premium in the marketplace. This does not preclude offering bulk products to institutional buyers at reduced rates or offering an array of products with differing qualities and prices. The steering committee suggested that smaller quantities might be advisable for salsa and marinara (i.e., 12 ounces) in keeping with modern household cooking practices that employ smaller batches. It could also add to the upscale appeal of the products and will reduce production costs. The marinara sauce scenario was changed from a 24-ounce bottle to 12-ounce bottle scenario as a result of this suggestion.

Real estate capital costs and leasing

Construction costs for a new warehouse/manufacturing facility ranges from $150 to $400 a square foot, averaging about $194 per square foot annually in the western United States, excluding land acquisition costs.[xxvi] For existing facilities in the greater Walla Walla Valley, the cost can range between $36 to $130 per square foot depending on availability and attributes. Commercial and industrial lease rates range from $.50 per month to $2.50 per month, depending on location, attributes, and amenities.[xxvii] The economy (year 2020) is near the peak of the business cycle when labor is scarce and relatively expensive.[xxviii] With such a robust economy, land acquisition and construction costs are high and the timing of new construction should be carefully considered. It might be possible to lease a temporary location during the scaling up process and acquire and build a permanent facility later, perhaps in coordination with the expansion plans of the BMAC Food Bank. Currently the food coalition has potential access to a 3,000 sq. ft. warehouse that can be leased at $0.50 per sq. ft. per month. The lease is scalable, and 1,000 square feet of this space could be leased at a cost of $6,000 per year ($0.50 * 1,000 sq. ft *12 months).

Initial capital investment and equipment

The proposed food hub has many possible configurations that vary widely in equipment and capital costs. Estimates for the equipment needed for salsa is $75,702, and some of this equipment would potentially be available for additional value-added products or commercial kitchen use (Table 40). The process will need freezer space, additional equipment, and remodeling for the leased facility. We estimate the upfront costs of starting the food hub to manufacture value-added products at about $180,000. Including the cost of a used refrigerator truck at about $20,000, the total estimated start-up costs are $200,000.

Table 40. Pricing of equipment for value-added processing

Equipment	Price
Chili Roaster	$2,500
Kettles	$35,000
Screw press	$860/month
Fermenting Barrels, plastic buckets	$500
Chopper/Food Processor	$20,000
Blixer Blender	$12,000
Pump Filler	$3,000
Stainless tables	$1,000
Total	**$75,720**

In the financial analysis, we assume a 7% interest rate for the $200,000 loan. For the depreciation expense we assume a $10,000 salvage value and a 10-year straight-line depreciation. Interest expense is $14,000 annually and depreciation is $19,000 annually.

Scalability of value-added products

Value-added products are particularly appealing because they are very scalable with low overall capital and fixed costs. Both capital and labor are scalable. For farmers, value-added products can be produced during winter months, complementing their annual farming schedule. Overhead costs can initially be minimized while the products are being created, tested, and marketed. Available grants and contracts also may be used to mitigate initial start-up capital costs. Our financial analysis primarily focuses on the viability of a “scaled-up” operation in the range of about 50,000 bottles of salsa annually.

Value-added product cost components

In this section, we outline the key cost components of the proposed value-added products. Then we will conduct a “deep dive” into the cost and revenue structure of salsa manufacturing where we have the most complete data. Excluding the direct production costs, most of fixed expenses are similar for the other value-added products.

Trucking and transportation costs

A refrigerated truck will likely be an essential component of the food hub, both for transporting products to market and to serve as portable refrigerated/freezer storage. Refrigerated truck prices vary considerably depending on the size, attributes, year, and other factors and can range from $8,000 to over $100,000. We found several trucks under $20,000 that would likely work well for start-up operations (Figure 41).[xxix] Annual cost of gasoline is estimated to be about $8,900. Repairs and maintenance are estimated at $0.12 per mile or about $3,600 annually.[xxx] For labor we estimate about ½ year full-time (1,040 hours at $20 per hour, fully loaded salary) at a cost of $20,800 per year.

Figure 41. Refrigerated truck for sale for $19,800

We estimate that the truck would operate and travel 6 months out of the year (although there is a wide variance). The average fuel mileage is about 9 miles to the gallon and would consume an estimated 3,333 gallons per year at an average cost of $2.67.[xxxi] Total estimated operating cost is $33,300 per year (Table 41). This does not include the interest or depreciation included in the capital costs.

Table 41. Transportation costs

Description	Cost
Fuel (30,000 miles *$2.67/gal)	$ 8,900
Repairs ($0.12 per mile)	$ 3,600
Labor (2,040 hrs. *20/hour)	$ 20,800
Total costs	**$ 33,300**

Total operating cost is $1.10 per mile, which is consistent with the annual costs of operating a tractor trailer-type truck at $1.38 per mile.[xxxii] Labor for truck operations is included in trucking costs and not in the labor component of the financial statements, which only include production labor expenses.

Marketing costs

Marketing costs for each scenario was included as a $5,000 fixed cost. The true marketing costs are unknown. It was suggested by a steering committee member that marketing costs in the scenarios might be low and should be set between 5% to 10% of total revenues. This would reflect the marketing costs of a traditional retail store outlet. It is unclear that increasing marketing costs would be appropriate for the value-added products in this proposal. Many avenues exist for advertising such as word-of-mouth, Internet and social media, and other types of networking. The true marketing cost in these scenarios will have to be determined during the start-up process.

Scenario 2: Salsa

Salsa product revenue and production assumptions

The following section outlines the cost structure and revenue profile of salsa production. The base case features a 10-gallon steam batch (small batch process) that produces 80 16-ounce jars of salsa per batch (128 ounces per gallon total per batch). There are 12 jars per case, 6.7 cases per batch, and 80 jars per batch. For the base case, each jar sells for $10 each or $800 of revenues per batch.

Salsa: Food preparation labor costs (small batch)

A small-batch (i.e., 10-gallon batch) food preparation analysis was the basis for the small-batch salsa labor estimation. The numbers in Table 42 were provided by Walla Walla Grown. They estimated that it takes 600 minutes (10 labor hours) to prepare the vegetables, 120 minutes (2 hours) to cook the ingredients, 80 minutes (1.33 hours) to jar the salsa, 40 minutes to label the jars, (0.67 hours), and 120 minutes (2 hours) for cleanup. In total, it takes about 960 minutes or 16 hours to produce one batch or 80 jars of salsa. If we assume a fully loaded wage (i.e., a wage including benefits) of $18 per hour, it costs $288 of labor per batch of 80 jars. Scaling up to 667 batches (53,360 bottles) annually would cost 10,672 labor hours or 5.13 full-time equivalent jobs annually, costing $192,096 (Table 43).

Table 42. Salsa production labor time requirements

Task/batch	Labor minutes	Labor hours
Prep Veg	600	10.00
Cook	120	2.00
Jar	80	1.33
Labels	40	0.67
Cleanup	120	2.00
Minutes/batch	**960**	**16.00**
Total batches (667)	**640,320**	**10,672**

Table 43. Labor costs for small-batch salsa production

Personnel requirments	Total
Wage ($18/hour)	$192,096
Total annual FTEs	5.13

Salsa: Economies of scale (larger batches)

We assume economies of scale will substantially reduce labor costs per batch and overall costs. This includes the benefits of learning-by-doing as production expands and from increasing capital acquisition. A simulation of these effects is included in the analysis. We assume that at the 50-gallon batch size, labor costs fall by 18.8% (13 labor hours equivalent) and by 37.5 % at the 100-gallon batch size (10 labor hours equivalent).

Table 44 outlines the cost per batch size at differing economies of scale. At a 10-gallon batch, the labor costs are 16 hours per batch or $288. For a 50-gallon batch the labor costs are $234 per 10-gallon batch equivalent and for the 100-gallon batch size they are $180 (per 10-gallon equivalent). Per 100-gallon batch size, the labor costs are $2,880 at 16 hours per 10-gallon batch equivalent, $2,340 at 13 hours per 10-gallon batch equivalent, and $1,800 at 10 hours per 10-gallon batch equivalent.

Table 44. Economies of scale of labor costs per batch size, at wage of $18.00/hr

	Production time per 10 gal. produced		
Total batch size	16 hr./10 gal.	13 hr./10 gal.	10 hr./ 10 gal.
10 gal. batch	$ 288	$ 234	$ 180
50 gal. batch	$ 1,440	$ 1,170	$ 900
100 gal. batch	$ 2,880	$ 2,340	$ 1,800

Salsa ingredients

Tomatoes are a primary ingredient to salsa production. The Walla Walla Valley is a rich irrigated agricultural region where tomatoes grow well. Production and price information was obtained from the food coalition members and from Washington State University crop budgets.[xxxiii] We estimate that

tomatoes can be obtained at about $0.67 per pound, although considerable variability exists. It may be possible to obtain field "seconds" appropriate for canning or freezing but with visual imperfections for lower costs. Onion costs are estimated at $0.08 per pound based on discussion with food coalition members and University of Idaho crop budgets.[xxxiv] Chili peppers are estimated at $0.25 per pound based on prices in local markets and discussions with food coalition members.

The food coalition members estimated that for a 10-gallon batch of salsa, 60 pounds of tomatoes, 30 pounds of peppers, and 15 pounds of onions are needed (Table 45). These quantities are proportionally scaled for the 50-gallon and 100-gallon batch sizes.

Table 45. Salsa ingredient requirements

	Pounds of ingredients required per batch size		
Ingredients	**10 gal. batch**	**50 gal. batch**	**100 gal. batch**
Tomatoes	60 lbs.	300 lbs.	600 lbs.
Peppers	30 lbs.	150 lbs.	300 lbs.
Onions	15 lbs.	75 lbs.	150 lbs.

Salsa ingredient costs

For a 10-gallon batch, tomatoes will cost $40.15, peppers will cost $7.40, and onions will cost $1.24. Total costs for a 10-gallon batch is $48.79. For a 50-gallon batch the cost is $243.94, and for a 100-gallon batch the cost is $487.89 (Table 46).

Table 46. Costs of salsa ingredients

		Expenditures per batch		
Ingredients	**$/lb.**	**10 gal. batch**	**50 gal. batch**	**100 gal. batch**
Tomatoes	$ 0.67	$ 40.15	$ 200.76	$ 401.51
Peppers	$ 0.25	$ 7.40	$ 37.00	$ 74.00
Onions	$ 0.08	$ 1.24	$ 6.19	$ 12.38
Total/batch		**$ 48.79**	**$ 243.94**	**$ 487.89**
Expenditures*		**$ 32,541.97**	**$ 32,541.97**	**$ 32,541.97**

*Overall for 53,360 bottles the total ingredients cost $32,541.97.

Salsa: Other variable costs

The jars (bottles) and lids cost about $0.50 each for a total cost of $40 per 10-gallon batch.[xxxv]

Other miscellaneous supplies we estimate at $.10 per bottle or $16 per 10-gallon batch. We estimate spoilage at 5% of revenues (80 bottles * 5% * $10/bottle) or $40 per 10 gallon batch (Table 47).

Table 47. Other Variable Costs Per Batch - Salsa

Type of cost	Bottle/batch	Costs per batch 10 gal. (80 bottles)	50 gal. (400 bottles)	100 gal. (800 bottles)
Bottling costs	$0.5 Bottle	$ 40.00	$ 200.00	$ 400.00
Supplies	$0.10 Bottle	$ 16.00	$ 80.00	$ 160.00
Spoilage	5%	$ 40.00	$ 200.00	$ 400.00

Salsa: Fixed costs

We are assuming an initial lease of 1,000 square feet at $0.50 per square foot per month or $6,000 per year. We estimate insurance costs at $5,000 per year although considerable variability exists, especially if it includes errors and omissions insurance (Table 48). For marketing, we allocated a fixed $5,000 per year, although it will likely vary widely as well. For management, we assumed a full-time manager at $25/hour, including benefits or $52,000 per year. For heat and electricity, we assumed $700 per month or $8,400 per year. For sewer, water, and garbage, we assumed $400 per month or $4,800 per year. Interest expense was estimated at $14,000 annually (7% interest), and depreciation is $19,000 annually (with a $10,000 salvage value).

Table 48. Annual fixed expenses

Expense	Yearly
Lease	$ 6,000
Insurance	$ 5,000
Marketing	$ 5,000
Management	$ 52,000
Heat/Electricity	$ 8,400
Sewer, Water, Ga.	$ 4,800
Interest	$ 14,000
Depreciation	$ 19,000
Total	**$ 114,200**

Salsa: Total revenues

We assumed a base case of $10 per bottle of salsa based on information provided by food coalition members. The base case assumes that 53,360 bottles are sold once the enterprise is fully scaled-up. This translates into 667 batches for the 10 gal. size, 133 batches, for the 50 gal. size, and 66.7 batches for the 100 gal. size. Total revenues are $533,600 for the base case (Table 49).

Table 49. Salsa revenues

Size/batch	Batches	Bottles/batch	Bottles	Revenues
10 gal.	667	80	53,360	$ 533,600
50 gal.	133	400	53,360	$ 533,600
100 gal.	66.7	800	53,360	$ 533,600

The *proforma* income statement for the salsa base case is presented in Table 50. Total revenues are $533,600 based on 53,360 bottles of salsa being solid at a price of $10 per bottle. Total variable costs are $332,642, leaving a gross margin of $200,958. Fixed costs are $114,200, leaving a net profit before taxes of $86,758.

Table 50. Proforma income statement for the Base Case - Salsa

Total revenues	**$533,600**
Variable costs	
Spoilage/Returns [xxxvi]	$26,680
Cost of Goods Sold	$32,542
Labor	$192,096
Trucking	$33,300
Add. Prod. Costs	$10,672
Supplies	$10,672
Bottling	$26,680
Total variable costs	**$332,642**
Gross margin	$200,958
Fixed costs	
Lease	$6,000
Heat/electric	$8,400
S/Water/Garbage	$4,800
Insurance	$5,000
Marketing	$5,000
Interest	$14,000
Depreciation	$19,000
Management	$52,000
Total fixed costs	**$114,200**
Total variable + fixed costs	**$446,842**
Net profits (before taxes)	**$86,758**

The majority of costs are variable (74.4%), and while 25.6% are fixed. The largest-cost item is labor (43%), followed by management salary (11.6%), trucking (7.5%), and cost of goods sold (i.e., the ingredients) (7.3%). The analysis suggests that given the low fixed costs and relatively low ingredient costs, production is very scalable. Production startup will have relatively low costs and can be expanded (relatively) smoothly overtime. Return on investment (ROI) is a robust 43% ($86,758/$200,000), although this metric must be viewed with caution for several reasons. First, this is a simulation of a fully scaled-up enterprise. Second, there may be additional capital costs and investment needed as the firm expands into a permanent facility. Marketing and transportation costs are likely to rise as well.

Table 51 presents the costs as percentages of variable and fixed costs separately and together as a percentage of total costs. For example, labor constituted 57.7% of variable costs and 43% of total costs. Management was 45.5% of fixed costs and 11.6% of total costs.

Table 52. Percent of costs for salsa production

Total costs	% Variable	% Fixed	% Total
Variable costs			
Spoilage/Returns	8.0%	---	6.0%
Cost of Goods Sold	9.8%	---	7.3%
Labor	57.7%	---	43.0%
Trucking	10.0%	---	7.5%
Add. Prod. Costs	3.2%	---	2.4%
Supplies	3.2%	---	2.4%
Bottling	8.0%	---	6.0%
Total variable costs	**100.0%**		**74.4%**
Fixed costs			
Lease	---	5.3%	1.3%
Heat/Electricity	---	7.4%	1.9%
Sewer, water, Gb.	---	4.2%	1.1%
Insurance	---	4.4%	1.1%
Marketing	---	4.4%	1.1%
Interest	---	12.3%	3.1%
Depreciation	---	16.6%	4.3%
Management	---	45.5%	11.6%
Total fixed costs		**100.0%**	**25.6%**

Salsa: Batch sizes and economies of scale

Three scenarios were conducted per batch size. Economies of scale were factored into the analyses as previously discussed: Labor costs fell by 18.75% with the 50-gallon batches and 37.5% with the 100-gallon scenario. Profits correspondingly increased from $86,758 per 10-gallon batches to $158,758 per 100-gallon batches. The return on investment (ROI) increases from 43% in the 10 gal. scenario to 79% in the 100 gal. scenario (Table 53).

Table 53. Return on investment per batch size – salsa base case

Batch size	Labor costs	Profits	Return on investment
10 gal.	$ 192,096	$ 86,758	43%
50 gal.	$ 156,078	$ 122,776	61%
100 gal.	$ 120,060	$ 158,794	79%

Salsa: Breakeven analysis

A breakeven analysis was conducted for each batch-size scenario. For the 10-gallon scenario, the price was $10/unit, variable cost (VC) per unit was $6.23, margin per unit was $3.77, and total fixed costs (TFC) were $114,200. The breakeven point was calculated by dividing total fixed costs ($114,200/3.77) by the margin per unit equaling 30,323 units. This represents the number of units that must be sold to cover all costs. Any units sold beyond the breakeven point create profits from the contribution of the

margin. The breakeven point declines as the batch size gets larger from economies of scale and decline in labor costs. The 100-gallon batch has a breakeven point of 22,322 units (Table 53). Figure 42 illustrates the breakeven point graphically.

Table 53. Breakeven analysis -- salsa base case

Metric	10 gal./BT	50 gal./ BT	100 gal./ BT
Price	$ 10.00	$ 10.00	$ 10.00
VC/Unit	$ 6.23	$ 5.56	$ 4.88
Margin/Unit	$ 3.77	$ 4.44	$ 5.12
TFC	$ 114,200	$ 114,200	$ 114,200
Breakeven Units	30,323	25,714	22,322

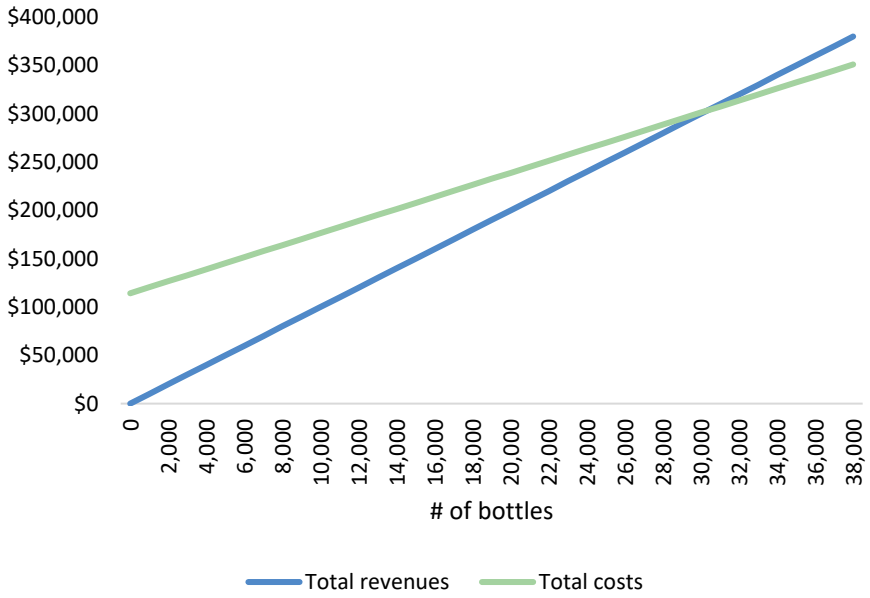

Figure 42. Breakeven for base case of 10 gal. batches

Salsa: Sensitivity analysis

Several scenarios were conducted to measure the sensitivity of assumptions. The first scenario lowered the price to $7.00 per unit, holding everything else constant. The 10-gallon batch and 50-gallon batch are unprofitable, but the 100-gallon batch still has a 3% ROI (Table 54) and a breakeven at 50,395 units. This suggests the product is very sensitive to labor costs. As production is scaled-up and expanded, labor costs per bottle of salsa will decline through automation, capital acquisition, and learning-by-doing. Preliminary analysis by stakeholders suggest that labor costs per unit could be reduced by as much as 50%.

Table 54. Return on investment per batch size for the salsa base case when price is reduced to $7.00 Unit

Batch size	Labor costs	Profits	Return on investment
10 gal.	$ 192,096	- $ 65,318	-33%
50 gal.	$ 156,078	- $ 29,300	-15%
100 gal.	$ 120,060	$ 6,718	3%
Breakeven units	**124,662**	**71,775**	**50,395**

Another scenario was conducted raising the price from $10 per bottle to $12 per bottle (Table 55). This increased profits by $101,384 for each scenario and the ROI by 51%. Thus, the analysis is relatively sensitive to price. The breakeven point fell substantially for each scenario: for example, falling to 10,168 units in the 10-gallon scenario.

Table 5527. Return on investment per batch size for the salsa base case when price is raised to $12 per unit

Batch size	Labor costs	Profits	Return on investment
10 gal.	$ 192,096	$ 188,142	94%
50 gal.	$ 156,078	$ 224,160	112%
100 gal.	$ 120,060	$ 260,178	130%
Breakeven units	**20,155**	**18,010**	**16,277**

Wages and salaries were reduced by 30% in addition to the economics of scale for each scenario in Table 56. The breakeven point fell in each scenario, for example, falling by 5,480 units in the 10-gallon scenario.

Table 56. Salsa productivity increases - reduced salary costs by 30% (price: $10 unit)

Batch size	Labor costs	Profits	Return on investment
10 gal.	$ 147,766	$ 131,088	66%
50 gal.	$ 120,060	$ 158,794	79%
100 gal.	$ 92,354	$ 186,500	93%
Breakeven units	**24,843**	**22,322**	**20,265**

Finally, we doubled the ingredient costs. Each scenario is still profitable with a high ROI, suggesting that vegetable inputs are not a key factor to the profitability of the value-added products (Table 57).

Table 57. Doubling the ingredient costs – salsa (price: $10 unit)

Batch size	Labor costs	Profits	Return on investment
10 gal.	$ 192,096	$ 54,216	27%
50 gal.	$ 156,078	$ 90,234	45%
100 gal.	$ 120,060	$ 126,252	63%
Breakeven units	**36,182**	**29,808**	**25,343**

Salsa benefit-cost analysis (capital budgeting)

A benefit-cost (financial) analysis was conducted for salsa under limited criteria. It is based on a fully scaled-up operation on a ten-year time horizon with an initial capital investment of $200,000.

We assumed a discount rate of 7% (interest rate). Current rates for small business loans range from 6.50% to 11.25% in nominal terms.[xxxvii] We assumed the small batch base case for salsa production with an output of 667 batches or 53,360 bottles of salsa. Total costs are 446,842 annually (fixed and variable) and total revenues are $533,600 at $10 per bottle. Costs and revenues are assumed to increase proportionally (thus offsetting) and kept constant to simplify the analysis. The net present value is $409,352 at a 7% discount rate. The internal rate of return is 42% and the payback period is 3 periods. The benefit-cost ratio is 1.12 (Table 58).

Table 58. Benefit-cost assessment salsa production (base case) (CCF=cumulative cash flows)

Yrs	Investment	Costs	Total costs	Revenue	Net	CCF
0	$200,000		$200,000	0	-$200,000	-$200,000
1		$446,842	$446,842	$533,600	$86,758	-$113,242
2		$446,842	$446,842	$533,600	$86,758	-$26,484
3		$446,842	$446,842	$533,600	$86,758	$60,274
4		$446,842	$446,842	$533,600	$86,758	$147,032
5		$446,842	$446,842	$533,600	$86,758	$233,790
6		$446,842	$446,842	$533,600	$86,758	$320,548
7		$446,842	$446,842	$533,600	$86,758	$407,306
8		$446,842	$446,842	$533,600	$86,758	$494,064
9		$446,842	$446,842	$533,600	$86,758	$580,822
10		$446,842	$446,842	$533,600	$86,758	$667,580
NPV	**$200,000**	**$3,138,431**	**$3,338,431**	**$3,747,783**	**$409,352**	
Internal rate of return					**42%**	
Benefit/cost					**1.12**	
Payback period					**3**	
Discount rate					**7%**	

Scenario 2: Marinara sauce

Marinara product revenue and production assumptions

The base case features a 10-gallon batch (small batch process) that produces 80 12-ounce jars of salsa per batch (96 ounces per gallon total per batch). Marinara processing includes an approximate 25% reduction of volume of ingredients during the process. There are 12 jars per case, 6.7 cases per batch, and 80 jars per batch. For the base case, each jar sells for $11 each or $880 of revenues per batch. The cost structure is very similar to salsa production but with 12 ounces instead of 16 ounces per jar.

The initial marinara analysis in this study[xxxviii] assumed a bottle size of 24 ounces instead of 12 ounces. The base case was unprofitable at the 24-ounce size, given the other assumptions in the analysis. Right sizing the bottle will increase revenues per batch and improve marketability as a high-end specialty product.

Marinara: Labor costs (similar to salsa production)

The WWVFSC estimated that it takes 600 minutes (10 labor hours) to prepare the vegetables, 120 minutes (2 hours) to cook the ingredients, 80 minutes (1.33 hours) to jar the marinara, 40 minutes to label the jars (0.67 hours), and 120 minutes (2 hours) for cleanup. In total it takes about 960 minutes or 16 hours to produce one batch or 80 jars of marinara sauce. If we assume a fully loaded wage (i.e., a wage including benefits) of $18 per hour, it costs $288 of labor per batch of 80 jars. Scaling up to batches of 667 or 26,680 bottles annually, would cost 10,672 labor hours or 5.13 full-time equivalent jobs annually, costing $192,096.

Marinara sauce economies of scale (larger batches)

We assume the same economies of scale will occur to reduce labor costs per batch and overall costs as in salsa production. The labor benefits include the benefits of learning-by-doing as production expands and by automation from increasing capital acquisition. A simulation of these effects is included in the analysis. We assume that at the 50-gallon batch size, labor costs fall by 18.75% (13 labor hours equivalent) and by 37.5 % at the 100-gallon batch size (10 labor hours equivalent).

Marinara sauce ingredients

The ingredient mixes for marinara sauce is similar to salsa but with substantially greater tomato inputs, which are illustrated in Table 59. The food coalition members estimated that for a 10-gallon batch of marinara, 90 pounds of tomatoes, 30 pounds of peppers, and 15 pounds of onions are needed. These quantities are proportionally scaled for the 50-gallon and 100-gallon batch sizes.

Table 59. Marinara ingredients requirements

	Pounds of ingredients required per batch size		
Ingredients	**10 gal. batch**	**50 gal. batch**	**100 gal. batch**
Tomatoes	90 lbs.	450 lbs.	900 lbs.
Peppers	30 lbs.	150 lbs.	300 lbs.
Onions	15 lbs.	75 lbs.	150 lbs.

Marinara sauce ingredient costs

For a 10-gallon batch, tomatoes will cost $60.23, peppers will cost $7.40, and onions will cost $1.24. Total costs for a 10-gallon batch is $68.86. For a 50-gallon batch the cost is $344.32, and for a 100-gallon batch the cost is $688.64 (Table 60).

Table 60. Cost of ingredients for marinara sauce

		Expenditures per batch		
Ingredients	**$/lb.**	**10 gal. batch**	**50 gal. batch**	**100 gal. batch**
Tomatoes	$ 0.67	$ 60.23	$ 301.13	$ 602.27
Peppers	$ 0.25	$ 7.40	$ 37.00	$ 74.00
Onions	$ 0.08	$ 1.24	$ 6.19	$ 12.38
Total/batch		**$ 68.86**	**$ 344.32**	**$ 688.64**
Expenditures*		**$ 45,932.35**	**$ 45,932.35**	**$ 45,932.35**

*Ingredients for 26,680 bottles cost $45,932.35.

Marinara total revenues

We assumed a base case of $11 per bottle of marinara sauce based on information provided by coalition members. The base case assumes that 53,360 bottles are sold once the enterprise is fully scaled up. This translates into 667 batches for the 10 gal. size, 133 batches for the 50 gal. size, and 66.7 batches for the 100 gal. size. Total revenues are $586,960 for the base case (Table 61).

Table 61. Marinara revenues

Size/Batch	Batches	Bottles/Bh	Bottles	Revenues
10 lbs.	667	80	53,360	$ 586,960
50 lbs.	133	400	53,360	$ 586,960
100 lbs.	66.7	800	53,360	$ 586,960

The *proforma* income statement for the "base case" is presented in Table 62. Total revenues are $586,960 based on 53,360 bottles of salsa being solid at a price of $11 per bottle. Total variable costs are $384,700, leaving a gross margin of ($238,260). Fixed costs are $114,200, leaving a net profit before taxes of $124,060. The base case is financially viable for marinara.

Table 62. Proforma income statement for the base case – marinara sauce

Total revenues	**$586,960**
Variable costs	
Spoilage/Returns [xxxix]	$29,348
Cost of Goods Sold	$45,932
Labor	$192,096
Trucking	$33,300
Add. Prod. Costs	$10,672
Supplies	$10,672
Bottling	$26,680
Total variable costs	**$348,700**
Gross margin	$238,260
Fixed costs	
Lease	$6,000
Heat/electric	$8,400
S/Water/Garbage	$4,800
Insurance	$5,000
Marketing	$5,000
Interest	$14,000
Depreciation	$19,000
Management	$52,000
Total fixed costs	**$114,200**
Total variable + fixed costs	**$462,900**
Net profits (before taxes)	**$124,060**

Marinara breakeven analysis

Using the same framework as for salsa, we extended economies of scale for 50-gallon and 100-gallon batches, providing 18.75% and 37.5% efficiency gains respectively. All scenarios are feasible as can be seen in Table 63.

Table 6328. Marinara breakeven analysis

Metric	10 gal./BT	50 gal./ BT	100 gal./ BT
Price	$ 11.00	$ 11.00	$ 11.00
VC/Unit	$ 6.53	$ 5.86	$ 5.18
Margin/Unit	$ 4.47	$ 5.14	$ 5.82
TFC	$ 114,200	$ 114,200	$ 114,200
Breakeven units	**25,576**	**22,217**	**19,638**

Marinara sauce production: Increased labor efficiency scenario

An alternative scenario increases labor efficiency by 50% for each scenario through learning-by-doing, capital acquisition, and automation in the production process. All three batch sizes are feasible as seen

in Table 64. For the 100-gallon production process, the breakeven point of production is 17,395 units in this scenario.

Table 64. Increasing labor efficiency 50%/batch size - marinara production

Metric	10 gal./BT	50 gal./ BT	100 gal./ BT
Price	$ 11.00	$ 11.00	$ 11.00
VC/Unit	$ 5.33	$ 4.88	$ 4.43
Margin/Unit	$ 5.67	$ 6.12	$ 6.57
TFC	$ 114,200	$ 114,200	$ 114,200
Breakeven units	**20,158**	**18,675**	**17,395**

Marinara sauce benefit-cost analysis (capital budgeting)

A benefit-cost (financial) analysis was conducted for marinara under limited criteria. It is based on a fully scaled-up operation on a ten-year time horizon with an initial capital investment of $200,000.

We assumed a discount rate of 7% (interest rate). We assumed the small-batch base case for marinara sauce production with an output of 667 batches or 53,360 bottles of marinara. Total costs are $462,960 annually (fixed and variable) and total revenues are $586,960 at $11 per bottle. Costs and revenues are assumed to increase proportionally (thus offsetting) and kept constant to simplify the analysis. The net present value is $671,343 at a 7% discount rate. The internal rate of return is 62% and the payback period is 2 years. The benefit-cost ratio is 1.19. The internal rate of return is the discount rate that makes the net present value (NPV) of all cash flows from a project equal to zero (Table 65).

Table 65. Benefit-cost assessment for marinara production (base case) (CCF=cumulative cash flows)

Yrs	Investment	Costs	Total costs	Revenue	Net	CCF
0	$200,000		$200,000	0	-$200,000	-$200,000
1		$462,900	$462,900	$586,960	$124,060	-$75,940
2		$462,900	$462,900	$586,960	$124,060	$48,119
3		$462,900	$462,900	$586,960	$124,060	$172,179
4		$462,900	$462,900	$586,960	$124,060	$296,239
5		$462,900	$462,900	$586,960	$124,060	$420,298
6		$462,900	$462,900	$586,960	$124,060	$544,358
7		$462,900	$462,900	$586,960	$124,060	$668,418
8		$462,900	$462,900	$586,960	$124,060	$792,477
9		$462,900	$462,900	$586,960	$124,060	$916,537
10		$462,900	$462,900	$586,960	$124,060	$1,040,596
NPV	**$200,000**	**$3,251,218**	**$3,451,218**	**$4,122,561**	**$671,343**	
Internal rate of return					**62%**	
Benefit/Cost					**1.19**	
Payback Period					**2**	
Discount Rate					**7%**	

Economic impacts of salsa or marinara sauce production

We assumed the base case of salsa and marinara production with overall gross revenues of $533,600. The production and revenue streams of both products were very similar, thereby producing the same overall economic impacts. Thus, these results can be used for either salsa or marinara production. We are assuming most of the sales are made to larger cities and towns outside the regional economy.

Factoring in the multiplier analyses, either salsa or marinara food production (base case) creates a total of 12 regional jobs, $448,479 in salaries and benefits, $543,986 in gross regional product, and $851,075 in sales (output), including multiplier effects (Table 66. In addition, the enterprise would contribute approximately $9,372 in property taxes, $17,447 in sales and excise taxes, and $5,107 other taxes, for a total of $31,926, including multiplier effects.

Table 66. Economic impacts of salsa or marinara sauce production

Impact Type	Employment	Labor income	Gross regional product	Output
Direct effect	10	$350,000	$369,435	$533,600
Indirect effect	0.7	$35,559	$54,532	$106,413
Induced effect	1.6	$62,920	$120,018	$211,062
Total effect	**12**	**$448,479**	**$543,986**	**$851,075**

Scenario 2: Popsicles

Popsicle revenue and production assumptions

The following section outlines the cost structure and revenue profile for popsicle production. The infrastructure of this scenario is similar to the salsa and marinara sauce scenarios and the fixed costs were the same. The variable costs have proportionally less labor per batch but more ingredient costs per batch than the other two scenarios. There will also be greater spoilage because the product has to be frozen. Refrigeration will be a major factor throughout the production and supply chain process. The full costs are largely unknown and may not be fully reflected in the analysis. This will be an important consideration in the startup and scaling process.

The proposed popsicle products are “Peaches and Cream Walla Pop,” “Melon Paleta Walla Pop,” “Blooming Mary Walla Pop,” and “Razzelberry,” which we chose to represent the base case. The small batch size is a 5-gallon batch that produces 300 Razzelberry popsicles per batch. For the base case, each popsicle sells for $3 or $900 of revenues per batch.

Additional popsicle equipment would cost $20,000 if this scenario shared equipment and infrastructure with one of the other value-added lines.

Popsicle food preparation labor costs (small batch)

A small-batch (i.e. 10-gallon batch) food preparation analysis for Razzelberry was the basis for the labor estimation for popsicle production based on input from the steering committee members (Tables 67 and 68).

Table 67. Razzelberry popsicle labor requirements

Task/batch	Labor minutes	Labor hours
Prepare fruit	90	1.5
Cook/package	90	1.5
Minutes/batch	**150**	**3.0**
Total batches (667)	**120,060**	**2,001**

Table 68. Labor costs for Razzelberry popsicle production

Personnel requirements	Total
Wage ($18/hour)	$36,018
Total annual FTEs	0.96

A steering committee member estimated that it takes 1.5 labor hours to prepare the fruit and 1.5 hours to prepare the ingredients and for packaging, totaling 3 hours to produce one batch of 300 popsicles. If we assume a fully loaded wage (i.e., a wage including benefits) of $18 per hour, it costs $54 of labor per batch of 300 popsicles. Scaling up to batches of 667, or 200,100 popsicles annually, would cost 2,001 labor hours or 0.96 full-time equivalent jobs annually, costing $36,018.

Popsicle economies of scale (larger batches)

We assume economies of scale will reduce labor costs per batch and overall costs. This includes the benefits of learning-by-doing as production expands and from increasing capital acquisition. We assume that at the 50-gallon batch size, labor costs fall by 16.7% (2.5 labor hours equivalent) and by 33 % at the 100-gallon batch size (2 labor hours equivalent) (Table 69).

Table 69. Economies of scale of labor costs per year per batch size of popsicles at wage of $18.00/hr

	Production time per 10 gal. produced		
Total batch size	3 hr./5 gal.	2.5 hr./10 gal.	2 hr./ 50 gal.
5 gal.	$ 54.00	$ 45.00	$ 36.00
50 gal.	$ 270.00	$ 225.00	$ 180.00
100 gal.	$ 540.00	$ 450.00	$ 360.00
Labor costs	**$ 36,018**	**$ 30,015**	**$24,012**

Popsicle ingredients

For the Razzelberry popsicles, we assumed that 50% of the ingredients are berries, 25% apple juice, and 25% water. The coalition estimates that each 5-gallon batch takes 40 lbs. of berries at $2.0 per pound, 50 lbs. of apples at $0.50 per pound, and $10 of lemon juice and other ingredients. For a five-gallon batch, the cost is $80 for berries, $25 for apples, and $10 for lemons and other ingredients. Total product cost is $115 for 5 gallons, $1,150 for 50 gallons, and $2,300 for 100 gallons. Expenditures for production of 200,100 popsicles would total **$76,705.00** (Table 70).

Table 70. Cost of ingredients for Razzelberry popsicles

		Expenditures Per Batch		
Ingredients	$/lb./unit	10 gal. batch	50 gal. batch	100 gal. batch
Berry fruit	$ 2.00	$ 80.00	$ 800.00	$ 1,600.00
Apples	$ 0.50	$ 25.00	$ 250.00	$ 500.00
Lemons/Sugar	$ 10.00	$ 10.00	$ 100.00	$ 200.00
Total/Batch		**$ 115.00**	**$ 1,150.00**	**$ 2,300.00**
Expenditures*		**$ 76,705.00**	**$ 76,705.00**	**$ 76,705.00**

Popsicle total revenues

The proforma income statement for popsicles is presented in Table 71. Total revenues are $600,300 for 200,100 popsicles. Variable costs are $396,148, creating a gross margin of $204,152. Total fixed costs are $114,200, creating a net profit of $89,852 with a return on investment (ROI) of 45%.

Table 71. Proforma income statement for the base case - popsicles

Total revenues	**$600,300**
Variable costs	
Spoilage/returns [xl]	$30,015
Cost of goods sold	$76,705
Labor	$36,018
Trucking	$33,300
Additional production costs	$40,020
Supplies	$40,020
Packaging	$140,070
Total variable costs	**$369,148**
Gross margin	$204,152
Fixed costs	
Lease	$6,000
Heat/electric	$8,400
Sewer/water/garbage	$4,800
Insurance	$5,000
Marketing	$5,000
Interest	$14,000
Depreciation	$19,000
Management	$52,000
Total fixed costs	**$114,200**
Total variable + fixed costs	**$510,348**
Net profits (before taxes)	**$89,952**

Popsicle breakeven analysis

Table 72 presents the breakeven analysis for popsicles at various levels of productivity. The breakeven for the base case is 111,933 popsicles.

Table 72. Popsicle breakeven analysis

Metric	5 gal./BT	50 gal./ BT	100 gal./ BT
Price	$ 3.00	$ 3.00	$ 3.00
Variable costs/unit	$ 1.98	$ 1.95	$ 1.92
Gross margin/unit	$ 1.02	$ 1.05	$ 1.08
Total fixed costs	$ 114,200	$ 114,200	$ 114,200
Breakeven units	**111,933**	**108,736**	**105,716**

Popsicle benefit-cost analysis (capital budgeting)

A benefit-cost (financial) analysis was conducted for popsicles under limited criteria. It is based on a fully scaled-up operation on a ten-year time horizon with an initial capital investment of $200,000.

We assumed a discount rate of 7% (interest rate). We assumed the small-batch base case for popsicle production with an output of 667 batches or 200,100 popsicles. Total costs are $510,348 annually (fixed and variable) and total revenues are $600,300 at $3 per popsicle. Costs and revenues are assumed to increase proportionally (thus offsetting) and kept constant to simplify the analysis. The net present value is $431,785 at a 7% discount rate. The internal rate of return is 44% and the payback period is 3 years. The benefit-cost ratio is 1.11 (Table 73).

Table 73. Benefit-cost assessment popsicle production (CCF=cumulative cash flows)

Yrs	Investment	Costs	Total costs	Revenue	Net	CCF
0	$200,000		$200,000	0	-$200,000	-$200,000
1		$510,348	$510,348	$600,300	$89,952	-$110,048
2		$510,348	$510,348	$600,300	$89,952	-$20,096
3		$510,348	$510,348	$600,300	$89,952	$69,856
4		$510,348	$510,348	$600,300	$89,952	$159,808
5		$510,348	$510,348	$600,300	$89,952	$249,760
6		$510,348	$510,348	$600,300	$89,952	$339,712
7		$510,348	$510,348	$600,300	$89,952	$429,664
8		$510,348	$510,348	$600,300	$89,952	$519,616
9		$510,348	$510,348	$600,300	$89,952	$609,568
10		$510,348	$510,348	$600,300	$89,952	$699,520
NPV	**$200,000**	**$3,584,471**	**$3,784,471**	**$4,216,256**	**$431,785**	
Internal rate of return					**44%**	
Benefit/cost					**1.11**	
Payback period					**3**	
Discount rate					**7%**	

Economic impacts of popsicle production

We assumed the base case of popsicle production with overall gross revenues of $600,300. We are assuming most of the sales are made to larger cities and towns outside the regional economy.

Factoring in multiplier analyses, the popsicle base case creates a total of 8 regional jobs, $375,885 in salaries and benefits, and $528,749 in gross regional product, and $889,001 in sales (output) per year. (Table 74). In addition, the enterprise would contribute approximately $22,489 in property taxes, $41,868 in sales and excise taxes, and $3,849 other taxes, for a total of $68,206, including multiplier effects per year.

Table 294. Economic impacts of popsicle production

Impact type	Employment	Labor income	Gross regional product	Output
Direct effect	6	$300,000	$384,756	$600,300
Indirect effect	0.6	$23,217	$43,403	$111,927
Induced effect	1.3	$52,669	$100,590	$176,775
Total effect	**8**	**$375,885**	**$528,749**	**$889,001**

Scenario 2: Conclusions

All the scenarios for value-added were feasible, even at a small batch scale. The actual equipment priced out by participating producers is at the 100-gallon batch size. Much of the same equipment can be used in all three production lines. This size of operation fits the scale of production, resources, tolerance for risk, time available, and interests of the group currently moving forward to develop a value-added food hub. It is also of a scale to fit with Food Bank needs and interests.

Scenario 3: Retail

Scenario 3: Description

A number of producers expressed interest in a retail space in both interviews and the supplier survey. Ideas discussed included buying an existing local grocery store and redeveloping it as a food retail cooperative. This could include deli, bakery, butcher shop, and other value-added functions as well as retail. Another idea was a small-scale retail cooperative, such as that in Blue Mountain Station, which only sells member or local products. Another idea was to have a showroom for buyers from restaurants and institutions. Retail operations need to be in locations easily accessible to customers. Steering committee members considered several buildings in downtown Walla Walla as well as the building in Southgate Center which used to be Harvest Foods as potential retail locations.

Scenario 3: Financial analysis

The operation we considered for the financial analysis is scalable, but considerable capital costs would be needed to launch the venture. Food-related inventory costs would start with an investment of about $150,000 and expand to as much as $500,000 for a fully scaled-up food retailer. Considerable retail floor space is also needed, ranging from 5,000 square feet to 15,000 square feet. Equipment, freezer space, shelving, and other infrastructure costs would range from about $250,000 to $500,000, depending on the new/used mix and availability. Initial capital costs could easily reach $500,000 to launch. Assuming a lease rate of $0.50 cents per square foot per month, to lease 10,000 square feet would be $5,000 per month or $60,000 per year, a considerable expense.[xli]

Creating and scaling up a retail operation would require considerable time commitment, perseverance, and capital investment. It would likely take many years to reach a fully sustainable operation with a wide customer base.

Scenario 3: Moscow Food Cooperative example

The Moscow Food Co-op (Moscow, Idaho) is a good example of a highly successful retail enterprise. It is now a community leader and a cornerstone business for downtown Moscow and part of the overall brand of the City of Moscow. The Moscow Food Co-op helped establish the Moscow Farmers Market, one of the best in the Pacific Northwest for the size of the community. However, the Moscow Food Co-op had a very long scaling-up evolution, which took place over many decades. It was founded in 1973 – 47 years ago in a smaller building than it is in currently. Today it has about 15,000 square feet of retail space and is owned by nearly 7,800 people in the Moscow, Idaho region. Its retail and food service spaces are situated in a former Safeway store in downtown Moscow, Idaho

In 2018, the coop had $2.7 million in assets, $11.3 million in annual sales, and 130 staff. It purchases $778,000 of local produce and products from 200 producers annually (Table 75).

Table 75. Moscow Food Co-op income statement

	2017	2018
Net sales	**$11,112,321**	**$11,372,645**
Cost of goods	$6,447,410	$6,586,073
Gross profit	**$4,664,911**	**$4,786,572**
Personnel	$3,155,059	$3,319,088
Occupancy	$395,441	$417,052
Administration	$345,829	$400,987
Marketing + outreach	$351,917	$351,926
Store operations	$420,279	$416,922
Governance	$36,289	$35,636
Total expenses	**$4,704,814**	**$4,941,611**
Other income	$67,835	$49,173
Other expenses	$574	—
Net profit*	**$27,358**	**-$105,866**

* Prior to final 2018 depreciation and final income taxes

Scenario 3: Economic impacts

We assume a Moscow Food Coop type operation with about $7 million in retail sales and $1 million in prepared foods. These represent base sales or new monies to the economy. We input the data into a modified IMPLAN food and beverage stores sector and other food and drinking places in the model.

Factoring in the multiplier analyses, the retail operation creates a total of 60.0 regional jobs, $1.9 million in salaries and benefits, and $2.7 million in gross regional product, and $4.4 million in sales (output) including the multiplier effects per year. In addition, the operation contributes approximately $179,066 in property taxes, $333,377 in sales and excise taxes, and $23,082 other taxes, for a total of $535,525, including the multiplier effects per year (Table 76).

Table 76. Output by impact type

Impact type	Employment	Labor income	Gross regional product	Output
Direct effect	49.7	$1,517,499	$1,905,161	$2,953,000
Indirect effect	3.3	$114,571	$253,092	$498,778
Induced effect	6.7	$266,824	$508,330	$894,300
Total effect	**60**	**$1,898,895**	**$2,667,583**	**$4,346,078**

Scenario 3: Conclusions

Although a portion of those surveyed and several of those interviewed were interested in developing a retail operation, others, including those on the steering committee, thought that retail was not a compatible activity for this particular effort. Several thought establishing a retail outlet could detract from Food Bank operations. The general feeling was that it did not seem like a good idea to give food away and sell food in the same space. A retail operation also would need to be able to separate public space from warehouse space, which is already a challenge for the Food Bank. Furthermore, while a retail operation would benefit producers and potentially the food hub, it provides little gain or incentive for the Food Bank to participate. While in general there was interest in this option, no strong advocate interested in leading the effort was apparent during the process.

Scenario 4: Commercial kitchen

Scenario 4: Description

Additional commercial kitchen capacity was consistently identified as a need for the Walla Walla Valley in interviews and WWVFSC steering committee meetings. As part of exploring this scenario, those surveyed, interviewed, and in the steering committee identified equipment needed for a commercial kitchen. There is a considerable range in prices for any specific item, depending on multiple variables (Table 77).

Commercial kitchen equipment can range from $15,000 to $500,000 for large operations.[xlii] Several key informants we interviewed indicated that facility modifications are much more expensive than equipment. Researchers in this study estimated the cost (at the high end) at about $130,000 for new equipment and facility modifications for a commercial kitchen.

Table 77. Commercial kitchen needs

Specific function	Cost
Preparation	
Misc. kitchen tools, for example, cutting boards	$500
Grinder	$239 - $283
Dehydrator	$200 - $690
Cherry pitter	$103
Industrial chopper/dicer	$185 - $500
Fruit & vegetable peeler	$5 - $1,852
USDA meat room smoker and meat grinders	LARGE RANGE
Vacuum packager	$500 - $3,753
Mixer: 40-Quart / 80-Quart / Other	$7,000 - $19,000 each
Stainless steel tables	$233-$440/each
Heated proofer cabinet	$2,000 - $6,142
VEMAG stuffers & portioner with guillotine	
Cooking	
Type 1 exhaust hood	$1,000 - 4,530
Electric convection oven	$5,718 - $10,725
Steam & water jacketed kettle	$5,000- $25,000
Full-size four-rack gas convection oven	$3,325 - $9,000
Four-burner gas stove	$1,989.00 or $4,990.15
Six-burner gas stove	$1,657 - $5,620
Oven/stove combo	^^
Gas tilting skillet	$18,122 - $19,361
Three-foot gas grill	$2,500
Microwave	$300- $1,300
Wash	
Under-counter commercial dishwasher	$5,275 - $7,818
Stainless-steel 3 compartment sink	$500 - $1,303
Triple sink for washing produce	$500-$1,300
Stainless steel dry racks	$600 – 1,500
Handwashing sink	$449
Storage	
Stainless steel refrigerator (standalone)	$1,373 - $6,000
Personnel	
1 scheduler/manager	

Scenario 4: Conclusions

BMS and Pasco Specialty Kitchen serve people from across the Walla Walla Valley, but mostly those closer to Dayton or Pasco, respectively, use their services. Many key informants thought that a large portion of the Walla Walla Valley was underserved when it comes to commercial kitchen access. Several stakeholders were concerned about the impact of a new commercial kitchen in Walla Walla on BMS, although no one thought this was a barrier.

Several key informants indicated that enough commercial kitchens or suitable facilities exist and that it is more a matter of people learning where to access them. For example, the Walla Walla Fairgrounds has several kitchens that are underused, and churches, schools, and a variety of other options were identified, although most of these do not include the specialized equipment normally associated with commercial kitchens. During the planning process, meeting participants reported that both the cities of Walla Walla and College Place were interested in developing commercial kitchens, further complicating development of a commercial kitchen at a food hub. Also important, commercial kitchens are generally organized by a public agency interested in local economic growth. The ones we reviewed were not profit oriented, although their revenues helped cover some operational costs. This makes a commercial kitchen less attractive as part of a startup that needs to breakeven as soon as possible.

At the same time, specific equipment is needed by multiple producers in the Walla Walla Valley that is not currently available and is too expensive for individual small farms. Several on the steering committee and interviewed identified steam kettles for making jams and sauces as the highest priority gap in the Walla Walla Valley. For that reason, a smaller steam kettle could be added to the value-added line in Scenario 2 to address this need as well as for use in developing recipes and test batches. A commercial kitchen's value is more as a support for food entrepreneurs and producers than as a profit center to support a new food hub. Since multiple other groups are interested in developing commercial kitchens in the area, it makes sense for the food hub to fit in a priority need of a number of actively engaged producers (i.e., an appropriately sized steam kettle), but wait and see what else develops in the area for commercial kitchens while focusing the food hub on starting up the value-added processing lines.

Comparing the scenarios: Strengths, weaknesses, opportunities, treats

We compared the scenarios using a SWOT analysis (Table 78).

Table 78. Summary of strengths, weaknesses, opportunities, and threats by scenario

Strengths	Weaknesses	Opportunities	Threats
Scenario 1: Distribution			
• Stakeholder interest • Qualifies for government grants • Considerable local expertise available • Brings new money into community • Other organizations successfully doing this in the region provide proof of concept	• Difficult to make profitable • Long lead time to make profitable • Higher human capital required • No one committing to move forward • Might require debt • Capital intensive • Requires a diverse range of products	• Synergistic with Food Bank operations • Can be integrated into Food Bank remodel • Forming regional network with LINC Foods and other distributors	• Local competition, including with mainstream food system • Dependent on many committed farmers • Dependent on Food Bank support
Scenario 2: Value-added processing			
• Producers already launching • Easiest to make profitable • Could qualify for government grants • Scalable at every stage • Considerable local expertise available • No local competition for many products • Brings new money into community • Could involve few or many types of crops • Other organizations successfully doing this in the region provide proof of concept	• Potentially capital intensive • Small number of people involved make exiting the business potentially more difficult	• Synergistic with Food Bank operations • Can be integrated into Food Bank remodel • Ability to schedule processing during farming off season • High potential for employment opportunities • Flexibility for multiple individuals/groups to develop products	• Could reduce Food Bank donations
Scenario 3: Retail			
• Could qualify for government grants • Considerable local expertise available • Other organizations successfully doing this in the region provide proof of concept	• Likely incompatible with Food Bank operations • Difficult to make profitable • Long lead time to make profitable • Higher human capital required • No one committing to move forward • Capital intensive • No suitable buildings available • Requires a diverse range of products	• Direct outlet for member producers • High potential for employment opportunities	• Local competition, including with mainstream food system • Dependent on many committed farmers
Scenario 4: Commercial kitchen			
• Could qualify for government grants • Considerable local expertise available • Other organizations successfully doing this in the region provide proof of concept	• Perception it could hurt BMS • Not profitable • No one committing to move forward • Less compatible with Food Bank than value-added scenario	• Demand among some producers • Synergistic with Food Bank operations • Individual equipment synergistic with value-added scenario • Flexibility for multiple individuals/groups to develop products	• Could reduce Food Bank donations • Local competition with other commercial kitchens

Organizational structure

Discussion about how to organize the food hub took place throughout the project. The primary decisions were 1) the values of the food hub and how they should be reflected in the organizational structure, 2) whether it should be for-profit or nonprofit, and 3) what type of legal structure it should have.

Triple-bottom line model

One decision point in the conversation occurred during a WWVFSC meeting in April 2019 where coalition members discussed differences in focus between a food hub that is organized solely towards making **profit**, a hub developed as a **social enterprise** (i.e., generating profit to address a social cause), and one developed as a **triple bottom line** hub (i.e., balancing profit with social and environmental values). While not a consensus, the group overwhelmingly chose a triple-bottom line model. Fairness to everyone involved was repeatedly emphasized, meaning fairness to producers and employees as well as everyone else in the supply chain, including consumers. While discussion continued in the project about the balance of profit and nonmonetary values, from that point forward it occurred within the expectation that the hub would follow a triple bottom line model.

For-profit model

Another decision point was whether the food hub should be a nonprofit or for-profit organization. The decision was made to focus on a for-profit model for a number of reasons: 1) since the Food Bank is a nonprofit, the food hub would be able to access the larger pool of available grants available to nonprofits without needing to be one itself, 2) developing a food hub is a lot of work over a long period of time and those involved wanted to be rewarded financially if they invested their time and resources, and 3) no one involved stepped forward to lead the charge to develop it as a nonprofit organization. A factor that proved to be important is the food hub can be developed to follow triple bottom line values regardless of whether it is a nonprofit or for-profit organization.

Limited liability company (LLC) structure

Those interviewed and the steering committee considered several possible organizational structures, including a producer cooperative, an employee/producer cooperative, a B-corporation (triple bottom line), a limited liability company (LLC), and a nonprofit organization. Through discussion at WWVFSC and steering committee meetings and research, the focus became on either a for-profit LLC or a cooperative. Over the life of the project, the group settled on developing an LLC for several reasons: 1) either business structure could facilitate advancing triple bottom line values, 2) an LLC is simpler to set up given the size of the group currently committed to developing the food hub, 3) several members of the group had set up their farms as LLCs and the group as a whole was comfortable with the model or did not have strong opinions, and 4) several group members had been board members or members of cooperatives and were not interested in the prolonged discussions and conflicts involved with getting a large group to work together.

Conclusions

At the end of the project, a small group of producers (less than 10) are moving forward with developing a for-profit, triple bottom line food hub organized as an LLC focused on value-added processing of salsa, marinara sauce, popsicles, and potentially jams to start. Although many farmers have expressed interest

in participating, it is unclear how many additional farmers will want to join the effort to actually start one compared to those who will participate if others do the work of setting it up. The farmers most involved figure they can change the organizational structure if needed in the future if circumstances change.

How should it be financed?

Many funding sources and configurations are possible

We found each food hub had a unique strategy and history of securing the resources they needed. The funding and resources they secured generally reflected who was leading the effort, whether a public agency, a cooperative, or a family business. Figure 43 includes funding sources identified by those interviewed as being used during food hub start up and subsequent scaling up of operations. At the scale of the food hub options considered, funding could be recruited from a variety of sources and configurations, depending on the specific resources available. Every food hub we interviewed had their own unique mix, which often included the use of existing or loaned equipment and storage space with a lot of sweat equity and support by others. Co-location with other organizations or free or shared use of infrastructure, such as coolers and freezers, is a common story. It does not take any particular funding configuration to make this type of enterprise work; rather, it is the ability to put together whatever is needed from the resources available. In general, food hubs run by agencies and nonprofits are more heavily reliant upon public funding and matched staff and services. While most private enterprises used public funding as part of startup and scaling up, they support their core functions with revenues as soon as possible. The failure of one food hub, according to a former board member, resulted in part from the failure to make this distinction. Running a for-profit business like an agency or nonprofit is not a strategy for success.

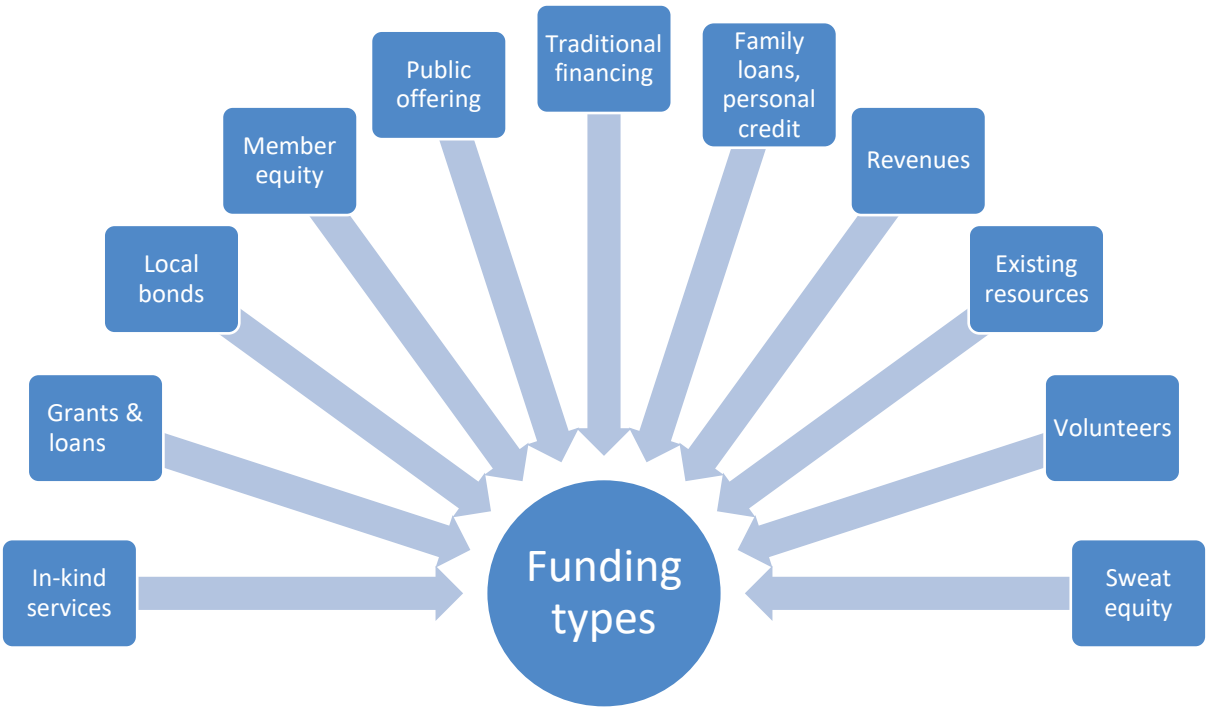

Figure 43. Funding sources

The role of grants

Ultimately, revenues should pay for food hub operations, but grants can be critical, especially during startup. Coming up with initial funding for facilities, equipment, and staff has been a major barrier to several of the food hubs studied.

Grants played a variety of roles in the food hubs we studied (Figure 44). Grants can provide larger sums than other most other options, and smaller grants can fill holes in funding and build capacity. Federal grants generally require the most work to administer and manage, although state grants can be equally cumbersome. When an organization receives a grant from a program, funding through the same program is less certain, and long-term funding is unlikely. Success in funding a long-term effort takes planning and consistent effort in applying for new funding, and even the most disciplined effort will still have occasionally disruptive gaps in funding. Other than a couple examples of agency-led efforts, almost all of the food hubs we studied had one-time money grants, meaning they received a grant from that funding source once, usually for a single thing, such as a year of a staff person, a piece of equipment, or for a building.

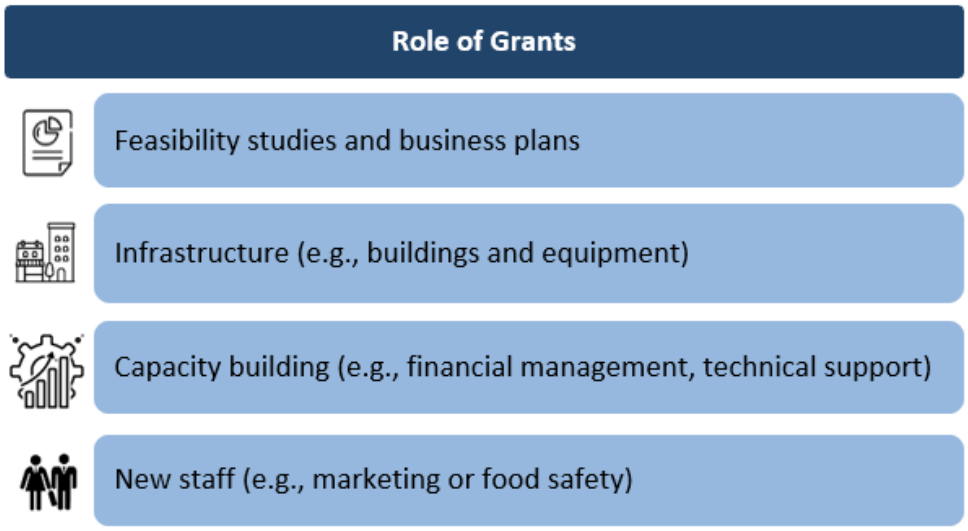

Figure 44. Role of grants

Because of its partnership with the BMAC Food Bank, which is a nonprofit organization, the food hub will have access to funding it otherwise would not be eligible for as a for-profit business as long as the food hub develops in a way that is synergistic with the Food Bank. This gives the effort a lot of options, and it should be possible to obtain grants and other resources that benefit both.

Our financial analysis found most scenarios would be profitable without including grants and other subsidies; however, time needed to reach breakeven can be dramatically shortened by reducing costs through grants or other subsidies. This is merited because the food hub would in part provide a service that would benefit the general public as it will 1) enable business development at the entrepreneurial stage to create local economic development, 2) fill a prioritized need in local and regional food system development, help build the local small farm and business economy, and 4) increase the impact of the

Food Bank to address food insecurity, to name just a few of the benefits of this type of rural development.

Specific funders

An initial list of potential funding programs is included in Appendix E The list is meant to give a sense of the overall funding landscape and is not exhaustive. Given the current expectations for the food hub, some the funding sources are more obviously relevant to the effort than others. The **USDA Agricultural Marketing Service's Local Food Promotion Program** is a next logical step, since they funded this feasibility study. Grants to that program can be as large as $500,000 and require a 25% match, which is more than enough to cover all value-added scenarios analyzed and enough to launch any of the other options as well. **USDA Rural Development** has several programs that are directly relevant, including the Value-Added Producer Grants, which has been critical to other food hubs during their development in the region. **Western SARE** has a number of programs that could benefit producers involved in a food hub, and a number of private foundations and funds, such as the **Tilth Alliance** or **M.J. Murdock Charitable Trust** are potential funders of the food hub or the Food Bank. Other funding can benefit the effort through agency and nonprofit partners. Funding for technical training and education is available through a variety of sources such as Western SARE, USDA, and Washington and Oregon states.

Walla Walla is also fortunate to be in Washington State, which has effective and highly supportive state-level support for these types of efforts. In addition to funding through programs such as the **Washington State Department of Commerce Community Revitalization Board**, which was critical to development of Blue Mountain Station, for example, **Washington State Department of Agriculture Regional Markets Program** has provided highly valuable resources, information, and technical support to LINC Foods and other similar efforts in the region. Engaging support agencies such as this in the food hub development effort is likely to make recruiting needed resources more strategic and easier and increase likelihood of long-term success.

Reduce capital costs through Food Bank partnership

Leasing space from the Food Bank will enable the food hub to avoid large capital costs that would dramatically increase startup financing needs. The ability to buy into shared equipment with the Food Bank is another big advantage. One option discussed is that the Food Bank could be the primary owner of the equipment and lease use of the equipment to the food hub. One option favorably discussed was that the food hub could pay its lease in processing services or in processed food, which would directly benefit the Food Bank's operation by salvaging food donations (which would otherwise be waste) and by increasing local, shelf-stable, nutritious food for distribution. Marinara sauce and basic wash, trim, and packaging services for fresh produce donations are examples of products and services of interest to the Food Bank.

Member equity

The producers participating in the food hub startup have also discussed each contributing $5,000 to cover initial startup expenses while they apply for grants. This would enable them to start the process of developing recipes and test batches while they write grants to buy equipment, help pay for staff, or whatever is possible given priority needs and available resources. The producers in Walla Walla Grown agreed that a substantial buy-in by participants in the food hub was important to get the ball rolling and

as a threshold of commitment for participation. They wanted everyone to put "skin in the game" if they want to participate as a member or owner of the food hub. Those who do not buy in will likely be able to lease the equipment or pay for processing and other services, but they will do so as customers rather than as members or owners.

What to do with education

Many people interviewed and participating in the feasibility process thought training and education were vital functions for the food hub.

People who want to start a small business need education and support. There is a big gap in training and support between what is available at home kitchen and large commercial agricultural scales. People starting businesses in this economic space come from a wide variety of backgrounds, often with some experience in the food supply chain, whether it be in production, processing, retail, or restaurants. As a key informant who provides business support said, "It is not a lot of business majors." Many people have knowledge that makes them competitive, but they need basic business support on how to start and scaleup the business aspects of their endeavor.

Supplier survey respondents were generally interested in participating in all three training topics the survey asked them about (Figure 45). Other training topics respondents said they were interested in included writing and negotiating contracts, consumer education, marketing, food pairing, GAP certification, grant writing, insurance, accounting and bookkeeping, co-op business models, vegetable and fruit production, and packaging.

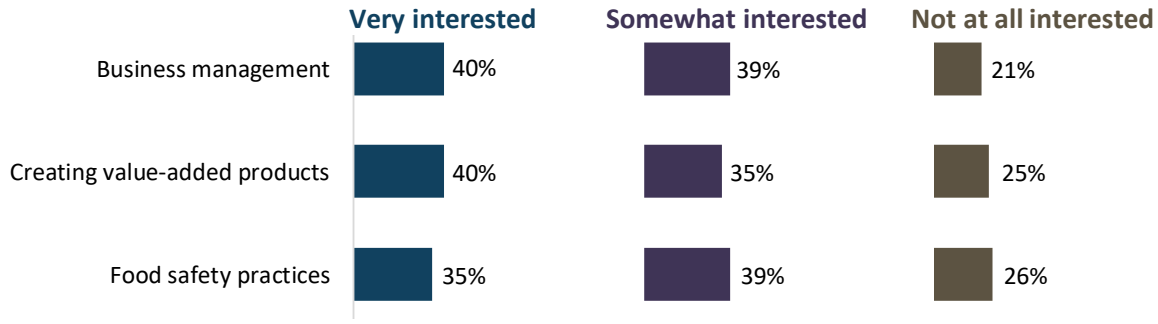

Figure 45. Supplier survey respondents' level of interest in participating in training on select topics (n=57)

Providing training and education to those supplying the food hub was a vital function in several of the public agency-led food hubs we studied. These had successfully developed grant funding to support education functions, which proved critical in supporting full-time, year-round staff. Other food hubs generally provided training for their members through partners, such as state extension or state agency programs.

A number of those interviewed, particularly those working for nonprofit organizations, identified the need for consumer education, including cooking classes. Several, including the Food Bank Director, identified the need for a community space for events, meetings, and activities. They indicated that a wide variety of education was needed for the public from cooking classes to outreach to schools. The Food Bank wants a teaching kitchen, a room suitable for use as a classroom, and a community room for larger events.

While education and community space was identified as a need, most interviewed and most of those in the steering committee thought that it should be addressed at a later stage of development and

probably not by the food hub at all, or with the food hub as a partner in a broader effort led by another group. They felt that focusing a startup on educational activities detracts from the imperative to reach profitability as soon as possible.

Education is still a high priority of the Food Bank and many of those involved in the food hub feasibility study. The food hub though, is not a likely home for many of these activities, either during its startup or once it is established. Some existing groups already provide educational programing, such as the Farm-to-School program and the Walla Walla County Health Department. Next steps include further planning with those interested in implementing training, education, and outreach activities to explore collaboratively addressing this need.

Conclusions

People are successfully operating all types of food hub enterprises in the Northwest, some of which are decades old or multi-generational efforts. All the opportunities studied were feasible given enough sweat equity and public funding, although not all are likely to be profitable or to benefit the BMAC Food Bank. Out of the four scenarios, we found developing value-added products is the most promising in terms of most quickly reaching breakeven. A commercial kitchen, on the other hand, will require continuous grant and in-kind staff support and resources throughout its life. Distribution and retail options are hard work, hard to make profitable, and hard to keep profitable. All four scenarios were scalable, and all would benefit producers and consumers, but some less so the people setting up the food hub (Figure 46). Ultimately, the food hub needs to reflect the interests and resources accessible to those involved in starting it up. Overall, value-added processing was the best choice from the perspectives of those involved.

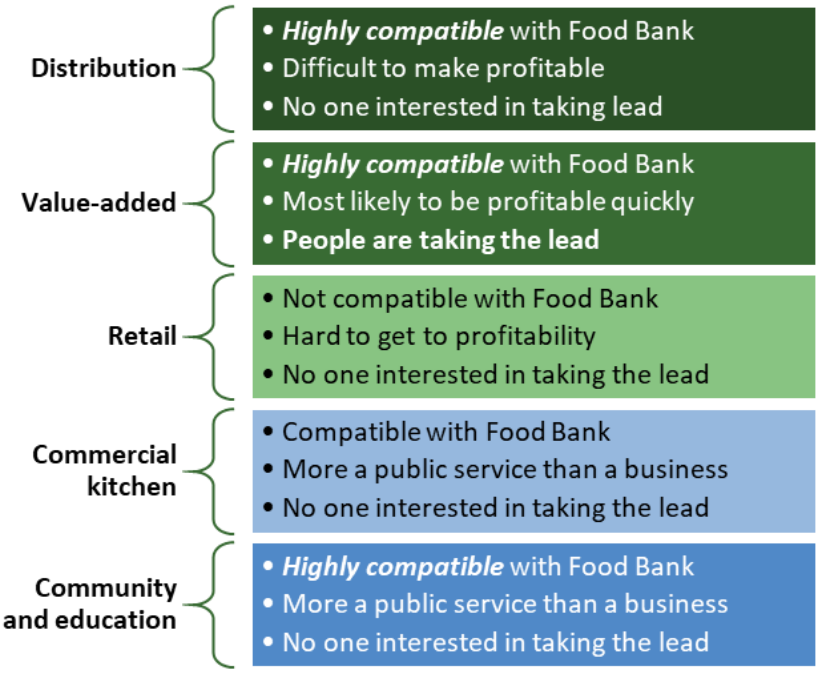

Figure 46. Scenario summary

At the same time, because of the potential to partner with the BMAC Food Bank, any of the scenarios has some advantages that a private business on its own would not. For example, through its access to Food Bank equipment and infrastructure, the food hub could start with less capital costs than it would otherwise. Partnership with the Food Bank also provides access to federal and state funding that a private company would not otherwise have. In addition to helping process and supply food—by leasing space and buying into equipment, vehicles, and services—a food hub will enable the Food Bank to get better and more equipment, which will reduce its costs and increase operational efficiencies. Co-locating could also lead to problems, so communication and collaborative planning will be key as the partnership advances to ensure the relationship is mutually beneficial and works well.

Ultimately the food hub will reflect the people involved, the products they choose to make and sell, and the resources that they are actually able to bring together to start and scaleup the enterprise. **The main constraint to starting additional value-added processing activities or developing other services is the people committed to making it happen.** We encountered many people with vision and energy to succeed in this type of endeavor, and there is room for more than one new food enterprise led by other people interested in collaborating with the Food Bank. For this initial effort though, the next step is to continue to develop value-added processing as the initial core service of a startup food hub.

Appendices

Appendix A: Economic impacts methodology

We created a multi-county 2017 greater Walla Walla regional IMPLAN (IMpact analysis for PLANning) model to estimate the economic impacts of the BMAC Food Bank and three food hub scenarios (distribution food hub, value-added processing, and retail). IMPLAN is the most widely employed input-output modeling software and data package for estimating economic impacts. Outputs were adjusted for inflation to year 2020.

Economic base assessment

This analysis is founded on economic base theory. A local or regional economy has two types of industries: base industries and non-base industries. Any economic activity that brings money into the local economy from the outside is considered a **base industry**. A base industry is sometimes identified as an export industry, which is defined as any economic activity that brings new monies into the community from outside. For example, base industries can include high-technology companies, federal government operations, and other manufacturing and service firms. Firms providing services to individuals living outside the region's trade center, such as medical and legal services, are included in the region's economic base. Payments from state and federal governments (including Social Security, Medicare, university funding, retirement accounts, and welfare payments) are sources of outside income to businesses and residents. These are counted as part of the economic base.
Non-base industries are defined as economic activity within a region that support local consumers and businesses within the base sector. They recirculate incomes generated within the region from the base industries. Such activities include, but are not limited to, shopping malls that serve the local population, business and personal services consumed locally, barbers, medical services consumed locally, and local construction contracts. Non-base industries support the base industries.

Base industries are sometimes confused with non-base industries. For example, some county economies have large retail trade sectors that produce a paradox: they employ a substantial percentage of the workforce but actually contribute little to the local economy because most of the retail sales are local. They bring little new money into the community. Thus, it appears from the size effect that the retail trade sector contributes a large amount of employment and earnings to the economy. Most of this employment and earning activity is allocated or attributed to other local "export" industries that bring revenues into the community from outside sales. From an economic base perspective, which determines the economic "drivers" of the economy, the retail trade sector is much smaller. Only the retail trade activities serving visitors from outside the area can be counted as economic base activity.

Economic base analysis is important for identifying the vital export industries of a region. Non-base industries, on the other hand, are important for keeping money within a region and stimulating local economic activity for residents. In this respect, non-base industries are said to deepen the economy while export industries are said to broaden it. For example, suppose a Walla Walla patient elects surgery at a local hospital instead of traveling to a medical center in Seattle, Washington. The substitution of local services for an imported service represents an increase in the demand for local business services. Keeping income in the community enhances the multiplier effects of the export industries. The overall effect of import substitution can be viewed as an analogous increase in demand for an export industry.

Defining and explaining economic impacts

Economic impacts measure the magnitude or importance of the expenditures of basic (export) industries. Our economic model estimates multipliers for each industrial and service sector. Suppose you have a (hypothetical) multiplier of 1.45. Every dollar of direct expenditures creates $1.45 dollars of total new spending in the community's economy.

Impacts are apportioned into two levels: the direct impact and the multiplier effects. The first level is the direct impact of value-added expenditures on the regional economy (i.e., the jobs, payroll and earnings, value added, and sales directly created by the industry of study through their exports). The second is comprised of two parts: a) the impacts on other regional businesses that provide goods or services in support of the industry of study (i.e., the indirect impacts), and b) the effect of employee and related consumer spending on the economy (i.e., the induced impacts). The indirect and induced impacts are the so-called "ripple" or multiplier effects of value-added expenditures in the regional economy. The direct effects are driven by exports whereas the multiplier effects are driven by local expenditures and the deepening of an economy. Exports, the new money coming into an economy, set off a web of transactions as each business seeks to fulfill the demands of its customers. A manufacturer's impact upon the economy is thus comprised of the magnitude of the exports and magnitude of the multiplier(s). The sum of the direct, indirect, and induced effects measures the total impact of an industry to an economy.

Appendix B: Detailed Agricultural Census data description

Current production and farm characteristics

Number and size of farms

Between 1997 and 2017, the overall trend in the five-county region is a decrease in number of farms and total acreage farmed, except for farms less than 50 acres in size.

The number of farms in Washington and Oregon decreased from 2007-2017 at rates of 8.9% and 2.4%, respectively (Table 79).[xliii] In the five-county region, the number of farms overall increased by 14 farms (0.4%) from 2007-2017, recovering from a dip that occurred from 2007-2012. Growth was not even across the five counties: the increases in Umatilla and Asotin counties outnumbered the losses in the number of farms in Columbia, Garfield, and Walla Walla counties, which decreased by 9.2%, 5.4%, and 2.8% respectively.

Table 79. Number of farms, by county, 2007-2017

Region	2007	2012	2017	% change (2007-2017)
Washington State	39,284	37,249	35,793	-8.9%
Oregon State	38,553	35,439	37,616	-2.4%
Five-county total	**3,301**	**3,250**	**3,315**	**0.4%**
Asotin	192	185	205	6.8%
Columbia	283	308	257	-9.2%
Garfield	239	211	226	-5.4%
Walla Walla	929	943	903	-2.8%
Umatilla	1,658	1,603	1,724	4.0%

Walla Walla and Umatilla counties have a concentration of small farms (Figure 47), which have grown in number in the area (Figure 48). The number of farms over 1,000 acres declined by 9% across the five-county region between 1997-2017. Farms over 1,000 acres also decreased 9% in combined acreage (Figure 49). In the same period, farms with less than 50 acres made up 52% of the total number of farms in the five-county region and were the only size of farm that increased in number between 1997 and 2017.

In contrast, for farms between 50-219 acres, Columbia County saw the largest growth rate in number (47%) and combined acreage (76%) (Figure 51). Walla Walla and Asotin counties also increased in the number of farms, although their increases were more modest (7% and 6%, respectively). Overall, the number of farms between 50-219 acres decreased 5% in the five-county region because of losses in Umatilla County (which decreased 20% in total number of farms and 16% in combined acreage) and in Garfield County, which decreased 14% in number of farms of this size, although total acreage increased by 45% in Garfield County. Total acreage of farms in this size increased in Columbia and Asotin counties and decreased slightly in Walla Walla county. Umatilla County has the highest percentage of farms at this scale at 59.6%, followed by Walla Walla County where 54.2% of the total number of farms are less than 50 acres.

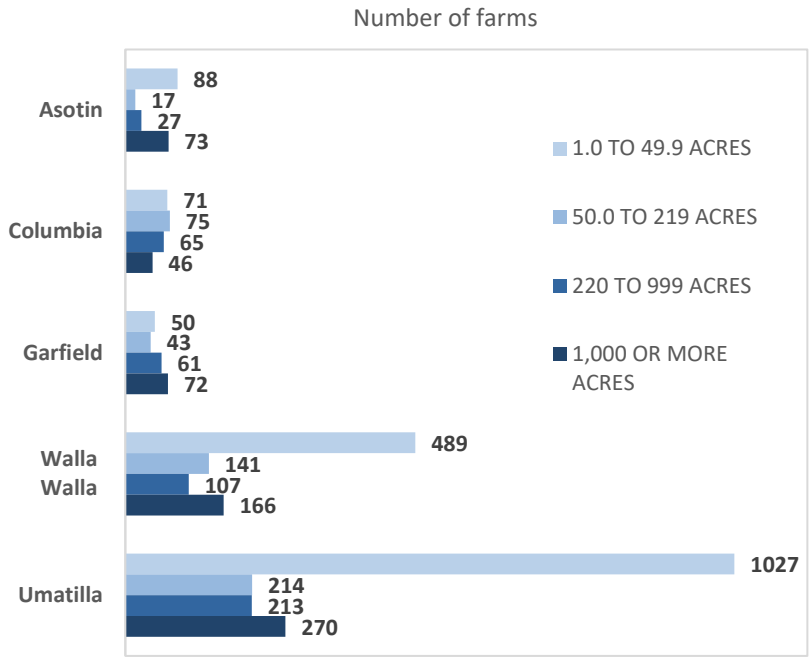

Figure 47. Total number of farms by farm size, by county, 2017

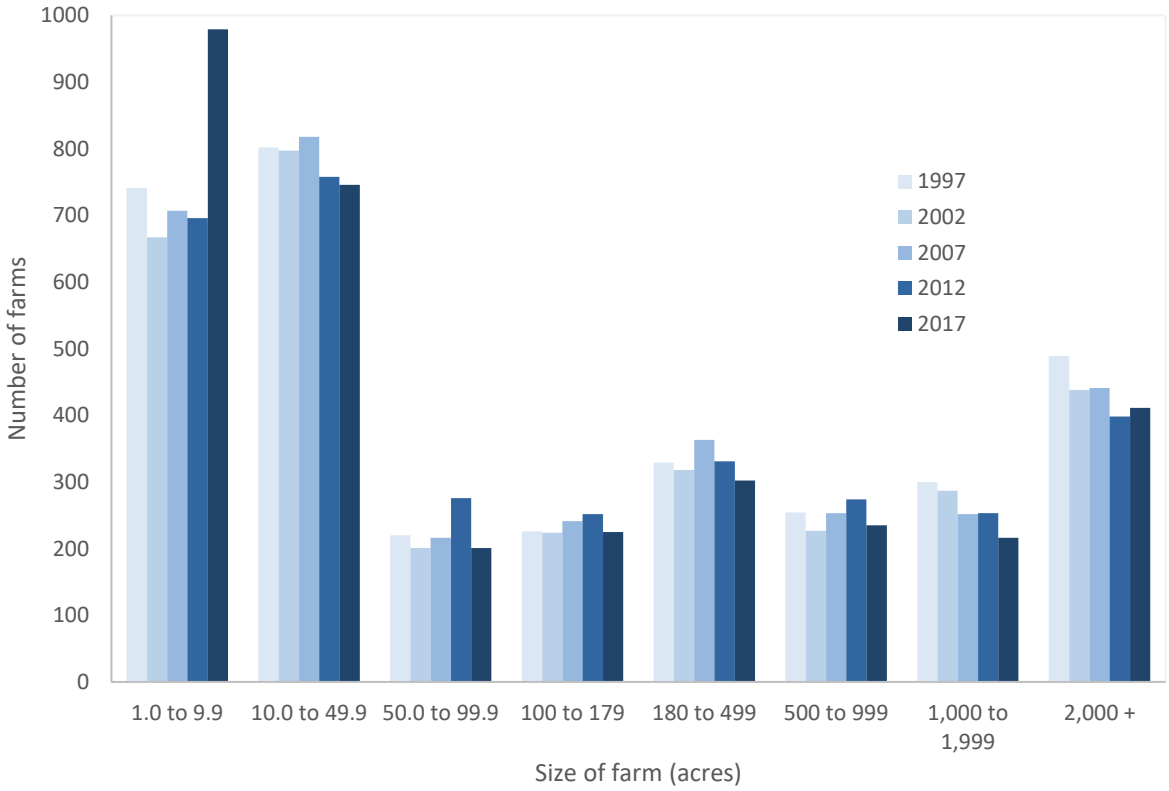

Figure 48. Number of farms by farm size, five-county totals, 1997-2017

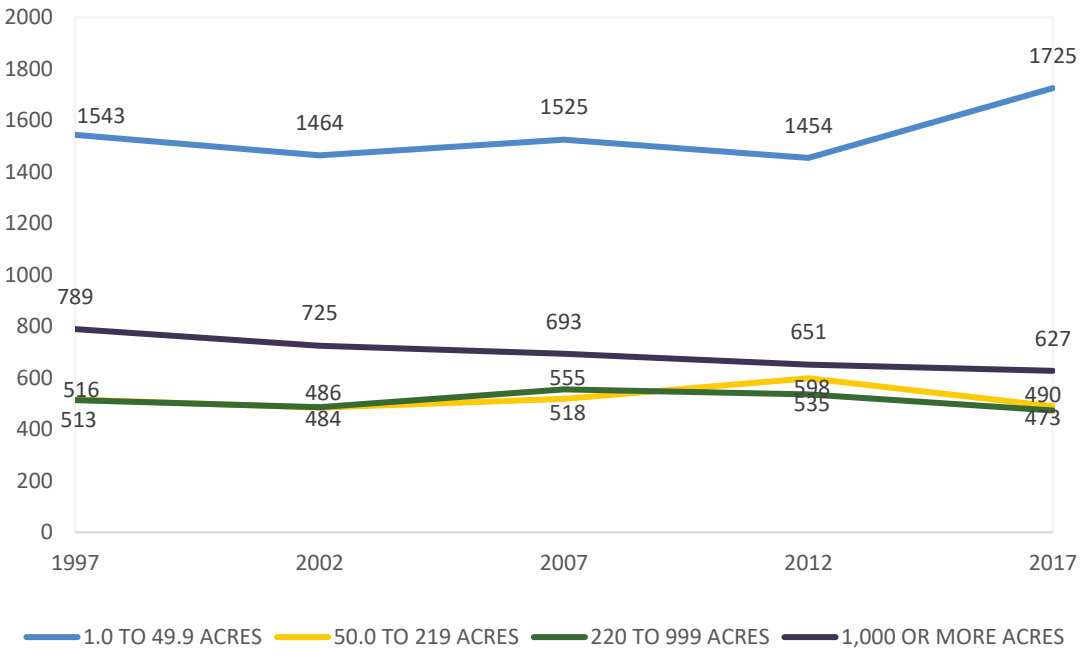

Figure 49. Change in number of farms, 1997-2017

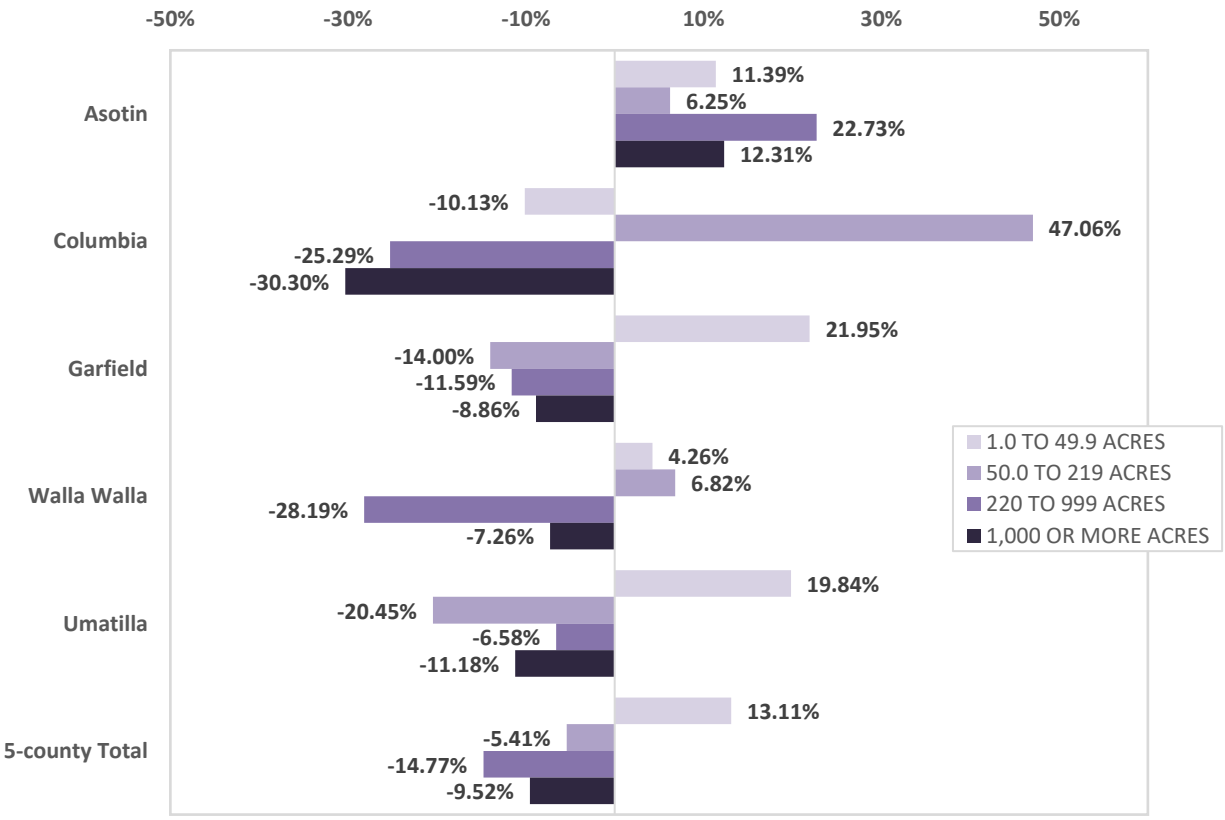

Figure 50. Percent change in number of farms by farm size 2007-2017

Though most farms in the five-county region were smaller than 50 acres in 1997-2017, the majority of the total acreage is in farms over 1,000 acres (Table 80). In 2017, farms with total acreage over 1000 acres contained 88.5% of the total acreage in the five-county area (2,512,247 total acres). Large farms in this size bracket are decreasing both in number and acreage, but still make up the majority.

Table 80. Acres in farms by size of farm (1997-2017)

Size of farm (acres)	Asotin	Columbia	Garfield	Walla Walla	Umatilla	*5-county Total*
2017						
1.0 to 49.9	767*	1,339	1,239	6,117	11,457	*20,919**
50.0 to 219	1,891*	8,163	5,008	17,272	25,683	*58,017**
220 to 999	12,367	31,633	30,725	58,004	114,227	*246,956*
1,000+	235,137	202,216	252,876	621,144	1,200,874	*2,512,247*
2012						
1.0 to 49.9	764	1,507	568*	7,463	10,519	*20,821**
50.0 to 219	2,649*	9,266	5,145*	17,574	32,963	*67,597**
220 to 999	17,877*	44,244	33,340	58,417	128,422	*282,300*
1,000+	240,570	*	269,318	561,667	1,136,408	*2,207,963*
2007						
1.0 to 49.9	986	1,626*	946	6,756	11,838	*22,152**
50.0 to 219	1,442*	6,756*	5,720*	14,055	31,983	*59,956**
220 to 999	12,690	42,054	35,642	75,259	118,971	*286,242*
1,000+	257,498	262,743	*	586,280	1,284,529	*2,392,676**
2002						
1.0 to 49.9	577*	952	516*	5,839	12,937	*20,821**
50.0 to 219	1684*	5,967	3,116*	15,338	29,963	*56,068**
220 to 999	13,007	38,112	24,997*	62,106	113,810	*252,032**
1,000+	262,939	249,630	283,124	617,277	1,174,222	*2,587,192*
1997						
1.0 to 49.9	684	1,063	706	5,960	13,104	*21,517*
50.0 to 219	1,742*	4,643	3,440*	17,938	30,513	*58,276*
220 to 999	16,872*	33,924	24,983*	62,380	134,192	*272,351*
1,000+	295,123	281,000	301,226	664,791	1,225,789	*2,767,929*

* means at least one data detail withheld within sum "to avoid disclosing data for individual operations."

The amount of data withheld in specific counties limits the conclusions about acreage of farm sizes. However, a few conclusions about the five-county area can be drawn from the data:

- The total acreage in farms 220 to 999 acres in size decreased 9.3% between 1997 to 2017.
- The total acreage in farms larger than 1000 acres decreased 9.2% between 1997-2017.
- Walla Walla County saw a 2.6% increase in total acreage of farms sizes 1-49.9 acres.

On average, only about half of the total acreage of farms (48.2%) was harvested in 2017 (Table 76). Farms with total acreage over 1000 acres had the lowest percentage of harvested cropland at 29.4%.

Farms less than 9.9 acres had an average of 48.2% of total cropland harvested, although some individual counties had much higher rates. In this size category, Garfield County harvested 353.8% of their total cropland, while Columbia harvesting 176.5%. These numbers greater than 100% indicated that specific acres of land were harvested more than one time in 2017. Walla Walla County (64.8%) and Umatilla County (35.6%) have lower harvesting rates, but ultimately have more farms in this size range. Farms smaller than 50 acres harvested a higher percentage of their land than farms in general (Figure 51). Table 81 provides percent of land harvested by county and farm size.

Table 51. Percentage of total cropland acreage that was harvested, 2017

Size of farm (acres)	Asotin	Columbia	Garfield	Walla Walla	Umatilla	*5-county total*
1.0 to 9.9	-	176.5%	353.8%	64.8%	35.6%	*48.2%*
10.0 to 49.9	11.5%*	68.3%	25.9%	43.4%	54.1%	*47.9%**
50.0 to 99.9	-	27.0%	46.4%	35.7%	61.6%	*46.6%**
100 to 499	68.4%*	38.0%	51.9%	65.5%	60.1%	*58.1%*
500 to 999	129.7%	30.0%	95.4%	65.6%	41.7%	*55.7%*
1,000+	7.9%	37.2%	29.9%	38.2%	27.6%	*29.4%*

* means at least one data detail withheld within sum "to avoid disclosing data for individual operations."

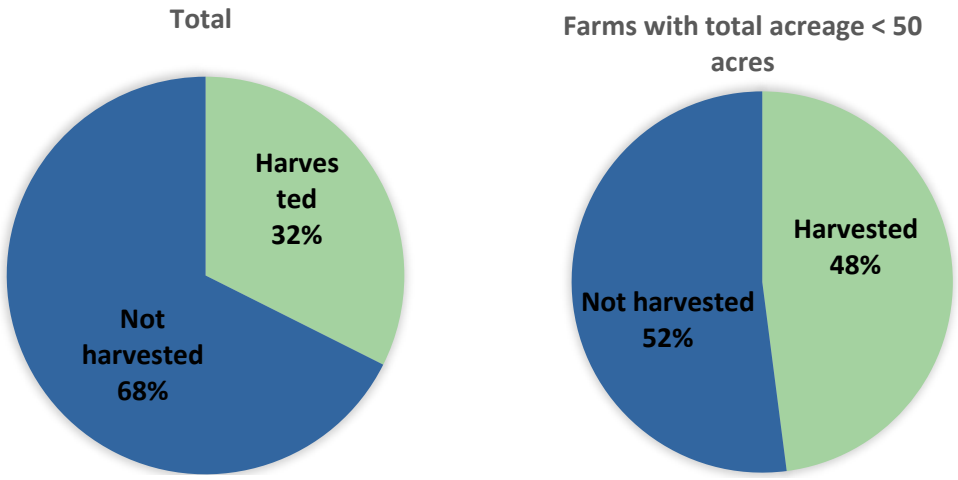

Figure 51. Percentage of total cropland that was harvested in 2017, five-county totals

Table 82. Acres of Harvested cropland by size of farm, 1997-2017

Size of farm (acres)	Asotin	Columbia	Garfield	Walla Walla	Umatilla	*5-county total*
2017						
1.0 to 9.9	41	143	92	691	1,129	*2,096*
10.0 to 49.9	88*	859	314	2,193	4,481	*7,935**
50.0 to 199	1,269*	1,962	1,816	6,886	9,786	*21,719**
200 to 499	3,790	5,045	6,006	16,171	25,130	*56,142*
500 to 999	8,359	6,213	19,546	25,343	34,199	*93,660*
1,000 +	18,536	75,291	75,519	237,400	331,363	*738,109*
2012						
1.0 to 9.9	(D)	82	62	710	833	*1,687*
10.0 to 49.9	192*	770	207	2,610	5,349	*9,128**
50.0 to 199	1,112	1,722	1,238	6,501	13,985	*24,558*
200 to 499	2,910	7,614	6,067	15,460	26,850	*58,901*
500 to 999	9,459	12,263	15,874	29,491	46,131	*113,218*
1,000 +	22,086	75,731	67,102	226,162	302,098	*693,179*
2007						
1.0 to 9.9	47	73	30	426	1,048	*1,624*
10.0 to 49.9	(D)	703	46*	2,024	4,818	*7,591**
50.0 to 199	1,311*	1,901	1,141	6,922	8,591	*19,866**
200 to 499	810	5,584	5,677	11,675	25,317	*49,063*
500 to 999	9,242	7,693	16,978	30,100	47,130	*111,143*
1,000 +	21,189	89,547	59,450	230,945	352,977	*754,108*
2002						
1.0 to 9.9	(D)	95	40	614	916	*1,665*
10.0 to 49.9	411*	865	190	2,853	4,773	*9,092**
50.0 to 199	2,024	2,595	1,691	7,734	10,846	*24,890*
200 to 499	3,213	7,239	8,894	19,358	25,993	*64,697*
500 to 999	6,328	13,448	21,175	41,027	57,454	*139,432*
1,000 +	28,618	99,613	71,007	244,727	296,042	*740,007*
1997						
1.0 to 9.9	38	67	47	684	1,093	*1,929*
10.0 to 49.9	492*	720	356*	2,463	4,776	*8,807**
50.0 to 199	355	3,374	1,813	10,667	18,207	*34,416*
200 to 499	7,117	10,815	7,359	25,882	28,049	*79,222*
500 to 999	7,292	15,480	30,131	52,526	73,824	*179,253*
1,000 +	20,657	86,580	78,560	278,708	298,718	*763,223*

*means that there is at least one data detail missing/withheld within sum.

While the Agricultural Census data indicates that potentially farms of all sizes existing which may participate in a food hub, actual interest expressed through interviews and the supplier survey showed considerable interest in participation.

Irrigated land

In 2017, in the entire 5-county area, 50.3% of farms indicated having some cropland with irrigation (Table 83).

Table 83. 2017 Irrigation by size of farm, 2017

Farm size (acres)	Total # of farms	# of farms with irrigation	Total acres of irrigated land	% of total farms with irrigation
Total	**3315**	**1668**	**214,082***	**50.3%**
1.0 to 9.9	979	720	2,458*	73.5%
10.0 to 49.9	746	461	6,380	61.8%
50.0 to 69.9	109	35	1,262	32.1%
70.0 to 99.9	92	32	1,596*	34.8%
100 to 139	96	35	1,707*	36.5%
140 to 179	129	54	4,321*	41.9%
180 to 219	64	24	2,060*	37.5%
220 to 259	51	19	2,179*	37.3%
260 to 499	187	63	9,286*	33.7%
500 to 999	235	66	17,799*	28.1%
1,000 to 1,999	216	47	29,531*	21.8%
2,000+	411	112	135,503*	27.3%

*indicates data missing

Irrigated land is predominately located in Walla Walla and Umatilla counties (Table 84).

Table 84. Irrigated acres by county, 2007-2012

Irrigated land (acres)	Asotin County	Columbia County	Garfield County	Walla Walla County	Umatilla County
Total					
2012	482	4,083	795	91,108	147,844
2007	307	4,172	474	92,438	142,301
% change, 2007-2012	57.0	-2.1	67.7	-1.4	3.9
Harvested cropland					
2012	319	3,635	771	88,077	137,763
2007	151	3,486	379	87,162	125,833
% change, 2007-2012	111.3	4.3	103.4	1.0	9.5
Pastureland, excluding woodland pastured					
2012	163	448	24	3,031	10,081
2007	156	686	95	5,276	16,468
% change, 2007-2012	4.5	-34.7	-74.7	-42.6	-38.8

Crops grown

Berries

In the five-county area, there are 70 farms that indicated they produce berries on a total of 352 acres (Figure 52). All berry production in the area is irrigated.

In 2017, Walla Walla County contained 67.1% of the farms growing berries and 68.2% of the total acres of berry cropland in the study area. Garfield County had no berry production reported in the Agricultural Census in 2017.

Between 2012 and 2017, the number of farms growing blueberries doubled from 21 to 42 farms. In the same time period, the number of farms growing blackberries decreased 33% and the number growing strawberries decreased 57%. The number of boysenberry farms quadrupled from 1 to 4 farms, and farms growing raspberries remained steady with 35 farms. Not all the farms that indicated they grow berries had plants bear fruit.

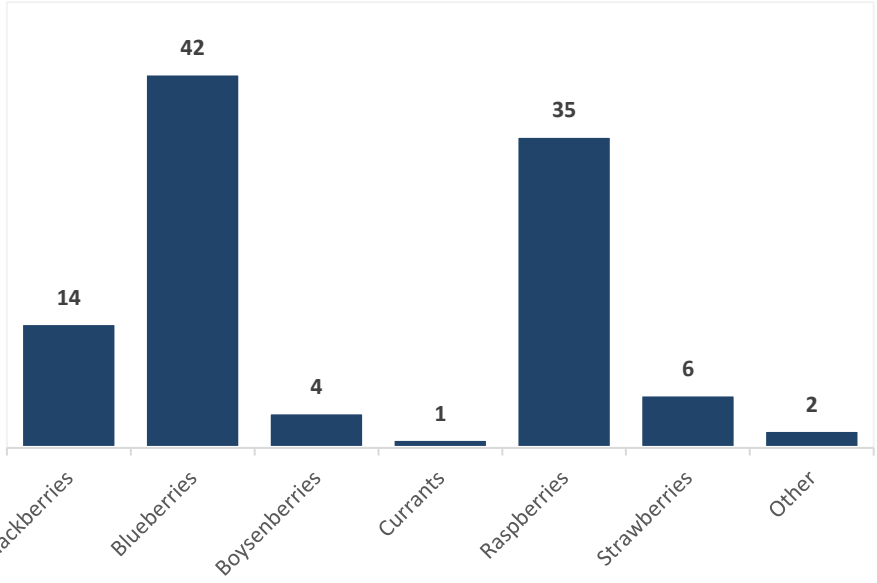

Figure 52. Number of farms growing specific berries, 2017

Fruit and nut production

The number of farms growing fruits and nuts in the five-county region increased between 2002 and 2017, except for the number of farms growing apples (Table 85). The greatest increases occurred in the number of farms growing tart cherries (increase of 22 farms), grapes (increase of 20 farms), and peaches (increase of 14 farms). The number of farms growing apples decreased by 53 farms between 2002 and 2017. Most of this loss occurred between the 2002 and 2007.

Even though fewer farms produced apples in 2017 compared to 2002, apples remained one of the top-three fruits the greatest number of farms in the five-county region grew in 2017: 80 farms grew apples, 114 farms grew grapes, and 94 farms grew sweet cherries.

County-level conclusions from 2002-2017 data include the following:

Asotin

- The number of farms growing grapes increased 33.3% (from three to four) and acreage committed to growing grapes increased 333.3% to 13 total acres.
- Less than five farms grow any particular fruit/nut

Columbia

- The number of farms growing apples decreased 50%.
- In 2017, the number of farms growing pears increased 300% to four farms, with a total of 91 acres in pears.

Garfield

- In 2017, 23.7% of the farms growing peaches were located in Garfield County, with seven total acres.

- The number and acreage of apricot farms grew from two acres at two farms in 2002 to five acres at five farms in 2017.

Walla Walla

- In 2017, the greatest number of acres for specific fruits were apples (11,658 acres), grapes (2,826 acres), sweet cherries (595 acres), and tart cherries (289 acres).
- The number of farms growing apples decreased 22.6%, but the total acreage of apples increased 37.3% to a total 11,658 acres in 2017.
- Farms growing apricots grew 900%, from 1 to 10 farms.
- The number of farms growing sweet cherries increased 50% and the number of acres used to grow sweet cherries increased 22.7% to 595 acres in 2017.
- The number of farms growing grapes increased 3.2%, while total acreage decreased 21.9% to 2,826 acres in 2017.
- In 2017, 10 farms grew pears, but altogether they only totaled three acres.
- Between 2012 and 2017, six farms with a total of eight acres started growing nectarines.
- Data for plum and prune acreage was only made public in 2007 when there were 36 acres of plums/prunes being grown on five farms. The data for 2012 and 2017 acreage was withheld, but the total number of farms has increased to 12.

Umatilla

- The highest combined acreage of farms growing fruits and nuts in 2017 were for apples (2,395 acres), grapes (1,099 acres), and sweet cherries (481 acres).
- Acreage of the following fruits decreased: apples (17.2%), apricots (40.0%), plums and prunes (61.4%), and sweet cherries (10.6%)
- Acreage of grapes increased 148.6% from 442 acres to 1099 acres, while the number of farms increased 58.6%. The main increase was between 2002 and 2012, where acreage of grape farms doubled (2007 data withheld).
- The number of farms growing peaches decreased 17.6% to 14 total farms in 2017, while acreage increased 89.5% to 36 acres.
- The number of acres growing sweet cherries increased from 538 acres in 2002 to 892 acres in 2007. Between 2012 and 2017, sweet cherry acreage dropped from 877 to 481 acres.
- Plum and prune acreage dropped dramatically between 2012 and 2017 from 346 to 90 acres total.

Table 85. Number of farms with specific fruit and nut production in the five-county region

Fruit/Nut Type	2002	2007	2012	2017	% change 2002 -2017
Apples	133	95	92	80	-39.8%
Apricots	17	12	15	28	64.7%
Cherries, sweet	84	82	98	94	11.9%
Cherries, tart	1	1	8	23	2200.0%
Grapes	94	84	119	114	21.3%
Kiwifruit	0	0	0	5	
Nectarines	9	8	8	9	0.0%
Peaches	24	21	26	38	58.3%
Pears	23	17	25	31	34.8%
Plum/apricot hybrid	0	2	1	3	
Plums & Prunes	28	35	32	29	3.6%
Almonds	0	5	0	6	
Chestnuts	0	1	1	3	
Hazelnuts	1	0	1	7	600.0%
Walnuts	3	8	7	7	133.3%

Vegetable production

The total number of farms with vegetable production decreased 23.0% in the five-county region between 2002 and 2017. During the same time period, total acreage of vegetable production increased 44.3% from 40,649 acres in 2002 to 58,665 acres in 2017.

In 2017, 84.7% of farms with vegetable production were irrigated, compared to 71.1% of farms with vegetable production that were irrigated in 2002. Though the number of operations with irrigation decreased 8.3% from 2002-2017, the percentage of total farms with irrigation compared to the total number of farms has increased. Additionally, the total acreage of vegetable production with irrigation increased 108.6% between 2002 and 2017, from 22,102 acres to 46,099 acres.

In 2017, 58,665 acres in the five-county region were devoted to growing vegetables but 62,743 acres of vegetables were harvested, indicating that some acreage was harvested more than once within the year. The number of acres of vegetables harvested increased 54.0% between 2002 and 2017, though the majority of that increase occurred between 2002 and 2007 when the total acreage harvested jumped from 40,740 acres to 62,361 acres.

In 2017, potatoes with 20,652 acres harvested and green peas with 18,853 acres harvested were the two crops with the greatest number of acres harvested (Table 86). The producers of both crops were all located within Walla Walla and Umatilla counties.

Walla Walla and Umatilla counties were home to the majority of all vegetable production within the five-county region (Table 87). Umatilla County had 59.9% of all farms with vegetable production (157 total) and 67.4% of the total acreage of vegetables harvested. Walla Walla County had 33.1% of all farms

with vegetable production and 32.6% of the total acreage of vegetables harvested (Table 88). In 2017, Asotin County had six farms with a total of 14 acres growing vegetables and Columbia County had five farms growing a total of four acres of vegetables.

No data vegetable production data was reported for Garfield County in the 2017 Agricultural Census; however, in 2012 there were three farms that grew vegetables and at least one of them grew the following crops: cantaloupe (1 farm), sweet corn (1), cucumbers (1), pumpkins (1), rhubarb (2), squash (1), tomatoes (1), watermelons (1).

Table 86. Top-five vegetables grown in the five-county area based on the number of acres harvested, 2017

Top 5	Crop	Total Acres Harvested
1	Potatoes	20,652
2	Green Peas	18,853
3	Sweet Corn	10,302
4	Dry Onions	4,043
5	Carrots	1,011

Table 87. Number of farms with specific vegetable production, 2017

	Asotin	Columbia	Walla Walla	Umatilla
Total Number of Farms growing Vegetables	6	5	52	94
Artichokes	-	-	1	-
Asparagus	-	1	2	7
Beans (Green & Lima)	-	-	2	2
Beans (Snap)	4	1	3	5
Beets	4	1	4	4
Broccoli	-	1	6	1
Cabbage, Chinese	-	1	1	2
Cabbage, Head	-	1	4	3
Cantaloupe	-	1	7	7
Carrots	-	1	6	3
Cauliflower	-	1	1	-
Celery	-	-	2	-
Chicory	-	-	1	-
Cucumbers	-	1	5	6
Eggplant	-	-	4	5
Escarole & Endive	-	-	2	-
Garlic	-	3	5	1
Herbs, fresh cut	-	-	9	3
Honeydew melon	-	-	2	-
Greens, Kale	-	-	4	6
Lettuce	-	1	5	-
Lettuce, head	-	-	1	-
Lettuce, leaf	-	1	5	-
Lettuce, romaine	-	-	3	-
Mustard greens	-	-	1	-
Onions, dry	-	1	13	12
Onions, green	-	3	3	1
Parsley	-	-	1	-
Peas, Chinese	-	1	1	2
Peas, green	-	-	5	35
Peppers, bell	-	-	11	9
Peppers, Chile	-	3	9	5
Potatoes	-	1	11	19
Pumpkins	5	-	14	9
Radishes	-	-	2	-
Spinach	-	3	6	-
Squash	1	3	10	12
Squash, summer	1	3	7	7
Squash, winter	-	3	7	12
Sweet corn	5	3	10	12
Tomatoes	1	3	16	9
Turnips	-	-	1	-
Watercress	-	-	-	2
Watermelon	-	-	-	12
Vegetables, other	-	-	5	14

Table 88. Total acreage of vegetables harvested, 2017

Vegetable Crop	Asotin	Columbia	Walla Walla	Umatilla
Total Acres of Vegetables Harvested	**14**	**4**	**20,456**	**42,269**
For fresh market	14	3	2,323	6,995
For processing	0	1	18,133	35,274
Artichokes	-	-	(D)	-
Asparagus	-	(D)	(D)	144
Beans (Green & Lima)	-	-	(D)	(D)
Beans (Snap)	2	(D)	(Z)	1
Beets	(D)	(D)	(Z)	(Z)
Broccoli	-	(D)	1	(D)
Cabbage, Chinese	-	(D)	(D)	(D)
Cabbage, Head	-	(D)	(Z)	(D)
Cantaloupe	-	(D)	2	26
Carrots	-	(D)	(D)	1,011
Cauliflower	-	(D)	(D)	-
Celery	-	-	(D)	-
Chicory	-	-	(D)	-
Cucumbers	-	(D)	1	1
Eggplant	-	-	1	1
Escarole & Endive	-	-	(D)	-
Garlic	-	(D)	1	(D)
Herbs, fresh cut	-	-	1	(Z)
Honeydew melon	-	-	(D)	-
Greens, Kale	-	-	(Z)	1
Lettuce	-	(D)	2	-
Lettuce, head	-	-	(d)	-
Lettuce, leaf	-	(D)	(D)	-
Lettuce, romaine	-	-	(Z)	-
Mustard greens	-	-	(D)	-
Onions, dry	-	(D)	1,647	2,396
Onions, green	-	(Z)	(Z)	(D)
Parsley	-	-	(D)	-
Peas, chinese	-	(D)	(D)	(D)
Peas, green	-	-	1,250	16,603
Peppers, bell	-	-	2	1
Peppers, chile	-	(Z)	2	(D)
Potatoes	-	(D)	10,223	10,429
Pumpkins	4	-	17	(D)
Radishes	-	-	(D)	-
Spinach	-	(Z)	(D)	-
Squash	(D)	1	49	(D)
Squash, summer	(D)	(D)	(D)	1
Squash, winter	-	(D)	(D)	(D)
Sweet corn	8	(Z)	6,051	4,243
Tomatoes	(D)	(D)	7	4
Turnips	-	-	(D)	-
Watercress	-	-	-	(D)
Watermelon	-	-	-	857
Vegetables, other	-	-	8	(D)

Bee colonies

The number of farms with production from bee colonies in the five-county area grew 131.3% between 2002 and 2017, from 16 to 37 farms (Figure 53). Together, Umatilla, Garfield, and Columbia counties produced 787,902 pounds of honey in 2017, which represented $1,528,000 of honey sales.

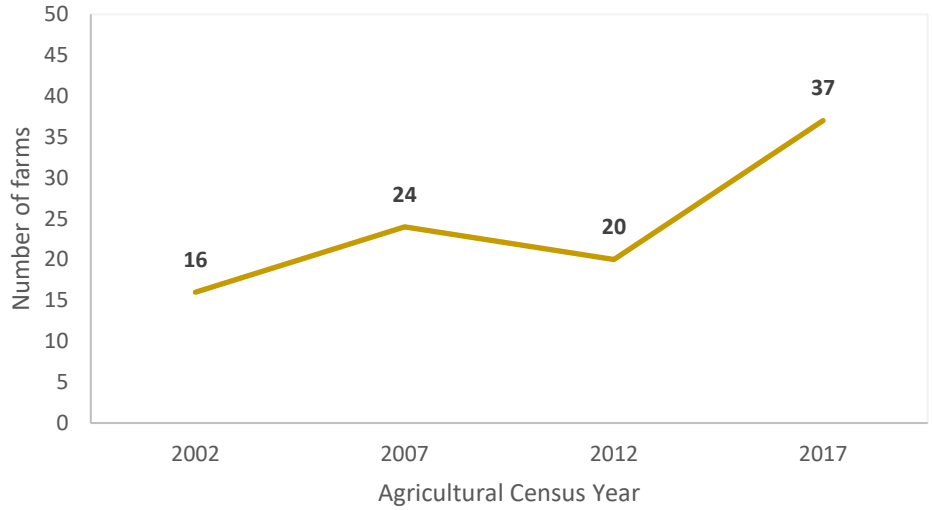

Figure 53. Number of farms with productive bee colonies

Most (92.4%) honey production was located in Umatilla County, with 8,087 bee colonies across 19 farms. The total number of colonies increased 63.8% between 2002 and 2017. In the same timeframe, the number of farms with production increased 111.1% and the pounds of honey produced increased 761.9% from 84,452 pounds to 727,906 pounds. In 2017, each bee colony produced an average of 90.0 pounds of honey.

Sales in Umatilla County grossed $1,387,000 in 2017, averaging $1.90 per pound of honey or $171.50 per colony. The total sales grew from $959,000 in 2012 to $1,387,000 in 2017.

Honey production increased 388.3% in Columbia County between 2002 and 2017, from 10,160 pounds of honey to 49,616 pounds. In 2017, Columbia County farms had a total of 66 colonies, averaged 752 lbs. of honey per colony, and sold at an average rate of $2.47 per pound of honey. Sales per colony averaged $1863.64.

Garfield County had nine farms with bee colonies, producing 10,380 lbs. of honey, grossing $18,000. In 2017, Garfield County farms with bee colonies averaged $1.73 per pound of honey.

Most of the data for Walla Walla County bee colonies and farms with bees is withheld, but we do know that the number of operations with production increased from three farms in 2002 to nine farms in 2017.

Certified-organic farms

There were 20 certified-organic farms in the five counties in 2017, down from 26 in 2012. All the certifications were in Walla Walla and Umatilla counties. The six lost were in Umatilla County. In 2012, Umatilla County had 13 certified-organic farms, two of which had sales less than $5,000 and 11 had sales of $5,000 or more. In 2017, Umatilla County had seven certified-organic farms, six of which had sales of $5,000 or more. Despite the decrease in the number of certified-organic farms, total sales of certified-organic products increased from $11,470,000 to 13,554,000. Though the number of certified-organic farms in Walla Walla County remained the same, there was a 149.4% increase in sales between 2012 and 2017, from $16,107,000 to $40,167,000.

Crops grown historically in the five-county region

The following Tables 89-92 report Agricultural Census data for the vegetable and fruit crops that were grown in the five-county region (Walla Walla, Columbia, Garfield, and Asotin counties in Washington and Umatilla County in Oregon) from 1934 to 2017. This historical data provides context for current production capacity, giving an indication of what has been grown in the past and the consistency of production over time.

Table 89. Vegetables harvested for sale in the five-county region, 1934-1992

CROP	1934		1939		1945		1974		1992	
	# of farms	Acres	# of farms	Acres	# of farms	Acres	# of farms	Acres	# of farms	Acres
Total	**1,834**	**6,251**	**1,490**	**13,414**	**1,130**	**78,766**	**481**	**97,879**	**313**	**50,890**
Artichoke										
Asparagus			289	1,056			47	8,019	50	2,062
Beans, lima (green)									13	917
Beans, snap, string, or wax	130	77	57	37	76	52	21	1,216	10	495
Beets (table)			13	4					0	0
Broccoli										
Cabbage, Chinese										
Cabbage, Head	158	131	119	107	132	138	11	55	0	0
Cantaloupe, muskmelons, honeydews, etc.			81	106					8	57
Carrots			124	146			24	242	0	0
Cauliflower			5	2			3	20	0	0
Celery			2	0					0	0
Corn, sweet	200	197	66	134	130	263	20	638	21	1,979
Cucumbers			43	31			23	817	0	0
Eggplant										
Escarole and Endives										
Garlic										
Greens, mustard and kale										
Herbs, fresh cut										
Lettuce							26	19	3	2
Onions, dry			152	345			48	628	60	3,301
Onions, green and shallots							12	54	0	0
Peas, chinese (sugar and snow)										
Peas, green			93	10,492	190	74,229	131	69,689	107	41,278
Peppers, Bell										
Peppers, Chile										
Potatoes							43	15,248		
Pumpkins										
Radishes			14	5			10	10	3	2
Rhubarb										
Spinach			131	339			27	295	14	207
Squash			61	117			10	48	0	0
Tomatoes	337	586	201	412	193	350	5	65	11	30
Turnips										
Watercress										
Watermelons	138	206	39	81			20	816	13	560
All other vegetables and melons	871	5,054			409	3,734			0	0

Table 90. Vegetables harvested for sale in the five-county region, 1997-2017

CROP	1997		2002		2007		2012		2017	
	# of farms	Acres	# of farms	Acres	# of farms	Acres	# of farms	Acres	# of farms	Acres
Total	**339**	**61,326**	**335**	**39,305**	**472**	**58,073**	**411**	**55,524**	**443**	**59,823**
Artichoke									1	0
Asparagus	56	2,507	53	2,592	14	313	10	72	10	144
Beans, lima (green)	11	1,697	3	0	9	0	5	na	4	0
Beans, snap, string, or wax	12	837	2	0	19	1,751	18	4	13	3
Beets (table)	3	2	1	0	1	0	5	na	13	0
Broccoli					1	0	6	na	8	1
Cabbage, Chinese									3	0
Cabbage, Head	3	6	5	1	7	0	8	4	8	0
Cantaloupe, muskmelons, honeydews, etc.	9	126	16	73	16	82	12	37	16	28
Carrots	0	0	1	0	26	94	22	2	10	1,411
Cauliflower	0	0	0	0	0	0	1	na	2	0
Celery	0	0	0	0	0	0			2	0
Corn, sweet	32	9,612	24	6,583	42	9,875	36	13,619	30	10,302
Cucumbers	8	140	11	9	27	13	23	1	12	2
Eggplant			2	0	5	1	8	1	9	2
Escarole and Endives					5	1			2	0
Garlic	6	10	4	1	5	0	5	na	9	1
Greens, mustard and kale					5	1	5	1	2	0
Herbs, fresh cut					5	1	4	na	12	1
Lettuce	3	0	2	0	3	0	3	na	5	2
Onions, dry	52	6,086	58	2,748	37	800	37	739	26	4,043
Onions, green and shallots	0	0	1	0	1	0	4	na	7	0
Peas, Chinese (sugar and snow)			2	0	4	1010	3	na	4	0
Peas, green	104	39,133	66	26,230	53	21817	48	17,202	40	17,853
Peppers, Bell									20	3
Peppers, Chile			6	8	18	9	7	na	17	2
Potatoes					57	21405	40	22,795	30	24,761
Pumpkins			16	130	31	31	24	96	28	21
Radishes	3	0	0	0	1	0	5	6	2	0
Rhubarb					1	0	2	na	0	0
Spinach	12	306	11	115	8	0	2	na	9	0
Squash	0	0	9	5	9	0	11	na	26	50
Tomatoes	12	27	23	19	40	27	37	26	29	11
Turnips									1	0
Watercress									2	0
Watermelons	13	837	11	791	14	842	9	818	12	857
All other vegetables and melons	0	0	8	0	8	0	11	101	19	325

Table 91. Fruit harvested for sale in the five-county region, 1934-1992

CROP	1934		1939		1945		1974		1992	
SMALL FRUITS HARVESTED	**# of farms**	**Acres**	**# of farms**	**Acres**	**# of farms**	**Acres**	**# of farms**	**Acres**	**# of farms**	**Acres**
Total	**130**	**99**	**802**	**495**	**457**	**190**	**0**	**0**	**24**	**26**
Blackberries and dewberries			103	36	74	19				
Boysenberries			29	9	55	16				
Blueberries									4	
Currants			1							
Gooseberries			17	1						
Loganberries			10	3						
Raspberries (tame)			313	178	241	67			8	2
Strawberries	130	99	289	252	87	88			12	24
Youngberries			40	16						
NON-CITRUS ORCHARDS	**# of farms**		**# of farms**	**Acres**	**# of farms**	**Acres**	**# of farms**	**Acres**	**# of farms**	**Acres**
Total farms with orchard fruit (acres)			**1,517**	**6,472**	**1,193**	**6,889**	**230**	**5,288**	**410**	**8,995**
	# of farms	**Bushels**	**# of farms**	**Bushels**	**# of farms**	**Bushels**	**# of farms**	**Bushels**	**# of farms**	**Acres**
Apples	1,722	952,101	909	349,546	1,204	376,428	163	1,813	199	8,100
Peaches	1,035	45,412	857	57,499	1,134	66,101	10	17	29	16
Pears, total	924	17,250	588	31,518	748	16,288	11	15	28	15
	# of farms	**Pounds**	**# of farms**	**Pounds**	**# of farms**	**Pounds**	**# of farms**	**Pounds**	**# of farms**	**Acres**
Plouts										
Grapes	671	632,074	340	409,795	503	636,820	7	3,186,000	31	40
Cherries, Sweet										
Cherries, Tart	1,531	69,816	940	2,615,532	1,185	3,020,379	65	393	85	719
Apricots			588	529,575	946	938,092	8	7	28	64
Nut trees			404	32,267	205	4,569			6	0
Nectarines									4	41

Table 92. Fruit harvested for sale in the five-county region, 1997-2017

CROP	1997		2002		2007		2012		2017	
SMALL FRUITS HARVESTED	**# of farms**	**Acres**	**# of farms**	**Acres**	**# of farms**	**Acres**	**# of farms**	**Acres**	**# of farms**	**Acres**
Total	**16**	**16**	**31**	**100**	**15**	**0**	**90**	**136**	**101**	**263**
Blackberries and dewberries			3	2	3		21	9	14	2
Boysenberries			1				1		2	
Blueberries	3		5	22	2		20	98	42	254
Currants									1	
Gooseberries										
Loganberries										
Raspberries (tame)	8	7	11	5	6		35	27	37	7
Strawberries	5	9	11	71	4		13	2	5	
Youngberries										
NON-CITRUS ORCHARDS	**# of farms**	**Acres**	**# of farms**	**Acres**	**# of farms**	**Acres**	**# of farms**	**Acres**	**# of farms**	**Acres**
Total farms with orchard fruit (acres)	**325**	**10,036**	**388**	**16,614**	**336**	**16,171**	**404**	**17,154**	**437**	**19,559**
	# of farms	**Acres**	**# of farms**	**Acres**	**# of farms**	**Acres**	**# of farms**	**Acres**	**# of farms**	**Acres**
Apples	165	9,173	133	11,443	95	11,290	92	10,690	80	14,056
Peaches	18	25	24	38	22	19	26	47	38	54
Pears, total	18	10	23	21	17	0	31	167	31	94
	# of farms	**Acres**	**# of farms**	**Acres**	**# of farms**	**Acres**	**# of farms**	**Acres**	**# of farms**	**Acres**
Plouts									3	0
Grapes	33	163	94	4,064	84	3,511	116	4,662	114	3,938
Cherries, Sweet									89	1,076
Cherries, Tart	73	646	84	1,034	83	1,327	106	1,558	28	293
Apricots	15	19	17	14	13	8	15	6	28	14
Nut trees	0	0	4	0	13	13	10	18	18	28
Nectarines	3	0	9	0	9	3	8	6	8	6

Appendix C. Population characteristics

Demographic overview

In 2018, an estimated 167,354 people lived in the five-county project area (Table 93).[xliv] More than 80% of the total population in the project area resides in either Umatilla County or Walla Walla County (Figure 54).

Table 9330. Population estimates and population change by county, 2010- 2018

County	2010	2018	# change	% change
5-county Total	**163,095**	**167,354**	**4,259**	**2.6%**
Asotin	21,725	22,610	885	4.1%
Columbia	4,094	4,059	-35	-0.9%
Garfield	2,261	2,247	-14	-0.6%
Walla Walla	58,920	60,922	2,002	3.4%
Umatilla	76,095	77,516	1,421	1.9%

The populations of all 5 counties stayed relatively stable between 2010 and 2018. In the five-county area, the population increased 4,259 individuals in that time, showing an overall 2.6% growth (Figure 55).[xlv] Growth in the project region is less than growth in both Washington and Oregon states, which grew 11.8% and 9.2% in the same time period.

Walla Walla county experienced the most growth in population, increasing an estimated 2,002 people in that time period, to 60,922.[xlvi] Asotin county saw the largest percent growth out of all 5 counties, increasing 4.1% with 885 individuals. Both Columbia and Garfield county saw a decrease in population, but numbers are small at 35 individuals and 14 individuals respectively.

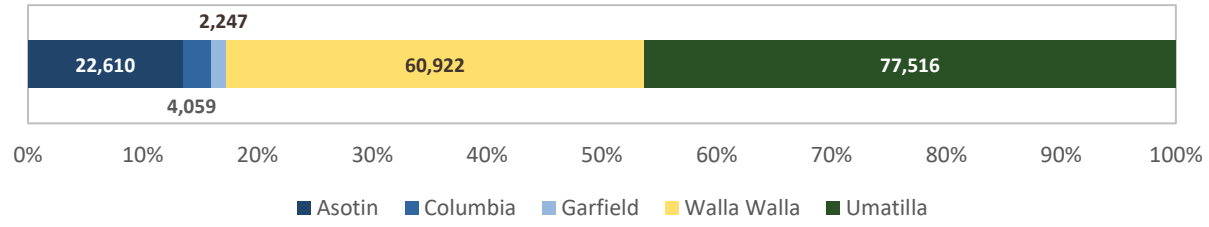

Figure 144. Population of individual counties as percent of total, 2018

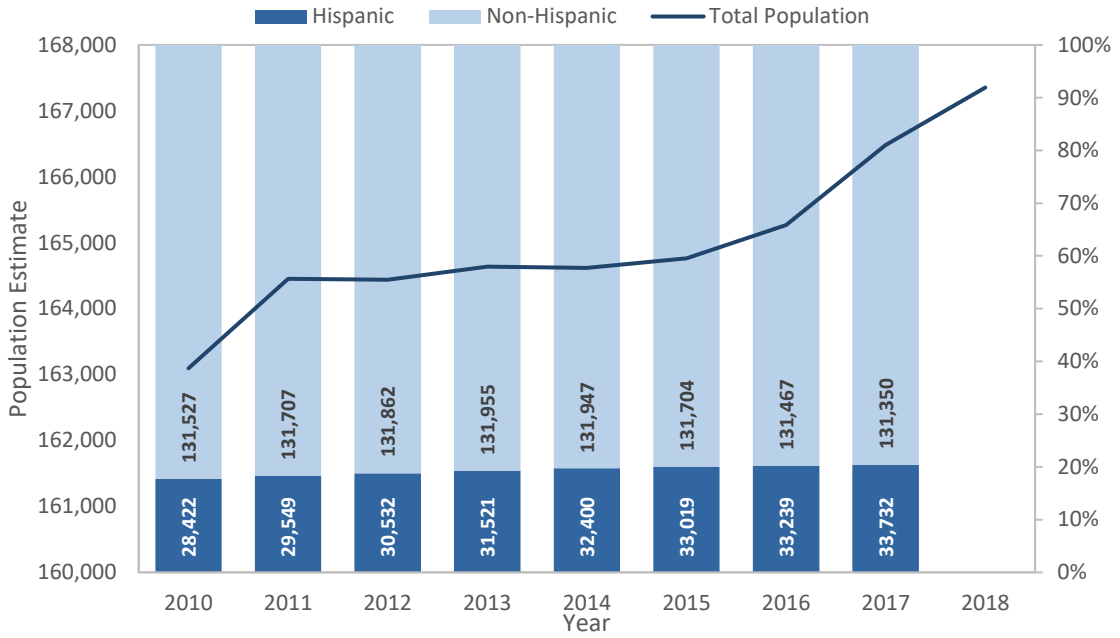

Figure 55. Population of individual counties as percent of total, 2018

Age

Ages 18-24 have the smallest percent and number of the population (Figure 56). While 25.2% of the population of Umatilla is under 18, in the other counties it is around 20%.[xlvii] Walla Walla has the highest percentage of people ages 18-24 (12.9%) perhaps because there are 3 colleges in the town. The majority of the population in all counties is 25-64. A significant percent of people over 65 years old live in Asotin (23.3%), Columbia (27.9%), Garfield (25.4%) counties (Table 94).

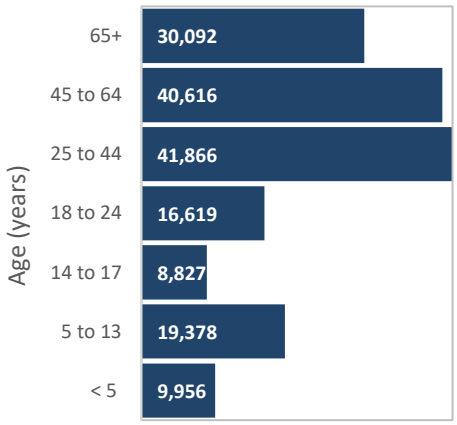

Figure 156. Age distribution in 5-county region, 2018

Table 94. Age Distribution of population, by county, 2018[xlviii]

Age	Asotin		Columbia		Garfield		Walla Walla		Umatilla	
	#	%	#	%	#	%	#	%	#	%
Total Population	***22,610***		***4,059***		***2,247***		***60,922***		***77,516***	
< 18 years	4,588	20.3%	765	18.8%	478	21.3%	12,779	21.0%	19,551	25.2%
< 5	1,165	5.2%	205	5.1%	160	7.1%	3,336	5.5%	5,090	6.6%
5 to 13	2,318	10.3%	382	9.4%	216	9.6%	6,434	10.6%	10,028	12.9%
14 to 17	1,105	4.9%	178	4.4%	102	4.5%	3,009	4.9%	4,433	5.7%
18 to 64 years	12,750	56.4%	2,163	53.3%	1,198	53.3%	37,145	61.0%	45,845	59.1%
18 to 24	1,447	6.4%	241	5.9%	136	6.1%	7,871	12.9%	6,924	8.9%
25 to 44	5,156	22.8%	805	19.8%	456	20.3%	14,859	24.4%	20,590	26.6%
45 to 64	6,147	27.2%	1,117	27.5%	606	27.0%	14,415	23.7%	18,331	23.6%
65+ years	5,272	23.3%	1,131	27.9%	571	25.4%	10,998	18.1%	12,120	15.6%
85+	653	2.9%	133	3.3%	85	3.8%	1,654	2.7%	1,443	1.9%

Race and ethnicity

The majority of the population in every county in the project area is white (Figure 57). Of the non-white population, the majority identifies as "Some other race" or "Two or more races."[xlix]

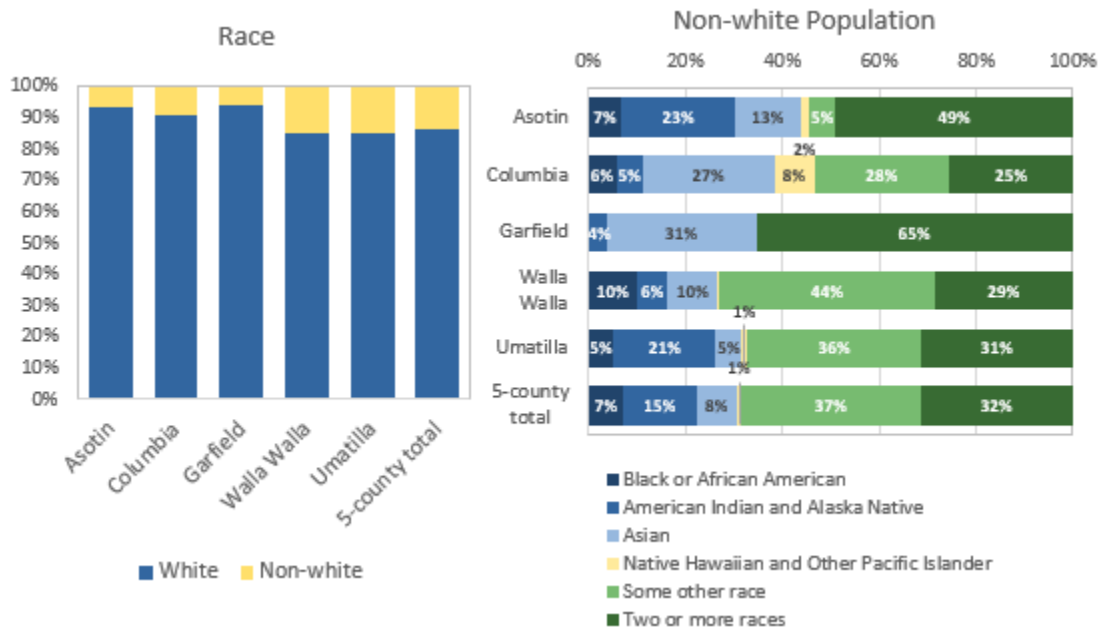

Figure 57. Race of Population, 5-county region, 2017

In the 5-county project area, 20.4% of the population is Hispanic or Latino (Figure 58).[l] Umatilla and Walla Walla counties have the largest Hispanic or Latino populations, at 26.0% and 21.1% of their total populations respectively. Garfield and Asotin counties have the least percentage of population that is Hispanic or Latino, at 2.4% and 3.6% respectively. The population of Columbia County is 7.4% Hispanic or Latino.

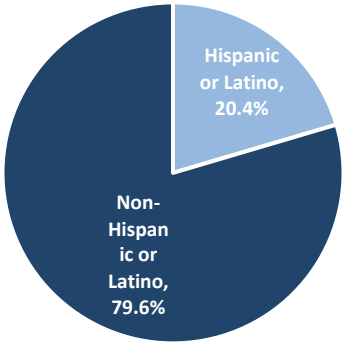

Figure 58. Percent of population Hispanic or Latino in 5-county area, 2017

Hispanic and Latino population growth accounts for most of the total population growth in most of the counties. In the 5-county region, the Hispanic population grew 18.7% between 2010 and 2017, whereas the Non-Hispanic population decreased 0.1%.[li] Hispanic population growth between 2010 and 2017 was greater than 18% in every county except Garfield county, whereas the non-Hispanic population had a maximum growth of 3.4% in Asotin county and decreased in both Columbia county and Umatilla county.

Between 2010 and 2017 the following occurred in each county:

- Asotin County experienced a 28.7% increase (181) in the Hispanic population and a 3.4% increase (715) in the Non-Hispanic population.
- Columbia County experienced a 76.8% increase in the Hispanic population (up 129 individuals) and a decrease of 2.3% or 87 Non-Hispanic individuals
- Garfield County experienced a decrease in the Hispanic population of 55.8% (67 people), while the non-Hispanic population increase 2.5% (53 people)
- Walla Walla County experienced an increase in the Hispanic population of 19.8% (1,773 people) and an increase of 1.1% non-Hispanics (504)
- Umatilla County experienced Hispanic population growth of 19.8% (3,294) while the non-Hispanic population decreased 2.3% (1,362)

Languages

English was the primary language spoken at home in all five counties in 2017 (Table 95). Asotin County had the highest percentage of the population speaking English at home, at 97.1%. Umatilla and Walla Walla counties had the lowest percentages of the population speaking primarily English, at 77.3% and 81.5% respectively.[lii] The second most spoken language was Spanish, which was the language spoken in 21.5% of homes in Umatilla County.

Table 95. Languages spoken at home by percent of population, 2017

Language	Asotin	Columbia	Garfield	Walla Walla	Umatilla
English	97.1%	91.9%	95.5%	81.5%	77.3%
Spanish	0.9%	4.2%	0.6%	15.8%	21.5%
Other Indo-European	1.4%	3.1%	0.5%	1.3%	0.4%
Asian and Pacific Island Languages	0.5%	0.8%	2.9%	1.2%	0.5%
Other	0.0%	0.0%	0.5%	0.3%	0.3%

Poverty and food security

Food security is a measure of financial ability for households to live a healthy lifestyle. A food insecure household is one that is not meeting basic dietary needs and might be running out of food, eating low quality food, or skipping meals.[liii] Food insecurity is most commonly related to poverty, unemployment, and rates of homeownership.[liv]

In the 5-county project region, an estimated 19,070 individuals were food insecure in 2017, representing about 11.6% of the total population (Table 96).[lv] Columbia County had the highest rate of individuals who were food insecure, at 12.8% of the total population. Walla Walla county had the lowest rate of food insecurity, 11.1%, but the greatest number of individuals among the Washington counties. Umatilla county had the greatest number of individuals at 8,820, because of its higher total population.

Table 96. Food insecurity characteristics, 2018

Characteristics	Asotin	Columbia	Garfield	Walla Walla	Umatilla	5-county total
Population	22,259	3,999	2,226	59,862	76,736	**165,082**
Food Insecurity rate	12.5%	12.9%	12.8%	11.1%	11.5%	**11.6%**
Estimated # food insecure individuals (rounded)	2,790	520	290	6,640	8,830	**19,070**
% below 185% poverty*	82%	84%	80%	78%	85%	-

Table 9731. Population characteristics by state

Characteristics	Washington	Oregon
Total population (2017)	**7,405,743**	**4,142,776**
Children (under 18)	1,645,816	873,619
Median Household Income	**$67,106**	**$57,532**
Rank among states (best to worst)	11	22
Total people living in poverty	**805,691**	**536,146**
Poverty rate	11.30%	13.30%
Rank among states (worst to best)	39	25
Children living in Poverty	219,668	144,361
Child poverty rate	13.70%	17.00%
Rank among states (worst to best)	41	30
Total people living below 185% of Federal Poverty Level	**1,732,705**	**1,160,990**

Of the individuals who experienced food insecurity in 2016, between 78% and 85% of them were below 185% poverty, which means that they qualify for federal assistance such as SNAP benefits, WIC, and Free and Reduced-price school meals.[lvi]

In Washington, 17.5% of children are food insecure and of those children, 61% are eligible for federal assistance such as the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) or Child Nutrition Programs.[lvii] In Oregon, 20.0% of children are food insecure and 63% are likely eligible for federal assistance. A high percentage of people and children in both states live in poverty and below the 185% of Federal Poverty level (Table 98).

In the entire 5-county project area there were 26,788 students enrolled in the Free and Reduced Lunch Program.[lviii]

In Washington and Oregon together, 246,987 individuals participated in the WIC program on average per month.[lix] In both states, about 56% of those participants were children and 20% were children.

A combined total of 131,991 children participated in the Child and Adult Care Food Program on average per day in Washington and Oregon.[lx]

Table 9832. Percent of households participating in SNAP benefits, 2012-2016

County	% with SNAP
Asotin	18.1%
Columbia	17.7%
Garfield	9.9%
Walla Walla	14.9%
Umatilla	23.9%

In Washington and Oregon, a combined 105,034 individuals participated in the Temporary Assistance to Needy Families (TANF) program, 72.4% of which were children.[lxi] The maximum TANF benefit for a single-parent household with three kids was $521 in Washington and $506 in Oregon.

Appendix D: Likelihood of participating explanations from supplier survey respondents

Likelihood of participating in a food hub

Forty-two supplier respondents provided explanations for their likelihood (or unlikelihood) of using a new food hub if they had access to one in the Walla Walla Valley. Supplier survey respondents' who said they were "**very likely**" to use one provided the following explanations:

- "A location with easy access for both farmers and consumers would be very helpful."
- "Access to storage and retail and marketing services would help sell and move our farm products."
- "Close. Customer base. Area residents are open to change."
- "For all the reasons we chose in earlier questions: a retail store, value added processing kitchen, storage for crops (cool, cold), to sell products to other value-added producers (pickling cucumbers, kraut cabbage, etc.), for distribution to larger urban markets (Seattle, Portland, Boise), under a WW brand."
- "Gateway to synergistic market access to institutional sales."
- "I am interested in the distribution and marketing potential that a food hub opens."
- "I live in Walla Walla and commute to Dayton at least 5 times/week to work at Blue Mountain Station. That said, I just signed a 2-year lease, so....."
- "If the distance from the Milton Freewater/College Place/Walla Walla area was close enough I could justify renting processing space."
- "I've outgrown my current space. Having access to larger equipment and storage of finished product is my current bottleneck to expanding my business."
- "Need a place closer to make jams."

- “There is definitely a lack of large-scale freezer/refrigerator space for 1,000-liter IBCs and such for larger scale VAPs such as juices and frozen fruit. Freezing is one of the best ways to save excess fruit that preserves the nutritional integrity and is a good form of season extension.”
- “To support local efforts, have better access to produce and a variety of produce, and hopefully reduce my operating costs and expand my access to markets.”
- “To support other local businesses.”
- “Use it a lot as long as quality of produce exceeds or meets conventional produce.”
- “Very interested in freezer storage.”
- “We desperately need bottling and labeling services for high viscosity foods and sauces. The wine industry reigns, and it is extremely hard to scale fermented and thermally processed foods.”
- “We're excited about building local inertia for local food year-round -- in a retail front, in institutions, in shared equipment & resources.”
- “Would love a local hub to store and retail goods.”
- “Would use for distribution, value-added processing, and marketing.”

Supplier respondents who indicated they were **“somewhat likely”** to use a new food hub if they had access to one in the Walla Walla Valley provided the following explanations:

- “30 min. closer commute, and better places to eat lunch :). Also, hopefully better freight service for pallet freight.”
- “Completely depends on where it’s at.”
- “Depending upon cost to use and the distance from my home.”
- “I am interested in expanding product sales and fulfilling customer needs.”
- “I am a home gardener with surplus so not sure if a hub would work for me. A farmers market in Dayton would be very useful.”
- “I am retired.”
- “I feel the organic, non-GMO farmers need a food hub in the Walla Walla Valley.”
- “I LIKE THE IDEA BUT WE ARE A LITTLE FURTHER AWAY THAN MAKES THIS PRACITICLE [sic].”
- “I live in between Walla Walla and Dayton, so either the new food hub or the Blue Mountain Station in Dayton would work for me depending on availability of each.”
- “I would purchase from the Food Hub but nothing else.”
- “If it is profitable enough and we have enough labor to expand our operations, we might be interested in having more places to market our produce.”
- “If located in Dayton / Waitsburg very likely, anywhere else very unlikely.”
- “It would depend on if I required the space at a given time during the season.”
- “Location.”
- “Looking for different ways to market garbanzo beans locally.”
- “Personell [sic] to man and requirements.”
- “There is opportunity in our business using a food hub. I am not sure I have the time to take our business to that next step.”
- “We are located south of Pendleton, Oregon.”
- “We would like to use a hub in Walla Walla for distribution.”

The one respondent who said they were **"somewhat unlikely"** to use a new food hub if they had access to one in the Walla Walla Valley said, "It would depend on the location, hours, cost, etc." The three respondents who said they were "**very unlikely**" to use it said

- "I have my own place."
- "I would have to research it."
- "Our operation has no need for a food hub."

Likelihood of participating in a commercial kitchen

Thirty-seven supplier respondents provided explanations for their likelihood (or unlikelihood) of using a new commercial kitchen if they had access to one in the Walla Walla Valley. Those who indicated they were "very likely" to use a new commercial kitchen provided the following explanations:

- "Blue Mountain Station and Pasco Specialty Kitchen are both too far away for my needs."
- "I'm only in Dayton because there was no commercial kitchen space in Walla Walla."
- "Lack of a commercial kitchen in WW is holding us back from exploring the possibility of starting our business of jarring heirloom tomatoes."
- "Not heavily, but we might increase our business to include more value-added products."
- "Would use it to can tomatoes."

Those who indicated they were "somewhat likely" to use a new commercial kitchen provided the following explanations:

- "Depending upon distance from my home and cost to use."
- "Distance from the center of population and rental rates would be the biggest factor. Would need to compare to building my own facilities."
- "Interested to market garbanzo beans for incorporation into new recipes."
- "It would depend on the location. Blue Mountain Station is already accessible easily, not a lot of equipment for food processing though."
- "Jams."
- "Not in my core business plan, but plans can change."
- "Possible use for value-added products."
- "Sweet onion jam is more regulated than regular fruit jam so not sure just a commercial kitchen is enough for us."
- "Value-added products."
- "We are looking for unique versatile ways to utilize our land/products."
- "We are still working toward production levels and time availability to warrant use of an offsite facility."
- "We currently don't process food, but with that option available would consider it as an option."
- "We currently have access to a low-cost kitchen."
- "Would be most interested if contractor made value-added products for us that we marketed ourselves."

Those who indicated they were "somewhat unlikely" to use a new commercial kitchen provided the following explanations:

- “A kitchen is not on my 'needed' list.”
- “Distance from where we are located.”
- “Have WSDA certified plant already.”
- “I only produce wheat and I am not sure that I would need kitchen space, but it would be helpful to other people.”
- “Not my thing, but you never know...”
- “Only use commercial kitchen for using a dishwasher.”
- “Probably not necessary for our products.”

Those who indicated they were “very unlikely” to use a new commercial kitchen provided the following explanations:

- “Could use it to make jam.”
- “Do not process foods.”
- “I have canning and other food preserving methods available at my home.”
- “I have my own bakery to use.”
- “I have my own place.”
- “I own a commercial kitchen.”
- “No need.”
- “Retired, move around some.”
- “There is only so much we can focus on doing and we like growing the produce more than processing it.”
- “We have our own facility.”

Appendix E: Some funding programs relevant to food hubs

Funder	Program	Amount	Summary	Due Date
M.J. Murdock Charitable Trust	Strategic Projects Grants	$50,000-Big	Help fund both new nonprofit programs and the expansion of existing programs, and may be used to cover start-up costs and/or related staff member additions.	LOI Continuous
Small Business Administration (SBA)	Program for Investment in Microentrepreneurs (PRIME)	$500,000; match required	Funding to provide (i) training and technical assistance to disadvantaged entrepreneurs; (ii) training and capacity building to microenterprise development organizations (MDOs) and programs; (iii) aiding in researching and developing best practices for microenterprise and technical assistance programs for disadvantaged entrepreneurs; and (iv) for other activities as the SBA Administrator determines.	Continuous
Tilth Alliance	Washington State Organic & Sustainable Farming Fund	$2,000 - $20,000	Supports projects that will improve the economic viability, social impacts, or environmental sustainability of their farm businesses. The goal of this grant program is to enhance the operations of farmers practicing responsible and progressive methods such as sustainable soil management, crop diversification, habitat preservation, climate change mitigation and environmentally safe waste management practices.	1/18/2020
US Department of Commerce Economic Development Administration	Economic Development Assistance Programs	$3,000,000	Supports construction, non-construction, technical assistance, and revolving loan fund projects under EDA's Public Works and Economic Adjustment Assistance programs. Grants and cooperative agreements made under these programs are designed to leverage existing regional assets and support the implementation of economic development strategies that advance economic prosperity in distressed communities.	Continuous
USDA	Community Facilities Technical Assistance and Training Grant	$150,000	Funding to provide Technical Assistance and/or training with respect to essential community facilities programs. Funds may be used for assisting communities in identifying and planning for community facility needs	Open
USDA Agricultural Marketing Service	Federal-State Marketing Improvement Program (FSMIP)	100% match required	To strengthen and explore new market opportunities for US food and agricultural products. Requires 100% match. Only state agencies, agricultural experiment stations, and the state departments of agriculture can apply and receive funding.	4/5/2019*
	Local Food Promotion Program (LFPP)	$500,000	Focus on planning and implementation of local and regional food intermediary supply chain development. Requires 25% match.	5/7/2019*
	Organic Cost Share Programs	Up to 75% of certification costs, not to exceed $750	Federal reimbursement to assist with the cost of receiving and maintaining organic certification.	Accepted year round

Funder	Program	Amount	Summary	Due Date
USDA Agricultural Marketing Service	Specialty Crop Block Grant Multi-State Program (SCBGP)	$250,000 - $1M	Funds collaborative, multi-state projects that address food safety; plant pests and disease; research; crop-specific projects addressing common issues; and marketing and promotion.	9/1/2019*
	Specialty Crop Block Grant Program (SCBGP)	$250,000 - $1M	Enhances competitiveness of US grown specialty crops, including fruits, vegetables, dried fruit, tree nuts, horticulture, and nursery crops, including floriculture.	5/24/2019*
	Farmers Market Promotion Program (FMPP)	$500,000; $15,000-$500,000	Funds direct farmer-to-consumer marketing activities through capacity building and community development, training, and technical assistance projects	6/18/2019*
USDA NIFA	AFRI: Agricultural Economics & Rural Communities	Up to $1,000,000	Supports rigorous social science projects, including behavioral and experimental economics research and analysis, that informs decision making and policy design to enhance the sustainability of agricultural production systems, both conventional and organic, and related activities in rural areas, protect the environment, enhance quality of life, and alleviate poverty. Topics include, but are not limited to, the interactions between agriculture, environment and communities in rural areas; demographic changes and impacts; consumer preferences or behavior; decision-making under uncertainty; crop insurance; availability of credit and financing; market structure and performance; and policy and design impact.	11/18/2020
	Beginning Farmer & Rancher Development	$50,000-$200,000	Supports organizations for education, mentoring, and technical assistance initiatives for beginning farmers or ranchers.	3/19/2020
	Community Food Projects	400,000 over four years	To increase food security in communities by bringing the whole food system together to assess strengths, establish linkages, and create systems that improve the self-reliance of community members over their food needs.	6/3/2019*
	Small Business Innovation Research	Up to $100,000	Funds qualified small businesses to support high quality research related to important scientific problems and opportunities in agriculture that could lead to significant public benefits. This is a two-phase program and initial funding can be built upon.	Annually in October
Western SARE (Sustainable Agriculture Research & Education)	Farmer/Rancher Grants	$20,000 for one producer, $25,000 for 3 or more producers, up to 3 years	Funds producers to conduct on-site experiments that can improve their operations and the environment and can be shared with other producers and also projects for marketing and organic production.	Fall 2020
	Professional + Producer Grants	$50,000 for up to 3 years	Similar in concept to the Farmer/Rancher Grants except an agricultural professional coordinates the project and a farmer or rancher serves as the project advisor.	Fall 2020

Funder	Program	Amount	Summary	Due Date
Western SARE (Sustainable Agriculture Research & Education)	Professional Development Program Grants	Up to $75,000 for up to 3 years	Funds training for agricultural professionals to help them spread knowledge about sustainable agriculture concepts and practices.	Fall 2020
	Research and Education Grants	Up to $350,000 for up to 3 years	Funds interdisciplinary approaches to address issues related to sustaining agriculture.	LOI due in June in 2019
USDA Rural Development	Business and Industry Guaranteed Loan Program	$5M - $25M	Provides loan guarantees for rural businesses	Accepted year round
	Community Facilities	Past awards range $15,000-$56,000	Funding to develop essential community facilities in rural areas. An essential community facility is one that provides an essential service to the local community in a primarily rural area, and does not include private, commercial or business undertakings.	
	Renewable Energy Systems & Energy Efficiency Improvement Loans & Grants	Grants: $1,500 to $500,000; Loans: $5,000 to $25 million	Provides guaranteed loan financing and grant funding to agricultural producers and rural small businesses for renewable energy systems or to make energy efficiency improvements.	Varies by type of grant or loan
	Rural Business Development Grants	$500,000	Supports targeted technical assistance, training, and other activities leading to the development or expansion of small and emerging private businesses in rural areas which will employ 50 or fewer new employees and have less than $1 million in gross revenue.	Continuous
	Rural Cooperative Development Grants	$200,000	Helps improve the economic condition of rural areas by helping individuals and businesses start, expand, or improve rural cooperatives and other mutually owned businesses through Cooperative Development Centers.	
	Value-Added Producer Grants	Planning grants up to $75,000; Working capital grants up to $250,000; 50% match required	Helps producers enter into value-added activities related to the processing and/or marketing of new products. Goals are to generate new products, create, and expand marketing opportunities, and increase producer income. Priority if proposing a mid-tier value chain.	1/31/19 (based upon last year's due date)
	Rural Community Development Initiative (RCDI)	$250,000	Funds qualified intermediary organizations to provide financial and technical assistance to recipients to develop their capacity and ability to undertake projects related to housing, community facilities, or community and economic development.	6/25/2019 (Based upon last year's date)

Funder	Program	Amount	Summary	Due Date
Washington State Department of Agriculture	Specialty Crop Block Grant Program (USDA AMS)	Varies	Funding focus areas include packers and processors; improving efficiency and reducing costs of distribution systems; developing local and regional food systems; and improving food access in underserved communities. LINC received a $101,186 in 2019 to increase specialty crop sales to their largest customers.	11/4/19 LOI; 2/20/2020 proposals
Washington State Department of Commerce	Community Economic Revitalization Board	Big	Funds local governments and federally-recognized tribes for public infrastructure which supports private business growth and expansion. Eligible projects include domestic and industrial water, storm water, wastewater, public buildings, telecommunications, and port facilities.	Every other month through March 2021

* Based on last year's due date

Note: these entries include portions and fragments of text from funding program websites and program documents that have been edited, summarized, and interpreted for consistency and readability and adapted for the purposes of this plan. This funding spreadsheet is meant for use by the Walla Walla Valley Food System Coalition members for planning purposes, not for publication more generally.

Endnotes

[i] USDA Agricultural Census
[ii] USDA Agricultural Census
[iii] The median is measure of the center of a data distribution that is not affected by outliers.
[iv] The mode refers to the most frequently occurring number of acres.
[v]fUSDA Agricultural Census
[vi] USDA Agricultural Census
[vii] USDA Agricultural Census
[viii] USDA Agricultural Census
[ix] USDA Agricultural Census
[x] There were no repeating numbers in this data.
[xi] Farms indicating production as opposed to farms with inventory.
[xii] Feeding America, Map the Meal Gap 2018: A Report on County and Congressional District Food Insecurity and County Food Cost in the United States in 2016 (2018) retrieved from https://www.feedingamerica.org/sites/default/files/research/map-the-meal-gap/2016/2016-map-the-meal-gap-full.pdf
[xiii] Bureau of Economic Analysis (BEA). U.S. Department of Commerce. Bea.gov Home Page. Web. 10 Feb 2020. http://www.bea.gov/regional/.
[xiv] Emsi. Economic Modeling Specialists, International. Web. 10 Feb 2020. https://www.economicmodeling.com/.
[xv] Bureau of Labor Statistics (BLS). U.S. Department of Labor. Web. 10 Feb. 2020. http://www.bls.gov/.
[xvi] Suljic, Ajsa, Employment Security Department, Washington State, https://esd.wa.gov/labormarketinfo/county-profiles/walla-walla.
[xvii] Emsi. Economic Modeling Specialists, International. Web. 10 Feb 2020. https://www.economicmodeling.com/.
[xviii] QCEW Explanation of Location Quotient: "If an LQ is equal to 1, then the industry has the same share of its area employment as it does in the nation. An LQ greater than 1 indicates an industry with a greater share of the local area employment than is the case nationwide. For example, Las Vegas will have an LQ greater than 1 in the Leisure and Hospitality industry because this industry makes up a larger share of the Las Vegas employment total than it does for the nation as a whole." https://www.bls.gov/cew/about-data/location-quotients-explained.htm.
[xix] Emsi labor force and unemployment rates are estimates for the year 2019 whereas the individual unemployment rates are for December 2019.
[xx] Washington State University Extension, Thurston County. September 2018. Value-added Processing Facility Tour of Skagit and Whatcom Counties (official field tour notes).
[xxi] 2018 Puget Sound Food Hub Cooperative Membership Application.
[xxii] Puget Sound Food Hub Farmers' Cooperative: A Guide for Farmers and Ranchers
[xxiii] "LINC Foods Policies. Accessed February 3, 2019 from http://www.lincfoods.com/policies
[xxiv] "LINC Foods Membership Policy." Accessed February 3, 2019 from http://www.lincfoods.com/linc-farmers/
[xxv] These tables were developed as part of an iterative planning process. The initial tables were developed based on information from interviews, the National Food Hub Survey (2017 version), and team experience. The steering committee provided input at several times during the process. The tables were then used at meetings to discuss options for the food hub.
[xxvi] Cummings Insights 2019 https://ccorpinsights.com/costs-per-square-foot/. Given that Walla Walla is a relatively rural region, the lower end estimates were used for warehousing and light manufacturing. There is wide variance in material and labor costs, which are relatively inexpensive in Walla Wall as compared to larger West Coast cities.
[xxvii] Commercial Real Estate Listing, LoopNet Walla Walla, https://www.loopnet.com/search/commercial-real-estate/walla-walla-wa/for-sale/?sk=d22047d4e07d4cfe5e7af65de66e4274&e=u.
[xxviii] Marotta, David, "Longest Economic Expansion In United States History," Forbes Magazine, https://www.forbes.com/sites/davidmarotta/2020/01/21/longest-economic-expansion-in-united-states-history/#7e094f6662a2. 1/21/20.
[xxix] See: https://www.commercialtrucktrader.com/listing/2006-MITSUBISHI+FUSO-FE145-5005058054.

[xxx] "The Truckers Report," https://www.thetruckersreport.com/infographics/cost-of-trucking/.
[xxxi] Note there can be considerable volatility in fuel prices. This price was obtained from the U.S. Energy Information Administration, https://www.eia.gov/dnav/pet/pet_pri_gnd_dcus_nus_w.htm.
[xxxii] See: https://www.nonforceddispatch.com/truck-drivers-paid-mile/.
[xxxiii] Galinato, Suzette P., Carol A. Miles and Srinivasa S., "2011 Cost Estimates of Producing Fresh Market Field-Grown Tomatoes in Western Washington," http://ses.wsu.edu/enterprise_budgets/.
[xxxiv] Thornton, Mike, Neil R. Rimbey, and Kate Painter. Southwestern Idaho and Eastern Oregon: Treasure Valley Onions- 2013 Costs and Returns Estimate," https://www.uidaho.edu/cals/idaho-agbiz/crop-budgets.
[xxxv] Hannah Dolle, Arkansas Glass Container Corporation, 516 W. Johnson Avenue,Jonesboro, Arkansas 72401.
[xxxvi] Returns/spoilage is normally netted out of total revenues but was included in variable costs to simplify the presentation.
[xxxvii] https://www.merchantmaverick.com/sba-loan-rates/.
[xxxviii] In an earlier draft and public presentation of this analysis.
[xxxix] Returns/spoilage is normally netted out of total revenues but was included in variable costs to simplify the presentation.
[xl] Returns/spoilage is normally netted out of total revenues but was included in variable costs to simplify the presentation.
[xli] Cost estimates were obtained from steering committee members and from data collected regionally from the interview process and secondary data sources.
[xlii] Decker, Fred, "The Estimated Cost for a Commercial Kitchen in a Small Business," https://smallbusiness.chron.com/estimated-cost-commercial-kitchen-small-business-74630.html. Accessed 2-1-20.
[xliii] United States Department of Agriculture (USDA), 2012 Census Volume 1, Chapter 2: County Level, Table 1 retrieved from https://www.nass.usda.gov/Publications/AgCensus/2012/Full_Report/Volume_1,_Chapter_2_County_Level/Washington (USDA, 2012, Census of Agriculture, Table 1)
[xliv] U.S. Census Bureau, Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2018, data accessed via American Factfinder (factfinder.census.gov), see Table PEPANNRES
[xlv] U.S. Census Bureau, Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2018, data accessed via American Factfinder (factfinder.census.gov), see Table PEPAGESEX
[xlvi] U.S. Census Bureau, Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2018, data accessed via American Factfinder (factfinder.census.gov), see Table PEPAGESEX
[xlvii] U.S. Census Bureau, Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2018, data accessed via American Factfinder (factfinder.census.gov), see Table PEPAGESEX
[xlviii] U.S. Census Bureau, Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2018, data accessed via American Factfinder (factfinder.census.gov), see Table PEPAGESEX
[xlix] U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates, data accessed via American Factfinder (factfinder.census.gov); see Table B03002
[l] U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates, data accessed via American Factfinder (factfinder.census.gov); see Table B03002
[li] U.S. Census Bureau, 2010-2015 and 2013-2017 American Community Survey 5-Year Estimates, data accessed via American Factfinder (factfinder.census.gov); see Table DP05
[lii] U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates, data accessed via American Factfinder (factfinder.census.gov); see Table S1601
[liii] Food Research & Action Center, Sources for FRAC State of the States Profiles, (2018).
[liv] Map the Meal Gap, Economic Drivers of Food Insecurity (2018) retrieved from https://public.tableau.com/profile/feeding.america.research#!/vizhome/MaptheMealGap-TheEconomicDriversofFoodInsecurity/CorrelationofFactors
[lv] Feeding America, Map the Meal Gap 2019: Overall Food Insecurity in Washington by County in 2017 and Map the Meal Gap 2019: Overall Food Insecurity in Oregon by County in 2017 (2018).
[lvi] Feeding America, Map the Meal Gap 2018: Overall Food Insecurity in Washington by County in 2016 and Map the Meal Gap 2018: Overall Food Insecurity in Oregon by County in 2016 (2018).

[lvii] Feeding America, Map the Meal Gap, Child Food Insecurity, (2018) retrieved from https://public.tableau.com/profile/feeding.america.research#!/vizhome/MaptheMealGap-ChildFoodInsecurity/ChildFoodInsecurity

[lviii] Washington Superintendent of Public Instruction, Child Nutrition Program Reports, Free and Reduced-Price Meals Eligibility (October county) (2018) retrieved from https://www.k12.wa.us/data-reporting/reporting/child-nutrition-program-reports and Oregon Department of Education, Student's Eligible for Free/Reduced Lunch (2018-2019) retrieved from https://www.ode.state.or.us/sfda/reports/r0061Select2.asp

[lix] Food Research & Action Center, Profile of Hunger, Poverty, and Federal Nutrition Programs (2018).

[lx] Food Research & Action Center, Profile of Hunger, Poverty, and Federal Nutrition Programs (2018).

[lxi] Food Research & Action Center, Profile of Hunger, Poverty, and Federal Nutrition Programs (2018).