



A STUDY OF THE POTENTIAL IMPACT OF

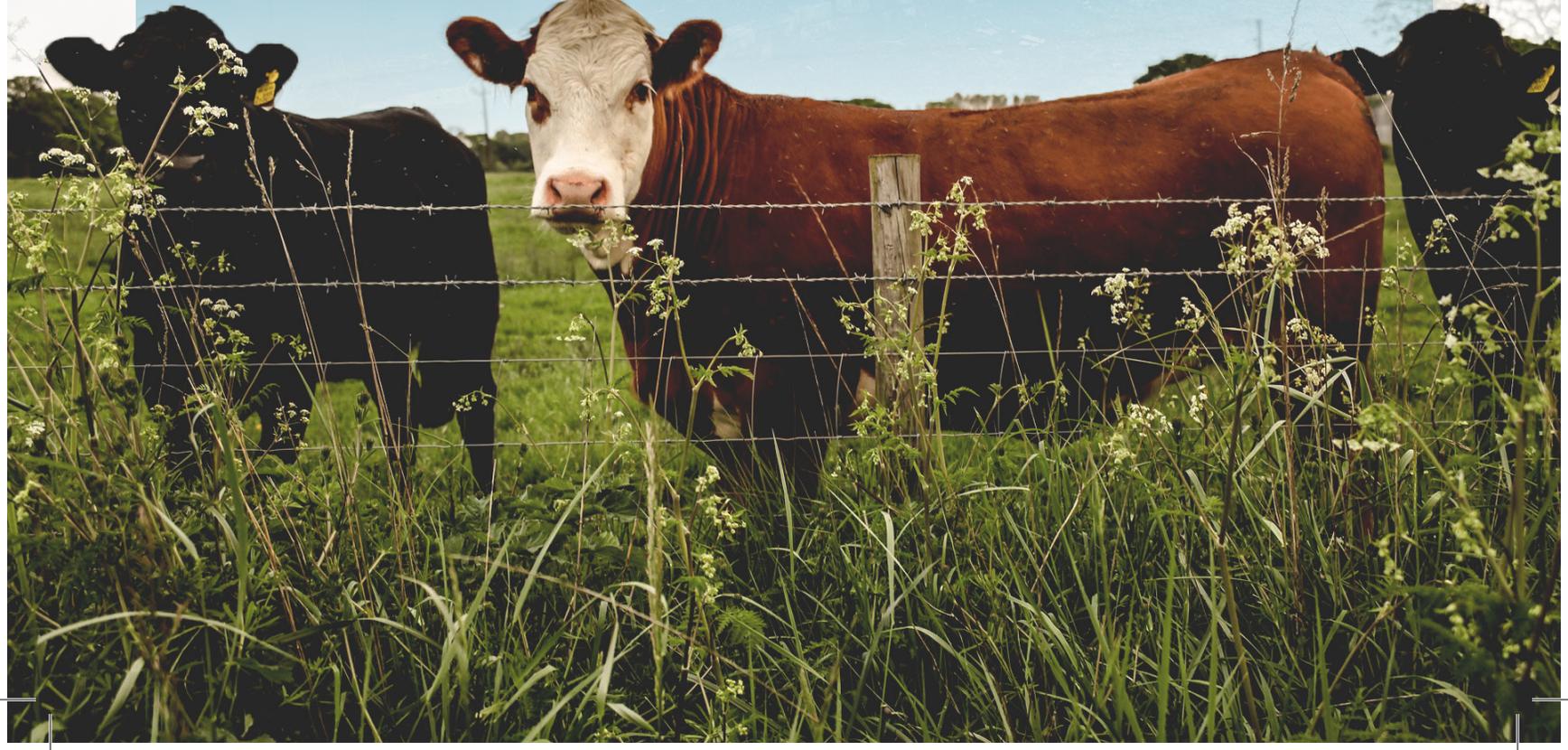


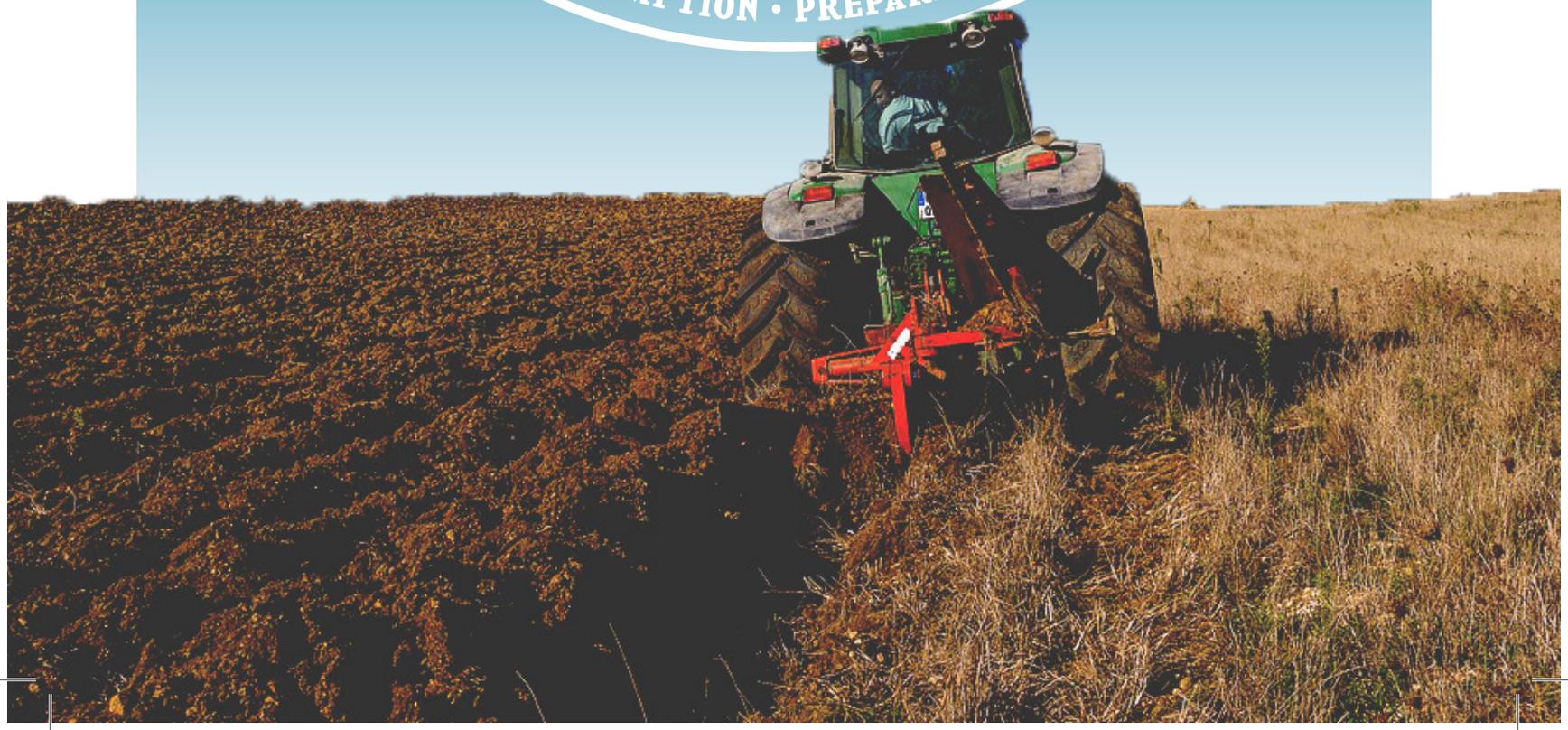
*Local Food*

as an

**ECONOMIC DRIVER**

LOCAL FOODS IN THE TACONITE ASSISTANCE AREA







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# EXECUTIVE SUMMARY

Localizing food production and consumption for the Iron Range Resources & Rehabilitation service area (hereafter referred to as the Agency service area and/or the Taconite Assistance Area) will add between 250 and 3500 jobs in agriculture and value-added processing to our region, retain between \$51 million and \$256 million annually in food dollars within the region, and have substantial economic spillover effects to related businesses. These impacts of localizing the purchase of food under a range of scenarios point to the need to continue activities to support the development of local food systems in the region.

Currently, the 155,020 people in 68,428 households of the region spend \$469 million on food (\$262 million on food for use at home and \$207 million on food service). Of this \$469 million, only a small percent currently goes directly to local growers and processors (less than 0.5 percent of total household spending is for food purchased direct from local suppliers). Any increase in purchasing from local producers will result in the retention of food dollars in the regional economy. We estimate that if the region purchased 20%

of its food locally—an ambitious, yet an attainable goal in keeping with the Superior Compact—\$51 million annually in food dollars would be kept in the region. At 100%, the region could retain as much as \$256 million annually in food sales.

To meet the regional demand for food, we estimate that the region would require between 122,410 and 164,057 acres in food production based on two alternate diet scenarios. Eighty-three percent of the Standard American Diet can be grown locally, and 100% of the Range Healthy Diet can be produced locally. The region has enough land to meet these requirements. Today the Taconite Assistance Area contains 2.1 million acres of farmland suitable for agriculture.

The Agency's service area can build a more robust, diverse and resilient economy by providing more and more of our basic needs—most notably food for our communities and our region. We don't often think of our food system as a key part of our infrastructure, but a vibrant regional food structure can support a stable economy.

## THE SUPERIOR COMPACT

The Superior Compact is a regional purchasing goal developed for retail and institutional food purchasers intended to drive investment in local foods. The compact sets a goal of 20% local food purchases by 2020. Local food is defined as within 100 miles of the purchaser and 50% by weight of processed foods with multiple ingredients. As of 2013, over 20 restaurants, institutions and food businesses have signed on to the compact within the NE MN and NW WI Lake Superior Bioregion. Businesses have signed on to the compact, driven by the high interest in local foods by their customers and are taking steps to increase local food purchases.



# **RECOMMENDATIONS**

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## **01 CREATE A PUBLIC RELATIONS EFFORT TO PROMOTE LOCAL FOOD PRODUCTION AND CONSUMPTION.**

Build a campaign around the pride of our region growing and feeding our own as a noble and worthy regional goal. In order to realize the benefits of localizing food production and processing, the Iron Range needs more growers and more value-added processing. The Rutabaga Project, a local food advocacy effort by the Iron Range Partnership for Sustainability and the Arrowhead Economic Opportunity Agency has initiated this effort on a small scale. Iron Range Grown has also effectively promoted this focus and it can be expanded exponentially.

## **02 FOCUS FUNDING ASSISTANCE FOR LOCAL FARM INVESTMENTS WHICH WILL INCREASE THEIR EFFICIENCY AND PRODUCTION CAPACITY.**

Based on our research, there is a significant market for locally grown food in the Agency's service area, yet interviews with area growers point to the need for basic upgrades to equipment such as post-harvest equipment like refrigeration or packing equipment which will increase capacity and efficiency of vegetable operators in the region. Assistance for farms could also include help in obtaining land for new growers such as tax forfeited land (and other lands) set aside through lease and purchase options or student loan forgiveness program for young folks committed to farming in our region. One model for focused investments on regional farms is a revolving loan fund call "Grow a Farmer Fund" administered by the Southern Initiative Foundation (<https://smifoundation.org/news-events/newsroom/blog-archives/grow-a-farmer-fund.html>).

## **03 RESEARCH PROCESSING AND DISTRIBUTION MODELS FOR THE REGION.**

One clear finding of the research is the need to build local processing capability (value-added products) to fill the food needs of the region and efficiently move food products throughout the region. A reasonable next step would be to identify current production clusters and logical distribution maps and scenarios to efficiently move products from farm to market. Part of this work would include build-out scenarios for processing and cost estimates to greatly increase the potential of the localization of the foods and the viability of such enterprises. Ideally any type of organizational models researched would focus on how best to keep the food dollar local and to work to increase the farmer's share of that food dollar.

## **04 SUPPORT EDUCATION AND TECHNICAL ASSISTANCE FOR LOCAL FARM OPERATIONS.**

Two primary issues for existing and potential operations in the Taconite Assistance Area include (1) soil building and management and (2) business planning and development. The generally thin soils of the region need soil building efforts to create the high-fertility necessary for high value food products. In some of our farm fields we find poorly managed and depleted soils. Regenerating and amending this soil naturally holds enormous potential for increasing our capacity. To accomplish this, the sponsorship of educational programming about farm soil-building would be of great assistance. Likewise, each individual farm operation would greatly benefit from one-on-one technical assistance on their farm finances. Based on our interviews, those who are currently direct marketing are interested in expanding their operations, and offering them farm business planning assistance will help them identify the necessary next steps in terms of investments and efficiently marketing their products. Direct outreach to farms in the region and sponsoring the cost of participation in farm financial analysis and counseling through the University of Minnesota Extension's farm business management program would help to build the base of growers in the region.

# BACKGROUND

During the past decade, there has been significant interest in developing local food systems. Increasing consumer demand for farm products is driven by the belief that local food production systems are more sustainable, healthy, and supportive of local economies. Local food sales through direct markets have grown tremendously—annual direct-market sales increased from \$511 million in 1997 to \$1.2 billion in 2007 (Martinez et al., 2010)—and the number of farmers markets has increased to nearly 8,000 nationwide (USDA AMS, 2017). Additionally, more than 5,200 school districts in the U.S. source food from local farmers, ranchers, and food businesses (USDA Farm to School Census, 2015).

The Taconite Assistance Area has engaged in local food development in recent years, although the tradition of small farms and direct-to-consumer sales reach back to the earliest days of settlement. For example, in 1912, a Virginia promotional magazine featured an ad for “Dairying and Gardening Opportunities in St. Louis County, Minnesota.” The ad touted St. Louis County’s “low prices” of land, “together with the soil and climate conditions so favorable... no one, who wants to locate his family in the most promising of America’s Agricultural Districts, should fail

to investigate them.” An article in the magazine, titled “You can Own a Farm,” claims that “this is distinctly a farming and dairyman’s country. Anything grown elsewhere in the state can be and actually is grown most successfully here.” It provides a start-up budget for a small farm, promising prospective farmers that they could make a profit in the first year.

In the 1920’s Virginia schools had a 67-acre farm (where the hospital and golf course now stand) with cows, pigs, chickens, work horses and an enormous produce operation. The cafeteria at the school was supplied with ample eggs, milk, cheese, and produce for feeding students (the original “farm-to-school”) until 1934 when the city bought the property for a hospital. So local food has made its impact here on the Iron Range in our past.

More recent formal initiatives include the Agency-sponsored Recharge the Range initiative and its agriculture sub-committee (2016), the founding and activities of the Rutabaga Project (2015), the initiation of area

farmers markets, with Virginia’s beginning in 2015, Babbitt and Finland in 2017, and a new market in Glen starting in 2018, the opening of community gardens in Virginia in 2015, the initiation of the Northland Food Network under the auspices of the Minnesota Food Charter (2018), the initiation and rapid growth of the Facebook group “Iron Range Grown” in 2018, and the larger, regional foodshed analysis conducted for the Western Lake Superior region (2010).

In light of past efforts and the general conversation about what is next for local foods in the region, the Iron Range Partnership for Sustainability applied for and received funding from Iron Range Resources & Rehabilitation to examine the market potential for local foods in the Taconite Assistance Area and contracted with David Abazs (Round River Farm) and Ryan Pesch (University of Minnesota Extension) to conduct the analysis.



# METHODOLOGY

**For this analysis, the study group estimated the size of the food market and the potential impacts of sourcing food locally in the region through three scenarios of food consumption. The six main sources that inform the analysis include:**

- 01** Production assessment via two diet scenarios data base from Defining the Agricultural Landscape of the Western Lake Superior Region, Co-PI Stacey Stark, MS, GISP and CO-PI David Abazs, Round River Farm.
- 02** Consumer Expenditure Survey (CEX) data from the U.S. Bureau of Labor Statistics: This national dataset from the Bureau of Labor Statistics (BLS) provides spending on food at home and away from home (food service) by dollar value. Not detailed enough to provide estimates of sales on individual products, this long-running survey does provide reliable and reasonable estimates of the size of the food market and total spending on food.
- 03** Population and demographic estimates from the U.S. Census Bureau
- 04** Food availability and disappearance dataset from the USDA's Economic Research Service (ERS)
- 05** Interviews with livestock and vegetable operations in the Taconite Assistance Area
- 06** IMPLAN data about food processing and farm industries in the region, demographic and business data for specific geographic areas (see Appendices 2 and 3 for full reports on the region). The team combined and analyzed the data to estimate a reasonable amount of food spending within the Agency's service area (Figure 1). Estimates also cover a series of market outlets. These estimates reflect only purchases made in the region, and this report provides the sources and explanations used to arrive at its market estimates.

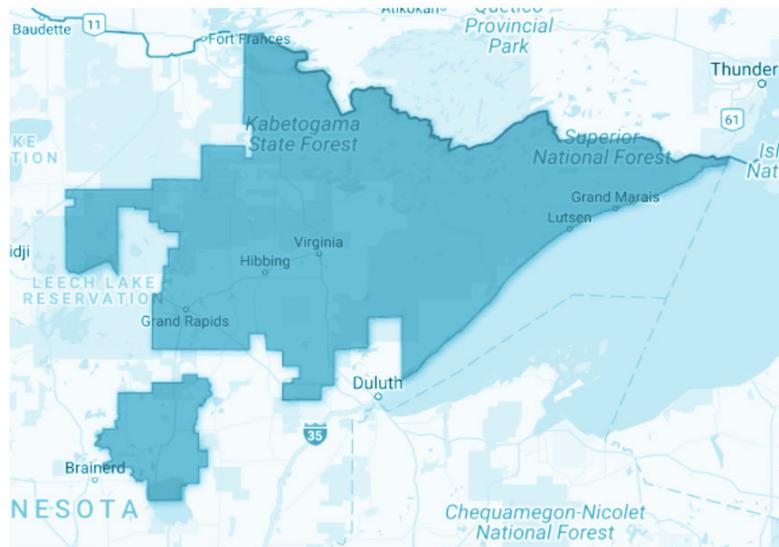


Figure 1: Map of the Agency's service area

The study team obtained the CEX and Census Bureau figures through ESRI's business analyst software, a GIS mapping program that retrieves demographic and business data for specific geographic areas (see Appendices 2 and 3 for full reports on the region).

# HOW MUCH FOOD DO IRON RANGE HOUSEHOLDS PURCHASE EACH YEAR?

The project team estimated that residents in the Agency's service area spend a total of \$469 million on food annually, including \$262 million on food consumed at home and \$207 million on food service consumed away from home. Not all spending on food at the retail level goes towards food itself, however, since some margin of food sales supports overhead. We estimate that the amount spent on food (cost outlay for food sellers) decreases to \$193 million for food-at-home sales and \$62 million on food service according to national benchmarks for food retailers and food service respectively (Roernick et al., 2014; Baker Tilly, 2014).

The study team estimated how much residents of the Agency's service area spent on food by adjusting the national Consumer Expenditure Data (CEX) data based on the demographic profile of households to better represent the region. One of the best measures of American household spending, the consumer expenditure survey by the Bureau of Labor Statistics details household spending across many categories and subcategories from motor oil to gifts. Since the purpose of this report is to identify the size of the food market in the region, the study group also combined CEX spending data with national data from the USDA to break down household spending by outlet and food purchase location.

## ESTIMATES OF FOOD SALES FOR USE AT HOME BY OUTLET (GROCERY)

We broke out CEX data by outlet to provide a sense of where food is purchased. According to USDA's Economic Research Service (ERS), 65% of all food purchased for at-home consumption comes from supermarkets. In the case of the Agency's service area, supermarket sales account for \$170 million of the total \$262 million of food purchases for home consumption. This \$170 million in sales at supermarkets translates into \$126 million in total food value after subtracting the 26% gross margin for operations (Roernick, 2014). The trend of consumers to purchase food at big box supercenters is also evident.

Sales in the last category of "processors, wholesalers, farmers, and other" may give the impression of more farm sales direct to consumer than the label would imply. Nationally, farm sales direct-to-consumer were estimated at \$8.7 billion, whereas Americans spent a total of \$1.6 trillion on food and beverage according to USDA. Based on these figures, farmers make up only 2.6 percent of sales in the category "Farmers, processors, wholesalers, and others." This matches the citation, earlier in this report, that households spend only one half of one percent on food directly from farms nationally (Park, 2017).

FOOD AT HOME BY OUTLET	PERCENT OF SALES	ESTIMATES OF SALES AT OUTLET	ESTIMATES OF COST OUTLAY FOR FOOD AT OUTLET	COST OUTLAY AT 20% MARKET SHARE
<b>SUPERMARKETS</b>	64.9	\$169,771,941	\$125,631,236	\$25,126,247
<b>CONVENIENCE STORES</b>	2.3	\$6,016,571	\$4,452,263	\$890,453
<b>OTHER GROCERY</b>	0.2	\$523,180	\$387,153	\$77,431
<b>SPECIALTY FOOD STORES</b>	2.3	\$6,016,571	\$4,452,263	\$890,453
<b>WAREHOUSE CLUBS AND SUPERCENTERS</b>	16.5	\$43,162,358	\$31,940,145	\$6,388,029
<b>MASS MERCHANDISERS</b>	0.5	\$1,307,950	\$967,883	\$193,577
<b>OTHER STORES</b>	4.9	\$12,817,912	\$9,485,255	\$1,897,051
<b>HOME DELIVERED, MAIL ORDER</b>	2.4	\$6,278,161	\$4,645,839	\$929,168
<b>PROCESSORS, WHOLESALERS, FARMERS, AND OTHER</b>	5.9	\$15,433,813	\$11,421,022	\$2,284,204
<b>TOTAL</b>	100	\$261,590,048	\$193,576,636	\$38,715,327

Figure 2: Purchases of food for use at home by outlet (Sources: BLS, ERS, and estimates by University of Minnesota Extension)

**ESTIMATES OF FOOD SALES AWAY FROM HOME (FOOD SERVICE)**

Producers interested in selling food often focus on restaurants, especially full-service ones since they typically have greater flexibility in purchasing than limited-service restaurants such as fast food. However, coffee shops are also considered limited-service and two commercial produce operators reported in their interviews with the study team that they sold to coffee shops.

FOOD AWAY FROM HOME	PERCENT (ERS DATA)	ESTIMATE OF SALES (PER CEX)	ESTIMATES OF COST OUTLAY FOR FOOD AT OUTLET	COST OUTLAY AT 20% MARKET SHARE
<b>FULL-SERVICE RESTAURANTS</b>	54.2	\$112,303,356	\$33,691,007	\$6,738,201
<b>LIMITED-SERVICE EATING PLACES</b>	28.9	\$59,881,310	\$17,964,393	\$3,592,879
<b>HOTELS AND MOTELS</b>	3	\$6,216,053	\$1,864,816	\$372,963
<b>SCHOOLS AND COLLEGES</b>	5.8	\$12,017,702	\$3,605,311	\$721,062
<b>STORES, BARS, AND VENDING MACHINES</b>	3.4	\$7,044,860	\$2,113,458	\$422,692
<b>RECREATIONAL PLACES</b>	3.2	\$6,630,456	\$1,989,137	\$397,827
<b>OTHERS, INCLUDING MILITARY OUTLETS</b>	1.5	\$3,108,026	\$932,408	\$186,482
<b>TOTAL</b>	100	\$207,201,763	\$62,160,529	\$12,432,106

Figure 3: Purchases of food away from home by outlet based on CEX figures (Source: BLS and estimates by University of Minnesota Extension)

**CURRENT LOCAL FOOD SALES DIRECTLY TO CONSUMERS BY FARMS IN THE REGION**

Census of Agriculture data from the National Agricultural Statistical Services (NASS) provides reliable and detailed information about the state of agriculture in the United States. Census of Agriculture statistics are created from surveys sent to all American farm operators (identified as selling more than \$1,000 in agriculture-related production). For purposes of examining the local food market, figures regarding direct sales to consumers are an important indicator of current supply or activity in the region.

The 2012 Census of Agriculture reported that 317 operations in the 7 counties encompassing the Agency's service area sold \$2.5 million in agricultural goods directly to consumers. Based on primary reports from operators in the region about their

sales, we estimate that USDA is significantly under-reporting this particular variable for the 7-county region. Even though the Agency's service area contains only 45% of the population of the 7-county region, we estimate that farms in the region are direct marketing between \$2 million and \$2.5 million in products for the Agency's service area. It is important to note, however, that while these are sales by farms in the region direct to customers, not all sales are necessarily to residents within the Agency's service area. This measures farms currently direct marketing to consumers rather than demand by residents of the region.

*"I See There Being Room for Everything... Not Only Local Vegetables, but Also Meats and Other Locally-Sourced Items"*

**Kate Paul, Owl Forest Farm**  
Owl Forest Farm: Forbes, MN

Started in 2006, The Farm has Grown from 1.5 Acres to 5 as They Grow their CSA Program and Diversify Sales with Cut Flowers.



**FOCUS: IRON RANGE RESTAURANTS AND INSTITUTIONS**

Full-service restaurants spend 30 percent of their total sales on food, whereas the remainder goes to other costs such as labor, overhead, and advertising (Baker Tilly, 2014). Based on this benchmark, full-service restaurants in the Agency's service area with \$112 million in sales are spending approximately \$34 million on food which could be sourced locally. We were unable to identify suitable research to parse this spending figure into useful product categories, such as fresh vegetables and meats. It is clear that food purchases will vary significantly, based on the type and management of the restaurant.

**SCHOOLS AND INSTITUTIONS ARE A GROWING SOURCE OF SALES**

Based on interviews with multiple local food operators in the region, growers view both meat and produce sales to institutions as a growing market for local foods. One source useful to understanding the current state of farm-to-school in the region is the national farm-to-school census (<https://farmtoschoolcensus.fns.usda.gov/>) that the USDA conducted last in 2015. The census asked school food service directors about their current farm-to-school activities, challenges, and spending. Sixteen school districts and charter schools responded to the census survey from the Agency's service area. The farm to school survey found that 10 of the 16 respondents had purchased local foods in the past year. Their spending on local foods added up to \$67,885 out of a total reported \$2.1 million food budget or 3.1%. Nine of 16 respondents reported purchasing fruits and vegetables and only one reported purchasing local milk, products served mainly at lunch. Six of the 16 respondents reported using local foods for breakfast, whereas nine reported serving local foods as part of lunch and one as part of a snack.



*"Basic Processing of Vegetables Opens Up Big Opportunities  
With Schools and Other Institutions"*

**ERIK, MAPLE RIDGE PRODUCE**  
Aitkin, MN

Maple Ridge Produce has Found More Schools and Healthcare Facilities are Receptive to Buying From Local Growers. Programs such as MDA's Farm to School Grants are Available to Help Growers like Erik and Lauren to meet the Demand

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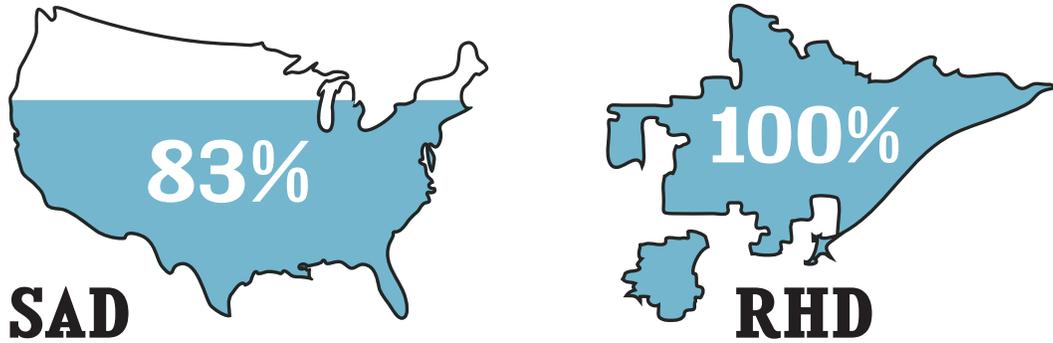
# WHAT WOULD IT TAKE TO GROW MOST OR ALL OF OUR OWN FOOD?

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**SCENARIOS 1 AND 2:  
THE IRON RANGE PRODUCTION ASSESSMENT USING TWO TYPES OF DIETS TO DETERMINE THE LAND AND FARM REQUIREMENTS TO BUILD A LOCAL FOOD PRODUCTION SYSTEM IN OUR REGION**

We looked at two possible diets for consumers in our region. They represent a typical American diet on one end of the continuum and a 100% local healthy diet at the other end of the continuum. (See Appendix 1 for a more detailed explanation about the source of these diet scenarios.) We use these diets as a basis for assessing the growth potential in local food production to meet these diet needs, both at the farmers level and at a regional economic level. The typical American diet used here is labeled the Standard American Diet (SAD) of which approximately 83% can be grown in the region. In other words, all but 17% of the foods in the SAD can be grown in the Agency's service area. The other diet is a 100% local diet labeled the Range Healthy Diet (RHD), of which 100% can be grown in the Agency's service area.

COMPARISON OF WHAT CAN BE GROWN LOCALLY



DIETS	MEATS & EGGS	NUTS & SEEDS	DAIRY	LEGUMES	FRUIT	VEG.	GRAINS	ADDED FATS	ADDED SUGARS	TOTAL ACRES
SAD	87,819	12	30,341	799	3,052	4,680	7,412	25,881	4,061	164,057
RHD	45,548	3,795	21,367	11,107	18,179	9,669	7,120	5,624	0	122,420

Figure 4: Total acres needed to supply the Standard American Diet (SAD) and Rang Healthy Diet (RHD)

In this study, we are examining the potential portion of this total (with a target of 20%) being procured from local farms, instead of being shipped into our region from distant US or foreign sources. Not only would the on-farm production have a direct financial effect in our region, but the collateral economics of this localization of the food system would also be extensive.

For both scenarios, the population of 155,020 (provided by Agency staff) is used along with the per acre production and land requirements for the food needed in both diets. To do this, we determined how much land was needed for each diet to feed the total population. The differences found in the two diet scenarios result from the different proportion of each diet that can be grown in our region and the quantity of the different foods needed for each diet.

For example, the beef production needed for the SAD diet equals 9,727,178 pounds while only 4,325,058 pounds are needed for the RHD. This diet difference, after calculating the land needed for production, shows that for the SAD diet we need 62,497 acres of land and for the RHD we would need 27,863 acres of land to provide our beef needs. We did this calculation for all of the products typically consumed in both diets. The results show that the total acres needed (all foods) for the SAD diet are 164,057 and 122,410 for the RHD.

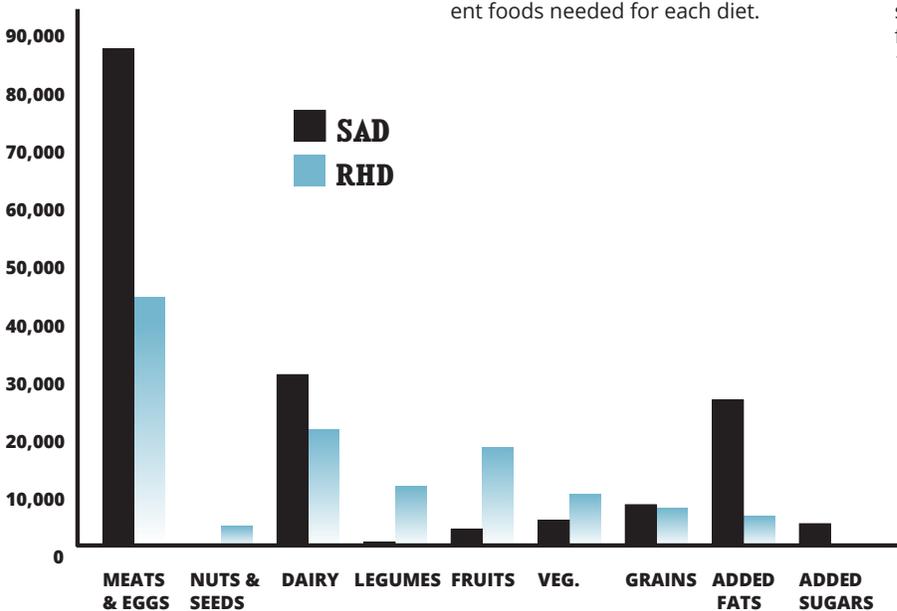


Figure 5: Acres needed by food type for each diet

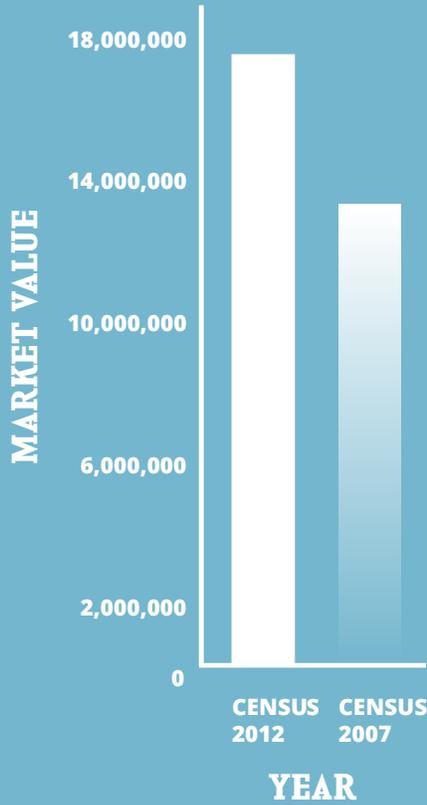


Figure 6: Market value of farms in St. Louis County ( source: USDA, Census of Agriculture ). Note all counties are listed in appendix 5.

### STANDARD AMERICAN DIET PRODUCTION ECONOMICS

Using St. Louis County farm census data as our standard, we identify 685 current farms in looking at the following scenarios. For example, in the 2012 census, the average sales per farm totaled \$24,904 (\$17,059,000 market value/685 farms = \$24,904). If we used this average, we would need 2,222 farms to provide all of the food production in the Agency's service area. Since only 83% of the SAD can be grown in our region, we reduce the 2,222 farms to 1,844 farms needed. We further modify this number with our independent assessment of the types of farms and acreage needed and *we estimate the need for 1,614 farms to provide all of the food production needs in the Agency's service area. Again, this assumes the Standard American Diet.*

### RANGE HEALTHY DIET PRODUCTION ECONOMICS

*If we shifted our food consumption patterns to a diet that could be totally grown in our region, the RHDiet (100% grown in our region), our assessment would indicate 4,343 farms needed, a substantial increase over farms needed for the SADiet. This farm need increase is a result of the diet's increased use of vegetables, fruit and nuts/seeds and that the diet would provide 100% of the food needs of our region instead of just part of our food needs (SADiet can be 83% locally produced). In either case, the direct effect of procuring our foods from local producers would create the need for additional farms and farmers along with all the supporting and complementary businesses needed to allow for this shift and growth of the food sector in our local economy.*



**SCENARIO 3:  
AN ALTERNATIVE WAY OF PROJECTING THE SIZE OF FOOD MARKET BASED ON  
CURRENT FRESH FRUIT AND VEGETABLE CONSUMPTION PLUS SELECT LIVESTOCK PRODUCTS**

In this scenario, the study group focused only on those products which could most easily be supplied by local farm operations. We used data to estimate the demand for fresh fruits and vegetables only, instead of both fresh and processed products. Our rationale is that local growers can more readily fill the fresh market than competitively enter into processing. We also examined the size of the market for animal products that local operators are able to raise, including beef, chicken, and eggs as well as select dairy products.

**In this scenario the region would need 340 acres to produce all the fruits and vegetables necessary to meet 20% of market share of the region and 1,699 acres to meet 100% of the total resident needs in fruits/vegetables. Local farm operators would also need to raise a substantial number of animals to produce the 34 million pounds of meat needed to feed the region entirely or 6.8 million to fill 20% of market share (see Figure 7).**

We examined the size of current food demand through application of the Food Disappearance Dataset from USDA to the Taconite Assistance Area. This national dataset provides the average consumption of food products per capita across a wide range of foods. Our analysis examines only those food products which could reasonably be grown or raised in the Agency's service area. For example, we do not examine the market potential of avocado or mango production, but concentrate on fruits and vegetables adapted to Minnesota's climate.

Figure 7: Market potential for livestock products to meet 100% of demand in Agency's service area (Source: USDA, Food Disappearance Dataset)

	<b>DEMAND (LBS)</b>	<b>SUPPLY NEEDED</b>	<b>UNIT</b>
<b>MEAT</b>			
<b>BEEF</b>	10,085,541	22,075	HEAD
<b>VEAL</b>	61,409	506	HEAD
<b>PORK</b>	7,799,898	174,111	HEAD
<b>LAMB</b>	175,914	1,128	HEAD
<b>CHICKEN</b>	13,241,156	4,270,927	HEAD
<b>TURKEY</b>	2,710,527	166,290	HEAD
<b>EGGS</b>			
<b>SHELL EGGS (COUNT)</b>	26,323,490	2,193,624	DOZEN
<b>DAIRY</b>			
<b>BUTTER</b>	733,905	48,927	CASES
<b>WHOLE AND PART-SKIM CHEESE: TOTAL</b>	5,064,934	844,156	CASES
<b>BEVERAGE MILK (GALLONS)</b>	3,202,400	711,644	CASES
<b>YOGURT (GALLONS)</b>	206,640	137,760	CASES

Some foods are easier to produce in the Agency's service area, both due to production and market conditions. For example, raising lamb and beef on the current forages of NE Minnesota is an easier lift than profitably ramping up butter production with a thin supply chain and serious market competition in dairy.

Figure 8: Market potential for fruits and vegetables to meet 100% demand in Agency's service area (Source: USDA, Food Disappearance Dataset)

	<b>DEMAND (LBS)</b>	<b>SUPPLY NEEDED</b>	<b>UNIT</b>	<b>SUPPLY BY ACRES</b>
<b>VEGETABLES</b>				
<b>ASPARAGUS</b>	177,517	5,917	CRATES	44.4
<b>BELL PEPPERS</b>	1,048,970	37,463	BUSHELs	52.4
<b>BROCCOLI</b>	935,061	40,655	CASES	77.9
<b>BRUSSELS SPROUTS</b>	46,868	1,875	CASES	3.9
<b>CABBAGE</b>	1,331,376	26,628	CRATES	33.3
<b>CARROTS</b>	1,389,566	27,791	BUSHELs	34.7
<b>CAULIFLOWER</b>	269,230	10,769	CASES	17.9
<b>CELERY</b>	989,575	16,493	CASES	16.5
<b>COLLARD GREENS</b>	88,122	4,896	BUSHELs	5.9
<b>CUCUMBERS</b>	978,888	17,798	BUSHELs	48.9
<b>EGGPLANT</b>	148,480	4,499	BUSHELs	9.9
<b>ESCAROLE/ENDIVE</b>	35,497	1,420	BUSHELs	1.8
<b>GARLIC</b>	458,256	15,275	CASES	30.6
<b>KALE</b>	59,582	2,383	BUSHELs	4.0
<b>LETTUCE: HEAD</b>	3,141,771	78,544	CASES	104.7
<b>LETTUCE: ROMAINE AND LEAF</b>	2,346,617	58,665	CASES	67.0
<b>MUSHROOMS (FRESH)</b>	400,327	400,327	POUNDS	NA
<b>MUSTARD GREENS</b>	68,742	3,819	BUSHELs	4.6
<b>ONIONS</b>	3,365,324	67,306	SACKS	67.3
<b>POTATOES</b>	6,084,188	60,842	CASES	152.1
<b>PUMPKIN</b>	798,093	798,093	POUNDS	20.0
<b>RADISHES</b>	81,109	6,759	CASES	11.6
<b>SNAP BEANS</b>	339,158	11,305	BUSHELs	84.8
<b>SPINACH</b>	316,088	12,644	BUSHELs	21.1
<b>SQUASH</b>	692,599	15,391	BUSHELs	23.1
<b>SWEET CORN</b>	1,417,465	28,349	BUSHELs	141.7
<b>SWEET-POTATOES</b>	807,536	20,188	CASES	80.8
<b>TOMATOES</b>	3,148,669	157,433	FLATS	116.6
<b>TURNIP GREENS</b>	66,753	3,708	BUSHELs	4.5
<b>FRUIT</b>				
<b>APPLES</b>	2,549,440	63,736	BUSHELs	127.5
<b>BLUEBERRIES</b>	88,732	32,864	CASES	11.1
<b>CANTALOUPE</b>	1,527,983	50,933	CASES	76.4
<b>GRAPES</b>	1,243,601	56,527	FLATS	155.5
<b>HONEYDEW</b>	313,828	10,461	CASES	15.7
<b>RASPBERRIES</b>	62,711	10,452	FLATS	12.5
<b>STRAWBERRIES</b>	999,268	83,272	FLATS	83.3
<b>WATERMELON</b>	2,519,760	29,644	CASES	126.0
<b>TOTAL FRUIT AND VEGETABLES</b>	34,707,900			1,699 ACRES

# WHAT WOULD BE THE IMPACTS OF PRODUCING AND PURCHASING OUR FOOD WITHIN THE REGION?

## IMPACT ON FARM-RELATED INDUSTRIES

Money spent with farmers in the Agency’s service area when sourcing its food from within its borders benefits not only the farm operations, but also spills over to related industries such as veterinary services, trucking, and repairs.

The study team employed farm financial data from Minnesota farms to estimate economic spillover impacts for select commodities. The Center for Farm Financial Management at the University of Minnesota aggregates data collected from hundreds of farms each year in its FINBIN database (<https://finbin.umn.edu/>). Used by farms for benchmarking purposes, this public data provides detailed data on farm income and spending on direct inputs and overhead expenses.

## IMPACTS ON GROWERS

### FRUIT AND VEGETABLES IMPACTS

The acres necessary to meet the fruit and vegetable needs of consumers in the region ranged from 1,699 to 10,259 acres based on the three scenarios outlined earlier in the report. The study team estimated sales, income, and expenses for each of the three scenarios based on research in Central Minnesota.

In 2016 and 2017, University of Minnesota Extension compiled detailed data from 11 vegetable producers in Central Minnesota which provided us research-based benchmarks to estimate potential impact of the three scenarios

and economic spillover effects to related industries. Extension research found that the fruit and vegetable growers who participated in the study—all of whom direct marketed products directly to customers—purchased a greater amount of their inputs locally than the national average (Pesch and Tuck, 2015).

Clearly the Range healthy diet, with its focus on fruit and vegetable consumption, would infuse a greater amount of income to farm operations (\$43 million in fruit and vegetable income) than the other scenarios. Its potential economic

spillover to other businesses in the region would also be greater, generating \$53 million in sales in other industries. Scenario 3 (using only those products most easily produced in the Agency’s service area) yields significantly less economic impact, yet, within scenario 3, an increase in fruit and vegetable production would generate a greater amount of farm income than an increase in beef or fluid milk (see Figures 9, 10, 11).

Figure 9: Economic spillover effects of fruit and vegetable operations for three scenarios (Source: FINBIN, Center for Farm Financial Management)

	SCENARIO 3	SAD FRESH & PROCESSED	RANGE HEALTHY FRESH & PROCESSED
ACRES	1,699	4,965	10,259
SALES	\$15,858,251	\$46,352,802	\$95,770,253
NET CASH INCOME	\$7,121,349	\$20,815,313	\$43,006,845
DIRECT EXPENSES			
CROP CHEMICALS	\$77,237	\$225,759	\$466,444
CUSTOM HIRE	\$170,551	\$498,511	\$1,029,982

Figure 9: Economic spillover effects of fruit and vegetable operations for three scenarios (Source: FINBIN, Center for Farm Financial Management)

<b>DISTRIBUTION (TRUCKING, SHIPPING)</b>	\$105,252	\$307,647	\$635,635
<b>FERTILIZER</b>	\$130,353	\$381,014	\$787,220
<b>FUEL AND OIL</b>	\$323,026	\$944,186	\$1,950,798
<b>REPAIRS, MAINTENANCE</b>	\$526,843	\$1,539,932	\$3,181,678
<b>SEEDS &amp; PLANTS PURCHASED</b>	\$976,284	\$2,853,624	\$5,895,917
<b>SUPPLIES</b>	\$1,898,834	\$5,550,189	\$11,467,332
<b>PRODUCTION LABOR</b>	\$179,231	\$523,881	\$1,082,399
<b>OVERHEAD EXPENSES</b>			
<b>INTEREST, MORTGAGE**</b>	\$2,188,739	\$6,397,564	\$13,218,108
<b>INTEREST, OTHER</b>	\$15,917	\$46,525	\$96,126
<b>INSURANCE, FARM SHARE</b>	\$195,461	\$571,322	\$1,180,417
<b>PROPERTY TAX, FARM SHARE</b>	\$240,829	\$703,931	\$1,454,402
<b>UTILITIES, FARM SHARE</b>	\$1,001,474	\$2,927,253	\$6,048,044
<b>OTHER EXPENSE</b>			
<b>ADVERTISING</b>	\$332,059	\$970,590	\$2,005,352
<b>DUES/MEMBERSHIPS</b>	\$122,786	\$358,896	\$741,521
<b>PROFESSIONAL SERVICES</b>	\$231,925	\$677,904	\$1,400,629
<b>EDUCATION</b>	\$21,555	\$63,004	\$130,173
<b>TOTAL CASH EXPENSES</b>	\$8,738,355	\$25,541,733	\$52,772,176

**BEEF IMPACTS**

Interviews with producers in the region pointed out how the landscape and climate of the Agency's service area lends itself to livestock production. With cool summers and short growing seasons, the region can produce forages and small grains to feed animals. The study group estimated the economic spillover effects of cow-calf operations supplying the beef demanded under the three scenarios. A cow-calf enterprise is one where a single farm raises animals to maturity from birth from a herd of cows, a business quite different from a feedlot operation where immature animals are purchased annually and fed-out in a central location to maturity. The team used

the financial data from FINBIN for cow-calf enterprises because data were available from 113 farms and the enterprise best matched the types of beef farms already operating in the region as compared to beef finishing feedlots.

When looking at results across the three scenarios, we see that the greatest demand is under the Standard American Diet (SAD) and least under the healthy diet where residents are eating less meat overall. The largest input under all scenarios is feed, a need which could be met by the farms selling the beef or other farm suppliers in the region. For example, a farm may choose to concentrate

on forage production to supply nearby cow-calf operations. Notable non-farm expenses that will come from other businesses include repair shops, veterinary, fuel, supplies, and interest.

Care should be taken to keep these estimates in context. The FINBIN data about cow-calf enterprises are for the whole state of Minnesota and not necessarily representative of the small operations which typically direct market or of cow-calf operations in the Agency's service area. However, the completeness of the FINBIN data is the most representative sample available for this analysis (see Appendix 4 for full report).

*"A Number of Livestock Producers Direct Market a Portion of Their Animals, But the Demand for Good Meat is Much Greater."*

**Keith Nelson,**  
St. Louis County Commissioner and Fayal Township farmer



Figure 10: Economic spillover effects of beef production under three scenarios (Source: FINBIN, Center for Farm Financial Analysis)

	<b>SCENARIO 3</b>	<b>SAD</b>	<b>RANGE HEALTHY</b>
<b>RETAIL LBS DEMANDED</b>	8,686,712	9,727,178	4,325,058
<b>FARM SALES</b>	\$29,963,835	\$33,552,807	\$14,918,801
<b>NET CASH FARM INCOME</b>	\$1,456,186	\$1,630,604	\$725,026
<b>SELECT INPUTS</b>			
<b>PROTEIN, VIT, MINERALS</b>	\$1,850,311	\$2,071,935	\$921,258
<b>FEED (HAY, PASTURE, OTHERS)</b>	\$14,860,569	\$16,640,520	\$7,398,982
<b>VETERINARY</b>	\$1,354,544	\$1,516,787	\$674,419
<b>PRODUCTION SUPPLIES</b>	\$1,856,534	\$2,078,904	\$924,356
<b>FUEL AND OIL</b>	\$1,082,805	\$1,212,500	\$539,122
<b>REPAIRS</b>	\$2,018,332	\$2,260,082	\$1,004,915
<b>UTILITIES</b>	\$232,326	\$260,153	\$115,674
<b>OPERATING AND OVER-HEAD INTEREST</b>	\$2,532,769	\$2,836,135	\$1,261,049
<b>TOTAL CASH EXPENSES</b>	\$28,507,649	\$31,922,203	\$14,193,775

**FLUID MILK IMPACTS**

The spillover effects to supply fluid milk under the three scenarios is surprisingly small. The gallons of milk necessary to meet regional demand range from 2.4 million to 3.5 million annually and would net dairy operators less than \$1 million in net cash farm income under 2017 FINBIN milk pricing. Notable inputs include repairs, breeding fees, and feed costs.

Figure 11: Economic spillover effects of fluid milk production under three scenarios (Source: FINBIN, Center for Farm Financial Management)

	<b>SCENARIO 3</b>	<b>SAD</b>	<b>RANGE HEALTHY</b>
<b>GALLONS OF MILK</b>	3,202,400	3,460,325	2,436,848
<b>SALES</b>	\$4,621,319	\$4,993,525	\$3,516,567
<b>NET CASH FARM INCOME</b>	\$586,616	\$633,862	\$446,382
<b>SELECT INPUTS</b>			
<b>PROTEIN VIT MINERALS</b>	\$768,384	\$830,270	\$584,697
<b>FEED</b>	\$1,396,310	\$1,508,771	\$1,062,515
<b>BREEDING FEES</b>	\$52,327	\$56,542	\$39,818
<b>VETERINARY</b>	\$129,441	\$139,866	\$98,497
<b>SUPPLIES</b>	\$349,766	\$377,937	\$266,153
<b>FUEL AND OIL</b>	\$77,114	\$83,325	\$58,679
<b>LABOR</b>	\$479,207	\$517,803	\$364,650
<b>HAULING AND TRUCKING</b>	\$57,835	\$62,493	\$44,009
<b>BEDDING</b>	\$90,884	\$98,204	\$69,158
<b>REPAIRS</b>	\$170,752	\$184,505	\$129,933
<b>UTILITIES</b>	\$68,852	\$74,397	\$52,392
<b>INTEREST</b>	\$99,146	\$107,132	\$75,445

**IMPACT ON JOBS IN THE AGENCY'S SERVICE AREA**

The study group examined how an increase in local food sourcing in the region would impact jobs. Using IMPLAN data customized to the Arrowhead Region, we estimated jobs in the farm and processing sectors based on a ratio of jobs per total output in those sectors from the IMPLAN model (<http://www.implan.com/>). We estimate that the region would conservatively support between 100 and 3500 jobs in agriculture under a range of food spending. (See Figure 12)

According to the IMPLAN model of the Arrowhead region, there are 0.02 jobs per \$1,000 of sales in the agriculture sector. University of Minnesota Extension research in Central Minnesota found a much higher ratio for vegetable growers of 0.09 jobs per \$1,000 of sales. However, considering that this ratio must represent not only labor-intensive vegetable

operations, but also livestock operations, we created our range of jobs based on the 0.02 ratio from IMPLAN and 0.05 ratio to better represent local farms outside of the traditional commodity supply chain. It is reasonable to expect that farms that are currently direct marketing and those serving local markets would have a higher job to sales ratio since they are taking on more supply chain roles than simply production. In this respect, the 0.05 jobs per \$1,000 of sales ratio is sensible if not conservative. To estimate the farm and processing share of the food dollar, we used USDA's food dollar dataset (<https://www.ers.usda.gov/data-products/food-dollar-series/>). According to their figures, for every dollar spent on food in the United States, 14.8 cents goes to agriculture sector and 15.2 cents goes to processing with the remainder going to related industries such as advertising, food service, and transportation.

Again, our method for estimating jobs in this way is conservative since we are using only a portion of total food sales in the region for the target industries of agriculture and processing even though, in reality, when farm operators direct market foods, they essentially take on most aspects of the food chain. Under this assumption, the job impact would increase 6 to 7 times, but we are reporting only conservative estimates in this report.

Sourcing 20% of food from farms in the Agency's service area would generate between 250-700 jobs in the agricultural sector, whereas 100% would create between 1,500 and 3,500 jobs (see Figure 12). These job estimates are a composite of both proprietors and employees and are not full-time equivalents.

Figure 12: Estimate of jobs in agriculture (source: IMPLAN and calculations by the study group)

<b>Total Food Spending in Region</b>	<b>% OF TOTAL FOOD SPENDING</b>	<b>TOTAL FOOD SALES</b>	<b>FARM SALES (14.8 CENTS PER DOLLAR)</b>	<b>ADDITIONAL AG JOBS AT IMPLAN RATIO</b>	<b>ADDITIONAL AG JOBS AT 0.05/\$1,000 RATIO</b>
<b>\$468,791,811</b>	20%	\$93,758,362	\$13,876,238	248	694
	100%	\$468,791,811	\$69,381,188	1459	3469

In addition to jobs in agriculture, we expect that localizing food production and consumption will create additional processing jobs in the region. These jobs could be at separate food processing enterprises using local foods or on-farm where operations take on employees to process farm commodities into value-added foods. Some communities in the state have recently focused efforts to grow and support value-added enterprises to grow their economy. One such example is Clinton, MN, where a community commercial kitchen supports multiple businesses. A publication from University of Minnesota features the efforts in Clinton and showcases its community kitchen as an example to other communities ([http://misadocuments.info/Commercial\\_Kitchen\\_Guide.pdf](http://misadocuments.info/Commercial_Kitchen_Guide.pdf)).



*"The Kitchen at the Community Center has Hosted Multiple Food Production Businesses Since We Opened, Creating Local Economic Opportunities for Community Folks. Right Now We are Hosting a Business That is Owned By a Local Couple."*

**HONOR SCHAULAND, DIRECTOR, FRIENDS OF FINLAND  
(MANAGER OF THE KITCHEN AND EDUCATIONAL PROGRAMMING)**

The USDA-certified kitchen at the Finland Community Center has helped to start value-added food businesses in the area by hosting the processing activities necessary to starting a food business.

**IMPACT ON THE ECONOMY: ANNUAL FOOD DOLLARS RETAINED IN THE AGENCY'S SERVICE AREA**

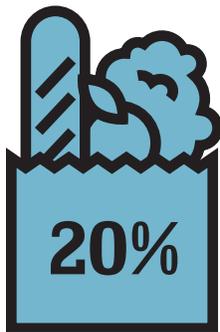
Clearly the aggregate food spending of households in the Agency's service area could have significant impacts if even only a portion was directed towards sourcing from local farm operators. Based on our estimates, the region could retain \$51 million in food sales if only 20% of food purchases were sourced from local farms. This increases up to \$256 million at 100% locally-sourced food. Even directing a small portion of these food dollars to local farms would have significant impacts on farm-related businesses and ripple through the regional economy.

Individual outlets such as restaurants and schools have already begun purchasing food direct from local farms. Full-service restaurants alone are a \$34 million food market. Farms and schools in the Agency's service area are sourcing \$2.1 million in food which could also be sourced from local farm operators. However, few farms currently sell food locally in a significant way and current supply falls far short of demand. Our interviews with farm operators who now market food direct to local consumers point to the need to grow the base of growers and assist existing operators to enter the local food market. The challenges of 'scaling up' local production in this way are many. New and existing operators will need assistance in the areas of production, marketing, and business planning.

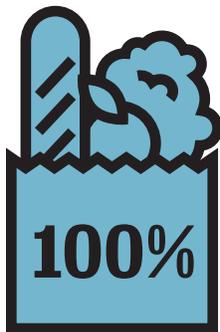
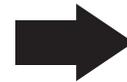
**% OF TOTAL  
FOOD SPENDING  
KEPT LOCAL**

**JOBS  
GENERATED**

**ANNUAL FOOD  
DOLLARS KEPT  
IN SERVICE AREA**



**248-694**



**1459-3469**



# CONCLUSION

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To reiterate, the Agency's service area can build a more robust, diverse and resilient economy by providing more and more of our basic needs—most notably food—for our communities and our region. We don't often think of our food system as a key part of our infrastructure, but a vibrant regional food structure can support a stable economy. Our recommendations are as follows:

## **01 CREATE A PUBLIC RELATIONS EFFORT TO PROMOTE LOCAL FOOD PRODUCTION AND CONSUMPTION.**

Build a campaign around the pride of our region, growing and feeding our own as a noble and worthy regional goal. In order to realize the benefits of localizing food production and processing, the Iron Range needs more growers and more value-added processing. The Rutabaga Project, a local food advocacy effort by the Iron Range Partnership for Sustainability and the Arrowhead Economic Opportunity Agency has initiated this effort on a small scale. Iron Range Grown has also effectively promoted this focus and it can be expanded exponentially.

## **02 FOCUS FUNDING ASSISTANCE FOR LOCAL FARM INVESTMENTS WHICH WILL INCREASE THEIR EFFICIENCY AND PRODUCTION CAPACITY.**

Based on our research, there is a significant market for locally grown food in the Agency's service area, yet interviews with area growers point to the need for basic upgrades to equipment such as post-harvest equipment like refrigeration or packing equipment which will increase capacity and efficiency of vegetable operators in the region. Assistance for farms could also include help in obtaining land for new growers such as tax forfeited land (and other lands) set aside through lease and purchase options or student loan forgiveness program for young folks committed to farming in our region. One model for focused investments on regional farms is a revolving loan fund call "Grow a Farmer Fund" administered by the Southern Initiative Foundation (<https://smifoundation.org/news-events/newsroom/blog-archives/grow-a-farmer-fund.html>).

## **03 RESEARCH PROCESSING AND DISTRIBUTION MODELS FOR THE REGION.**

One clear finding of the research is the need to build local processing capability (value-added products) to fill the food needs of the region and efficiently move food products throughout the region. A reasonable next step would be to identify current production clusters and logical distribution maps and scenarios to efficiently move products from farm to market. Part of this work would include build-out scenarios for processing and cost estimates to greatly increase the potential of the localization of the foods and the viability of such enterprises. Ideally any type of organizational models researched would focus on how best to keep the food dollar local and to work to increase the farmer's share of that food dollar.

## **04 SUPPORT EDUCATION AND TECHNICAL ASSISTANCE FOR LOCAL FARM OPERATIONS.**

Two primary issues for existing and potential operations in the Agency's service area include (1) soil building and management and (2) business planning and development. The generally thin soils of the region need soil building efforts to create the high-fertility necessary for high value food products. In some of our farm fields we find poorly managed and depleted soils. Regenerating and amending this soil naturally holds enormous potential for increasing our capacity. To accomplish this, the sponsorship of educational programming about farm soil-building would be of great assistance. Likewise, each individual farm operation would greatly benefit from one-on-one technical assistance on their farm finances. Based on our interviews, those who are currently direct marketing are interested in expanding their operations, and offering them farm business planning assistance will help them identify the necessary next steps in terms of investments and efficiently marketing their products. Direct outreach to farms in the region and sponsoring the cost of participation in farm financial analysis and counseling through the U of M Extension's farm business management program would help to build the base of growers in the region.

**The Iron Range is fertile ground for an energetic local food effort. The Facebook group "Iron Range Grown," initiated in March 2018 already has 1,161 members. Within that Facebook group, area growers and producers are posting about their products and consumers are requesting information on where to buy local. The Northland Food Network, new in 2017, is up and running, linking consumers, producers, institutions, and businesses in our region under the umbrella of the Minnesota Food Charter. In the spring of 2018, the Iron Range Resources & Rehabilitation Agency funded this study to determine the potential of local food as an economic driver. And the Rutabaga Project for access to local healthy food stands ready to assist in carrying out the recommendations of this report. The Iron Range Partnership for Sustainability expresses its sincere appreciation for the Department of Iron Range Resources and Rehabilitation's support of this work.**

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# APPENDICES

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## APPENDIX 01 PART A: NUTRITION RESEARCH

"In preparation for the writing of Defining the Agricultural Landscape of the Western Lake Superior Region: Realities and potentials for a healthy local food system for healthy people in 2010, co-author David Abazs assembled a group of individuals to participate in the development of a "Western Lake Superior Healthy Diet" (WLSHD) that would address growing, health and cultural issues. The group of doctors, nutritionist and dietitians along with expertise with Native American medical issues including diabetes and heart disease was formalized. The group was given the task to answer some broad questions that will likely lead to subsequent nutritional research on Western Lake Superior regional foods:

- 01** Quantify this region's food consumption based on the average Standard American Diet (SAD) pattern?
- 02** What would be an optimal diet pattern for WLSR that focuses as much as possible on local, seasonally available foods?
- 03** How would a regional diet particularly benefit people of the region in addressing health problems (e.g. diabetes) that particularly trouble indigenous populations?"

The individuals that dedicated their time and expertise to this process included: Peggy Heistad-Harri (Registered Dietitian, MEd, LD, CDE), Gayle Nikolai (Nutritionist/Fond du Lac band member), Emily Onello (Physician), Nancy Sudak (Physician), and Sarah Nelson (Physician). The group was facilitated by co-author David Abazs. All task force members agreed that the most significant aspect of the WLS Healthy Diet is the total reduction of calories as compared to the Standard American Diet (SAD). This fact alone would provide many benefits for health. The other aspect of the new diet is that it contains no additional (added) calories of sugar. This is an added health benefit. The group developed a healthy diet that can be 100% grown in our limited-growing region. This diet provides the basis of a statistical comparison of building a local food system using the Standard American Diet and the new regional diet.

Finally, Abazs developed methods to evaluate the amount of land that would be needed to meet the local portion of the Standard American Diet (SAD) and the new regional (WLSHD) diet. " (Stark et al, 2009-2010) These two diets, the second one renamed the Range Healthy Diet, have been used in this report as well.

## APPENDIX 01 PART B: FOOD PRODUCTION DATA FOR TWO DIET SCENARIOS ( NEXT PAGE )

**FLOUR & CEREAL**

Food Consumption, Prices, and Expenditures,  
 Food Availability( Per Capita) Data System;  
 \<http://www.ers.usda.gov/data/foodconsumption/\>

Standard American Diet (SAD) 626cal/480cal ratio				Range Heathy Diet		
Crop Consumption	#/per.	#/region	%	#/per.	#/region	%
Flour and cereal products \9	192.8	29,894,669.6	99.40%	147.9	22,922,430.3	100.0%
Wheat flour	134.5	20,847,864.4	69.74%	99.1	15,358,028.3	67.0%
Rye flour	0.0	0.0	0.00%	7.4	1,146,121.5	5.0%
Rice, milled	20.7	3,206,340.5	10.73%	0.0	0.0	0.0%
Corn products	31.9	4,945,138.0	16.54%	22.2	3,438,364.5	15.0%
Oat products	4.6	716,002.8	2.40%	7.4	1,146,121.5	5.0%
Barley products	0.0	0.0	0.00%	7.4	1,146,121.5	5.0%
Wild Rice				3.0	458,448.6	2.0%
Quinoa				1.5	229,224.3	1.0%
Amaranth				1.5	229,224.3	1.0%
Ratio Multiplier 76677316						
Wheat(54.93Bx60=3296# acre)		6,325.2 acres			4,659.6 acres	
Rye (34Bx56=1904# acre)		0.0 acres			602.0 acres	
Corn(121.57x56=6808#acre)		726.4 acres			505.0 acres	
Oat (62.11Bx32=1987# acre)		360.3 acres			576.8 acres	
Barley(59.42x48=2852# acre)		0.0 acres			401.9 acres	
Wild Rice						
Quinoa(1572# acre)		0.0 acres			145.8 acres	
Amaranth(1000# acre)		0.0 acres			229.2 acres	
				<b>7,411.9 acres</b>	<b>7,120.3 acres</b>	

Note 1 - Pounds available, not necessarily consumed due to waste and spoilage  
 Note 2 - % column doesn't always equal 100 due to rounding  
 Note 3 - The Region consists of MN 8 northeastern counties and WI's 7 northwestern counties  
 Note 4 - This is grain directly consumed by people, not the grain that is grown for livestock.

**LEGUMES**

Source: U.S. Department of Agriculture, Economic Research Service,  
 Food Consumption, Prices, and Expenditures,  
 Food Availability( Per Capita) Data System;  
 \<http://www.ers.usda.gov/data/foodconsumption/\>

Standard American Diet (SAD) 9cal/145cal ratio				Range Heathy Diet		
Crop Consumption	#/per.	#/region	%	#/per.	#/region	%
<b>Legumes</b>	<b>8.5</b>	<b>1,317,670.0</b>	<b>99.76%</b>	<b>136.9</b>	<b>21,229,127.6</b>	<b>100.0%</b>
<b>Dry Beans Total</b>	<b>4.5</b>	<b>697,590.0</b>	<b>52.94%</b>	<b>72.6</b>	<b>11,251,437.6</b>	<b>53.0%</b>
Pinto	2.7	421,654.4				
Navy	0.9	136,417.6				
Great Northern	0.3	46,506.0				
Red Kidney	0.5	77,510.0				
Lima	0.1	15,502.0				
<b>Lentils</b>	<b>2.1</b>	<b>325,542.0</b>	<b>24.71%</b>	<b>34.2</b>	<b>5,307,281.9</b>	<b>25.0%</b>
<b>Others</b>	<b>1.9</b>	<b>291,437.6</b>	<b>22.12%</b>			
<b>Dry Peas</b>				<b>30.1</b>	<b>1,317,670.0</b>	<b>22.0%</b>
Ratio Multiplier 16.11						
Dry Beans(1851# acre) <sup>28</sup>		376.9 acres			6,078.6 acres	
Lentils(1229# acre) <sup>29</sup>		264.9 acres			4,318.4 acres	
Other/Dry Peas (1855#acre) <sup>29</sup>		157.1 acres			710.3 acres	
				<b>798.9 acres</b>	<b>11,107.3 acres</b>	

Note 1 - Pounds available, not necessarily consumed due to waste and spoilage  
 Note 2 - % column doesn't always equal 100 due to rounding  
 Note 3 - The Region consists of the Taconite Assistance Area  
 Note 4 - Total legume pounds in SAD diet was changed to equal the sum total of beans below  
 Note 5 - Legume yields were determined by the average of the 5 years of production (ERS source)

FRUITS

Source: U.S. Department of Agriculture, Economic Research Service,  
 Food Consumption, Prices, and Expenditures,  
 Food Availability( Per Capita) Data System;  
 \<http://www.ers.usda.gov/data/foodconsumption/\>

Standard American Diet (SAD)				Range Healthy Diet		
	91cal/240cal ratio					
Crop Consumption	#/per.	#/region	%	#/per.	#/region	%
Fruits, total	<b>265.0</b>	<b>41,079,877.8</b>	<b>99.85%</b>	<b>698.9</b>	<b>108,342,533.2</b>	<b>100.0%</b>
Apples	19.4	3,008,853.4	7.32%	174.72	27,085,633.3	25.0%
<i>Bananas</i>	20.8	3,219,718.4	7.84%			
<i>Cantaloupes</i>	5.8	899,116.0	2.19%			
Grapes	4.0	622,222.7	1.51%	13.98	2,166,850.7	2.0%
<i>Peaches and nectarines</i>	7.1	1,097,188.2	2.67%			
Pears	2.6	407,315.0	0.99%	69.89	10,834,253.3	10.0%
<i>Pineapples</i>	1.5	230,427.2	0.56%			
Plums and prunes	1.5	236,894.2	0.58%	20.97	3,250,276.0	3.0%
Strawberries	2.0	304,631.6	0.74%	34.94	5,417,126.7	5.0%
Watermelons	10.7	1,658,714.0	4.04%			
Other	5.1	788,225.9	1.92%			
Blueberries				13.98	2,166,850.7	2.0%
Pie Cherries				6.99	1,083,425.3	1.0%
Raspberries				6.99	1,083,425.3	1.5%
June Berries				3.49	541,712.7	0.5%
<i>Oranges citrus</i>	14.3	2,214,037.3	5.39%			
<i>Grapefruit citrus</i>	7.3	1,131,215.2	2.75%			
<i>Other citrus</i>	4.5	693,162.6	1.69%			
Processed Frozen\A	3.3	513,882.0	1.25%	13.98	2,166,850.7	2.0%
Processed Dried\B	11.2	1,735,526.0	4.22%	55.91	8,667,402.7	8.0%
Processed Canned\C	24.5	3,805,628.8	9.26%	34.94	5,417,126.7	5.0%
Processed Fruit\D	119.0	18,452,384.7	44.92%	244.61	37,919,886.6	35.0%
		Ratio Multiplier 2.6373626		<b>349.4</b>	<b>54,171,266.6</b>	<b>50.00%</b>
Apples(18,586# acre)		404.7 acres			2,914.6 acres	
Grapes (10,228# acre)		152.1 acres			423.7 acres	
Pears(12,736#acre)		80.0 acres			1,701.4 acres	
Plums & Prunes(3,640#acre)		162.7 acres			1,339.4 acres	
Strawberries(4,080#acre)		74.7 acres			2,655.5 acres	
Blueberries(2,124#acre)		0.0 acres			1,530.3 acres	
Cherry Sweet(3,838#acre)		0.0 acres			423.4 acres	
Raspberries(5,000#acre)		0.0 acres			433.4 acres	
June Berries(3,500#acre)		0.0 acres			232.2 acres	
Other (3,616#acre)		545.0 acres				
Cranberries(10,400#acre)		0.0 acres			149.1 acres	
Cherry Tart(6321#acre)		0.0 acres			122.6 acres	
Currents/Goos(8,350#acre)		0.0 acres			92.8 acres	
Choke Cherry(15,000#acre)		0.0 acres			46.2 acres	
Processed Fruits		1,632.9 acres			6,114.0 acres	
		<b>3,052.0 acres</b>			<b>18,178.5 acres</b>	

Note 1 - The "other" category was determined by averaging the 4 other crops listed for the new diet

Note 2 - This is pounds available, not necessarily pounds consumed due to waste and spoilage

Note 3 - Percent column doesn't always equal 100 due to rounding

Note 4 - The Region consists of the Agency service area

SAD DIET ASSUMPTIONS - A/B/C/D - Processing represents 60% of the SAD fruit consumed

A/B/C/D - The SAD percents suggested we use a 2.5 multiplier to determine acres needed

RHD HEALTHY DIET ASSUMPTIONS - A/B/C/D - Processing represents 50% of the RHD fruit consumed

A/B/C/D - The RHD percents suggested we use a 2.0 multiplier to determine acres needed

A/B/C/D - 10# Cranberries, 5# Currants, 5# Tart Cherries, 4.47# Choke Cherry replaced half (48.93#) of the Juneberries, Blueberries, Plums, & Sweet Cherry for processing

DAIRY

Source: U.S. Department of Agriculture, Economic Research Service,  
 Food Consumption, Prices, and Expenditures,  
 Food Availability( Per Capita) Data System;  
 \<http://www.ers.usda.gov/data/foodconsumption/\>

Standard American Diet (SAD) 284cal/200cal ratio				Range Heathy Diet		
Consumption	#/per.	#/region	%	#/per.	#/region	%
<b>Dairy products, total</b> <sup>13</sup>	<b>606.3</b>	<b>93,982,593.0</b>	100.0%	<b>426.9</b>	<b>66,184,924.4</b>	100.0%
Fluid milk products <sup>14</sup> (gal)	22.3	3,460,324.6	10.6%	15.7	2,436,848.3	10.6%
Beverage milks						
Plain whole milk	6.4	999,158.6	3.1%	4.5	703,632.8	3.1%
Plain reduced fat milk (2%)	6.9	1,070,181.3	3.3%	4.9	753,648.8	3.3%
Reduced fat milk (1%) and skim milk	5.8	896,363.7	2.7%	4.1	631,242.0	2.7%
Flavored whole milk	0.3	43,381.3	0.1%	0.2	30,550.2	0.1%
Flavored milks other than whole	1.4	223,612.6	0.7%	1.0	157,473.7	0.7%
Buttermilk	0.2	30,198.5	0.1%	0.1	21,266.5	0.1%
Yogurt (excluding frozen)	20.4	3,158,857.7	9.7%	14.4	2,224,547.7	9.7%
Fluid cream products <sup>15</sup>						
Cream <sup>16</sup>	15.4	2,390,524.5	7.3%	10.9	1,683,467.9	7.3%
Sour cream and dips	7.9	1,225,793.6	3.8%	5.6	863,234.9	3.8%
Condensed and evaporated milks						
Whole milk	2.2	341,044.0	1.0%	1.5	240,171.8	1.0%
Skim milk	4.2	651,084.0	2.0%	3.0	458,509.9	2.0%
Cheese <sup>17</sup> (lbs)	32.5	5,038,150.0	15.5%	22.9	3,547,992.9	15.5%
American <sup>18</sup>	13.1	2,030,762.0	6.2%	9.2	1,430,114.1	6.2%
Cheddar	10.4	1,612,208.0	4.9%	7.3	1,135,357.7	4.9%
Italian <sup>18</sup>	13.8	2,139,276.0	6.6%	9.7	1,506,532.4	6.6%
Mozzarella	10.5	1,627,710.0	5.0%	7.4	1,146,274.6	5.0%
Other <sup>18</sup>	5.0	775,100.0	2.4%	3.5	545,845.1	2.4%
Swiss	1.3	201,526.0	0.6%	0.9	141,919.7	0.6%
Cream and Neufchatel	2.5	387,550.0	1.2%	1.8	272,922.5	1.2%
Cottage cheese, total	2.6	403,052.0	1.2%	1.8	283,839.4	1.2%
Lowfat	1.4	217,028.0	0.7%	1.0	152,836.6	0.7%
Frozen dairy products						
Ice cream	14.4	2,232,288.0	6.8%	10.1	1,572,033.8	6.8%
Lowfat ice cream	6.8	1,054,136.0	3.2%	4.8	742,349.3	3.2%
Sherbet	1.1	170,522.0	0.5%	0.8	120,085.9	0.5%
Frozen yogurt	1.4	217,028.0	0.7%	1.0	152,836.6	0.7%
	210.28	Ratio Multiplier	.704225	148.08		
Protein Vit Min. #4,042.10 <sup>6</sup>			1.5 acres			1.5 acres
Complete Ration #34,752.50 <sup>6</sup>			2.2 acres			2.2 acres
Corn (bu.) 63.30 <sup>7</sup>			0.6 acres			0.6 acres
Corn Silage #19,968.20 <sup>7</sup>			0.8 acres			0.8 acres
Hay, Alfalfa #3,581.10 <sup>7</sup>			0.6 acres			0.6 acres
Haylage, Alfalfa #5,992.00 <sup>6</sup>			0.3 acres			0.3 acres
Other feed stuff #3,290.10 <sup>6</sup>			0.3 acres			0.3 acres
Straw Bedding <sup>6</sup>			0.5 acres			0.5 acres
Per Dairy Cow			6.8 acres			6.8 acres
Per Dairy Cow			20,946.0 #milk <sup>7</sup>			20,946.0 #milk
Regional Needs			4,487 #cows			3,160 #cows
No. Farms Needed			30 #farms <sup>7</sup>			21 #farms
Land Needed			30,341.38 acres			21,367.17 acres

Note 1 - These numbers are from an averaging of 351 farms and includes cow replacement inputs.  
 Note 2 - The milk and 7 resource numbers is a five year average from 2004 - 2008  
 Note 3 - Organic per cow annual yields run 67% of conventional operations  
 Note 4 - Number of farms needed is based on the average of 151 cows per farm in the 2008 study  
 Note 5 - The RHD assumes a grass-fed based dairy operation which would increase the acres needed.

**NUTS**

Source: U.S. Department of Agriculture, Economic Research Service,  
Food Consumption, Prices, and Expenditures,  
Food Availability( Per Capita) Data System;  
<http://www.ers.usda.gov/data/foodconsumption/>

Standard American Diet (SAD)				63cal/160cal ratio			Range Heathy Diet		
Crop Consumption	lbs	LAFS WLS lbs	%	lbs	NWHD lbs	%			
<b>Nuts</b>	<b>9.90</b>	<b>1,534,698.0</b>	<b>105%</b>	<b>25.10</b>	<b>3,891,002.0</b>	<b>100.00%</b>			
Peanuts	7	1,009,180.2	65.76%						
Almonds	1.0	156,570.2	10.20%						
Walnuts	0.5	82,160.6	5.35%						
Coconuts	0.6	93,012.0	6.06%						
Pecans	0.4	68,208.8	4.44%						
Pistachios	0.1	20,152.6	1.31%						
Macadamia	0.1	20,152.6	1.31%						
Filberts/Hazelnuts	0.1	12,401.6	0.81%	13.81	2,140,051.1	55.00%			
Others	1.0	150,369.4	9.80%						
Sunflower Seeds				6.28	972,750.5	25.00%			
Pumpkin/Sauash Seeds				3.77	583,650.3	15.00%			
Flax Seeds				1.26	194,550.1	5.00%			
Production/acreage									
Hazel Nut(1,000lbs/acre)		12.4 acres		2,140.1 acres					
Sunflower Seeds(1,300lbs/acre) -25% shell				997.7 acres					
Pumpkin Seeds (1 150 lbs acre)- 6 tons flesh				507.5 acres					
Flax Seed (1,300lbs/acre)		0.0 acres		149.7 acres					
		12.4 acres		3,794.9 acres					

**SWEETENERS**

Source: U.S. Department of Agriculture, Economic Research Service,  
Food Consumption, Prices, and Expenditures,  
Food Availability( Per Capita) Data System;  
<http://www.ers.usda.gov/data/foodconsumption/>

Standard American Diet (SAD)				459cal/0cal ratio			Range Heathy Diet		
Consumption	#/per.	#/region	%	#/per.	#/region	%			
<b>Caloric sweeteners, total</b>	<b>138.9</b>	<b>21,529,702.4</b>	<b>98.9%</b>						
Sugar, refined cane and beet	62.3	9,661,881.0	44.9%						
Corn sweeteners	75.0	11,626,608.6	54.0%						
High fructose corn syrup	58.2	9,018,510.5							
Maple Syrup	x	x	x						
Honey	x	x	x						
Production/acreage									
Sugar(cane 45% cannot grow in MN) <sup>45</sup>		x		x					
Sugar(Beet 55% 46,720 x .17 #/acre) <sup>45 &amp; 5</sup>		669.1 acres							
Corn Sweeteners Total		3,392.0 acres							
Corn Syrup(1.77 #Corn/1.0 #HFCs) <sup>45 &amp; 47</sup>									
Maple Syrup(0.18 lbs/person) <sup>45 &amp; 48</sup>		x		x					
Honey (1.42lbs/person) <sup>45 &amp; 48</sup>		x		x					
		4,061.0 acres		0.0 acres					
Corn production/farm scale		85 # farms							
Beet production/farm scale		17 # farms							

- Note 1 - RHD does not include added sugars
- Note 2 - The "Healthy Diet Task Force" did recognize that sugars may be desired and offered Maple Syrup and Honey as options
- Note 3 - % column does n't always equal 100 due to rounding
- Note 4 - The "Healthy Diet Task Force" did recognize that sugars may be the last part of the diet to localize
- Note 5 - 95% of beets grown in the US are now genetically modified plantings
- Note 6 - % beet vrs cane sugar consumption is based on US production levels (What we actually consumes may be different)
- Note 7 - Corn/HFCS ratio was taken from Table 30 of USDA divided into Industrial Use of Corn, (HFCS) numbers
- Note 8 - Total Corn Sweeteners used Corn/HFCS calculation to determine acres needed
- Note 9 - State production of Maple Syrup & Honey divided by the population resulted in these numbers
- Note 10 - 17% sugar content was used for the beet to sugar conversion calculations

VEGETABLES

Source: U.S. Department of Agriculture, Economic Research Service, Food Consumption, Prices, and Expenditures, Food Availability( Per Capita) Data System: <http://www.ers.usda.gov/data/foodconsumption/>

Standard American Diet (SAD)	121cal/250cal ratio		Range Heathy Diet		
Consumption	#/per.	#/region %	#/per.	#/region	%
<b>Vegetables, total</b>	<b>338.6</b>	<b>52,487,013.1</b>	<b>599.55</b>	<b>108,444,241.7</b>	<b>100.0%</b>
<b>Fresh vegetables</b>	<b>151.6</b>	<b>23,500,324.7</b>	<b>313.21</b>	<b>48,554,389.9</b>	<b>44.8%</b>
Asparagus (all uses)	0.3	45,569.5	0.61	94,151.8	0.1%
Broccoli	1.4	217,176.5	2.89	448,711.7	0.4%
Cabbage	8.0	1,239,730.2	16.52	2,561,426.1	2.4%
Carrots	6.2	953,499.0	12.71	1,970,039.3	1.8%
Cauliflower	1.1	175,838.8	2.34	363,303.4	0.3%
Celery (all uses)	7.4	1,142,736.5	15.23	2,361,025.7	2.2%
Corn	6.5	1,007,364.5	13.43	2,081,331.6	1.9%
Cucumbers	3.9	598,710.5	7.98	1,237,005.2	1.1%
Head lettuce	25.6	3,973,352.1	52.96	8,209,405.2	7.6%
Mushrooms	1.2	186,327.4	2.48	384,974.0	0.4%
Onions	11.4	1,764,456.8	23.52	3,645,572.0	3.4%
Snap beans	1.3	203,798.0	2.72	421,070.3	0.9%
Bell peppers (all uses)	2.9	447,269.9	5.96	924,111.4	0.9%
Potatoes	51.1	7,924,868.1	105.62	16,373,694.3	15.1%
Sweet potatoes (all uses)	4.4	680,027.4	8.06	1,405,015.3	1.3%
Tomatoes	12.8	1,988,796.7	26.51	4,109,084.0	3.8%
Other fresh vegetables \8	6.0	924,254.3	12.32	1,909,616.4	1.8%
<b>Processed vegetables</b>	<b>187.0</b>	<b>28,986,688.3</b>	<b>386.34</b>	<b>59,889,851.9</b>	<b>55.2%</b>
Vegetables for freezing \9	51.5	7,990,150.6	106.49	16,508,575.5	15.2%
Vegetables for canning \10	102.5	15,891,056.7	211.80	32,832,761.8	30.3%
Vegetables for dehydrating \1	10.5	1,635,161.1	21.79	3,378,432.1	3.1%
Potatoes for chips	16.5	2,555,811.3	34.06	5,280,601.8	4.9%
Pulses	5.9	914,508.7	12.19	1,889,480.7	1.7%
	Ratio Multiplier	.70422535###			
<b>Fresh vegetables</b>					
Asparagus (#4,400/acre) <sup>15</sup>		10.4 acres	21.4	acres	
Broccoli (#7,300/acre) <sup>15</sup>		29.8 acres	61.5	acres	
Cabbage (#13,700/acre) <sup>15</sup>		90.5 acres	187.0	acres	
Carrots (#19,400/acre) <sup>15</sup>		49.1 acres	101.5	acres	
Cauliflower (#10,800/acre) <sup>15</sup>		16.3 acres	33.6	acres	
Celery (#32,000) <sup>15</sup>		35.7 acres	73.8	acres	
Corn (#6200) <sup>15</sup>		162.5 acres	335.7	acres	
Cucumbers (#8400) <sup>15</sup>		71.3 acres	147.3	acres	
Head lettuce (#9100) <sup>15</sup>		436.6 acres	902.1	acres	
Mushrooms (#78400) <sup>2,3,4,5,6,7,8,9,10,11,12,13,14,15</sup>		1.0 acres	2.0	acres	
Onions (#19,800) <sup>15</sup>		89.1 acres	184.1	acres	
Snap beans (#4500) <sup>15</sup>		44.3 acres	91.5	acres	
Bell peppers (#6900) <sup>15</sup>		64.8 acres	133.9	acres	
Potatoes (#15,200) <sup>15</sup>		521.4 acres	1,077.2	acres	
Sweet potatoes (all uses)		xx	x	x	
Tomatoes (#11,000) <sup>15</sup>		180.8 acres	373.6	acres	
Other fresh vegetables (#10,840) <sup>15</sup>		85.3 acres	176.2	acres	
<b>Processed vegetables</b>					
Vegetables/freezing (#10,840) <sup>15</sup>		737.1 acres	1,522.9	acres	
Vegetables/canning (#10,840) <sup>15</sup>		1,466.0 acres	3,028.9	acres	
Vegetables/dehydrating (#10,840) <sup>15</sup>		150.8 acres	311.7	acres	
Potatoes for chips (#15,200) <sup>15</sup>		168.1 acres	347.4	acres	
Pulses (#3,400) <sup>15</sup> average beans & P		269.0 acres	555.7	acres	
		<b>4,679.8 acres</b>	<b>9,669.0</b>	<b>acres</b>	

Note 1 - For other, freezing, canning and dehydrating the average vegetable yield of 10,840 lbs/acre was used  
 Note 2 - Vegetable yields per acre are above and below these numbers. Precise numbers are variable  
 Note 3 - Sweet Potato is a marginal crop for this northern climate and it has been removed from the Range totals  
 Note 4 - There are some "other" crops that are very productive per acre that could reduce the overall acreage

FATS & OILS

Source: U.S. Department of Agriculture, Economic Research Service,  
 Food Consumption, Prices, and Expenditures,  
 Food Availability (Per Capita) Data System;  
 \<http://www.ers.usda.gov/data/foodconsumption/\>

Standard American Diet (SAD) 710cal/250cal ratio				Range Healthy Diet		
Consumption	#per.	#region	%	#per.	#region	%
<b>Total, fat content only</b>	<b>84.5</b>	<b>13,100,202.9</b>	99.7%	<b>29.76</b>	<b>4,612,746.5</b>	<b>99.7%</b>
Butter (product weight)	4.7	731,134.2	5.6%	<b>1.66</b>	<b>257,441.6</b>	<b>5.6%</b>
Margarine (product weight)	4.6	708,295.8	5.4%	<b>1.61</b>	<b>249,399.9</b>	<b>5.4%</b>
Lard (direct use)	1.7	258,613.5	2.0%	<b>0.59</b>	<b>91,061.1</b>	<b>2.0%</b>
Edible beef tallow (direct use)	3.9	601,334.0	4.6%	<b>1.37</b>	<b>211,737.3</b>	<b>4.6%</b>
Shortening	24.9	3,852,369.5	29.4%	<b>8.75</b>	<b>1,356,467.9</b>	<b>29.4%</b>
Salad and cooking oils	44.5	6,903,869.5	52.7%	<b>15.68</b>	<b>2,430,939.4</b>	<b>52.7%</b>
Ratio Multiplier .70422 0.3521128						
Butter (product weight)	Acres in Dairy Data			Acres in Dairy Data		
Lard (direct use)	Acres in Dairy Data			Acres in Dairy Data		
Edible beef tallow (direct use)	Acres in Dairy Data			Acres in Dairy Data		
<b>Total, vegetable oil pounds</b>	<b>11.0</b>	gallons (74#/7.7)		<b>3.9</b>	gallons (26#/7.7)	
Margarine, shortening, salad & cooking oil by priority below						
Soybean Oil (48 gal/acre) <sup>22</sup>	55.61%	19,709.0 acres		X	X	X
Canola Oil (127 gal/acre) <sup>22</sup>	11.16%	75.8 acres		<b>80.00%</b>	<b>3,774.1 acres</b>	
Flax Seed Oil (51 gal/acre) <sup>22</sup>	X	X	X	<b>8.00%</b>	<b>939.8 acres</b>	
Hemp Seed Oil (39 gal/acre) <sup>22</sup>	X	X	X	<b>1.00%</b>	<b>153.6 acres</b>	
Sunflower Seed Oil (102 g/a) <sup>22</sup>	1.72%	286.9 acres		<b>11.00%</b>	<b>646.1 acres</b>	
Corn (18 g/a) <sup>22</sup>	5.61%	5,302.1 acres		X	X	X
Olive Oil (129 gal/acre) <sup>22</sup>	1.95%	X	X	X	X	X
Coconut	3.59%	X	X	X	X	X
Cottonseed	2.26%	X	X	X	X	X
Lard	2.59%	X	X	<b>Accounted for in the meat</b>		
Palm	7.50%	X	X	X	X	X
Palm kernel	2.24%	X	X	X	X	X
Peanut 2/	0.85%	X	X	X	X	X
Safflower	0.34%	X	X	X	X	X
Sesame	0.08%	X	X	X	X	X
Tallow, edible	4.50%	X	X	X	X	X
% Oil/Plant Type - USDA <sup>62</sup> 100.00%				<b>100.00%</b>		
<b>Total Regional Acres Needed</b>	<b>25,881.2 acres</b>			<b>5,624.0 acres</b>		

- Note 1 - The % totals do not always equal 100 due to rounding issues
- Note 2 - Some of the oil by-product includes a mash that is used as a livestock supplement
- Note 3 - The oil selections for the new diet address both health issues and the crops ability to grow here.
- Note 4 - The Butter, Lard and Edible beef tallow's direct use is included in the dairy and meat data sets.
- Note 5 - These numbers include loss and waste reducing the total average actually consumed
- Note 6 - A conversion rate of 7.7# per gallon was used to connect consumption to production numbers
- Note 7 - The SAD acreage includes 74.1% of the oil used and the RHD includes 100% of the oil needed
- Note 8 - 2% was added to the total to account for the acres needed to produce seeds & plants
- Final Note - 155,020 was used as our population calculator.

NOTE - discrepancies in the numbers between the "Defining the Agricultural Landscape of the Western Lake Superior Region" diet study (2010) and the CEX numbers are partly due to time of study (older data points to newer data points), the loss of farm products between production and consumption (waste), general averaged national numbers verses the more specific, regional numbers and differing base data point sources.

**APPENDIX 02: FULL CONSUMER EXPENDITURE  
SURVEY REPORT FOR AGENCY'S SERVICE AREA**

SOURCE: BUREAU OF LABOR STATISTICS WITH ESTIMATES BY ESRI AND U OF M EXTENSION

**Household Budget Expenditures**

Prepared By Business Analyst Desktop  
Food calculations by U of M Extension

<b>Demographic Summary</b>		<b>2017</b>	<b>2022</b>	
Population		155,020	156,064	
Households		68,428	68,705	
Average Household Size		2.22	2.23	
Families		41,931	42,237	
Median Age		49.1	50.1	
Median Household Income		\$50,339	\$54,966	
	<b>Spending Index</b>	<b>Average Amount Spent per HH</b>	<b>Total</b>	<b>Percent</b>
Total Expenditures	81	\$56,100.81	\$3,812,386,411	100.0%
Food	95	\$6,911.32	\$468,791,811	12.3%
Food at Home	94	\$3,822.85	\$261,590,048	6.9%
Food Away from Home	96	\$3,028.03	\$207,201,763	5.4%
Alcoholic Beverages	75	\$415.50	\$28,235,755	0.7%
Housing	78	\$16,554.36	\$1,124,967,861	29.5%
Shelter	74	\$12,062.04	\$819,688,192	21.5%
Utilities, Fuel and Public Services	89	\$4,492.31	\$305,279,669	8.0%
Household Operations	78	\$1,446.54	\$98,300,878	2.6%
Housekeeping Supplies	88	\$624.81	\$42,459,315	1.1%
Household Furnishings and Equipment	82	\$1,598.92	\$108,655,969	2.9%
Apparel and Services	74	\$1,603.84	\$108,990,573	2.9%
Transportation	86	\$7,012.78	\$476,560,297	12.5%
Travel	77	\$1,587.65	\$107,890,546	2.8%
Health Care	92	\$5,136.43	\$349,051,425	9.2%
Entertainment and Recreation	84	\$2,623.64	\$178,292,382	4.7%
Personal Care Products & Services	79	\$628.86	\$42,734,524	1.1%
Education	65	\$944.74	\$64,200,541	1.7%
Smoking Products	112	\$464.78	\$31,584,591	0.8%
Lotteries & Pari-mutuel Losses	85	\$47.04	\$3,196,678	0.1%
Legal Fees	74	\$136.80	\$9,296,648	0.2%
Funeral Expenses	113	\$95.30	\$6,476,048	0.2%
Safe Deposit Box Rentals	97	\$4.38	\$297,740	0.0%
Checking Account/Banking Service Charges	80	\$27.85	\$1,892,668	0.0%
Cemetery Lots/Vaults/Maintenance Fees	80	\$7.51	\$510,493	0.0%
Accounting Fees	85	\$69.44	\$4,718,612	0.1%
Miscellaneous Personal Services/Advertising/Fine	77	\$48.64	\$3,305,147	0.1%
Occupational Expenses	70	\$44.15	\$3,000,353	0.1%
Expenses for Other Properties	97	\$101.59	\$6,903,552	0.2%
Credit Card Membership Fees	66	\$3.33	\$226,087	0.0%
Shopping Club Membership Fees	70	\$14.80	\$1,005,608	0.0%
Support Payments/Cash Contributions/Gifts in Kind	84	\$1,960.51	\$133,228,496	3.5%
Life/Other Insurance	85	\$364.95	\$24,800,358	0.7%
Pensions and Social Security	76	\$5,620.37	\$381,937,545	10.0%



**APPENDIX 3: POPULATION AND DEMOGRAPHIC ESTIMATES FROM US CENSUS, ORGANIZED BY TWO PARTS OF AGENCY'S SERVICE AREA**

SOURCE: ESRI



Community Profile

Prepared By Business Analyst Desktop

<b>Population Summary</b>	
2000 Total Population	134,325
2010 Total Population	131,796
2017 Total Population	134,257
2017 Group Quarters	2,671
2022 Total Population	136,105
2017-2022 Annual Rate	0.27%
2017 Total Daytime Population	135,350
Workers	60,346
Residents	75,004
<b>Household Summary</b>	
2000 Households	57,150
2000 Average Household Size	2.30
2010 Households	58,580
2010 Average Household Size	2.20
2017 Households	59,316
2017 Average Household Size	2.22
2022 Households	59,976
2022 Average Household Size	2.22
2017-2022 Annual Rate	0.22%
2010 Families	36,198
2010 Average Family Size	2.76
2017 Families	36,362
2017 Average Family Size	2.77
2022 Families	36,629
2022 Average Family Size	2.78
2017-2022 Annual Rate	0.15%
<b>Housing Unit Summary</b>	
2000 Housing Units	76,758
Owner Occupied Housing Units	60.3%
Renter Occupied Housing Units	14.2%
Vacant Housing Units	25.5%
2010 Housing Units	84,353
Owner Occupied Housing Units	54.0%
Renter Occupied Housing Units	15.4%
Vacant Housing Units	30.6%
2017 Housing Units	86,518
Owner Occupied Housing Units	52.4%
Renter Occupied Housing Units	16.2%
Vacant Housing Units	31.4%
2022 Housing Units	88,168
Owner Occupied Housing Units	51.9%
Renter Occupied Housing Units	16.1%
Vacant Housing Units	32.0%
<b>Median Household Income</b>	
2017	\$50,455
2022	\$54,883
<b>Median Home Value</b>	
2017	\$137,629
2022	\$161,094
<b>Per Capita Income</b>	
2017	\$28,734
2022	\$33,057
<b>Median Age</b>	
2010	46.5
2017	48.5
2022	49.5

<b>2010 Population by Race/Ethnicity</b>	
Total	20,166
White Alone	97.1%
Black Alone	0.4%
American Indian Alone	0.8%
Asian Alone	0.3%
Pacific Islander Alone	0.0%
Some Other Race Alone	0.2%
Two or More Races	1.2%
Hispanic Origin	0.9%
Diversity Index	7.4
<b>2017 Population by Race/Ethnicity</b>	
Total	20,763
White Alone	96.2%
Black Alone	0.5%
American Indian Alone	1.0%
Asian Alone	0.4%
Pacific Islander Alone	0.0%
Some Other Race Alone	0.3%
Two or More Races	1.6%
Hispanic Origin	1.3%
Diversity Index	10.0
<b>2022 Population by Race/Ethnicity</b>	
Total	21,064
White Alone	95.8%
Black Alone	0.6%
American Indian Alone	1.0%
Asian Alone	0.4%
Pacific Islander Alone	0.0%
Some Other Race Alone	0.3%
Two or More Races	1.8%
Hispanic Origin	1.6%
Diversity Index	11.1
<b>2010 Population by Relationship and Household Type</b>	
Total	20,166
In Households	98.2%
In Family Households	80.3%
Householder	28.7%
Spouse	23.5%
Child	24.3%
Other relative	1.6%
Nonrelative	2.2%
In Nonfamily Households	17.9%
In Group Quarters	1.8%
Institutionalized Population	1.5%
Noninstitutionalized Population	0.3%

<b>2017 Population 25+ by Educational Attainment</b>	
Total	15,894
Less than 9th Grade	2.0%
9th - 12th Grade, No Diploma	6.6%
High School Graduate	32.0%
GED/Alternative Credential	5.0%
Some College, No Degree	23.5%
Associate Degree	11.8%
Bachelor's Degree	12.8%
Graduate/Professional Degree	6.3%
<b>2017 Population 15+ by Marital Status</b>	
Total	17,705
Never Married	18.6%
Married	60.8%
Widowed	8.1%
Divorced	12.4%
<b>2017 Civilian Population 16+ in Labor Force</b>	
Civilian Employed	95.6%
Civilian Unemployed (Unemployment Rate)	4.4%
<b>2017 Employed Population 16+ by Industry</b>	
Total	9,421
Agriculture/Mining	1.6%
Construction	9.7%
Manufacturing	8.4%
Wholesale Trade	2.2%
Retail Trade	13.3%
Transportation/Utilities	4.5%
Information	1.2%
Finance/Insurance/Real Estate	4.6%
Services	50.0%
Public Administration	4.4%
<b>2017 Employed Population 16+ by Occupation</b>	
Total	9,421
<b>White Collar</b>	<b>53.1%</b>
Management/Business/Financial	10.8%
Professional	18.3%
Sales	10.7%
Administrative Support	13.2%
Services	22.3%
<b>Blue Collar</b>	<b>24.7%</b>
Farming/Forestry/Fishing	0.7%
Construction/Extraction	6.5%
Installation/Maintenance/Repair	4.4%
Production	7.4%
Transportation/Material Moving	5.8%
<b>2010 Population By Urban/ Rural Status</b>	
Total Population	20,166
Population Inside Urbanized Area	0.0%
Population Inside Urbanized Cluster	17.2%
Rural Population	82.8%

<b>2010 Households by Type</b>	
Total	8,895
Households with 1 Person	29.8%
Households with 2+ People	70.2%
<b>Family Households</b>	<b>65.2%</b>
Husband-wife Families	53.5%
With Related Children	14.3%
Other Family (No Spouse Present)	11.7%
Other Family with Male Householder	4.5%
With Related Children	3.1%
Other Family with Female Householder	7.2%
With Related Children	4.9%
Nonfamily Households	5.0%
<b>All Households with Children</b>	<b>22.7%</b>
Multigenerational Households	1.7%
Unmarried Partner Households	7.0%
Male-female	6.5%
Same-sex	0.5%
<b>2010 Households by Size</b>	
Total	8,895
1 Person Household	29.8%
2 Person Household	43.5%
3 Person Household	10.9%
4 Person Household	9.2%
5 Person Household	4.0%
6 Person Household	1.9%
7 + Person Household	0.8%
<b>2010 Households by Tenure and Mortgage Status</b>	
Total	8,895
Owner Occupied	81.5%
Owned with a Mortgage/Loan	48.1%
Owned Free and Clear	33.4%
Renter Occupied	18.5%
<b>2010 Housing Units By Urban/ Rural Status</b>	
Total Housing Units	17,092
Housing Units Inside Urbanized Area	0.0%
Housing Units Inside Urbanized Cluster	11.4%
Rural Housing Units	88.6%

<b>2017 Households by Income</b>	
Household Income Base	59,316
<\$15,000	11.3%
\$15,000 - \$24,999	12.3%
\$25,000 - \$34,999	10.3%
\$35,000 - \$49,999	15.6%
\$50,000 - \$74,999	20.8%
\$75,000 - \$99,999	13.1%
\$100,000 - \$149,999	11.6%
\$150,000 - \$199,999	2.9%
\$200,000+	2.1%
Average Household Income	\$64,338
<b>2022 Households by Income</b>	
Household Income Base	59,976
<\$15,000	11.0%
\$15,000 - \$24,999	11.4%
\$25,000 - \$34,999	9.0%
\$35,000 - \$49,999	13.6%
\$50,000 - \$74,999	18.8%
\$75,000 - \$99,999	14.4%
\$100,000 - \$149,999	15.2%
\$150,000 - \$199,999	3.9%
\$200,000+	2.7%
Average Household Income	\$74,324
<b>2017 Owner Occupied Housing Units by Value</b>	
Total	45,320
<\$50,000	9.0%
\$50,000 - \$99,999	26.9%
\$100,000 - \$149,999	18.8%
\$150,000 - \$199,999	14.2%
\$200,000 - \$249,999	8.5%
\$250,000 - \$299,999	7.1%
\$300,000 - \$399,999	7.3%
\$400,000 - \$499,999	3.6%
\$500,000 - \$749,999	3.0%
\$750,000 - \$999,999	1.0%
\$1,000,000 +	0.6%
Average Home Value	\$186,590
<b>2022 Owner Occupied Housing Units by Value</b>	
Total	45,800
<\$50,000	6.6%
\$50,000 - \$99,999	23.3%
\$100,000 - \$149,999	17.1%
\$150,000 - \$199,999	13.6%
\$200,000 - \$249,999	9.1%
\$250,000 - \$299,999	8.8%
\$300,000 - \$399,999	10.2%
\$400,000 - \$499,999	5.1%
\$500,000 - \$749,999	3.8%
\$750,000 - \$999,999	1.4%
\$1,000,000 +	1.0%
Average Home Value	\$215,983

<b>2010 Population by Age</b>	
Total	131,812
0 - 4	5.3%
5 - 9	5.4%
10 - 14	5.6%
15 - 24	10.6%
25 - 34	10.2%
35 - 44	10.7%
45 - 54	16.0%
55 - 64	16.4%
65 - 74	10.1%
75 - 84	6.5%
85 +	3.1%
18 +	79.9%
<b>2017 Population by Age</b>	
Total	134,257
0 - 4	4.9%
5 - 9	5.1%
10 - 14	5.3%
15 - 24	10.1%
25 - 34	10.2%
35 - 44	10.3%
45 - 54	13.1%
55 - 64	17.7%
65 - 74	13.2%
75 - 84	6.7%
85 +	3.3%
18 +	81.4%
<b>2022 Population by Age</b>	
Total	136,105
0 - 4	4.7%
5 - 9	5.0%
10 - 14	5.4%
15 - 24	9.7%
25 - 34	9.8%
35 - 44	10.6%
45 - 54	11.5%
55 - 64	16.5%
65 - 74	15.6%
75 - 84	7.9%
85 +	3.3%
18 +	81.6%
<b>2010 Population by Sex</b>	
Males	66,203
Females	65,596
<b>2017 Population by Sex</b>	
Males	67,640
Females	66,617
<b>2022 Population by Sex</b>	
Males	68,689
Females	67,416

<b>2010 Population by Race/Ethnicity</b>	
Total	131,797
White Alone	95.1%
Black Alone	0.4%
American Indian Alone	2.2%
Asian Alone	0.4%
Pacific Islander Alone	0.0%
Some Other Race Alone	0.2%
Two or More Races	1.8%
Hispanic Origin	0.9%
Diversity Index	11.2
<b>2017 Population by Race/Ethnicity</b>	
Total	134,257
White Alone	94.1%
Black Alone	0.6%
American Indian Alone	2.4%
Asian Alone	0.5%
Pacific Islander Alone	0.0%
Some Other Race Alone	0.3%
Two or More Races	2.2%
Hispanic Origin	1.4%
Diversity Index	13.8
<b>2022 Population by Race/Ethnicity</b>	
Total	136,105
White Alone	93.4%
Black Alone	0.7%
American Indian Alone	2.5%
Asian Alone	0.5%
Pacific Islander Alone	0.0%
Some Other Race Alone	0.3%
Two or More Races	2.5%
Hispanic Origin	1.8%
Diversity Index	15.8
<b>2010 Population by Relationship and Household Type</b>	
Total	131,799
In Households	98.0%
In Family Households	78.0%
Householder	27.5%
Spouse	21.9%
Child	24.9%
Other relative	1.4%
Nonrelative	2.3%
In Nonfamily Households	20.0%
In Group Quarters	2.0%
Institutionalized Population	1.2%
Noninstitutionalized Population	0.9%

<b>2017 Population 25+ by Educational Attainment</b>	
Total	100,104
Less than 9th Grade	1.7%
9th - 12th Grade, No Diploma	4.7%
High School Graduate	25.9%
GED/Alternative Credential	5.1%
Some College, No Degree	25.4%
Associate Degree	14.5%
Bachelor's Degree	15.4%
Graduate/Professional Degree	7.3%
<b>2017 Population 15+ by Marital Status</b>	
Total	113,665
Never Married	23.8%
Married	55.7%
Widowed	7.9%
Divorced	12.6%
<b>2017 Civilian Population 16+ in Labor Force</b>	
Civilian Employed	93.5%
Civilian Unemployed (Unemployment Rate)	6.5%
<b>2017 Employed Population 16+ by Industry</b>	
Total	59,792
Agriculture/Mining	5.0%
Construction	8.2%
Manufacturing	8.7%
Wholesale Trade	1.9%
Retail Trade	10.6%
Transportation/Utilities	5.3%
Information	0.8%
Finance/Insurance/Real Estate	5.5%
Services	49.7%
Public Administration	4.3%
<b>2017 Employed Population 16+ by Occupation</b>	
Total	59,792
White Collar	52.5%
Management/Business/Financial	11.3%
Professional	19.4%
Sales	9.0%
Administrative Support	12.8%
Services	20.3%
Blue Collar	27.2%
Farming/Forestry/Fishing	0.9%
Construction/Extraction	7.8%
Installation/Maintenance/Repair	5.4%
Production	6.4%
Transportation/Material Moving	6.7%
<b>2010 Population By Urban/ Rural Status</b>	
Total Population	131,796
Population Inside Urbanized Area	0.0%
Population Inside Urbanized Cluster	34.5%
Rural Population	65.5%

<b>2010 Households by Type</b>	
Total	58,574
Households with 1 Person	32.8%
Households with 2+ People	67.2%
<b>Family Households</b>	<b>61.8%</b>
Husband-wife Families	49.1%
With Related Children	15.2%
Other Family (No Spouse Present)	12.7%
Other Family with Male Householder	4.2%
With Related Children	2.7%
Other Family with Female Householder	8.4%
With Related Children	5.8%
Nonfamily Households	5.4%
All Households with Children	24.2%
Multigenerational Households	1.5%
Unmarried Partner Households	7.1%
Male-female	6.7%
Same-sex	0.4%
<b>2010 Households by Size</b>	
Total	58,581
1 Person Household	32.8%
2 Person Household	38.9%
3 Person Household	12.6%
4 Person Household	9.7%
5 Person Household	4.0%
6 Person Household	1.4%
7 + Person Household	0.6%
<b>2010 Households by Tenure and Mortgage Status</b>	
Total	58,580
Owner Occupied	77.8%
Owned with a Mortgage/Loan	43.7%
Owned Free and Clear	34.1%
Renter Occupied	22.2%
<b>2010 Housing Units By Urban/ Rural Status</b>	
Total Housing Units	84,353
Housing Units Inside Urbanized Area	0.0%
Housing Units Inside Urbanized Cluster	27.6%
Rural Housing Units	72.4%

<b>Population Summary</b>	
2000 Total Population	19,064
2010 Total Population	20,166
2017 Total Population	20,763
2017 Group Quarters	364
2022 Total Population	21,064
2017-2022 Annual Rate	0.29%
2017 Total Daytime Population	18,595
Workers	7,203
Residents	11,392
<b>Household Summary</b>	
2000 Households	8,126
2000 Average Household Size	2.31
2010 Households	8,895
2010 Average Household Size	2.23
2017 Households	9,112
2017 Average Household Size	2.24
2022 Households	9,218
2022 Average Household Size	2.25
2017-2022 Annual Rate	0.23%
2010 Families	5,800
2010 Average Family Size	2.71
2017 Families	5,901
2017 Average Family Size	2.73
2022 Families	5,951
2022 Average Family Size	2.74
2017-2022 Annual Rate	0.17%
<b>Housing Unit Summary</b>	
2000 Housing Units	14,643
Owner Occupied Housing Units	46.6%
Renter Occupied Housing Units	8.7%
Vacant Housing Units	44.5%
2010 Housing Units	17,092
Owner Occupied Housing Units	42.4%
Renter Occupied Housing Units	9.6%
Vacant Housing Units	48.0%
2017 Housing Units	17,647
Owner Occupied Housing Units	41.3%
Renter Occupied Housing Units	10.4%
Vacant Housing Units	48.4%
2022 Housing Units	18,119
Owner Occupied Housing Units	40.7%
Renter Occupied Housing Units	10.2%
Vacant Housing Units	49.1%
<b>Median Household Income</b>	
2017	\$49,305
2022	\$55,566
<b>Median Home Value</b>	
2017	\$208,838
2022	\$242,930
<b>Per Capita Income</b>	
2017	\$27,946
2022	\$33,372
<b>Median Age</b>	
2010	50.2
2017	52.7
2022	53.9

<b>2017 Households by Income</b>	
Household Income Base	9,112
<\$15,000	13.3%
\$15,000 - \$24,999	11.6%
\$25,000 - \$34,999	10.1%
\$35,000 - \$49,999	15.5%
\$50,000 - \$74,999	22.0%
\$75,000 - \$99,999	12.0%
\$100,000 - \$149,999	10.2%
\$150,000 - \$199,999	2.8%
\$200,000+	2.5%
Average Household Income	\$63,467
<b>2022 Households by Income</b>	
Household Income Base	9,218
<\$15,000	12.1%
\$15,000 - \$24,999	10.2%
\$25,000 - \$34,999	8.9%
\$35,000 - \$49,999	12.7%
\$50,000 - \$74,999	20.1%
\$75,000 - \$99,999	14.4%
\$100,000 - \$149,999	14.2%
\$150,000 - \$199,999	4.1%
\$200,000+	3.4%
Average Household Income	\$76,088
<b>2017 Owner Occupied Housing Units by Value</b>	
Total	7,281
<\$50,000	4.5%
\$50,000 - \$99,999	12.8%
\$100,000 - \$149,999	14.1%
\$150,000 - \$199,999	16.7%
\$200,000 - \$249,999	11.1%
\$250,000 - \$299,999	9.9%
\$300,000 - \$399,999	14.1%
\$400,000 - \$499,999	7.7%
\$500,000 - \$749,999	6.2%
\$750,000 - \$999,999	1.6%
\$1,000,000 +	1.4%
Average Home Value	\$263,541
<b>2022 Owner Occupied Housing Units by Value</b>	
Total	7,368
<\$50,000	3.2%
\$50,000 - \$99,999	10.2%
\$100,000 - \$149,999	11.9%
\$150,000 - \$199,999	14.9%
\$200,000 - \$249,999	11.3%
\$250,000 - \$299,999	11.1%
\$300,000 - \$399,999	17.1%
\$400,000 - \$499,999	9.2%
\$500,000 - \$749,999	6.8%
\$750,000 - \$999,999	2.1%
\$1,000,000 +	2.1%
Average Home Value	\$293,646

<b>2010 Population by Age</b>	
Total	20,167
0 - 4	5.0%
5 - 9	5.5%
10 - 14	5.6%
15 - 24	8.8%
25 - 34	8.3%
35 - 44	9.3%
45 - 54	15.2%
55 - 64	16.7%
65 - 74	14.4%
75 - 84	7.7%
85 +	3.4%
18 +	80.4%
<b>2017 Population by Age</b>	
Total	20,764
0 - 4	4.6%
5 - 9	4.9%
10 - 14	5.2%
15 - 24	8.7%
25 - 34	8.8%
35 - 44	8.4%
45 - 54	12.6%
55 - 64	17.7%
65 - 74	16.7%
75 - 84	8.7%
85 +	3.7%
18 +	82.3%
<b>2022 Population by Age</b>	
Total	21,067
0 - 4	4.4%
5 - 9	4.8%
10 - 14	5.2%
15 - 24	8.3%
25 - 34	8.6%
35 - 44	8.9%
45 - 54	11.1%
55 - 64	16.7%
65 - 74	18.0%
75 - 84	10.3%
85 +	3.7%
18 +	82.5%
<b>2010 Population by Sex</b>	
Males	10,130
Females	10,036
<b>2017 Population by Sex</b>	
Males	10,495
Females	10,267
<b>2022 Population by Sex</b>	
Males	10,716
Females	10,348

APPENDIX 04: MINNESOTA FINBIN DATA FOR SELECT ENTERPRISES

Livestock Enterprise Analysis: Beef Cow-Calf -- Average Per Cwt. Produced

	Avg. Of All Farms	2017
Number of farms	112	112
Beef Calves sold	65.98	65.98
Transferred out	74.98	74.98
Cull sales	22.19	22.19
Other income	1.29	1.29
Purchased	-30.16	-30.16
Transferred in	-11.10	-11.10
Inventory change	21.27	21.27
Gross margin	144.45	144.45
<b>Direct Expenses</b>		
Protein Vit Minerals	8.92	8.92
Corn Silage	12.34	12.34
Hay, Alfalfa	12.96	12.96
Hay, Grass	22.29	22.29
Pasture	10.67	10.67
Hay	4.70	4.70
Other feed stuffs	8.68	8.68
Veterinary	6.53	6.53
Supplies	8.95	8.95
Fuel & oil	5.22	5.22
Repairs	9.73	9.73
Utilities	1.12	1.12
Operating interest	2.80	2.80
Total direct expenses	114.90	114.90
Return over direct expense	29.54	29.54
<b>Overhead Expenses</b>		
Hired labor	1.65	1.65
RE & pers. property taxes	1.32	1.32
Farm insurance	2.99	2.99
Utilities	2.68	2.68
Dues & professional fees	1.27	1.27
Interest	9.41	9.41
Mach & bldg depreciation	9.73	9.73
Miscellaneous	3.21	3.21
Total overhead expenses	32.25	32.25
Total dir & ovhd expenses	147.16	147.16
Net return	-2.71	-2.71
Labor & management charge	21.64	21.64
Net return over lbr & mgt	-24.35	-24.35
<b>Cost of Production Per Cwt. Produced</b>		
Total direct expense per unit	114.90	114.90
Total dir & ovhd expense per unit	147.16	147.16
With other revenue adjustments	148.77	148.77
With labor and management	170.41	170.41
Est. labor hours per unit	2.02	2.02
<b>Other Information</b>		
Number of cows	69.5	69.5
Pregnancy percentage	94.9	94.9
Pregnancy loss percentage	1.6	1.6
Culling percentage	11.9	11.9
Calving percentage	93.4	93.4
Weaning percentage	87.3	87.3
Calves sold per cow	0.82	0.82
Calf death loss percent	5.5	5.5
Cow death loss percent	2.4	2.4
Cows per FTE	286.0	286.0
Average weaning weight	533	533
Lbs weaned/exposed female	465	465
Feed cost per cow	390.24	390.24
Avg wgt/ Beef Calves sold	607	607
Avg price / cwt.	148.09	148.09

Note: columns are equal because data is for one year only

Livestock Enterprise Analysis  
(Farms Sorted By Years)

Dairy -- Average Per Cwt. Of Milk

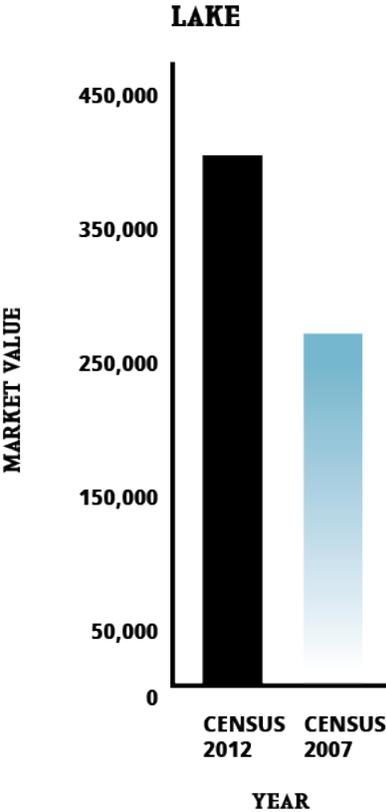
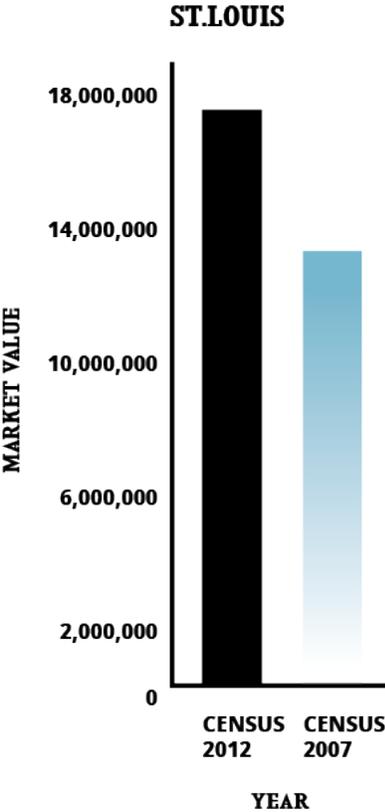
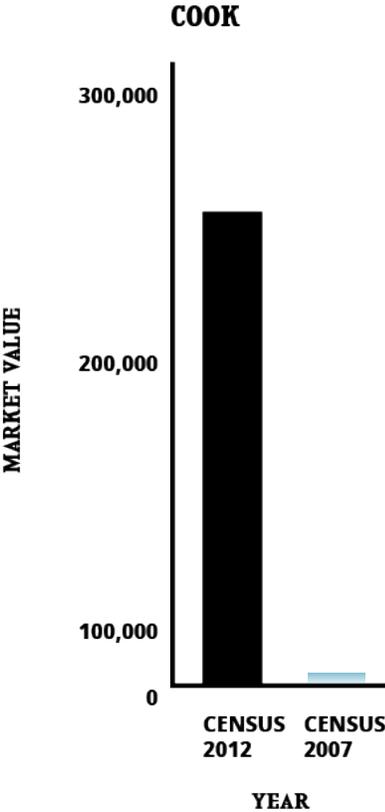
	Avg. Of All Farms	2017
Number of farms	405	405
Milk sold	17.81	17.81
Dairy Calves sold	0.18	0.18
Transferred out	0.14	0.14
Cull sales	0.95	0.95
Other income	0.19	0.19
Purchased	-0.13	-0.13
Transferred in	-0.25	-0.25
Inventory change	0.21	0.21
Dairy repl net cost	-2.33	-2.33
Gross margin	16.78	16.78
<b>Direct Expenses</b>		
Protein Vit Minerals	2.80	2.80
Complete Ration	1.34	1.34
Corn	0.85	0.85
Corn Silage	1.18	1.18
Hay, Alfalfa	0.66	0.66
Haylage, Alfalfa	0.54	0.54
Other feed stuffs	0.49	0.49
Breeding fees	0.20	0.20
Veterinary	0.47	0.47
Supplies	1.27	1.27
Fuel & oil	0.28	0.28
Repairs	0.62	0.62
Custom hire	0.29	0.29
Hired labor	1.42	1.42
Hauling and trucking	0.21	0.21
Bedding	0.33	0.33
Total direct expenses	12.94	12.94
Return over direct expense	3.84	3.84
<b>Overhead Expenses</b>		
Hired labor	0.41	0.41
Building leases	0.23	0.23
Farm insurance	0.19	0.19
Utilities	0.25	0.25
Interest	0.37	0.37
Mach & bldg depreciation	0.69	0.69
Miscellaneous	0.24	0.24
Total overhead expenses	2.38	2.38
Total dir & ovhd expenses	15.32	15.32
Net return	1.46	1.46
Labor & management charge	0.77	0.77
Net return over lbr & mgt	0.68	0.68
<b>Cost of Production Per Cwt. Of Milk</b>		
Total direct expense per unit	12.94	12.94
Total dir & ovhd expense per unit	15.32	15.32
With other revenue adjustments	16.45	16.45
With labor and management	17.22	17.22
Est. labor hours per unit	0.17	0.17
<b>Other Information</b>		
Number of cows	204.2	204.2
Milk produced per cow	24,604	24,604
Total milk sold	4,993,767	4,993,767
Pounds of milk sold per FTE	1,651,443	1,651,443
Culling percentage	29.9	29.9
Turnover rate	36.5	36.5
Cow death loss percent	6.2	6.2
Percent of barn capacity	113.6	113.6
Feed cost per day	5.29	5.29
Feed cost per cwt of milk	7.85	7.85
Feed cost per cow	1,931.90	1,931.90
Hired labor per cow	451.37	451.37
Avg. milk price per cwt.	17.91	17.91
Milk price / feed margin	10.06	10.06

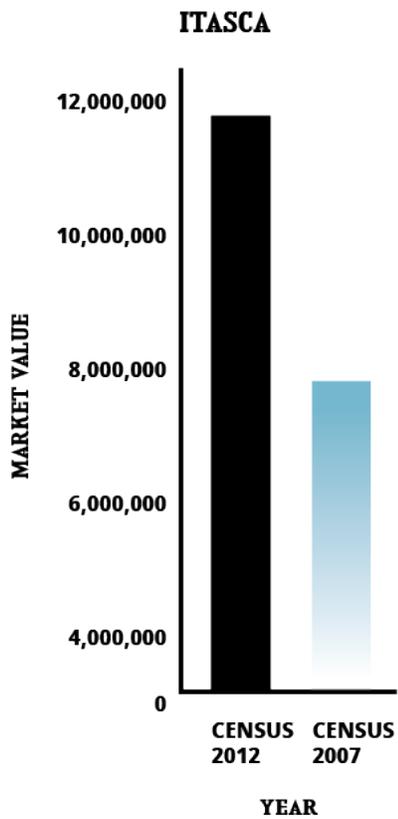
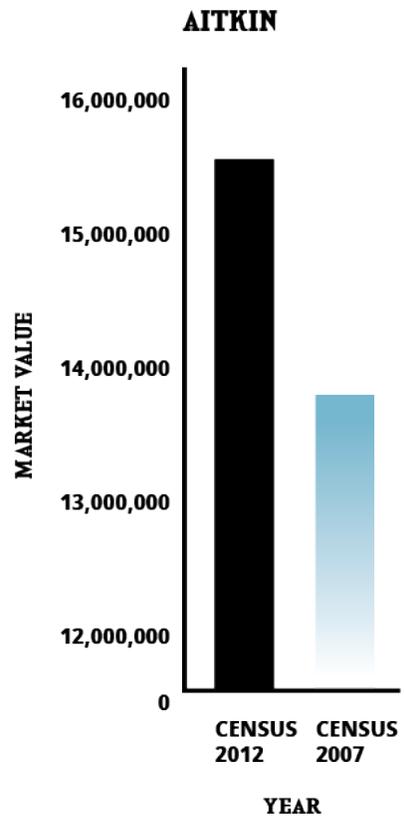
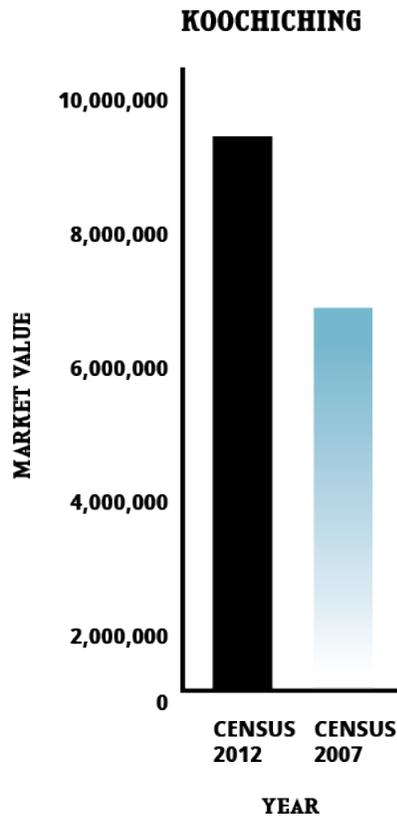
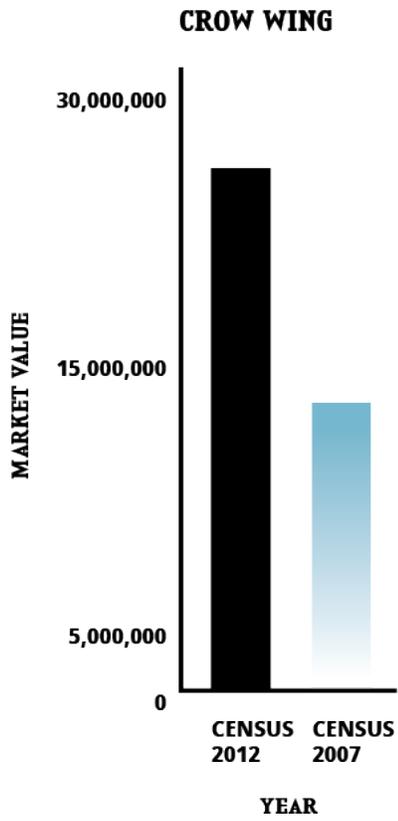
Note: columns are equal because data is for one year only



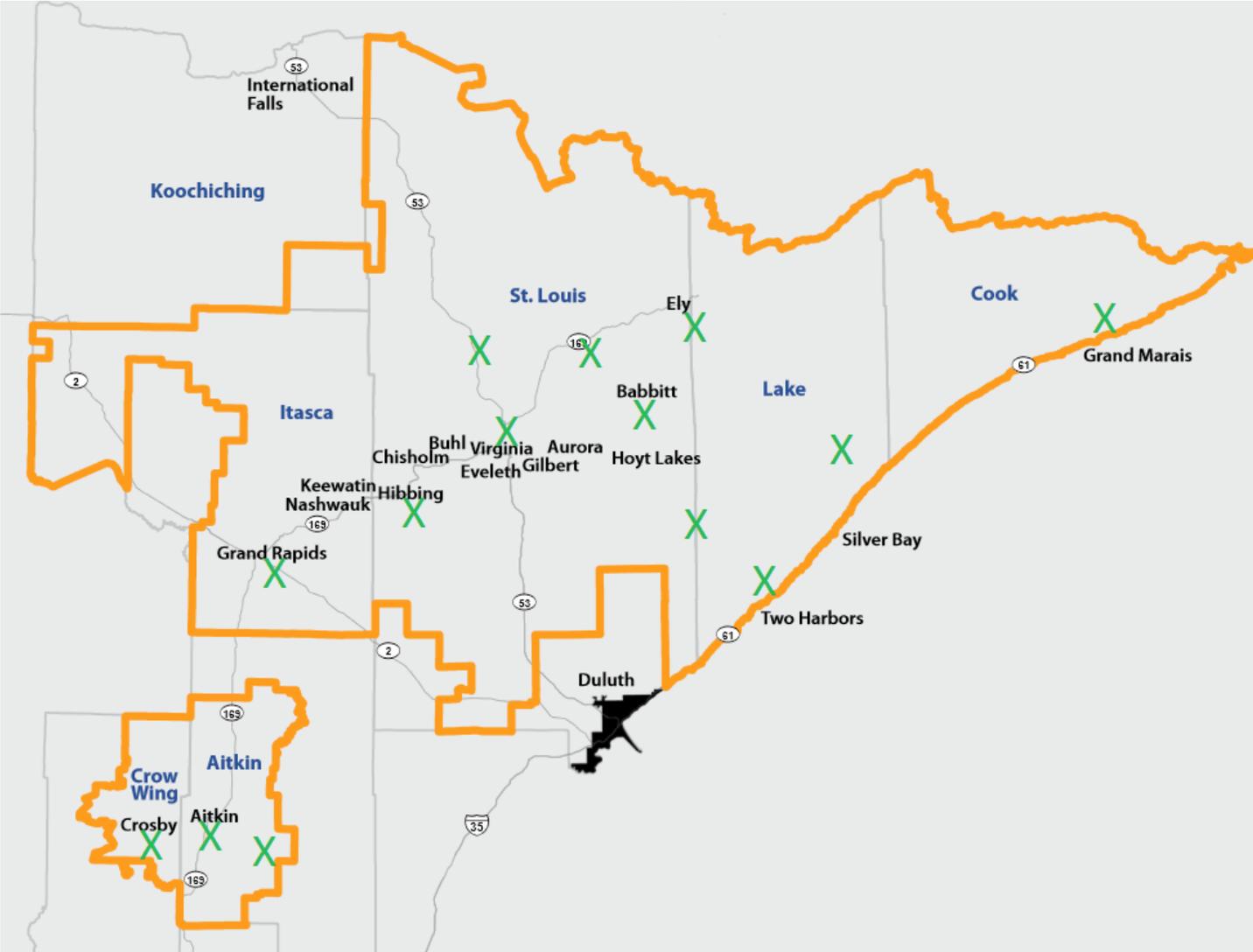
**APPENDIX 05: MARKET VALUE OF FARM PRODUCTION FOR SEVEN ARROWHEAD COUNTIES**

SOURCE: USDA, CENSUS OF AGRICULTURE





APPENDIX 06: FARMERS MARKETS IN THE TACONITE ASSISTANCE AREA





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