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INTRODUCTION

NEVA HASSANEIN AND MAXINE JACOBSON

Food and farming are essential. Like breathing, we all need to eat to live. Despite how central food is to our lives, most of us know very little about where the food we eat comes from, how it is grown, and how it reaches our plates. This lack of knowledge is true not only for individuals, but also for communities as a whole. Our local food system – what some refer to as our “foodshed” in a thought-provoking analogy to the concept of a watershed – is a complex web that incorporates farming and land use, food processing, distribution, food consumption, and waste in a particular geographic area.¹ Understanding how well our local food and farming system functions and has changed over time can help our community know how sustainable and secure that system is.

To increase understanding of Missoula County’s food system, we initiated a process known as a community food assessment in spring 2003. Such assessments – which have been conducted in about 15 other communities in the United States – are designed to look systematically at a wide range of issues related to food and agriculture in a particular place. The aim is to utilize the research process to identify what is working well in our food system and what problems need to be addressed. In developing the overall process for the assessment, we relied a great deal on *What’s Cooking in Your Food System? A Guide to Community Food Assessment* produced by the Community Food Security Coalition.² It provides excellent guidance for anyone undertaking such an endeavor.

Community food assessments are a collaborative and participatory process. In order to be responsive to community input, we organized a steering committee that represents 15 different organizations or interests in the local food and farming system. The committee includes farmers, County extension, a public health official, a planner, anti-hunger advocates, conservationists, and others (see inside front cover). The role of the steering committee has been to identify specific questions that need to be investigated, to give input into the research process, and to develop recommendations based on the findings.

University of Montana students have also been key participants in this process. The students involved in the project are primarily working at the graduate level and come mainly from the Environmental Studies Program and the Social Work Department.³ Under our supervision and the guidance of the steering committee, students have carried out much of the data collection and analysis for the food assessment. The process has given them a unique opportunity to learn valuable skills while making a strong contribution to a community-based research project.

For purposes of this assessment, we have chosen to define the “community” as Missoula County. In part, this is because much of the data are available at that level. We realize, however, that what happens in Missoula County is integrally tied to neighboring counties and that those are equally important to the long-term sustainability and security of our

local food system. Future studies on neighboring counties would greatly complement the Missoula County Community Food Assessment.

ABOUT THIS REPORT

As one of four components of the Missoula County Community Food Assessment, *Our Foodshed in Focus: Missoula County Food and Agriculture by the Numbers* utilizes existing statistical data, primarily from U.S. census reports and other government sources, to describe patterns in the local food system and how these have changed over time. Seven chapters, all authored by students, detail relevant trends in the following areas: demographics; agricultural production; environment; food distribution; employment in farming and food-related businesses; consumption; and food security and access. Each chapter also discusses why these trends might be occurring and explains why these measures are important. Appendices include (a) the raw data for each chapter and (b) the data sources used for each chapter. Additional reference material is presented at the end of each chapter in endnotes.

While each chapter of the report details changes in a particular facet of the food system, it is critical to consider the overall picture that is presented here. Accordingly, a synopsis of the findings follows this introduction.

A strength of this report is that it documents many of the food system changes that have occurred or are occurring in the County over time. We know of no other compilation of such data for Missoula County. Although some facets of the food system have been studied in the past, many of these reports are dated and/or partial. For example, the Missoula County Extension Office analyzed agricultural trends in the County for the period of 1950 to 1979.⁴ Missoula Measures, compiled by the City-County Health Department, provides information on a number of relevant community health indicators, but does not link that information to other facets of the food system.⁵ Thus, *Our Foodshed in Focus* fills a notable gap by providing a recent and fairly comprehensive analysis of the food system.

In compiling the data for Missoula County, we relied heavily on the work of other food system analysts, utilizing accepted methodologies and approaches. Particularly useful was the template developed by researchers at the Sustainable Agriculture Research and Education Program at University of California – Davis and the series of county reports they have produced.⁶ Their model was extremely helpful in specifying a methodology and a format for writing up the analysis. We gratefully acknowledge SAREP's contribution to this report.

It is important to note that we were necessarily limited by available data. For example, there are slight variations in the time period covered by our measures due to differences in availability of various statistics we relied upon. In addition, the censuses and measures have their own limitations. For instance, in some cases the UM student population and tourists may affect the accuracy of certain statistics, such as those describing per capita

food expenditures. Where known, we have tried to identify these limitations; thus, the report should be utilized with these limitations in mind.

OTHER COMPONENTS OF THE FOOD ASSESSMENT

Our Foodshed in Focus is designed to complement the other components of the Missoula County Community Food Assessment. These include:

Food and Farming Resources. This guide, available in May 2004, provides contact information and a brief description for a wide variety of organizations, programs, and businesses involved in the County food and farming system.

Agricultural Viability. This report, which will be released in the autumn of 2004, presents findings of research designed to answer the following questions: What is needed for viable and sustainable, commercial food production in and around Missoula? What are the existing assets and barriers to creating a more viable and sustainable production system? The report includes findings from data our team gathered during spring of 2004, specifically a telephone survey, in-depth interviews, and a focus group with farmers, ranchers, and market gardeners.

Residents' Concerns about Food. This report, also to be released in autumn of 2004, presents the findings of research designed to answer the following question: What concerns do Missoulians of various income levels have about food (including quality, access, transportation to food outlets, cost, eating behaviors and choices)? The report is based on findings from an extensive self-administered survey of a sample of County residents and from two focus groups with low-income Missoulians, all conducted by our research team during spring 2004.

¹ Kloppenburg, Jack Jr., John Hendrickson, and G.W. Stevenson. 1996. Coming in to the Foodshed. *Agriculture and Human Values* 13(3):33-42.

² Pothukuchi, Kami, Hugh Joseph, Hannah Burton, and Andy Fischer. 2002. *What's Cooking in Your Food System? A Guide to Community Food Assessment*. Venice, CA: Community Food Security Coalition.

³ In addition, one student is in the Society and Conservation Department, and another is in Communication Studies. Several undergraduates have been involved in the research as well.

⁴ Missoula County Extension Office. No date. *Agricultural Trends in Missoula County 1950-1979*. Missoula, Montana.

⁵ Missoula City-County Health Department. *Missoula Measures: Community Health Information*. Retrieved May 2004 at: <http://www.co.missoula.mt.us/measures/>

⁶ King, Shawn, and Gail Feenstra. 2001. *Placer County Foodshed Report*. Davis: UC Sustainable Agriculture Research and Education Program. SAREP has also produced reports on Stanislaus and Alameda Counties in California. See the following site for more information and for copies of the reports: <http://www.sarep.ucdavis.edu/cdpp/foodsystems/countystudies.htm>

SYNOPSIS
OUR FOODSHED IN FOCUS:
MISSOULA COUNTY FOOD AND AGRICULTURE BY THE NUMBERS

NEVA HASSANEIN AND MAXINE JACOBSON

As a component of the Missoula County Community Food Assessment, *Our Foodshed in Focus* compiles existing statistical data, primarily from U.S. census reports and other government sources, to describe patterns in the local food system and how these have changed over time. Seven chapters detail relevant trends on the following indicators of the food system: demographic; agricultural resource base; agricultural-related environmental impacts; economic productivity in agriculture and food distribution; employment in farming and food-related businesses; food consumption; and food security and access.

Here, we have synthesized some of the most salient findings from the report. Please see the appropriate chapter for details on the statistics and complete references, which have been omitted from this synopsis to simplify the presentation of overall findings. All dollar figures have been adjusted for inflation into 2002 dollars unless otherwise noted. As discussed in the Introduction, these statistical measures have both strengths and limitations.

AGRICULTURE

At first blush, the Census of Agriculture's statistics on farms in Missoula County can be misleading. The number of farms dropped by almost half (48%) between 1950 and 1974 (from 594 to 310), but then the number rose fairly consistently, increasing to 482 by 1997 (for a net decrease of 19% since 1950). The increased number of farms in recent decades is probably not due to an agrarian resurgence. Rather, number of farms tells only part of the story, because for purposes of the Agricultural Census, the term "farm" (which includes ranches throughout this report) refers to any place that produces or has the potential to produce \$1,000 or more of agricultural products (gross sales) in a given year. In other words, it does not take much production to be counted as a farm.

Statistics on acreage in farming and on the size of farms begin to fill in the picture. The total acreage in farming in the County dropped from a high of nearly 397,000 acres in 1954 to just over 262,000 in 1997, a 34% decrease. Although the total amount of land in farming and ranching has stayed roughly the same since the early 1970s, the average size of farms has been dropping (from 1,038 in 1969 to 544 in 1997). We are basically losing our larger farms (those over 100 acres), while the number of small farms (with 10-49 acres) has increased by 86% since 1950. This scaling down of farm size suggests that that many of our smaller farms may be primarily rural residences with agricultural enterprises playing a fairly minor economic role. Although further research is needed, such a trend would be consistent with the fact that the rural areas of the County (i.e., all

of the County except the Missoula urban area) saw a 46% increase in population during the 1990s (as compared with 22% for the County as a whole).

In response to these and related trends, there has been an increased use of conservation easements to protect agricultural land from development. As of 2001, nearly 22,000 acres of land in the County were enrolled in conservation easements held by a non-profit land trust. Land protected through conservation easements by 2001 accounted for a small percentage of the land in agriculture (about 8%).

Economically, Missoula County makes a very modest contribution to the state's total market value of agricultural products sold, accounting for less than half of one percent of that total. In 2001, agricultural products sold from Missoula County amounted to about \$7 million. Thus, it is not surprising that the vast majority of farm operators in the County make most of their living from off-farm jobs or income. In 1997, only 35% of the County's farm operators considered farming to be their principal occupation, a considerable drop from 49% in 1974 and a substantially lower percentage than farmers in the state of Montana as a whole (i.e., 65% in 1997). In addition, farm workers – those who work 150 or more days per year for wages on a farm – account for a negligible percentage (less than .5%) of overall County employment.

The Census of Agriculture also tells us some relevant facts about farm operators in the County. First, 75% percent of the farm operators in 1997 were full owners of their farms, 21% were part owners (i.e., they own some land and rent other land), and 4% were tenant farmers (i.e., rent land). Second, in 1997, the Census of Agriculture recorded only five farmers in the County who are Native American. Lastly, as elsewhere in the nation, the average age of farmers in Missoula County is rising, from 50 in 1950 to 56 in 1997.

This report also looks at several environmental factors with respect to agriculture in Missoula County, principally water pollution, water use, and use of synthetic pesticides, fertilizers, and petroleum. According to the U.S. Environmental Protection Agency, agriculture is the number one source of non-point source water pollution; however, there is only limited data on the subject for Missoula County. Although there is concern about water pollution from nitrates here, there is little evidence to suggest that fertilizers used in agriculture have been a major contributor to that pollution (which appears to result primarily from residential septic systems). With respect to supplemental water use, over half of the farms (57%) relied on some form of irrigation in 1997, but this accounts for only 8.5% of the acreage in farming in the County.

Specific data on the use of pesticides, fertilizers, and petroleum is not available. For purposes of the assessment, we used information on farm expenditures for these products as a surrogate measure of quantities used. From 1974 to 1997, there was a 298% increase in the amount farmers in the County spent on chemicals and a 117% increase in the amount spent on fertilizer. However, over the same period of time, petroleum (fuel) expenditures decreased by 7%. These figures (all of which are adjusted for inflation) are a very rough surrogate for use data because it is impossible to determine to what extent these changes in expenditures reflect changes in the prices of these materials as opposed

to changes in quantities used. It is clear, however, that Missoula County farm operators spend a considerable amount of money on petroleum, chemicals, and fertilizers, which accounted for nearly 14% of total farm expenditures (over \$9.22 million) in 1997 (not adjusted for inflation).

FOOD DISTRIBUTION NETWORK

The food distribution network is how food gets to consumers, including processors, wholesalers, retailers, and eating places such as restaurants. While the infrastructure needed by farmers and ranchers to process and handle their products is not well developed here, there has been considerable growth in the retail and food service sectors.

Missoula County has lost much of the infrastructure necessary for handling and processing agricultural products. The number of food manufacturers (which transform livestock and agricultural products into products for consumption) declined from 16 in 1959 to nine in 2001, a 44% drop. The number of farm product raw material wholesalers in the County is negligible (one in 1997).

While more conventional means of marketing agricultural products have declined, direct marketing to consumers may provide new opportunities. Missoula has a vibrant farmers' market, with about 100 vendors at the height of the season in recent years, although not all of the vendors are from the County. In 1982, the Census of Agriculture recorded that 66 farms in the County participated in direct marketing to individuals (e.g., through stands, farmers' markets). By 1997 that number had dropped to 33. The Census of Agriculture also indicates that direct market sales are a small percentage of the value of the County's gross agricultural production. Missoula also has two community supported agriculture (CSA) programs, both operated by the non-profit organization, Garden City Harvest. In CSA, members purchase a "share" of the farm/garden's produce at the beginning of the season and receive a weekly box of fresh food throughout the growing season. We suspect that some of the direct marketing activity is not captured by available statistics, and we have tried to address that concern in other parts of the Community Food Assessment.

In contrast to the infrastructure for processing and handling raw agricultural products, there is certainly an established and economically viable system for distributing food that has already been prepared for consumption. The number of food wholesalers (which typically distribute groceries to retail outlets) rose during the 1990s, increasing from 12 in 1992 to 16 in 2001. Their sales accounted for nearly \$60.5 million in 1997. As of 2001, there were 52 food retailers in the County (i.e., stores that sell food items for home preparation or consumption, excluding convenience stores). Food retail sales were \$164 million in 1997 (in 2002 dollars).

As eaters in Missoula County increasingly purchase food to eat away from home, the number of food servers – places that sell prepared food/drink for consumption on the premises such as restaurants – has grown considerably, reaching over 260 in 2001. Sales

in this sector topped \$125.7 million in 1997. Employment in the food distribution system (i.e., processors, wholesalers, retailers, and eating places) accounted for about 13.6% of all employment in the County in 1995 (the most recent statistics obtained). Most of that employment is in the retail sector and in food services, rather than in food processing or wholesaling, which have declined in importance as job sectors in the County.

EATERS

Population growth in the County is well recognized, but rarely do we think of the people who live here as eaters. The steady increase in the number of eaters (population) – growing by 114% between 1960 and 2000 – greatly influences our food system.

Missoula County residents spend a considerable amount of their per capita income on food, and they also are increasingly spending money to eat meals away from home. In 1997, residents spent nearly 16% of their per capita income on food. In that same year, residents spent 36% more on food than the typical US citizen. And, like most people in the U.S., Missoula County residents are dining away from home more frequently than in the past. For every dollar that eaters in Missoula County spent on food to eat “away from home” in 1972, they spent \$2.55 for food to eat “at home.” By 1997, for every dollar spent on food to eat away from home, eaters in the County spent only \$1.31 on food to eat at home. (Note that tourists and the University of Montana student population may affect the accuracy of these estimates).

Despite the abundance of food produced in the U.S., many people still go hungry or are food insecure (i.e., they experience times when they do not know if they can obtain their next meal). Hunger and food insecurity are largely a function of the ability to buy food. Although per capita income in Missoula County is relatively high in comparison with other Montana counties (4th out of 56), it is still below the national per capita income. In 2000, nearly 15% of people and 9% of families in the County lived below the poverty line.

Often we think of the government food and nutrition programs as providing a safety net. For a variety of reasons, however, many people in need are not accessing these programs. For example, the average monthly participation in the Women, Infants, and Children (WIC) Program was 2,533 in 2002. Strikingly, only about 30% of the students eligible to participate in the Free and Reduced School Lunch Program actually do participate (based on data from 1999 through 2002). Likewise, many low-income people are apparently not participating in the food stamp program. For instance, at the time of the last Census of Population in 2000, about 6% of the County’s population received food stamps in an average month. But nearly 15% of the population lived below the poverty line. Although program participation has increased somewhat in recent years, anti-hunger advocates have identified increasing food stamp participation as a priority. As discussed in this report, welfare reform, funding cuts, and other barriers play a role in these participation rates.

Food pantries and other emergency food providers often fill the gap left open by the modest rates of participation in government food and nutrition programs. Evidence suggests that most of the emergency food providers in the County have seen an increased use of their services in recent years. Clients made nearly 31,300 visits to the Missoula Food Bank in 2002; that number was up 19% from four years prior (1998). The Poverello Center served about 300 meals a day in 2001 and 2002, while a fairly new agency, Missoula 3:16, served an average of 66 meals a day in 2002. The only agency that saw a decline in the number of clients served in recent years was the Salvation Army, which distributed 48% fewer food boxes in 2002 than it did in 1999. The Seeley-Swan Food Pantry was the only rural agency for which we were able to obtain statistics. They distributed 825 boxes of food in 2002, which was 77% more than they did in 1999, the year they opened the pantry. It appears that most emergency food programs are located in the City of Missoula, leaving many rural areas underserved.

Our Foodshed in Focus suggests that there is a greater need for attention to the changes occurring in Missoula County's food system. Despite the increase in the number of farms in the County, it seems possible that many of our smaller farms may be primarily rural residences with agricultural enterprises playing a fairly minor economic role. Economically, agriculture here has not generated much in terms of the market value of agricultural products sold, which in turn is compounded by the loss of the infrastructure necessary for handling and processing agricultural products. Perhaps the brightest spot in the local food system is the strength of the food wholesaling, retailing, and food service sectors of the distribution system. This trend is consistent with population increases and with the reality that, like most North Americans, we spend a greater portion of our food dollars eating out than we used to. The extent to which food distribution establishments are locally owned was not part of this analysis, but it is an area in need of further study. Although the retail and the food service sectors may be doing well, far too many people in the County are living in poverty, struggling to obtain their next meal, and increasingly relying on emergency food sources.

This synopsis tells only part of the story; we hope you will find the details of the report useful and illuminating. The other components of the Missoula County Food Assessment will add to the analysis presented in this report. The long-term health of our local food system is an important indicator of agricultural sustainability and our community's food security now and in the future.

CHAPTER 1
DEMOGRAPHIC INDICATORS

LANETTE DIAZ

OVERVIEW

Missoula County's demographics have changed considerably in the last forty years, particularly in terms of the number of people living here. Fairly low per capita income and poverty have had a significant presence as well. These and related issues are explored in this chapter.

Missoula County has experienced a 21.8% rise in population between 1990 and 2000. The population growth has not had any significant effect on the distribution of ethnicity. Whites are still the largest ethnic group representing 94% of the population. Hispanics, American Indians, Blacks and Asians represent a small percentage of the population.

In 1999, Missoula County's per capita income was \$17,808 and the median household income was \$34,454. The per capita income and median household income for Missoula County are lower than the national average. Also, nearly 15% of the population in 2000 lived below the poverty line.

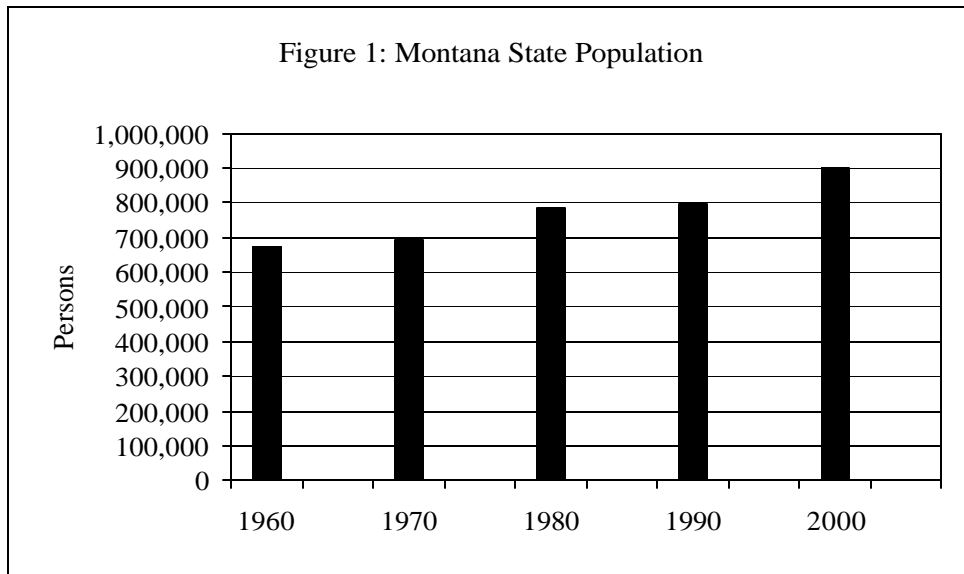
As Missoula County's population increases, agricultural land is being used for development (although it is important to note that not all land designated agricultural is used for food production). Yet the increase in population provides an optimal market for locally produced farm products. A sustainable food system, however, must provide food that is accessible, affordable and integrated into the programs and services for the poor.

POPULATION

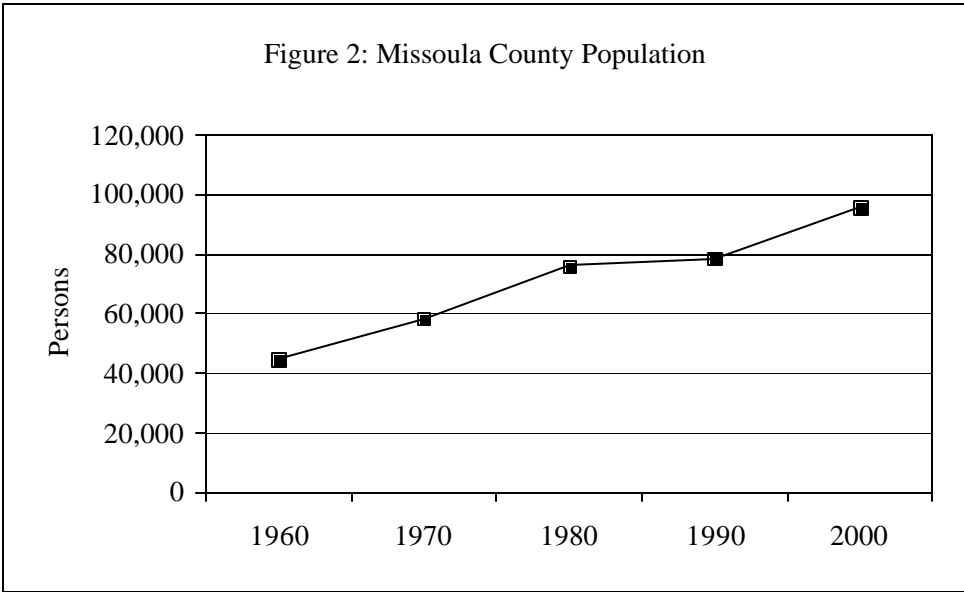
The trends.

Population data for Montana and for Missoula County are readily accessible. Population counts were taken as far back as 1890 and are current through 2000. The data presented here starts at 1960, because some pre-1960 demographic data are not comparable to later figures, due to the questions being changed.

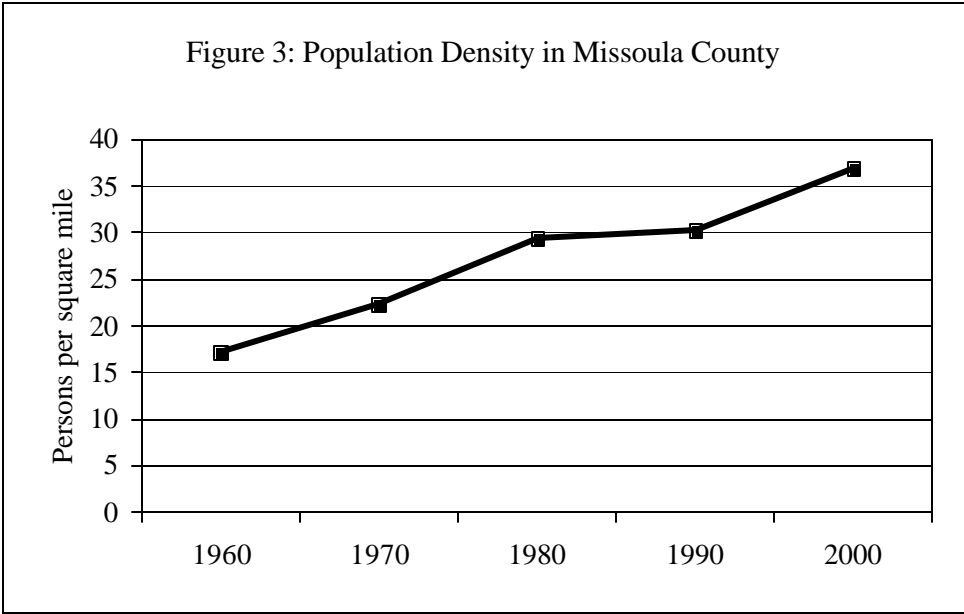
Montana's population rose by 33.7% (227,428 people) from 1960 to 2000. Montana's population grew the most between 1970 and 1980 with a growth of 13.3% (92,281 people), and between 1990 and 2000 with a growth of 12.9% (103,130 people) (see Figure 1).



Missoula County's population growth showed large increases in population between 1960 and 1970 with a growth of 29.1% (13,600 people), between 1970 and 1980 growing by 30.4% (17,753 people), and between 1990 and 2000 growing by 21.8% (17,115 people). Overall, between 1960 and 2000 Missoula County's population grew by 114% (51,139 people) (see Figure 2).



Given that Missoula County’s population increased overall from 1960 to 2000, other demographic data mirror those changes. For example, the number of persons per square mile in Missoula County increased from 17.1 in 1960 to 36.9 in 2000, or by 19.8 persons per square mile (see Figure 3).



The primary factors affecting population change have to do with the difference between births and deaths and between people moving into and out of the county. Census data indicated that 83% of Missoula County’s population resides within the Missoula urban area. However, areas outside the urban portion of the county had a greater percentage increase in population over the past ten years than did the urban area. These rural sub-areas including Lolo, Ninemile, Frenchtown, Potomac, Seeley, and Confederated Salish and Kootenai Tribal lands saw a 46% increase.¹

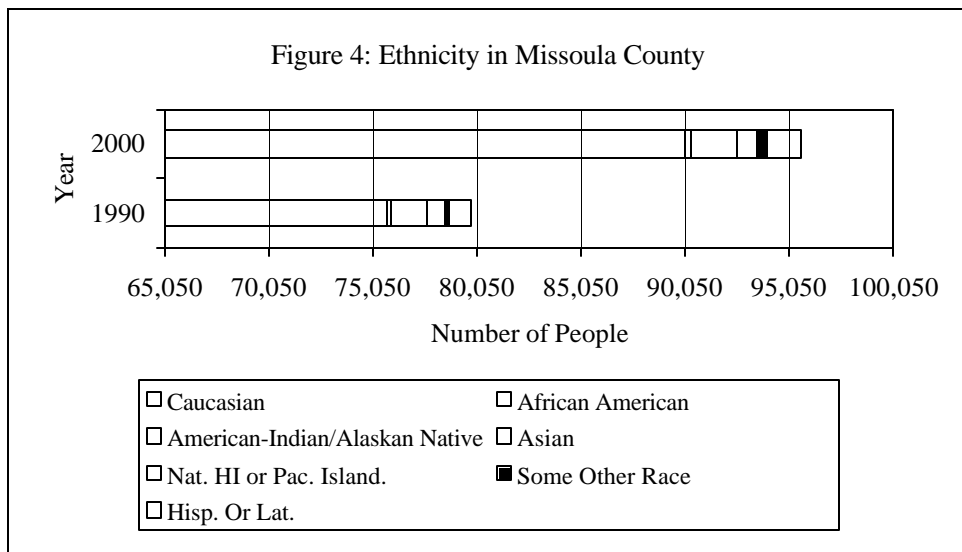
Why is this important?

Population growth in Missoula County has an impact on agricultural land. “Most of the County is constrained for development due to steep terrain, difficult access, distance from services, and the locations of rivers and streams. As a result, much of the subdivision and development activity in Missoula County has occurred in the valleys, near existing communities and in areas that were previously in agricultural production” (pp. 2-6).¹ With the increasing population of Missoula County and the consequent development pressures, Missoula County must consider the value of preserving land for agriculture in order to meet local food needs, as well as to preserve open space and rural life.

RACE AND ETHNICITY

The trends.

In 2000, 94% of Missoula County’s population were white; in 1990, 96% of the population were white. Hispanics, American Indians, Blacks, and Asians represent a small percentage of the population (see Figure 4).²



Why is this important?

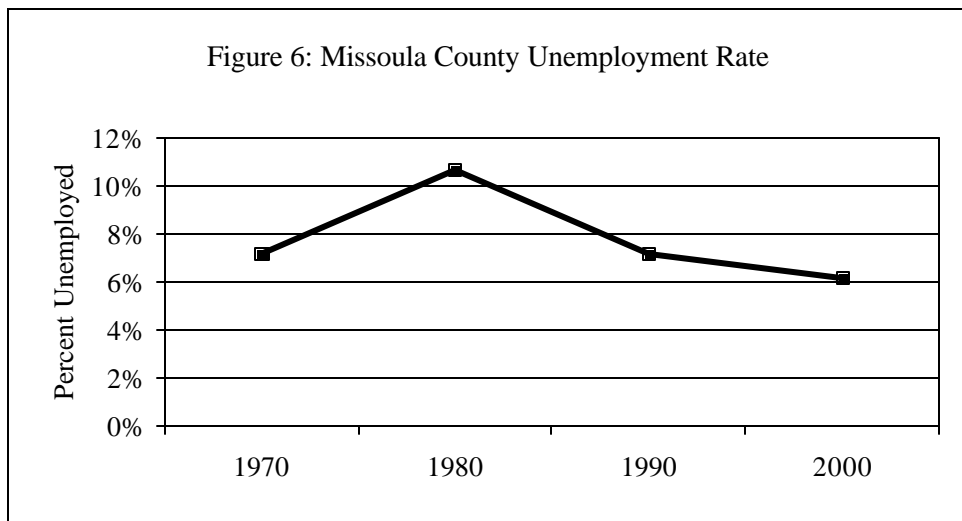
Any study must ensure that it makes an effort to include the perspectives and experiences of all social groups, not just the majority group. It would be easy to survey or ask the opinions of the majority about food security, neglecting minority concerns.

EMPLOYMENT AND INCOME

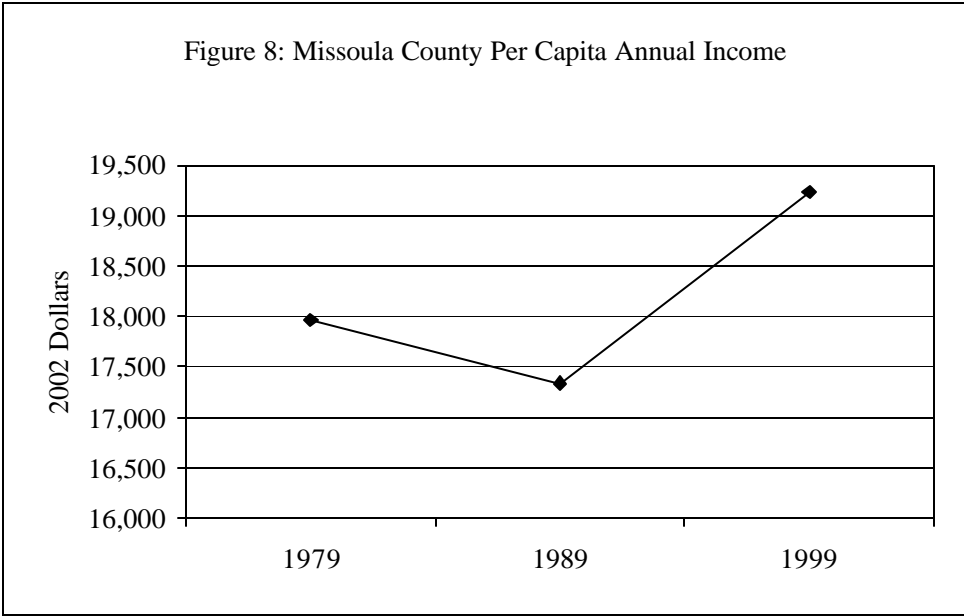
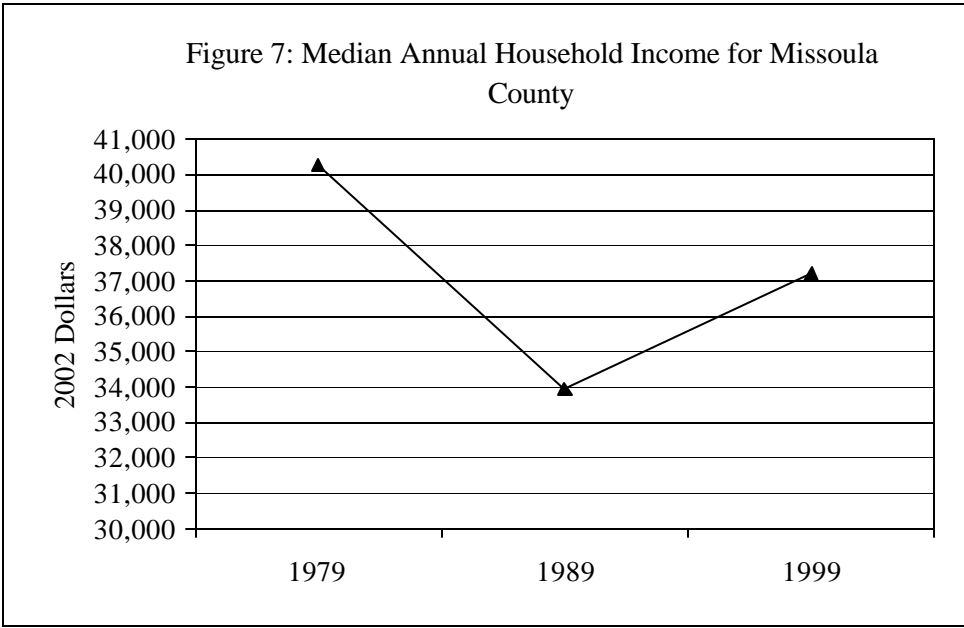
The trends.

Employment data is comparable from 1970 to 2000.³ Employment in Missoula County has gone up steadily from 1970 to 2000 with a 268% increase. Employment rose the most between 1970 and 1980 by 155.9% (22,712) and between 1990 and 2000 by 34.3%

(13,731) (see Figure 5). Civilian unemployment is also comparable from 1970 to 2000 (see Figure 6).



Missoula's median household income and per capita income are comparable between 1980 and 2000 Census reports, which actually give income levels for 1979, 1989, and 1999. Both the per capita income and median household income fell between the 1980 and 1990 Census, and then rose between the 1990 and 2000 Census. Figure 7 shows the median household income for Missoula County in 1979, 1989, and 1999 *adjusted for inflation* to reflect 2002 dollars. Figure 8 indicates per capita income also based on 2002 dollars.



Finally, when compared with the other 56 counties in Montana, Missoula County has a relatively high per capita income for Montana. In 1980 Missoula County ranked 4th out of 56 counties, in 1990 it was 8th, and in 2000 it was 7th. Although per capita income in Missoula County is higher than most other Montana counties, it is still below the national per capita income level (see footnote 1).

Why is this important?

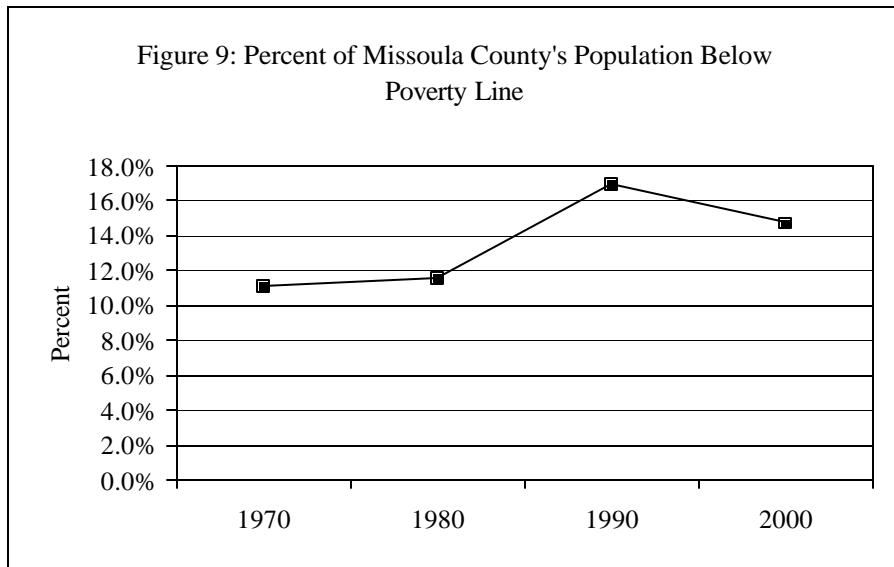
With respect to the food system, tracking employment and income is important because these factors directly affect people’s ability to obtain an adequate and nutritious diet. Large numbers of people unemployed and receiving a lower per capita income may not

be able to afford food. A sustainable food system must consider various ways to make local food accessible to poorer individuals and families.

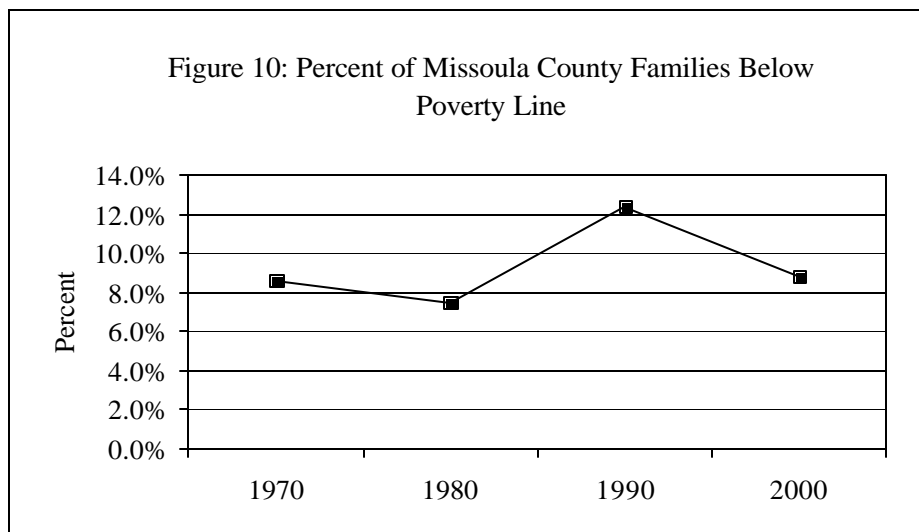
POVERTY

The trends.

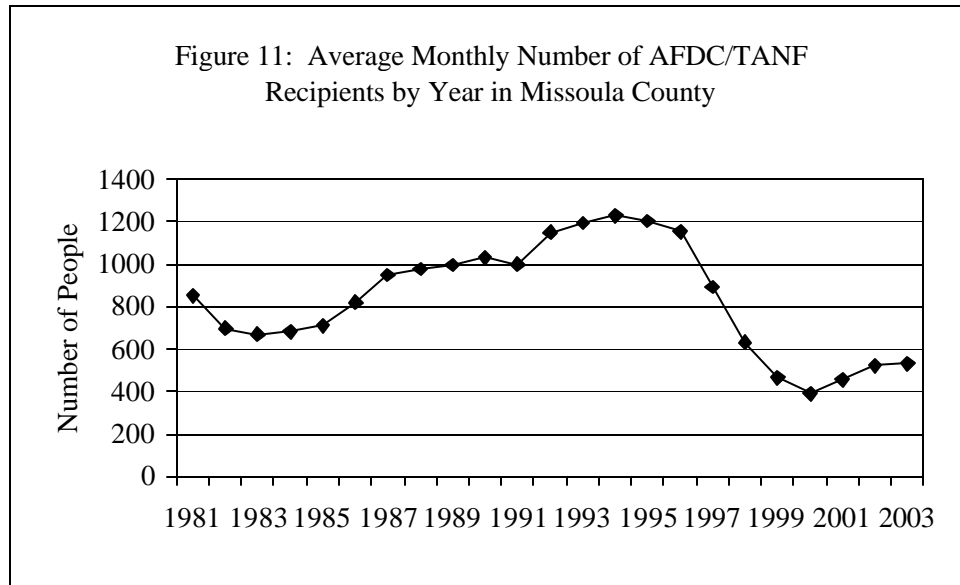
Overall the number of *people* living below the poverty line in Missoula County has risen steadily over the past 20 years.⁴ In 1990 the percent of people living in poverty peaked at 17% (13,376 people). However, in 2000 the percent of people living in poverty decreased to 14.8% (14,178 people) (see Figure 9).



The number of *families* living in poverty in Missoula County also has risen and fallen over the last 30 years. The percentage of families living in poverty in 1970 was 8.6%, in 1980 it was 7.5%, in 1990 it was 12.4%, and in 2000 it was 8.8% (see Figure 10).



The average number of welfare recipients receiving AFDC/TANF per month in a given year dropped between 1981 and 1983. Then, from 1983 to 1994 the average number of welfare recipients rose from an average of 669 cases, to an average of 1229 cases. From 1994 to 2000 the average number of cases lowered by 840 cases to a caseload of 390 per month in 2000. From 2000 to 2003 the average number of welfare recipients rose by 140 cases per month (see Figure 11).



Why is this important?

Understanding how many families and how much of the population is living below the poverty line and receiving welfare is essential when understanding food security. When people are poor, food is often something they will skimp on because they have to pay for housing, heat, clothing, etc. Some 33 million households in the US are not sure where their next meals are coming from.⁵ How can a local food system increase the food security and availability of food for poorer families and individuals?

¹ Missoula County Growth Policy, August 2000. Office of Planning and Grants, Missoula, Mt.

² Census data on ethnic distribution and race are not always comparable, because the 1997 revised standards issued by the Office of Management and Budget led to changes in the survey question on the identification of race for Census 2000.

Also, the definition of ethnicity and race by the Census Bureau does not always match an individual’s own identity. For example, original peoples of the Far East, Southeast Asia, and other Indian subcontinents including for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam are aggregated in the Asian category (see Appendix B Definitions of Subject Characteristics, http://ceic.commerce.state.mt.us/c2000/sf32000/subdef_%20sf3_.pdf). Therefore, the Asian category limits an individual from describing their ethnicity as solely Laotian or Chinese and the individual always has the option of marking “some other race” if they do not want to be lumped into a certain category. Another difficulty in determining race or ethnic distribution is that the census survey regarding ethnicity and race does not define for the individual taking the survey what each category means.

³ Census definitions used here include:

Employed - All civilians 16 years old and over who were either (1) “at work” — those who did any work at all during the reference week as paid employees, worked in their own business or profession, worked on their own farm, or worked 15 hours or more as unpaid workers on a family farm or in a family business; or (2) were “with a job but not at work” — those who did not work during the reference week, but who had jobs or businesses from which they were temporarily absent because of illness, bad weather, industrial dispute, vacation, or other personal reasons.

Civilian unemployed - All civilians 16 years old and over were classified as unemployed if they were neither “at work” nor “with a job but not at work” during the reference week, were looking for work during the last 4 weeks, and were available to start a job. Also included as unemployed were civilians 16 years old and over who: did not work at all during the reference week, were on temporary layoff from a job, had been informed that they would be recalled to work within the next 6 months or had been given a date to return to work, and were available to return to work during the reference week, except for temporary illness.

Per capita income - Per capita income is the mean income computed for every man, woman, and child in a particular group. It is derived by dividing the total income of a particular group by the total population in that group. Per capita income is rounded to the nearest whole dollar.

Median Income - The median divides the income distribution into two equal parts: one-half of the cases falling below the median income and one-half above the median. For households and families, the median income is based on the distribution of the total number of households and families including those with no income.

⁴ The census determines who lives in poverty by comparing a household’s total family income with the poverty threshold deemed appropriate for that family size and composition. If the total family income is less than the threshold deemed appropriate for that family, then the family is considered to live in poverty. If a person is not living with anyone related by birth, marriage, or adoption, then the person’s own income is compared with the poverty threshold (see Appendix B Definitions of Subject Characteristics, http://ceic.commerce.state.mt.us/c2000/sf32000/subdef_%20sf3_.pdf).

The federal government determines the poverty threshold or line by using the size of a family unit. The guideline was set in the 1960’s, and each year the levels are adjusted to take inflation into account (see Segal, E. & Brzuzy, S. (1998). *Social welfare policy, programs, and practice*. F.E. Peacock Publishers: Illinois). In 2000, the poverty threshold for one person was \$8,794. For a two-person family unit that threshold was \$11,239, for a three-person family unit it was \$13,738, and for a four-person family unit it was 17,603. The poverty threshold or line is used for calculating the number of people officially counted as poor, but it is not used to determine eligibility for all social welfare programs.

Included in the poverty section of this report is the number of welfare recipients enrolled in the welfare program called Temporary Assistance for Needy Families (TANF). Previous to 1996 the program was called Aid to Families with Dependent Children (AFDC). Data collected on the number of AFDC/TANF recipients in Missoula County are only reported by the average number of recipients per month during a given year. Therefore, it is difficult to determine the total number of AFDC/TANF recipients in a given year.

⁵ Lieberman, T. (2003). *Hungry in America*. *The Nation*. 8(18/25): 17-21.

CHAPTER 2
AGRICULTURAL RESOURCE BASE INDICATORS

LIBBY HINSLEY, KISHA LEWELLYN, AND JASON SEAGLE

OVERVIEW

Missoula County's agricultural resource base has seen considerable change since 1950. This chapter covers changes with regard to farm numbers and acreage, farm ownership, age of farmers, organic farming, and farmland conservation. Overall, Missoula County's total acreage in farming and total number of farms has decreased in the past fifty years. In particular, the number of farms in the range of 100 to 1,000 acres has declined quite significantly. Not surprisingly then, there has been an overall decrease in the number of farmers operating in the county. The average age of farmers has steadily increased over time, and the number of minority farmers has increased by one or two farmers for each census after 1970. The USDA has not recorded figures for organic farms in Missoula County. Recent trends also suggest that farmland conservation is on the rise in Missoula County.

Although the Census of Agriculture can be considered representative of farmers in Missoula County, it is not inclusive of all farmers. This under-representation occurs because some farmers apparently do not receive the Census of Agriculture. Relative to total production in Montana, agriculture in Missoula County does not seem to have been that significant. Although small in comparison to state totals, local food production is still vital to the health and security of our community.

FARM NUMBERS AND ACREAGE

The trends.

The definition of a farm used in the Census of Agriculture has changed nine times since the minimum criteria defining a farm for census purposes were first established in 1850. The current definition, first used for the 1974 Census, is “any place from which \$1,000 or more of agricultural products were produced and sold or normally would have been sold during the census year.”¹ This means that a place can be classified as a farm if it has the potential to produce \$1,000 worth of agricultural product in a year. For the 1950 and 1954 Census, places of three or more acres were counted as farms if the annual value of agricultural products amounted to \$150 or more. Between 1959 and 1974, “Places of less than 10 acres...were counted as farms if the estimated sales of agricultural products for the year amounted to at least \$250. Places of 10 or more acres...were counted as farms if the estimated sales of agricultural products for the year amounted to at least \$50.”² Due to increases in the value of a dollar and other changes in the structure of agriculture, organizations such as the Census Advisory Committee on Agriculture Statistics, the Office of Management and Budget, and the U.S. Department of Agriculture decided to change the definition of a farm in 1974.³

Agricultural production in Missoula County has changed since 1950. The number of farms in the county decreased by almost half (48%) from 594 in 1950 to 310 in 1974, but rose for a number of years after that (see Figures 1-4; Figures depicting Montana State data are included alongside Missoula County data for comparative purposes throughout this section). During the same twenty-year period, total acreage in farming in the county dropped from a high of nearly 397,000 acres in 1954 to 262,000 acres in 1974, a drop of 34%. Farmed acreage in the county has remained relatively stable in the years since 1974, in the vicinity of 250-280,000 acres. The number of farms has seen a net decrease of 19% since 1950, from 594 to 482 in 1997. The percentage of Montana’s farms located in Missoula County has been consistently low (2% or less) for the past 50 years. The percentage of Montana’s farm acreage located in Missoula County has also been consistently low at 1% or less.

Figure 1: Number of Farms in Missoula County

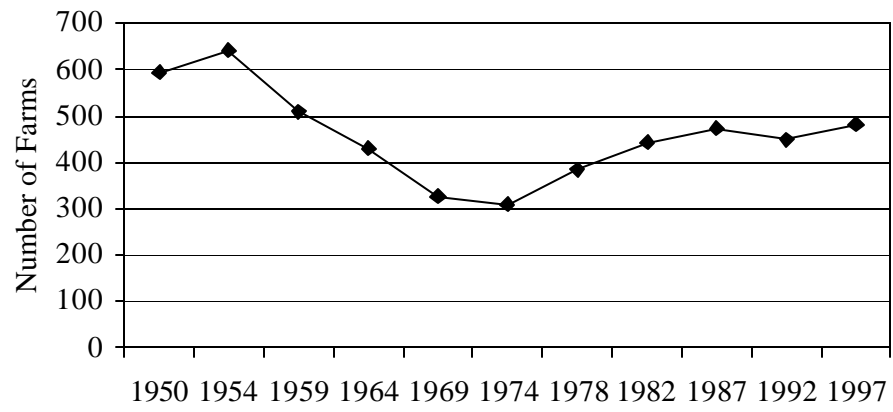
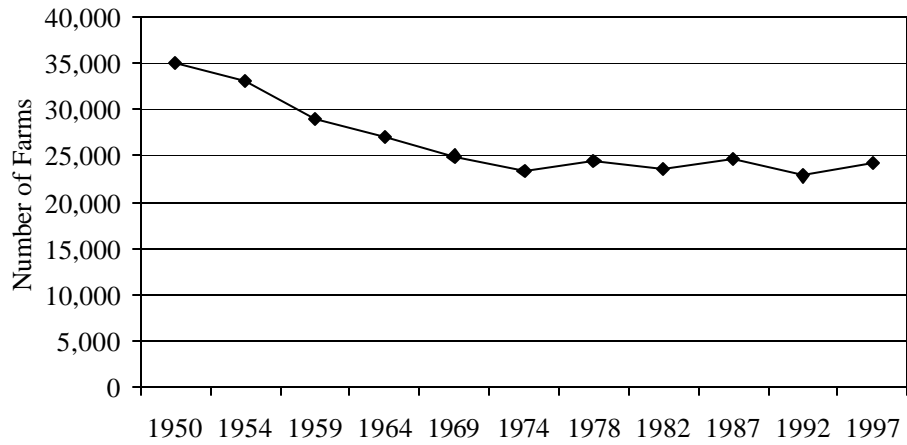
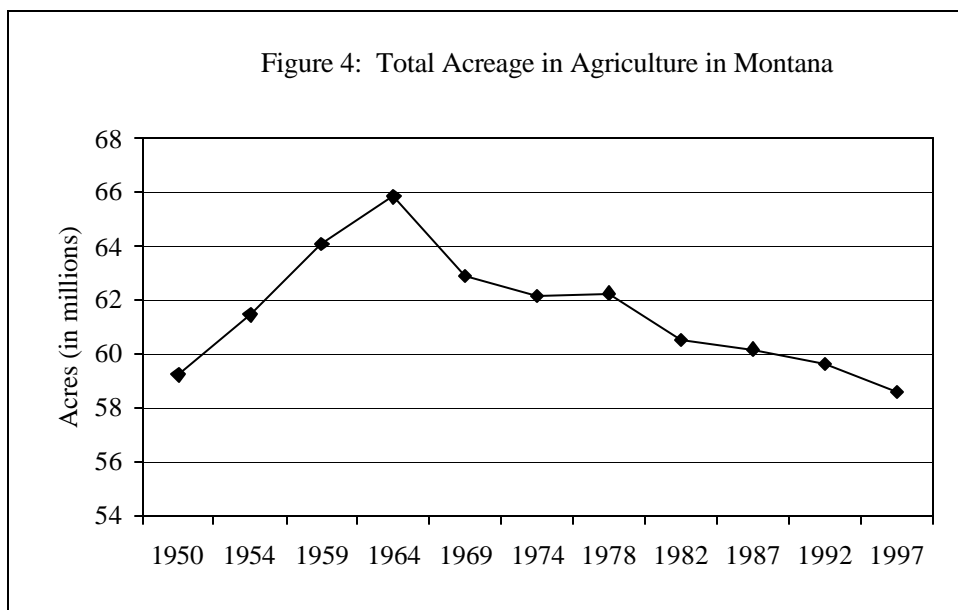
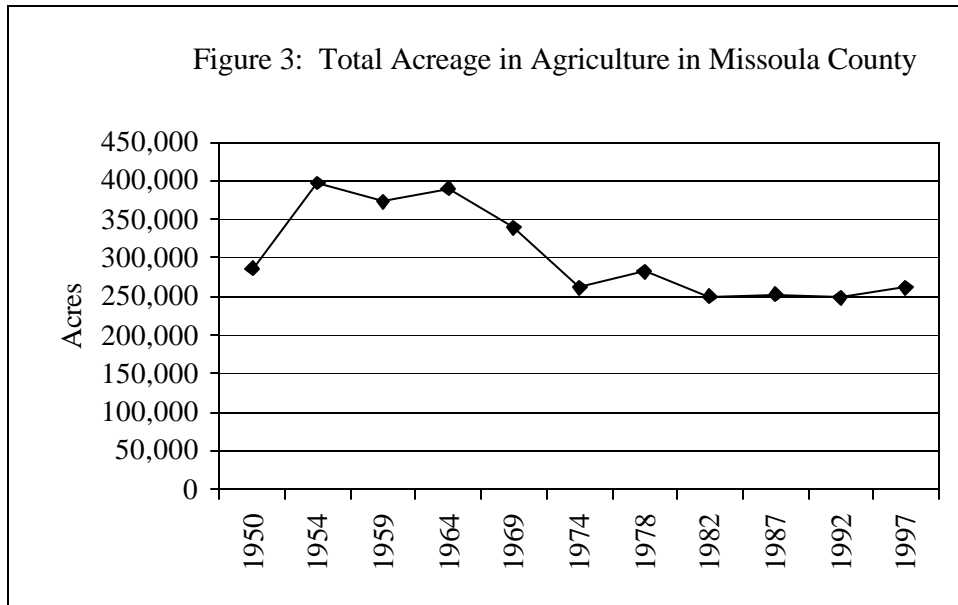


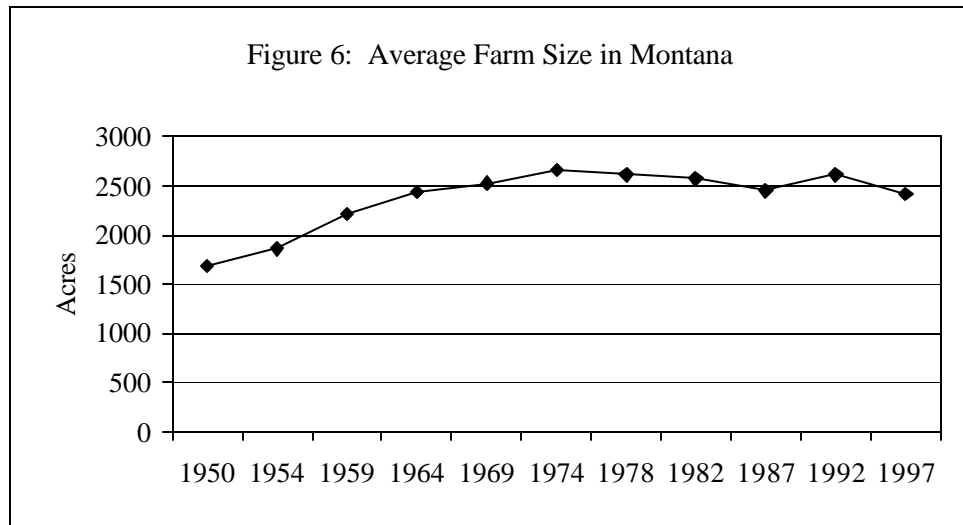
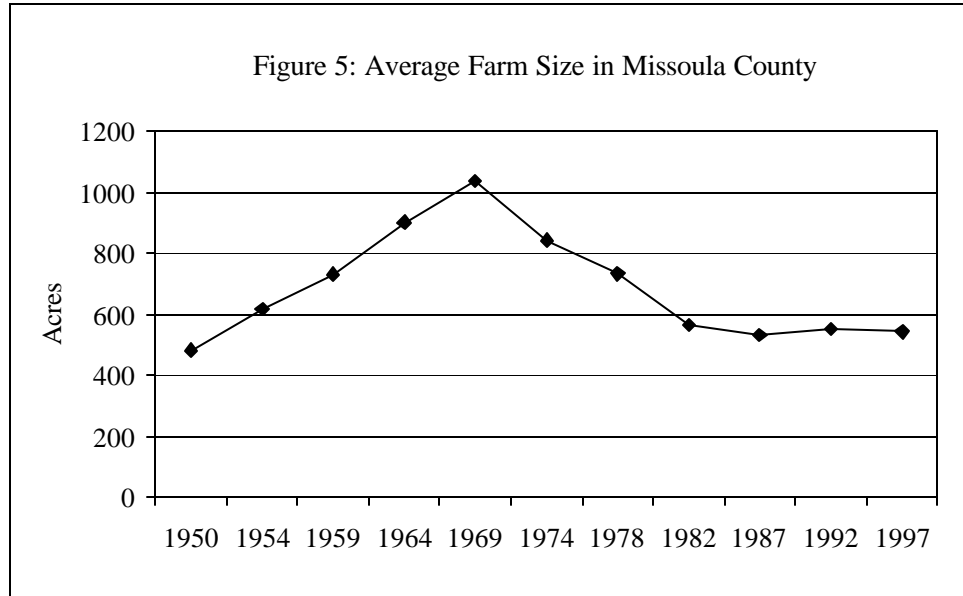
Figure 2: Number of Farms in Montana

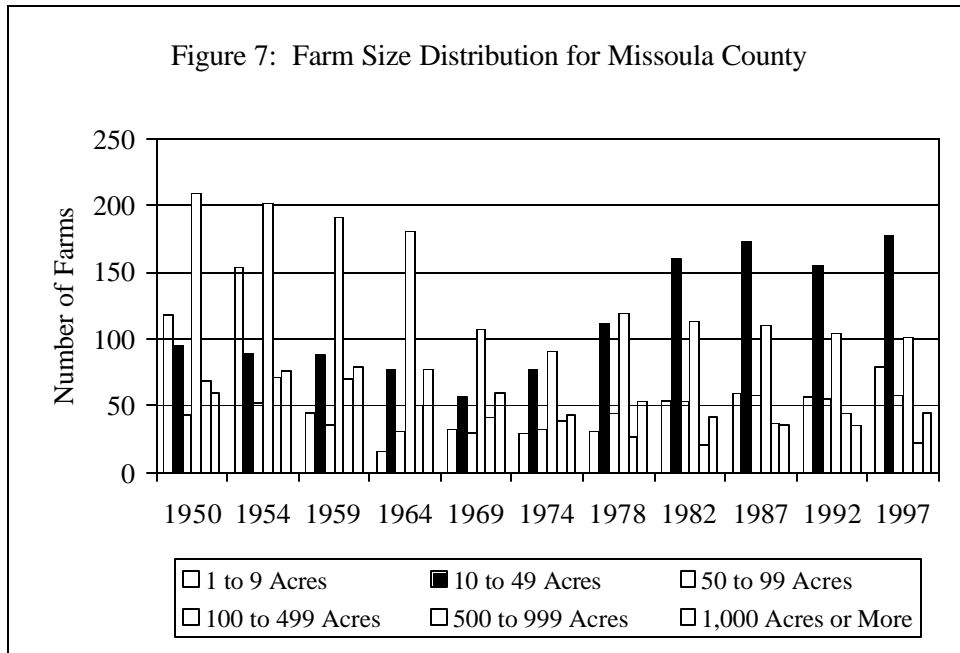




Over the past 50 years, the average farm size and farm size distribution in Missoula County have both fluctuated (see Figures 5-7). In 1950, average farm size was roughly 482 acres. By 1969 it peaked at 1,038 acres, and it has since fallen again to 544 acres in 1997 for a net increase of 13% since 1950. There have been notable changes in farm size distribution since 1950 across most of the size categories. The number of farms consisting of 1 to 9 acres has decreased from 118 to 79, or by 33% since 1950, but between 1992 and 1997 it climbed by 39% from 57 to 79. The number of farms with 10 to 49 acres has increased by 86% since 1950, from 95 to 177. The number of farms in the 50 to 99 acre category has risen slightly, while those in the 100 to 499 acre category have fallen by over 50%, from 209 to 101. Numbers of farms in the largest size classes have also decreased since 1950. In the 500 to 999 acre category, farm numbers have

fallen by just over two thirds, from 69 to 22, and in the 1,000 and over acre category farm numbers have fallen by one quarter, from 60 to 45. However, the number of farms in this size class rebounded by 29% between 1992 and 1997, from 35 to 45. In sum, although the number of farms under fifty acres is on the rise, Missoula County has far fewer large farms than it did fifty years ago.





Why is this trend occurring?

The patterns of change in Missoula County are not easily explained by broad national trends in agriculture over the past 50 years. It is interesting to note that the late 1960's and early 1970's saw some significant changes. This is roughly the point at which farm numbers and acreage in the county fell sharply, and the percentage of Montana's farms and farm acreage located in Missoula County dropped. However, it is also the time when the average farm size in the county peaked. This seems to reflect that Missoula County underwent a fairly dramatic shift to fewer and larger farms in the late 1960's and early 1970's, but that these trends have since lessened their severity somewhat. While the number of the smallest farms has fallen substantially since 1950 in Missoula County, it has begun a climb in recent years again. Where the county seems to be losing farms most is in the broad range of farms 100 acres and bigger, dropping from 338 in 1950 to 168 in 1997, a 50% decrease.

These trends mean that Missoula County has lost many of its farms that are large enough for commercial production of commodity crops. This could reflect a number of factors, including the high cost of inputs required for production, few opportunities for adding value to farm products (i.e., a lack of food processing facilities), insufficient local markets for agricultural products, and/or population growth in the county and the consequent pressure of development on agricultural land. The recent increase in the number of smaller farms in the county might reflect that it is more economically feasible to farm a smaller acreage. It might also suggest that, for tax purposes, a growing number of people are claiming farm status on smaller acreage parcels because they produce \$1,000 or more per year in agricultural products, even though they may not raise crops intensively or commercially on the land.

Why is this important?

The drop in farms of all sizes, but particularly the 50% decrease in those of 100 acres or more has implications for the viability of farming in Missoula County. It seems to suggest that certain crops that require larger acreage are difficult to produce here in an economically viable way. In order to build the capacity back up for that scale of farming in the county, it might be important to implement policies that make farming more economically feasible. However, the recent growth of small farm numbers in the county suggests that there may be an increasing potential for local production if more markets for locally grown crops are developed. In order to understand Missoula County's potential for local production, we need to better understand the county's small farms. Are these small farms producing agricultural crops with the potential for local consumption, or are they merely grossing at least \$1,000 in total agricultural product per year, thus qualifying as a "farm" under the Census definition? Maintaining farming as a viable enterprise is a key component to providing the county with a secure, local, and long-term food supply as well as preserving the county's rural character as development pressure rises in the future.

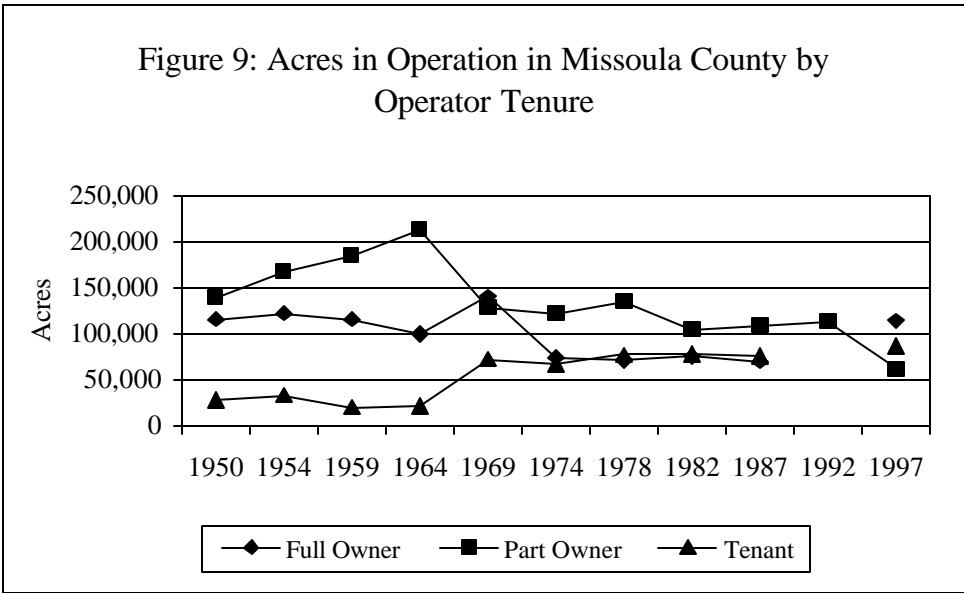
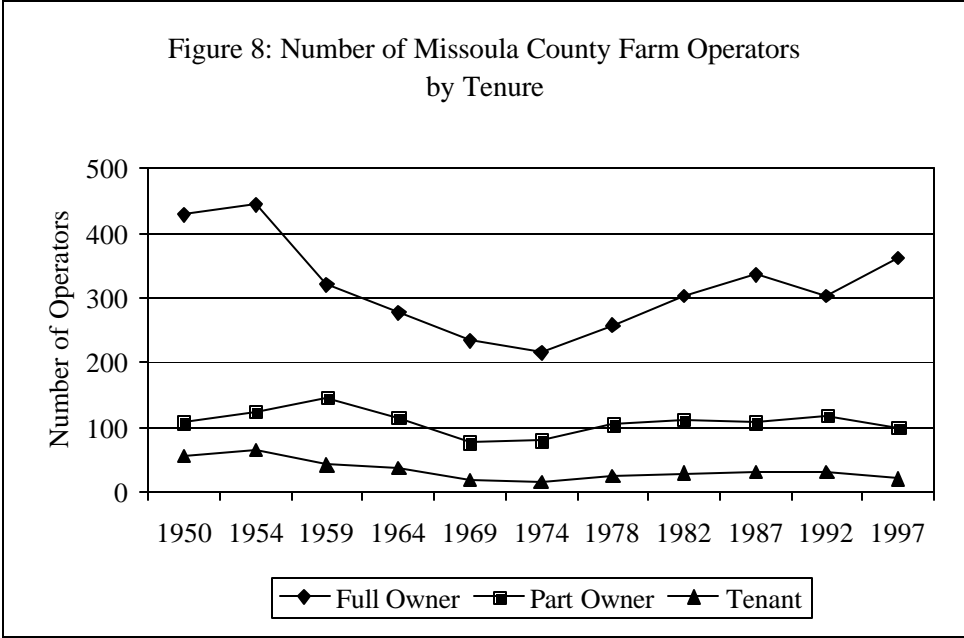
FARM OWNERSHIP BY TENURE

The trends.

The Census of Agriculture analyzes farmland according to three categories of tenure: full owner, part owner or tenant operator. A full owner is defined as an operator who owns all land (s)he farms. A part owner owns and rents land (s)he farms. And a tenant operator solely leases the land (s)he is operating. (Acreage figures for full owners and tenants were withheld in the 1992 Census of Agriculture "to avoid disclosing data for individual farms.")⁴

The number of full owners in Missoula County has been consistently higher than the number of part owners and tenants combined. Although there have been consistently more full owners, this group generally worked less acreage than part owners until 1997. Full owners and tenants worked similar amounts of land from 1974 to 1987 even though there were more full owners than tenant operators.

From 1954 to 1974 the number of full owners decreased by 51% from 444 to 215 operators (see Figure 8). However by 1997 that number had risen back to over 360 full owners in the county. The amount of acres in full owner operation decreased between 1954 and 1964, but then jumped in 1969 by 40% from approximately 100,000 to 140,000 acres (see Figure 9). Interestingly, this rise was immediately followed by a 48% decrease to 73,000 acres in 1974. The amount of land in full owner operation then stayed around 70,000 acres until 1997 when acreage rose by 65% from 69,000 to 114,000 in just ten years. By 1997 there were 362 full owners working over 114,000 acres, whereas in 1950 there were 429 full owners operating 115,000 acres. In 1997, full owners as a group were also operating more acreage than any other tenure group.



From 1950 to 1987, part owners operated more acreage than full owners or tenant operators in Missoula County (except in 1969). By 1997, however, part owners farmed less acreage than either group. In 1964 there were 114 part owners in the county operating a high of over 200,000 acres. By 1969, this acreage fell to 127,000 acres and there were only 76 part owners in the county. In 1997, 100 part owners were operating an all time low of roughly 60,000 acres.

The number of tenant operators dropped between 1954 and 1969 by 72% from 65 to 18 tenants. Within the same span of time, the number of acres in production more than doubled for tenants, going from 33,000 acres to 72,000. This trend stabilized and then

rose to 86,000 acres in 1997. Although the number of tenants rose as high as 30 in 1987 and 1992, it fell again in 1997 to 20.

Why are these trends occurring?

The trend toward full or part ownership may be directly related to the growth of the city out into smaller subdivided farms. As Missoula County grows in population, many families and individuals with the capital to purchase land or partially own land may have moved out of the city limits to purchase acreage. This land may then be used, in part or whole, for farming or ranching.

The trend of full owners operating more land than they were in 1950 may mean that full owners are actually operating more land per person. It may also be possible that some individuals are operating very large acreage while the bulk of full owners are operating smaller plots. However, it is important to note that although full owners may be operating more acreage as a group, they may not be producing food. In order to be categorized as a farm or ranch they must only make, or be able to make, \$1000 a year. The sale of one horse or cow would sufficiently meet this figure.

Why is this important?

Trends regarding ownership are important because of the economic concerns that come with farming or ranching and the amount of control an individual has over his or her operation. Farming as a full owner has many benefits, including maintaining management control over production, employment, and marketing. Since full owners have a direct relationship with the land and farm decision-making, they may also be enabled to connect with local markets and communities of consumers.

The increase in the amount of land operated by tenant farmers is also important to understand because tenant operators tend to have less input into farm management since they are only renting the property. They also have less security, since the landowner may or may not continue the lease from year to year.

MINORITY FARM OPERATORS

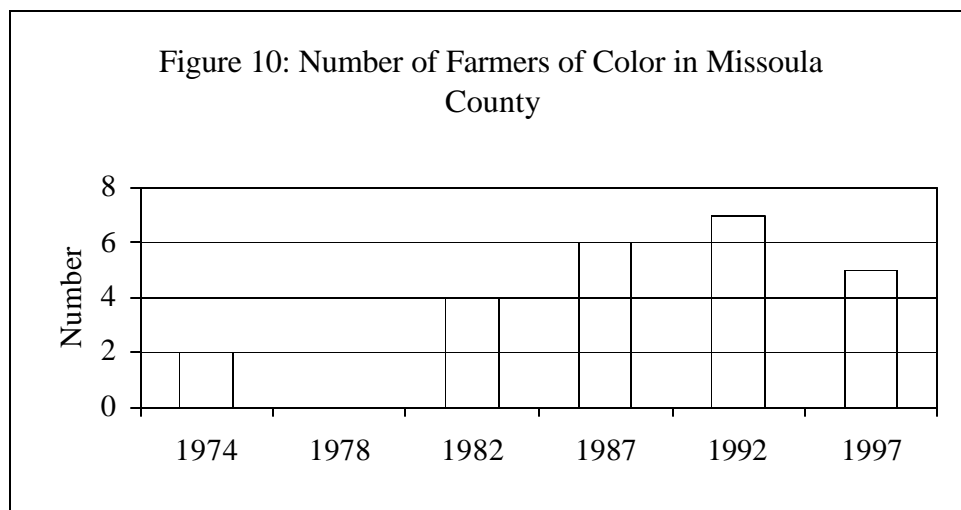
The trends.

Until 1964 farm ownership was delineated as *white* or *nonwhite* and as a result these figures are only moderately comparable with data collected after that time.⁵ Even after 1964, the definitions for race and ethnicity have been in transition. The 1974 definition provides information regarding *black and other races*. The term *black* includes “blacks, American indians, asian and pacific islanders and all other racial groups other than white.” (note: This census definition kept terms in lower case). The term *all other races* is primarily “limited to persons native to or of ancestry from Mexico, the Caribbean and central and south America.”⁶

During the 1990's there was a shift in the categorization to include separate information for a variety of ethnic backgrounds. The 1997 census attempted to improve statistics

regarding minority farm operators by sending out over 3,000 letters and postcards to farmers and ranchers asking for any missed operators. Officials also visited local farm organizations. Previous census only counted one farm operator for each Indian reservation; while in 1997 the goal was to provide a more accurate count.

It seems that the terminology may have been in the process of being redefined during 1969 since ethnic affiliation is not mentioned in the report again until 1974. Also, after 1974 the Census of Agriculture does not list figures on how many whites are farming in the county. This information could be ascertained by subtracting the number of minority farmers from the number of total farmers. For some years, data was unavailable for Missoula County and is left blank in Figure 10 below.⁷ This figure includes all tenure categories (full owner, part owner, and tenant).



During the 1940's the number of minority farmers in the county was actually higher than in 1997. Although this could be due to variations in the definitions, the number of minority farmers dropped and has remained consistently low. From 1974 to 1992, ethnic ownership of farms increased by approximately one person for every five years with the highest number occurring in 1992 at 7 minority operators. By 1997 the figure dropped to five, all of whom identified as American Indian.

Why are these trends occurring?

There are various socio-political and economic reasons that the majority of farmers in Missoula County are Caucasian. The trends could stem from historical oppression and limitations on property ownership for ethnic groups, particularly Native Americans. Many indigenous tribes exclude the idea of land ownership from their belief system and the U.S. government has historically denied native tribes land ownership rights. More recently, these trends may be attributed to economic factors such as inability to purchase increasingly expensive land.

Why is this important?

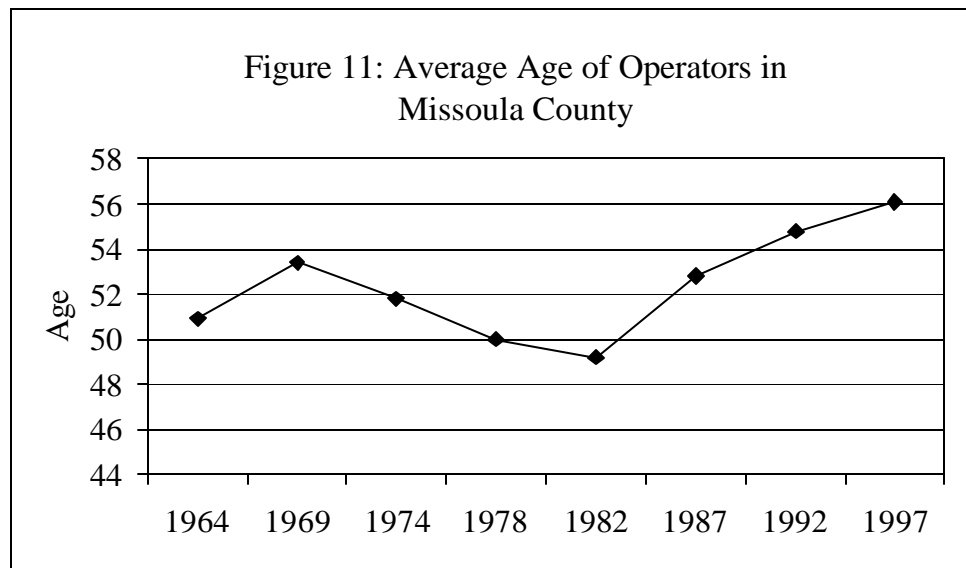
Understanding the diversity of farmers is important in regard to the social structure and equity within a given area. Even though there is limited diversity in Missoula County's

population overall, the rate of diversity among farmers is even lower. The overall demographics of Missoula County reflect that in 2000, 94% of residents were white, and 2.3% were American Indian.⁸ In 1997 there were 482 operators in the county and of those, only 5 were of ethnic origin other than white, European. This is only 1% of farmers in Missoula County, which does not parallel county population figures for people of color which is approximately 6%. This disparity may indicate a lack of opportunity for people of color to become involved in farming. What is also quite possible is that since the Census of Agriculture is still in the midst of developing information-gathering techniques, that this simply may not be an accurate assessment of the minority communities of farmers in Missoula County. Further community-based research would be helpful in deciphering the meaning of these indicators.

FARMER AGE

The trends.

Since the early 1980's, the average age of farmers in Missoula County has risen consistently (see Figure 11). Until 1964, the average age remained in the early fifties. However, in recent decades there has been a rise in these figures. Although there was a slight dip in 1982 to 49 years of age, the overall trend reflects a rise from 51 in 1964 to 56 in 1997.



Why are these trends occurring?

By 2025, Montana's 65 and older population is projected to rise to 20% of Montana's total population.⁹ This aging trend is reflected within the farming industry. National trends also indicate that fewer young people are entering farming. This increases the national average age of farmers, and the same is likely for Missoula County. As such, many farmers in Missoula County are coming closer to retiring age. While scrutiny of the median age might offer more information, these figures are not readily available.

Why is this important?

Age offers information regarding probable productivity and longevity of a work sector. It is possible that as farmers reach retirement age and are not replaced by a new generation, the end of their production could leave a gap in the food system. An influx of new operators could provide a certain amount of food security in that production could continue.

The state government has recognized that the lack of young farmers will affect productivity, but at the same time, some agencies claim that age will not affect the productivity of farmers. For instance, the Department of Health and Human Services states that although the average age of farmers is expected to increase, it is not expected to “affect Montana’s agriculture industry, because the development of new technologies has decreased the physical demands of farming and ranching.”¹⁰ However, the report does not take into account the high cost of such technologies nor the fact that this age group is considered close to retirement age in most other sectors of employment. This suggests that as the group ages, they will be leaving farming regardless of available technology.

The Montana Farm Bureau recognizes the lack of young farmers and has supported the creation of programs and policies such as the Beginning Farmers and Ranchers Tax Incentive Act of 2003. This Act mandates that capital gains taxes be eliminated when agricultural land is sold to a beginning farmer or rancher.¹¹

ORGANIC FARMS

For a variety of reasons, information on the number and acreage of organic farms in Missoula County is not available. An extensive phone interview with Doug Crabtree, Program Director of the Montana Department of Agriculture indicated that there is presently no mechanism by which to record the number of organic farms in Missoula County and that such information is “not pertinent to certification”. There is also no procedure by which to release organic farm address information so that someone else could collect that data. Further, even if such information were available from the Montana Department of Agriculture, it would be incomplete because there are multiple certifiers in the United States and around the world who could potentially certify farms in Montana.¹²

Although the National Organic Law mandates that the USDA accredit all certifying agencies, these agencies do not have to provide the USDA with a list of farms they have certified as organic. The Montana Department of Agriculture is just one of many certifiers, and organic standards are enforced by the Department only for those farms which they certify. The USDA, under the National Organic Program (NOP) is responsible for broader enforcement. Other accredited certifiers are responsible for their own clients.

The only existing directory has been collected and disseminated by Alternative Energy Resource Organization (AERO) which is a grassroots nonprofit organization. The 2003-2004 *Abundant Montana, Directory to Sustainably Grown Montana Food* lists three certified organic producers in Missoula County with production of vegetables, fungi, and herbs.

Why is this important?

Since there is no official database for organic farms in Missoula County, it is hard to ascertain how many farms are engaged in organic practices. The lack of statistics also leaves a gap in the overall picture of the food system in Missoula County, since many organic farms tend to be smaller and may be more oriented toward marketing in the local community. The identification of organic farms could also offer information regarding those farms practicing sustainable farming techniques. Such statistics could offer important information regarding the amount of food production from sustainable, organic agriculture in comparison to industrial agriculture.

The lack of information also begs the question of how the USDA is enforcing certified organic regulations when they have no comprehensive list of all organic farms. The Montana Department of Agriculture does require certified farms to fill out a form each year, indicating any changes in the management plan of their farm. It is only sent to farmers who have been certified with the agency.

FARMLAND CONSERVATION

The trends.

The American Farmland Trust, AFT, estimates that over five million acres of Montana's best ranchland will be imperiled from low-density development by the year 2020.¹³ The AFT defines "threatened" ranchland as rural areas that are expected to grow to suburban density by the year 2020. This recent study shows that of the nation's top 25 counties with "strategic ranchland at risk" seven lie within the state of Montana; Missoula County, with 341,760 "threatened" ranchland acres (20% of Missoula County land area), ranks ninth in the Rocky Mountain region.¹⁴ According to AFT, working agricultural lands across the state that "provide critical habitat, natural resources and jobs are being replaced with low-density residential growth."¹⁵ As these agricultural lands are fragmented and permanently transformed by development, Montana's ecological, economic and cultural heritages become imperiled as well.

In order to slow this development trend and help preserve Missoula County's agricultural landscape, a number of land conservation strategies have been employed in recent decades. Strategies being utilized include the Federal Conservation Reserve/Wetlands Reserve Program, private conservation easements, and a Bond Funding Initiative passed in 1995 to help preserve open space around the City of Missoula. Each of these conservation measures, described below, offers financial incentives to local farmers, ranchers, and property owners of critical habitat to resist macroeconomic pressure to sell or subdivide their land for development. Although each of these three economic

incentive strategies is fairly congruent with one another in their mission to preserve open space, each strategy is unique in the details of its approach to conservation.

The Conservation Reserve/Wetlands Reserve Program, administered by the Natural Resources Conservation Service, is a federally funded program that “pays farmers to voluntarily remove vulnerable lands from row-crop production for a ten-year period and requires permanent cover to be established.”¹⁶ By compensating the agricultural producer for retiring ecologically sensitive areas from production, this conservation strategy functions to reduce soil erosion, produce wildlife habitat, and assists the farmer/rancher in remaining financially solvent, at least for a decade.

For Missoula County, the Conservation Reserve/Wetlands Reserve Program does not appear on the Census of Agriculture prior to 1987. Data from 1992 indicates that nine farms were participating in such programs with a total of 826 acres set aside for conservation. Figures for total number of farms or total acreage are not listed in the 1997 Census of Agriculture.

Conservation easements are a voluntary legal agreement between a landowner and a qualified entity designed to protect, perpetually or for a limited term, specific conservation attributes of a property. A qualified entity could be any government body (County, State, or Federal) or a conservation group organized to protect land (such as a land trust organization). These measures allow the landowner to continue to own/manage the land, while restricting certain activities (such as subdividing or commercial timber harvesting) that would degrade its ecological characteristics. By removing or limiting the land’s development potential, conservation easements can decrease the estate tax by lowering the market value of the property. The tax benefits that conservation easements provide are proving to be a reliable method of ensuring that landowners can hold onto their property and pass it along intact to the next generation.

The amount of land set aside from development through conservation easements has been on the rise in Missoula County. By 2001, 21,884 acres of land in the County were protected through enrollment in this type of conservation strategy (which represents seven percent of the private land acreage in Missoula County).¹⁷ “In November 1995 City of Missoula voters passed a five million dollar open space bond to acquire open space land in or near the City, as guided by the Missoula Urban Open Space Plan. Since passage of the bond, local government ownership of open space land has increased from 1,220 acres to 2,736 acres, an increase of 124%.”¹⁸

It should be mentioned that the total acreage in Missoula County, over 22,000 acres, protected through the use of conservation easements and the bond funding initiative is not exclusive to agriculturally productive land but includes other protected areas such as wildlife habitat and public open space. According to the Missoula County Growth Policy, the recent increases in land area set aside for conservation is a trend expected to continue.

Why are these trends occurring?

The Conservation Reserve/Wetlands Reserve Program was introduced in the early 1980's to help curb significant soil erosion that was occurring as a response to agricultural overproduction on marginal lands during the 1970's.

Conservation easements did not come into widespread national use until the Tax Reform Act of 1976 officially recognized such donations of development rights as tax deductible; they have since become a very popular means to protect land.¹⁹ Seemingly, Missoula County residents are progressively becoming more aware of the detrimental side effects of urban growth, as the recent increase in conservation easements might suggest. This move to conserve agricultural lands has been facilitated by local organizations such as Five Valley Land Trust, Trust for Public Land, Nature Conservancy, and the Rocky Mountain Elk Foundation.

Why is this important?

Missoula County population increased by 17,115 people between 1990 and 2000, a 22% increase.²⁰ In this same ten-year period, "the number of acres in approved subdivisions increased by 12,206 acres, and 10,682 acres of this total were in subdivisions located outside the Missoula City Limit."²¹ Since 1990 the greatest percentage of population increase has occurred outside the urban area of the County, with rural sub-areas, such as the Lolo region, Ninemile/Frenchtown, Potomac/Seeley and Confederated Salish and Kootenai Tribal lands growing by 46%.²² With this level of population growth, agricultural land and open space throughout the valley will continue to be in high demand for development.

¹ U.S. Department of Commerce. 1987 Census of Agriculture. Volume 1 Geographic Area Series, Part 26: Montana State and County Data. Introduction, page VII.

² U.S. Department of Commerce. 1974 Census of Agriculture. Volume 1, Part 26: Montana State and County Data. Introduction, page IX.

³ Ibid.

⁴ U.S. Department of Commerce. 1997 Census of Agriculture.

⁵ U.S. Department of Commerce. 1964 Census of Agriculture.

⁶ U.S. Department of Commerce. 1974 Census of Agriculture.

⁷ U.S. Department of Commerce. 1997 Census of Agriculture.

⁸ U.S. Census Bureau; "State and County Quickfacts;" published July 2003, accessed 16 October 2003 <<http://quickfacts.census.gov/qfd/states/30/30063.html>>

⁹ Department of Health and Human Services; "The State of Aging, Final Report Summary 1999;" accessed 16 October 2003 <<http://www.dphhs.state.mt.us/sltc/pubs/STATE.AGING.reports/1999aging.rprt.exec.summ.DOC>>

¹⁰ Department of Health and Human Services; "The State of Aging, Final Report Summary 1999;" accessed 16 October 2003 <<http://www.dphhs.state.mt.us/sltc/pubs/STATE.AGING.reports/1999aging.rprt.exec.summ.DOC>>

¹¹ Montana farm bureau association; 16 October 2003 <<http://mfbf.org/newnews/TaxIncentiveYFR.html>>

¹² Crabtree, Doug, telephone interview. 21 Sept. 2003.

¹³ American Farmland Trust. "Study Shows 5 Million Acres of Ranchland at Risk in Montana". Press Release (July 7, 2002) Retrieved October 17, 2003 from the World Wide Web: http://www.farmland.org/news_2002/070202_mt.htm

¹⁴ American Farmland Trust “Strategic Ranchland in the Rocky Mountain West: Mapping the Threats to Prime Ranchland in Seven Western States”. Retrieved October 18th from the World Wide Web: http://www.farmland.org/rocky_mountain/strategic_ranchlands3.htm

¹⁵ Ibid.

¹⁶ Boody, M. George. *The Farm as Natural Habitat: Reconnecting Food Systems with Ecosystems*. Washington, Covelo, London: Island Press, 2002.

¹⁷ Missoula County Growth Policy, Chapter 2. p.7 August 2002. Office of Planning and Grants. Missoula, Mt.

<ftp://www.co.missoula.mt.us/opg2/Documents/Long%20Range%20County/Growth%20Policy/Chapter%202a%20Land%20Use%20Economy.PDF>

¹⁸ Ibid.

¹⁹ Five Valley Land Trust Organization. Retrieved September 2003 from World Wide Web: http://www.fvlt.org/cons_ease.htm

²⁰ Missoula County Growth Policy, Chapter 2. August 2002. Office of Planning and Grants. Missoula, MT. <ftp://www.co.missoula.mt.us/opg2/Documents/Long%20Range%20County/Growth%20Policy/Chapter%202a%20Land%20Use%20Economy.PDF>

²¹ Ibid.

²² Ibid.

CHAPTER 3 AGRICULTURE-RELATED ENVIRONMENTAL INDICATORS

MARGOT HIGGINS AND ERIN FOLEY

OVERVIEW

Finding trend data describing how agriculture impacts the environment in Missoula County was very challenging because few comprehensive reports exist for straightforward data on water pollution, water use, and agricultural chemical use in the county. Although we did not find precise figures for nitrate pollution in surface and groundwater, it has been an issue of local concern. This chapter also presents data on use of irrigation in the county. In addition, the trends suggest that the cost of fuel, fertilizer, and chemicals for farmers is growing. These items account for a greater percentage of total farm expenditures than they did in the past, which may reflect a greater reliance by the agricultural community on these inputs.

Nationwide, water pollution is probably the most damaging and widespread effect of agricultural production.¹ In order to contribute to a healthy food system, it is important that agricultural activities do not have an adverse impact on the environment through pollution or excessive water use. As the cost of farming increases in Missoula County, it is also important to come up with alternatives that help farmers cut their costs on synthetic inputs (fertilizers, chemicals and petroleum) so that farmers can improve their profits and remain viable.

GROUNDWATER AND SURFACE WATER POLLUTION FROM NITRATES

While nitrates occur naturally and are essential to all forms of life, excess nitrates resulting from human activities such as fertilizer use, and animal and human waste can cause soil and water pollution. Scientists generally agree that because gradual increases in nitrate pollution may result from nitrates that were released in the past, current trends in nitrate pollution may reflect historical activity. This suggests that even if current nitrate pollution activities were to stop, it may take decades for the ecosystem to recover.²

According to John Harvala, the Environmental Health Specialist with the Missoula Valley Water Quality District, there are about 150 public drinking water wells in Missoula County that provide for more than twenty five people for more than eight hours a day.³ These wells are tested on an annual basis in Missoula County and the analyses have not detected any significantly high nitrate levels on the whole (i.e., none have exceeded the EPA standard of 10 parts per million). While there is some pollution caused by nitrates that are primarily the result of residential septic systems, Harvala believes most well water nitrate detections have little connection to the agriculture system in Missoula County. This statement was also supported by Dr. Vicki Watson, a professor who specializes in water quality issues at the University of Montana.

Nevertheless, the majority of irrigation for agriculture in Missoula is surface water irrigation from ditches that drain directly or indirectly from and into the Clark Fork River, where nitrate levels and their associated algal blooms have been documented in the past. Between 1988 and 1991, an intensive monitoring program was conducted by the Clark Fork Voluntary Nutrient Reduction Program to identify the major point and non-point sources of nitrogen along the Clark Fork. The program determined that about three-fourths of the soluble nitrogen loading in the study came from tributaries, while the remaining quarter came from wastewater. In addition, research conducted by the city of Missoula's facility planning found a significant link between groundwater and surface water in the Missoula area.⁴ Nitrogen levels have contributed to dense mats of filamentous algae in the river above Missoula and heavy growths of diatom algae below Missoula. Decaying algae has been held responsible for the reduction of oxygen, water clarity, and visual appeal of the Clark Fork River.⁵

According to Will McDowell, the coordinator for the Clark Fork Voluntary Nutrient Reduction Program, agricultural inputs to nitrogen budgets in Missoula County have not yet been a priority for the VNR. McDowell explained, "Animal production facilities such as dairies and feedlots are usually the focus for nutrient management (rather than fertilizer) in an area like Missoula County which has little row crop agriculture. Because there are few major feedlots and dairies in Missoula County, it has not yet been an area of focus for the Voluntary Nutrient Reduction Program."⁶ The lack of attention towards agricultural inputs reveals that there are data gaps in the existing monitoring program that may be significant.

Why is this important?

Any excess nitrogen that is not used by plants may pollute soil or water and require costly treatment. When a surface water body becomes overloaded with nitrates from agriculture it can lead to excessive algal growth and can deplete the dissolved oxygen supply that is needed by native fish and other aquatic organisms.⁷ In addition, nitrate pollution in surface water can impact various other water uses including recreation and agriculture. Nationwide, the largest health concern surrounding nitrate pollution of water used for drinking is “blue baby syndrome,” a condition experienced by bottle fed infants, which interferes with the oxygen processing of red blood cells.

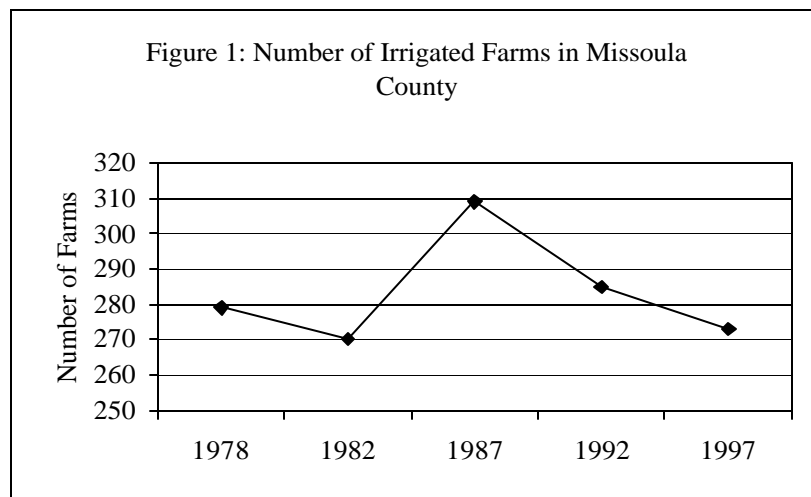
TOTAL SUPPLEMENTAL WATER USE BY AGRICULTURE

According to Mark Phares an attorney at the Department of Natural Resources, there are no subsidized water projects in Missoula County.⁸ Unlike the water system that provides irrigation to large scale agriculture in California relying on extensive pipelines that carry water over a long distance, farmers in Missoula rely on water from local sources. Most of the irrigation systems in Missoula County were created in the 1800’s by local government entities, according to Bill Schultz, the resource manager at the Missoula Water Resources Regional Office.⁹ Today they are run by local irrigation districts that local farmers pay to maintain the irrigation ditches.

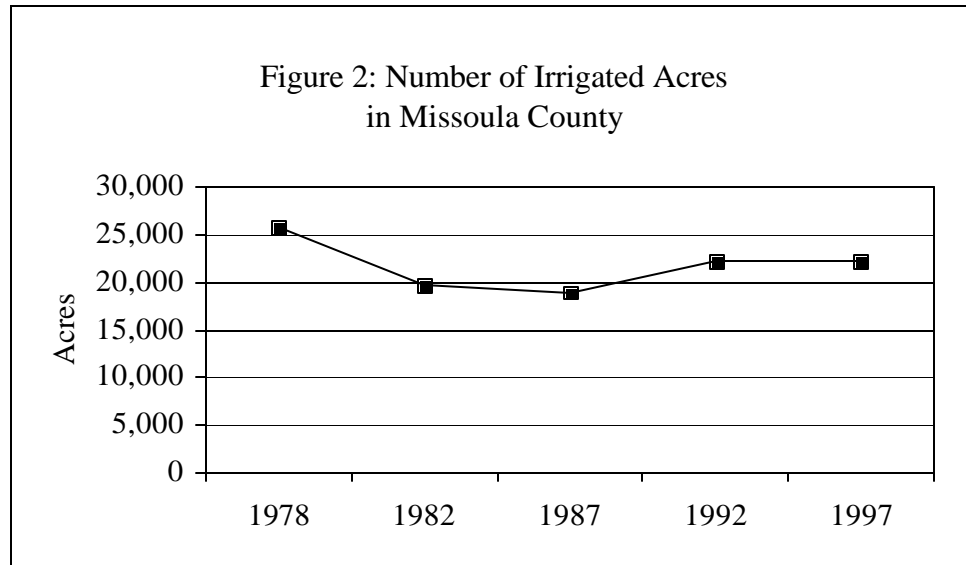
The trends.

Irrigation data for Missoula County was easily found in the Agricultural Census Surveys, which are conducted every five years. “Irrigated Land” is defined in the Agricultural Census as “land watered for agricultural purposes by artificial means.” The total acreage of irrigated land includes not only irrigated cropland but also any other land on a farm that was irrigated, such as pastureland.¹⁰

The number of irrigated farms in Missoula County has varied over the last decade (see Figure 1). Between 1982 and 1987 the number of irrigated farms grew by 14 percent, from 270 farms to 309 farms, subsequently dropping back to 1982 levels by 1997.



The number of irrigated acres in Missoula County dropped between 1978 and 1987, and then increased between 1987 and 1997 (see Figure 2). Note, however, that the Agricultural Census data are not necessarily comprehensive because they may underestimate the amount of water used by small-scale producers in the food system that the census might miss.



Why are these trends occurring?

The number of irrigated farms has fluctuated over the last 25 years, suggesting possible changes in land ownership in the county.¹¹ The 14 percent rise in irrigated farms between 1982 and 1987 corresponds with the rise in the number of small farms between one and nine acres and also matches an increase in the number of large farms exceeding 1,000 acres during that period. The subsequent drop in irrigated farms between 1987 and 1997 also follows the simultaneous decline of large farm ownership.

The number of irrigated farms represents just over half of the number of farms in Missoula County. In 1997, for example, 273 out of the total number of 482 farms (57%) were irrigated. More significantly, the data show that the number of irrigated acres represents only a small portion of the total acres farmed. In 1997, the total amount of acres farmed was 262,419 while only 22,291 acres (or 8.5%) were irrigated.

According to Tom Chard,¹² a statistician with the Montana Agricultural Statistics Survey in Helena, irrigation systems can be an enormous capital expense for farmers, which may deter many farmers from irrigating their crops. For example, hay production, which consumes a large portion of the agricultural land in Missoula County can grow under varying moisture conditions, Chard explained. While watering hay crops can triple the harvest, farmers may choose to avoid the expense associated with an irrigation system and produce a smaller crop. Chard also noted that once a farmer has made a capital investment in an irrigation system, he/she is likely to rely on it each year for different crops, regardless of weather conditions.

Why is this important?

Critical for irrigating agriculture, water is a finite resource especially in the arid climate of the Northern Rockies. The average rainfall in Missoula County is just 13.4 inches a year.¹³ As large quantities of water are used for irrigation, water tables may decline.¹⁴ Irrigation in the arid west has been associated with mineralization and salinization of soils and water, as well as groundwater depletion and surface and groundwater contamination.¹⁵ Demand for water use may intensify as the population in Missoula County continues to grow, creating potential conflict between residential and agricultural users.

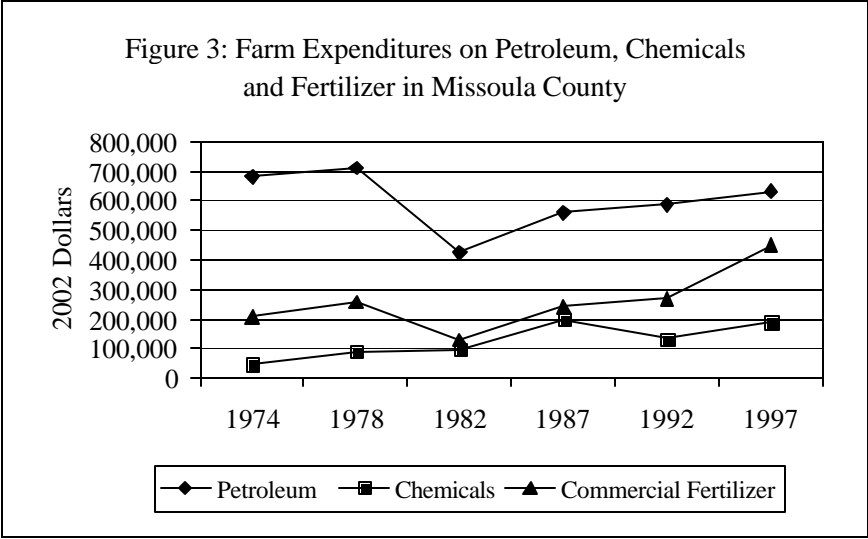
SYNTHETIC INPUT USE AND DEPENDENCE

Specific, accurate, and reliable data on the use of synthetic inputs on farms is not available for Missoula County. There are state level estimates on pesticide use, but they are not available on the county level.^{16,17} Instead of looking at the total amount of *synthetic inputs applied* in the county, the portion of total farm *expenditures spent on petroleum, chemicals, and fertilizers* was analyzed to act as a rough surrogate for use of synthetic inputs. The expenditure data includes only the amount spent on items that are directly related to and used for on-farm business, excluding personal expenses, hobby farmers with sales of less than \$1000, or hobby farmers with the potential to sell more than \$1000.¹⁸ Expenditure data for petroleum, chemicals and fertilizers are quite limited as a surrogate for use because changes in expenditures may also reflect changes in the prices of these products even when the dollars spent are adjusted for inflation.

According to the Census of Agriculture, changes were made to the census report in 1978 and 1982, and as a result, total farm expenditure data for those years are not available. Despite this data gap, a helpful analysis can be made from the existing expenditure trends.

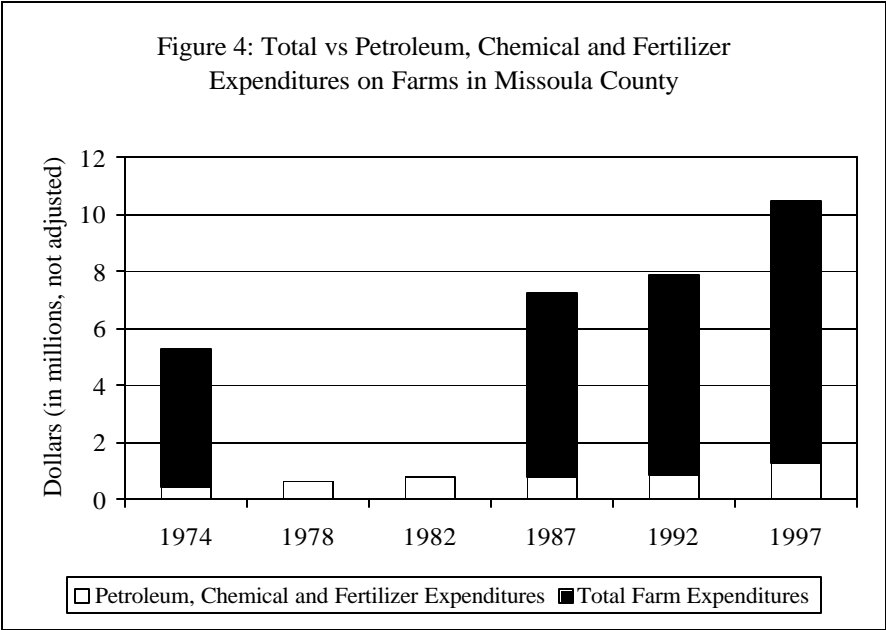
The trends.

According to the Census of Agriculture, the total amount farmers spend on production has increased over time. Figure 3 shows the amount spent on petroleum, fertilizer and chemicals adjusted into 2002 dollars.^{19, 20} Notice in 1982, the trends indicate a drop in the amount spent on fertilizer and petroleum. Since then, however, the amount spent on these inputs has increased.



From 1974 to 1997, there was a 298 percent increase in the amount spent on chemicals and a 117 percent increase in amount spent on fertilizer. Over the same period of time, petroleum expenditures decreased 7.1 percent. It should be noted, however, these percentages represent the amount farmers spent on synthetic chemicals and do not take into account the changes in chemical, fertilizer, or petroleum prices over time.²¹

By comparing the amount spent on fuel, fertilizers, and chemicals with the total farm expenditures we can arrive at a percentage for the amount spent on synthetic inputs for farm production (see Figure 4). The percentage of “Total Farm Expenditures” that was spent on petroleum, fertilizers, and chemicals was 13.6 percent in 1997, while in 1974 the percent of total expenditures spent on these inputs was only 8.3 percent.²² Thus, there has been a rise since 1974 in the proportion of farm expenditures devoted to petroleum, fertilizers and chemicals.



Why are these trends occurring?

The rise in the percentage of total farm expenditures spent on fuel, fertilizers, and chemicals may represent a greater dependence on synthetic chemicals and petroleum. The numbers may also reflect increasing prices for these inputs. For example, an increase in the amount of money farmers spent on petroleum may reflect increases in the price of fuel.

Why is this important?

One way to keep farmers on the land or in production may be to reduce their costs. Implementing more sustainable methods of farming may help to reduce the costs associated with fuel and synthetic inputs, which in turn would reduce the costs of production.

¹ National Research Council. 1989. *Alternative Agriculture* Washington, D.C.: National Academy Press

² Dr. Vicki Watson, e-mail correspondence on November 19, 2003.

³ Harvala, Jon, Environmental Specialist with the Missoula Valley Water Quality District, 523-4890, September, 2003.

⁴ Tri-State Implementation Council. 1998. *Clark Fork River Voluntary Nutrient Reduction Program*. Sandpoint, ID.

⁵ Tri-State Implementation Council. 1998. *Clark Fork River Voluntary Nutrient Reduction Program*. Sandpoint, ID.

⁶ Will McDowell, e-mail correspondence on November 19, 2003.

⁷ Tri-State Implementation Council. 1998. *Clark Fork River Voluntary Nutrient Reduction Program*. Sandpoint, ID.

⁸ Mark Phares, attorney, Department of Natural Resources, Missoula office 542-4200, September, 2003

⁹ Bill Schultz, Resource Manager, Missoula Water Resources Regional Office, 721-4284, September 2003.

¹⁰ Census of Agriculture, Montana State and County Data 1978-1997, Volume 1, part 26; U.S. Department of Commerce.

¹¹ Census of Agriculture, Montana State and County Data 1978-1997, Volume 1, part 26; U.S. Department of Commerce

¹² Chard, Tom Agricultural Statistician with Montana Agricultural Statistics in Helena, (406) 441-1240, September-October, 2003

¹³ National Weather Service, Western Region Headquarters.

<http://www.wrh.noaa.gov/wrhq/PROFILE/missoula.html> (Date accessed: November 20, 2003).

¹⁴ National Research Council. 1989. *Alternative Agriculture* Washington, D.C.: National Academy Press.

¹⁵ National Research Council. 1989. *Alternative Agriculture* Washington, D.C.: National Academy Press.

¹⁶ USDA Economics and Statistics System. "Agricultural Chemical Usage." Ithica N.Y: Cornell University, United States Department of Agriculture, Economics and Statistics System. <http://usda.mannlib.cornell.edu/reports/nassr/other/pcu-bb/> (Date accessed: 29 Sept 2003).

¹⁷ National Pesticide Use Data Base. 2003. "State Data by Active Ingredient and Crop." Washington, DC: National Center for Food and Agricultural Policy. <http://www.ncfap.org/database/default.htm> (Date accessed: 29 Sept 2003).

¹⁸ Census of Agriculture, Montana State and County Data 1974-1997, Volume 1, part 26; U.S. Department of Commerce.

¹⁹ USDA National Agricultural Statistics Service. "Farm Production: Expenses for Missoula Montana."

Oregon State University Libraries – GovStats- 1997 Census of Agriculture.

<http://www.nass.usda.gov/census/census97/volume1> (Date accessed: 14 Sept 2003).

²⁰ Census of Agriculture, Montana State and County Data 1974-1997, Volume 1, part 26; U.S. Department of Commerce.

²¹ Agricultural chemicals, fertilizer materials and crude petroleum are item names as listed in the Producer Price Index (PPI). The value given under the item name listed in the PPI was used as a multiplier to adjust the expenditure data for inflation into 2002 dollars.

²² Census of Agriculture, Montana State and County Data 1974-1997, Volume 1, part 26; U.S. Department of Commerce.

CHAPTER 4
ECONOMIC PRODUCTIVITY INDICATORS FOR AGRICULTURE AND FOOD DISTRIBUTION

JOELLEN SHANNON, MELISSA MATTHEWSON, MICHAEL WACHTEL JR.,
AND JASON SEAGLE

OVERVIEW

Understanding economic productivity and viability in the food and agricultural sector is vital to gaining a complete picture of the food system in Missoula County. In this section, information has been gathered regarding gross agricultural production, direct marketing, and the food distribution system.

The steady growth in the market value of agricultural products sold by Missoula County producers during the late 1980's and early 1990's is encouraging, and despite the slight drop between 1992 and 1997, will hopefully serve as sign that growth will continue in the future. However, the data indicate how small a contribution Missoula County makes to Montana's overall agricultural production. Missoula County's largest contribution over the last few decades to Montana's total agricultural products sold was less than half of one percent in 1978. This is mainly due to the fact that Missoula County simply does not have enough flat and affordable farm land at this time to support large-scale livestock or commodity production, both of which currently make up the largest percentages of Montana's total agricultural products sold.

Direct marketing provides many opportunities for farms to increase their sales. Despite these opportunities, the Census of Agriculture indicates that direct market sales are a small percentage of the value of the county's gross agricultural production. This data comes as a surprise, given Missoula County's thriving farmers' market and other direct marketing programs available to producers. This suggests the census may not include many market gardeners and farmers.

The food distribution system indicators should allow us to understand just how extensive and dynamic numbers of establishments and sales are within this sector of Missoula County's economy. This includes the county's network of food wholesalers, food manufacturers, food retailers, and food servers. Data indicates that the number and sales of food servers has been increasing; however, the other sectors seem to represent deficiencies of infrastructure in the food distribution system.

GROSS AGRICULTURAL PRODUCTIVITY

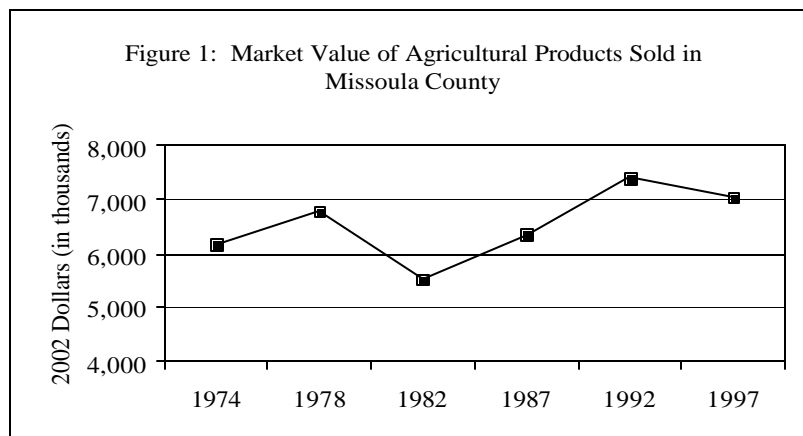
The market value of agricultural products sold was the best and most consistent number available from the U.S. Census of Agriculture to show gross agricultural productivity on both the state and county levels. For comparative purposes across years, we adjusted market value figures for inflation (reporting all values in 2002 dollars). U.S. Census of Agriculture data on market value of agricultural products sold represent the total sales for all agriculture products in the county and state, which includes the following farm products: grains, hay, silage, field seeds, vegetables, fruits, nuts, berries, nursery and greenhouse products, poultry, poultry products, dairy products, cattle, calves, hogs, pigs, sheep, lambs, and wool.

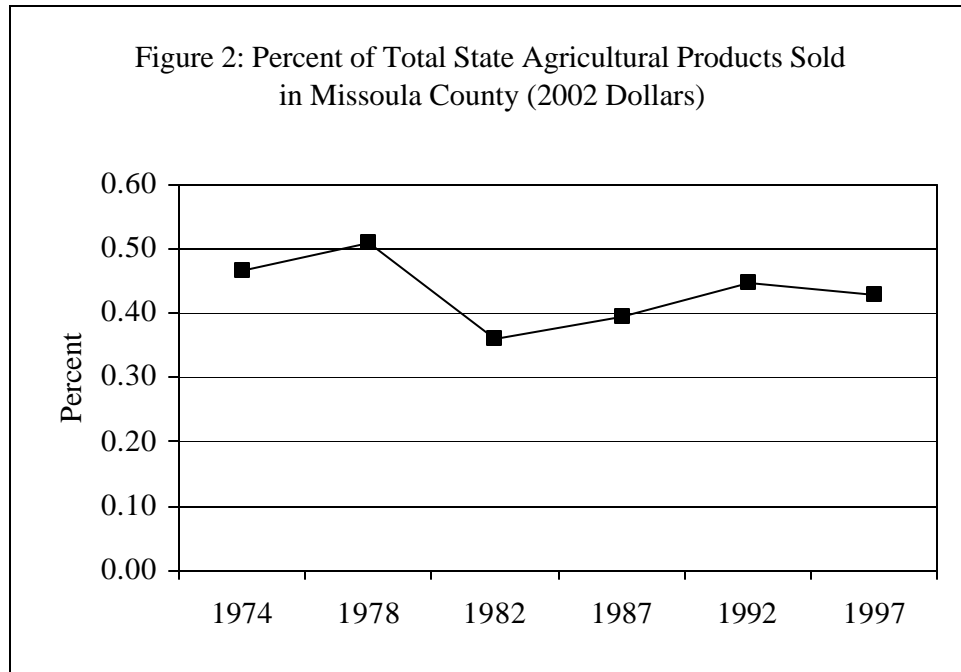
Data presented begins with 1974 because the definition of a farm used by the U.S. Census of Agriculture changed that year making it difficult to compare recent figures to prior years. The definition of the farm used in the 1974 census includes any agricultural operation earning or with potential to earn over \$1,000 annually.

The trends.

The inflation-adjusted market value of agricultural products sold by Missoula County producers increased by approximately 10% from 1974 to 1978 (see Figure 1). Between 1978 and 1982, the market value of agricultural products sold for Missoula County dropped by over 18.5% from 6,783,032 dollars in 1978 to 5,528,160 dollars in 1982. Starting in 1982 the market value of agricultural products sold by Missoula County producers began a steady climb of approximately 2% growth each year until 1992. Finally, between 1992 and 1997 Missoula County's market value of agricultural products sold decreased by 367,014 dollars or approximately 5%.

Missoula County has historically made a very modest contribution to the state's total market value of agricultural products sold, accounting for a high of 0.51 % in 1978 (see Figure 2). It is also important to note how closely Figure 1 and Figure 2 resemble each other. The similarities between these two graphs suggest that agricultural production in Missoula County, despite its many differences from agricultural production in other parts of Montana, is affected in many of the same ways and by the same forces as the rest of the state.





Why are these trends occurring?

The market value of agricultural products sold reflects gross earnings, ignoring the farmer’s overhead and expenditures; therefore it is important to note that these earnings are not equivalent to farm profit. The drop in Missoula County’s market value of agricultural products sold from 1978 to 1982 (over one million dollars) could be linked to the farm crisis of the early 1980’s. Another explanation could be development, which became increasingly popular in Missoula County during the 1980’s, causing some large ranches and farms to be subdivided and used for purposes other than farming. Indeed, there was an 11.5% drop in the number of acres farmed in Missoula County between 1978 and 1982, from 282,808 to 250,213 acres (see chapter 2). One factor which may have contributed to the steady increase in Missoula County’s market value of agricultural products sold between 1982 and 1992 is the common practice, according to area Horticultural Extension Agent Helen Atthowe, of landowners filling the U.S. Agricultural Census qualifications for a “farm” just to receive agricultural tax breaks. Finally the decrease in agricultural products sold by Missoula County producers between 1992 and 1997 may have been affected by the ever-increasing property values for flat land in Missoula County, enticing or forcing producers to sell or subdivide. These are just a few possible explanations for the fluctuations in Missoula County’s market value of agricultural products sold.

Why is this important?

The seemingly small contribution that Missoula County makes to Montana’s total agricultural products sold can largely be attributed to the fact that the geography in Western Montana is very different than that of Eastern Montana where most of the state’s livestock and commodity production occurs. Livestock and commodity crops, namely wheat, account for the largest percentages of Montana’s total market value of agricultural products sold. According to Helen Atthowe, the land values in Missoula County are too

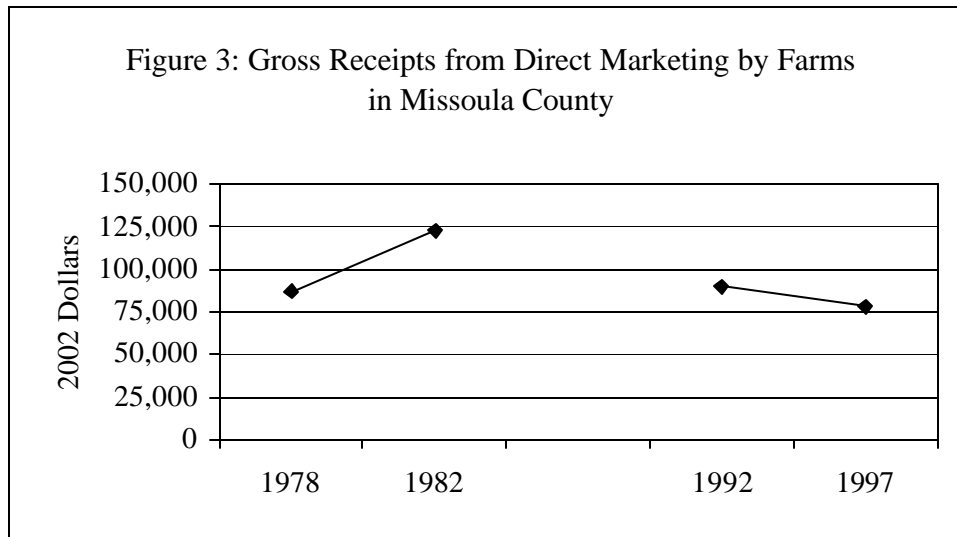
high to support large-scale production of livestock and low value commodity crops such as wheat. Thus, Missoula County's agricultural production relies heavily upon higher value crops such as vegetables, nursery and greenhouse products, hay, and other horticultural crops more suited to Western Montana's social and physical geography.

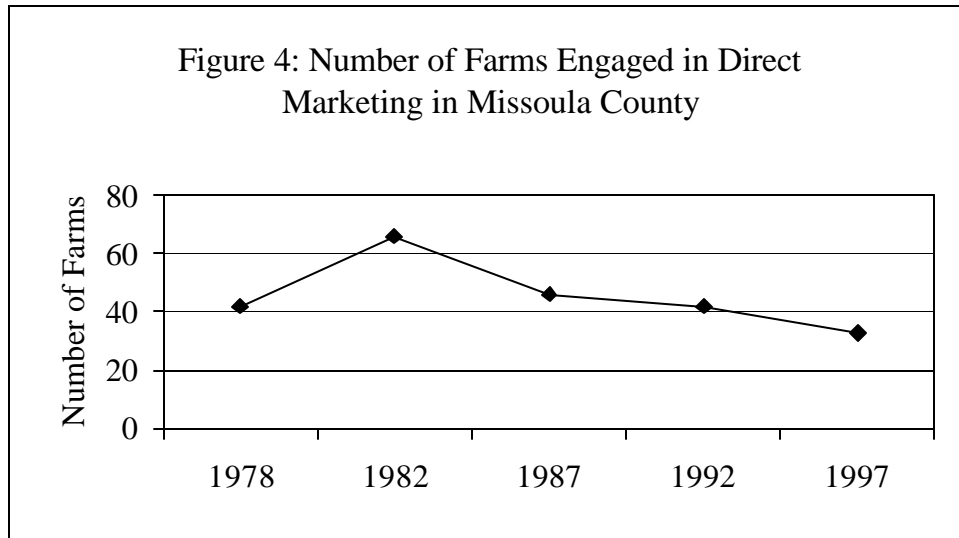
DIRECT MARKETING

The Census of Agriculture began collecting data on direct marketing in 1978, and it defines direct marketing sales as agricultural products sold directly to individuals for human consumption from roadside stands, farmers markets, and other types of direct markets. The data excludes any non-edible products such as nursery products, flowers and wool.¹

The trends.

According to the Census of Agriculture, gross sales in direct marketing peaked in 1982 and declined steadily thereafter. At its peak in 1982, direct sales were \$122,760 which translated into 2% of the market value of the county's gross agricultural production (see Figure 3). The number of farms engaged in direct marketing also peaked in 1982 and then declined (see Figure 4). At the peak, 66 farms participated in direct marketing, which was 15% of Missoula County's farms.





It is important to remember that this data does not include all farmers participating in direct sales, and therefore underestimates the value of direct marketing. For example, no data is collected on the estimated total sales at the Missoula Farmers' Market. The Missoula Farmers' Market was established in 1970, is held twice a week in downtown Missoula, and is a direct link between local producers and consumers. Over its 33-year life span, the Farmers' Market has grown considerably, becoming a highly visible and increasingly key element in the distribution of locally grown produce². During the height of the Farmers' Market in recent summers, some 100 vendors sell directly to consumers, which is at least three times the number of farms reported to be engaged in direct marketing in the Census of Agriculture in 1997 (although certainly some of those vendors farm outside of Missoula County).³

Community supported agriculture (CSA) has also become a popular way to direct market goods in many parts of the country. In CSA, consumers purchase a "share" of a farm's produce and in turn typically receive a box of the produce weekly throughout the growing season. In this county, only two CSA farms currently exist. The Rattlesnake Community Farm and River Road Community Garden are both operated by Garden City Harvest (GCH), a Missoula based non-profit organization. The money from the CSA shares goes directly back into GCH's production costs. It is not appropriate to present gross sales from this CSA program, because this is a non-profit endeavor, much of the Rattlesnake Community Farm work is provided by University of Montana students (enrolled in the PEAS Program), and the CSA members pay according to a sliding scale. It is important to note that the number of CSA members in Missoula County has slowly increased. The number of CSA shares sold to members at the Rattlesnake Community Farm was 68 in 2000, 77 in 2001, 75 in 2002, and 87 in 2003. The River Road Community Farm just got underway in 2003.

Common Ground Farm, based in Arlee, sells from five roadside stands in Missoula, Bonner, Lolo and Arlee. This farm only began their produce stands during the 2003 season, and the gross roadside stand sales from that farm are not yet available.

Why are these trends occurring?

The decline over the last two decades of both the number of farms involved in direct marketing and the sales of products sold through direct marketing may indicate that either these small farms (whose sales are often more dependent on direct markets than larger farms) are going out of business or have shifted to other markets. In Missoula County, farmers may also be investing more time in wholesale and restaurant markets than they are in direct marketing.

As mentioned above, the Census of Agriculture data is probably incomplete and does not show the impact that farm direct marketing has had in Missoula County. In recent years, there has been resurgence in demand for locally grown food. The vigorous turnouts at Missoula's Farmers' Market suggest that County residents appreciate what the market has to offer: community social interaction, the opportunity to support local farmers, and a chance to purchase nutritional food. The success of the Missoula Farmers' Market supports the idea that urban/farm linkages are being reevaluated in the minds of Missoula County residents.

Community Supported Agriculture is another direct marketing technique that has been doing well in recent years. At Garden City Harvest a single share is designed to feed a family of four for one week and the food can be picked up weekly directly from the producer. The number of shares sold at GCH is limited in order to ensure that enough produce remains to donate substantial quantities to local food pantries and other food assistance organizations, and there are more people who would like to be CSA members than who are actually enrolled⁴.

Why is this important?

Selling agricultural commodities through direct markets is an important way to connect the consumer with the farmer. These markets may also be a viable alternative for farmers who cannot break into the wholesale market because of competition or economic concentration. It would be interesting to conduct a survey in order to gather data on whether county residents would like to participate more in CSAs, shop at the Farmer's Market or stop to buy produce at roadside stands instead of shopping at large grocery store chains. A survey tool could also be used to question county farmers on their current market practices and ideas for improving direct markets in the region. There may be opportunities for more farmers to sell in these specific direct markets.

FOOD DISTRIBUTION SYSTEM

The data presented here offer numerical and productivity indicators for the distribution component of Missoula County's food system. This component includes the County's network of food wholesalers, food manufacturers, food retailers, and food servers. While the number of local manufacturing facilities in the County has declined by over one-third since the 1950s, the number of food wholesalers, retailers, and servers has risen.

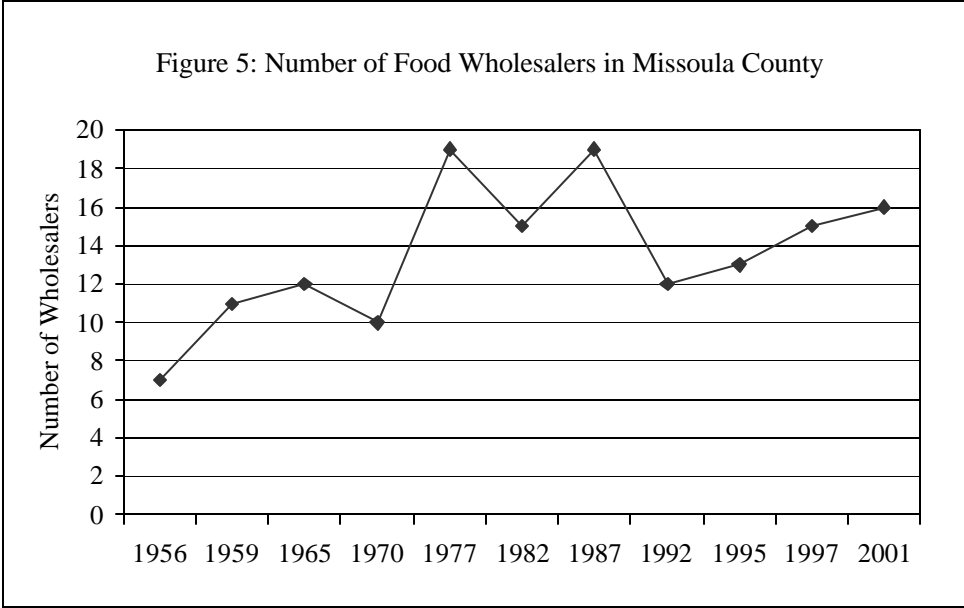
Although data on *numbers* of businesses were available for these categories of food distribution, there were gaps in the *sales* figures for the food distribution network. Data from 1977-1992 were not available in the U.S. Economic Census for Missoula County in terms of *sales* for the following categories: Food Manufacturers, Farm Product Raw Materials Wholesale, and Grocery and Related Products Wholesale. It appears as though the information for Missoula County was not available for the above indicators because an insufficient amount of sales occurred for the county in these areas. For example, the census recorded information on these indicators for Billings and Great Falls and/or Yellowstone and Cascade Counties (1977-1992) because these areas accounted for significant production and/or were designated as Metropolitan Statistical Areas (MSA). Missoula was not designated as a MSA until June 30, 1998. According to Jim Sylvester of the Bureau of Business and Economic Research at the University of Montana, much of the Food Distribution sales data was suppressed due to an insufficient amount being reportable⁵.

The trends.

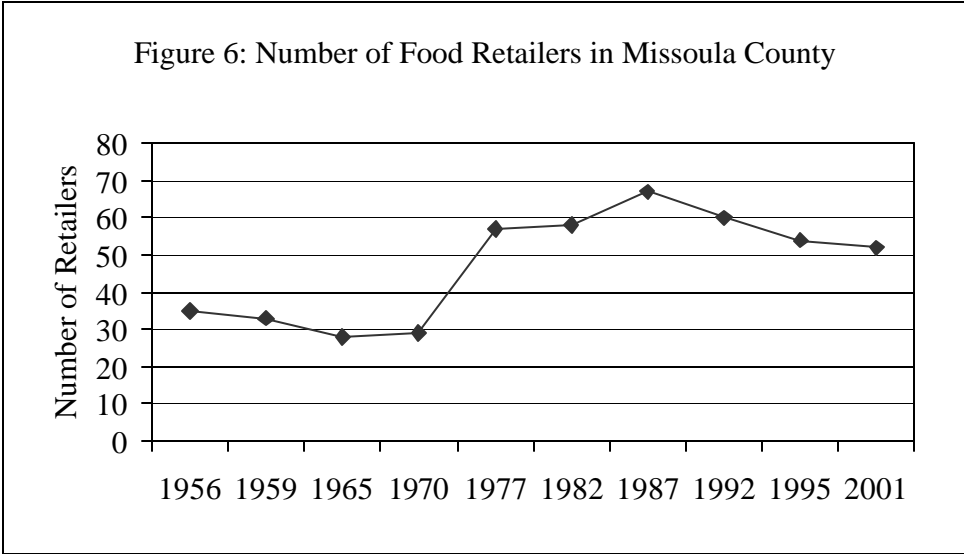
Farm product *raw material wholesalers* are those “establishments primarily engaged in wholesaling agricultural products (except raw milk, live poultry, and fresh fruits and vegetables), such as grains, field beans, livestock, and other farm product raw materials (excluding seeds).”⁶ The County Business Patterns report published by the U.S. Department of Commerce shows a total number of three raw material wholesalers in 1977, four in 1987, and one in 1992, 1997, and 2001. This decrease suggests that raw material wholesalers of farm products are contributing less and less to Missoula County’s food distribution network. Sales data was not available for this sector further demonstrating the insignificant contribution to the food distribution network.

According to the U.S. Census Bureau, industries classified in the *food manufacturing* sector “transform livestock and agricultural products into products for intermediate or final consumption”. The foods processed in these establishments are typically sold to wholesale or retail distributors. The number of Missoula County food manufacturers has declined from a high of 16 manufacturers in 1959 to nine such establishments in 2001. This represents a 44% decline.

Food wholesale establishments are primarily engaged in the wholesale distribution of general-line groceries: packaged frozen foods, dairy products (except canned or dried), confectionery items, fish, seafood and other meat products, fresh fruits and vegetables. During the past five decades, there has been an overall increase in the number of food wholesale businesses operating in Missoula County. Census data indicates that the number of wholesale establishments in the County nearly doubled during the mid-1970s, jumping from 10 in 1970 to 19 in 1977 (see Figure 5). Since 1992 when the number of food wholesaling establishments dropped to 12, the number of these establishments in Missoula County steadily increased to 16 in 2001. Sales figures for these establishments were only available for 1997 in the Economic Census, when they totaled \$60,486,000.

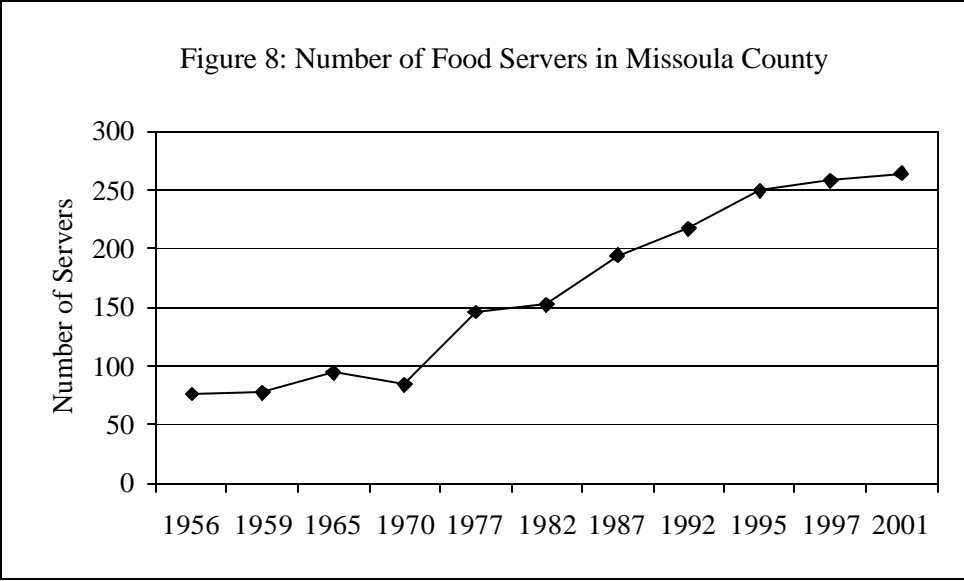


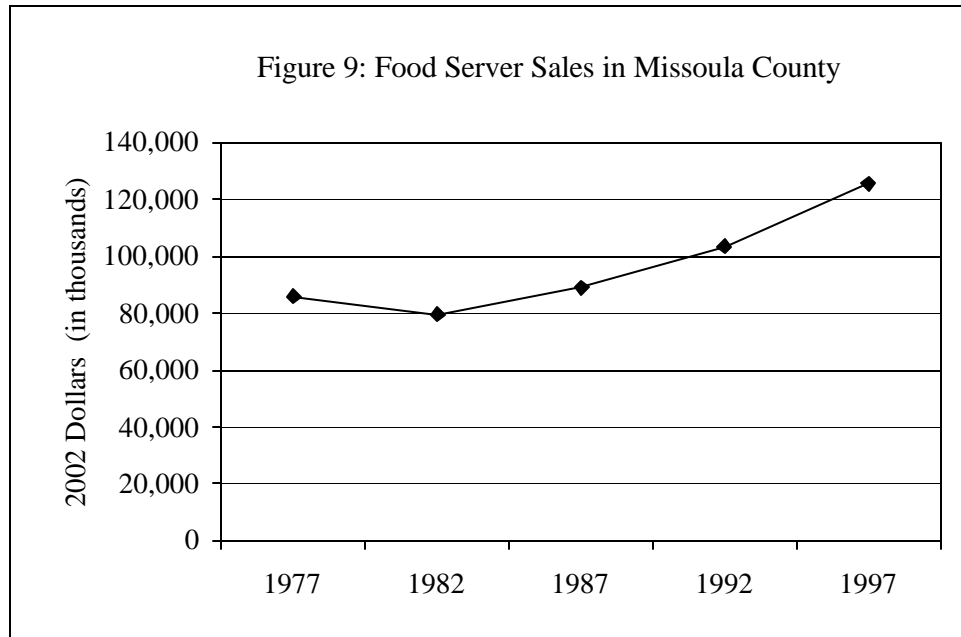
Over the past 50 years, the number of *food retailers* in the County has seen a net increase of 49% (see Figure 6). Food retailers are defined as, “stores engaged primarily in the sale of food items for home preparation and consumption.” Food outlets that are included in this category include: grocery stores, supermarkets, meat and fish markets, fruit and vegetable establishments, and confectionary stores. (Convenience stores are excluded from this classification due to non-food-items accounting for the majority of total sale receipts.) Peaking at 67 establishments in 1987, the number of food retailers had dropped to 52 in 2001, a 22% decline. Sales data also indicate a decline from 1977-1997 (see Figure 7). Sales peaked in 1992 to over \$185 million, but fell again in 1997 to just over \$164 million (all figures are adjusted for inflation to 2002 dollars).





Of all the food distribution indicators represented, the number of *food servers* has seen the greatest jump in numbers since 1956 (see Figure 8). Food servers are retail “establishments selling prepared food and drinks for consumption on the premises”, including “lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption.” The number of food service establishments has grown considerably from 76 in 1956 to over 260 in 2001 (a 242% increase). Sales also increased in the food server sector (see Figure 9), which showed an increase of approximately 47% from 1977 (\$85,831,000) to 1997 (\$125,740,000).





Why are these trends occurring?

The decrease in farm raw materials wholesaling and food manufacturing may be related to the fact that Missoula County has not been a significant agricultural producer for the state and may become less so in the future. Missoula ranks 52nd of 56 counties in the state for total agricultural receipts and less than 1% of the County’s total net income is derived from raising livestock and crops⁷. This modest level of recorded production likely creates an economically unattractive processing environment due to economies of scale.

The dramatic increase in food servers (restaurants) over the past several decades undoubtedly reflects the demographic growth of the County, and the City of Missoula in particular, and perhaps consumers are eating away from home more frequently as well (see Chapter 6). This trend poignantly demonstrates one of the influences food consumers place on the food distribution network. There is a demand for restaurant prepared food that was not present 50 years ago. It is obvious that more and more people are depending on Missoula County’s food servers to nutritionally sustain them. One major contributor may be the student body of the University of Montana, which is located in Missoula, and creates a sizeable market opportunity for new business starts. Accordingly, eating and drinking places ranked 11th in Missoula County for newly established businesses in 1998.⁸

Why is this important?

The integrity of the County’s food distribution network can serve as a reliable indicator for a number of food sustainability and security issues. The overall strength of this network can offer insight into what county assets are being utilized, overlooked, or neglected. The trends illustrated above direct attention to the gaps in our food distribution system and show a need for work on these levels in order to create a more secure and self-reliant food system.

The significant increase in the number of food servers in Missoula County has the potential to provide a strong market for local agricultural producers. Consumers can play a role in this potential by choosing to support restaurants that serve local agricultural goods.

The recession in the number of food manufacturing facilities could limit opportunities for producers in the county. Without a strong processing sector, farmers could be restricted to centralized processing in distant locations, limiting profitability.

¹ United States Department of Agriculture, National Agricultural Statistics Service, Census of Agriculture. 1997. <http://www.nass.usda.gov/census/> (Date accessed: 15 September 2003).

² Parker, Mel: Contact Representative, Missoula Farmers' Market. Personal Correspondence. Sept 28, 2003.

³ Bradford, K. 2003. *Building social relationships, building business : a case study of vendors at the Missoula Farmers' Market*. Missoula: University of Montana.

⁴ Hassanein, Neva. Current research project involving CSA membership. Email. Sept 28, 2003

⁵ Sylvester, Jim, Bureau of Business and Economic Research, phone conversation, October, 2003.

⁶ U.S Department of Commerce. Retrieved September 2003 from the World Wide Web. <http://www.census.gov/epcd/ec97/def/4225.HTM>

⁷ Ibid.

⁸ Missoula County Growth Policy, Chapter 2. August 2002. Office of Planning and Grants, Missoula, MT. <ftp://www.co.missoula.mt.us/opg2/Documents/Long%20Range%20County/Growth%20Policy/Chapter%202a%20Land%20Use%20Economy.PDF>

CHAPTER 5

FARM AND FOOD DISTRIBUTION EMPLOYMENT

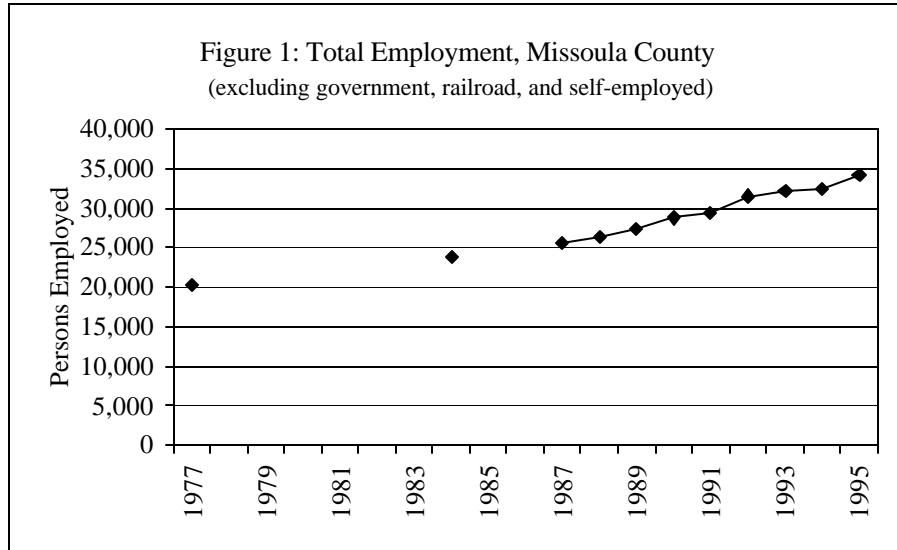
NANCY L. MCCOURT, KIRA PASCOE AND CHAR PEPPENGER

OVERVIEW

Employment is often an indicator of the importance of a given economic activity in a community. This chapter looks at employment trends in agriculture (including for farmers and farm laborers) and in the food distribution system (including processors, wholesalers, retailers, and eating places). The vast majority of farm operators in Missoula County do not consider farming to be their principal occupation, suggesting that many operators farm or ranch for enjoyment and/or for supplemental income. Most farms in the county do not appear to need much hired labor, as farm labor employment (i.e., farm workers) account for a very small percentage of overall employment in the county. Many more Missoula County residents are employed in the food distribution system (about 13.6% of all County employment in 1995, the most recent statistics obtained). Of particular importance are jobs in food service establishments (e.g., restaurants), which employed over 3,100 people in 1995.

TOTAL EMPLOYMENT

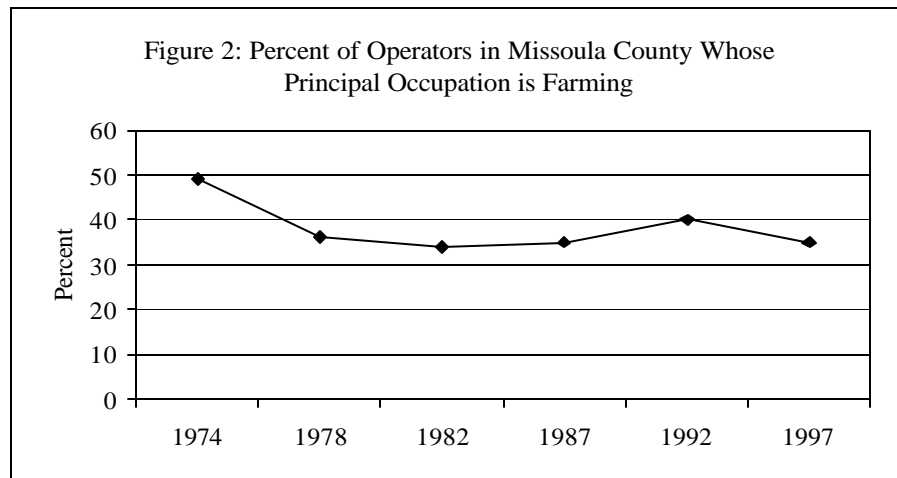
For purposes of creating context, Figure 1 shows Missoula County employment¹ trends (i.e., estimated number of jobs for all job sectors except government, railroad, and self-employed) between 1977 and 1995. The county experienced steady growth with employment increasing 69.8% over all job sectors.



FARMING AS PRINCIPAL OCCUPATION²

The trends.

The number of farm operators (a term for people employed as farmers) in Missoula County has steadily increased from 298 in 1974 to 482 in 1997. However, the percent of operators who reported their *principal occupation* as farming in the agricultural census has decreased from 49% in 1974 to 35% in 1997 (see Figure 2). It seems apparent that the majority of farm operators in the County now make most of their living from off-farm jobs or income.



The steady increase in total farm operators but decrease in percentage of operators who consider farming to be their principal occupation in Missoula County mirrors the trends for agriculture in the state of Montana as a whole. However, at the state level, a much greater percentage of farm operators consider farming their principal occupation (i.e., 65% in 1997).

Why are these trends occurring?

The increase in farm operators but decrease in percent of those whose principal occupation is farming may be due to that fact that Missoula's population is increasing, and some people may work their land to generate a little extra income. Thus, it could be that a lot of the operators, especially those who are land owners and who do not consider farming their principal occupation, are working the land part-time. Further research is needed to determine exactly what accounts for these trends.

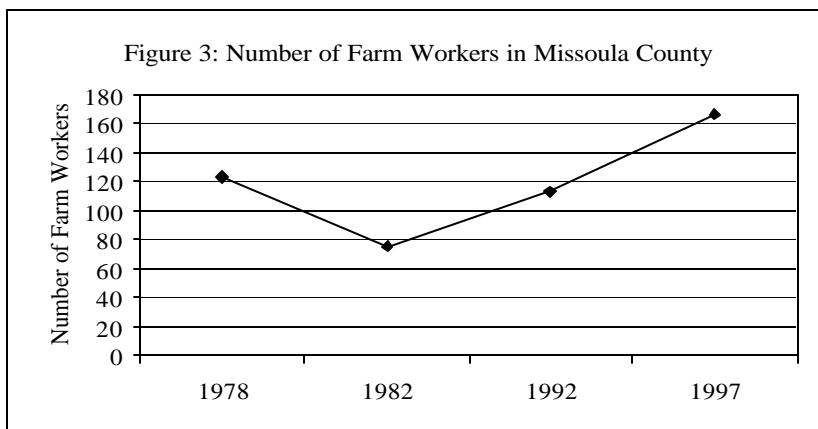
Why is this important?

The farm operator employment trend is important because it shows that while there is increased employment for operators in Missoula County, the percent of full-time farm operators is decreasing. This suggests that it is not easy to make a living, full-time, from employment as a farm operator in Missoula County. Alternatively, the increased percentage of operators whose principal occupation is off the farm may indicate an increase in "hobby" farmers, who farm/ranch mainly for enjoyment or supplemental income. More research is needed to ascertain exactly what type of farming, and therefore what type of farm operator, is needed for sustainable food production in Missoula County.

FARM LABOR EMPLOYMENT³

The trends.

Farm labor employment data reflects farm laborers who work 150 or more days per year. Missoula County farm labor employment trends are shown in Figure 3. Missoula County experienced a sharp decline of 39% from 1978 to 1982 in farm labor jobs, which was a period when many farmers carried high debt loads making hiring labor more difficult. However farm labor employment has increased steadily since 1982, from 75 in 1982 to 166 in 1997, an increase of 121%.



Why are these trends occurring?

Although there has been a slight increase in the number of farm workers in the county in the last decade, it appears that most farms and ranches do not require much hired labor. This may be due to the nature of livestock and hay production (which are predominant in the county). Most likely, Missoula County farmers rely principally on household labor, occasional help from family and friends, and/or very short-term employment of hired hands (e.g., during haying).

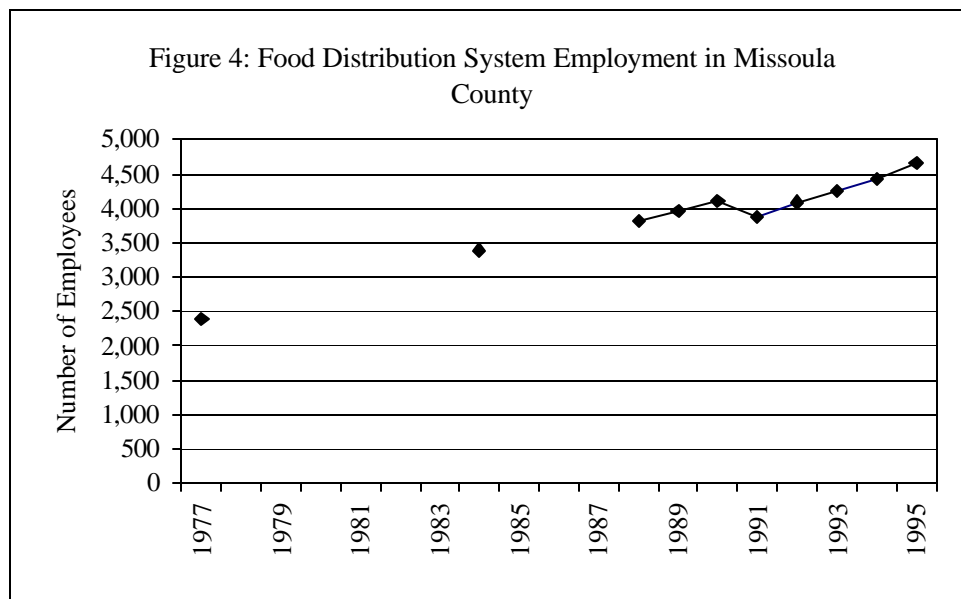
Why is this important?

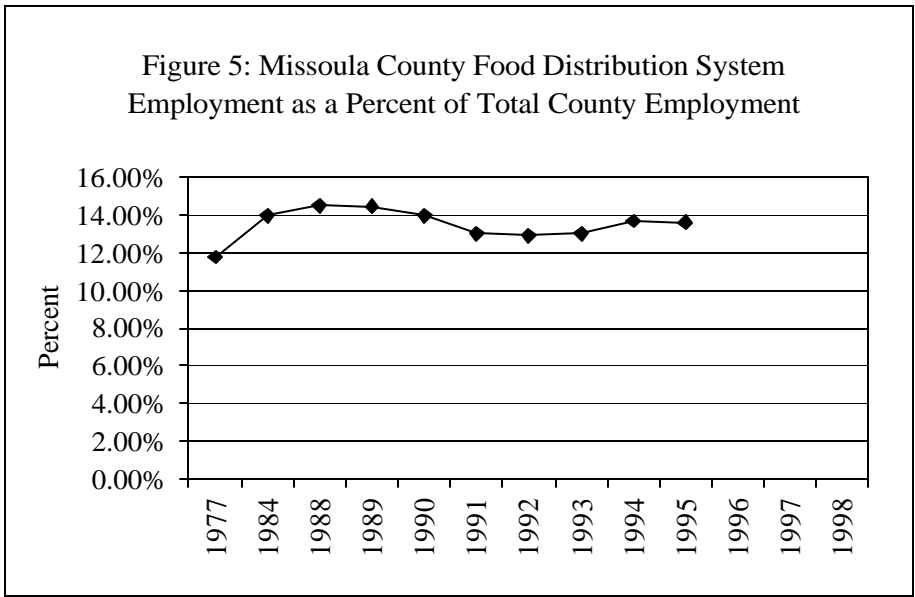
Missoula County farms are mostly small or “family farms,” that is, they are family owned and/or operated rather than organized on an industrial model, which relies much more heavily on hired labor. Not surprisingly, farm labor employment has accounted for a negligible percentage of overall county employment, between 0.3 and 0.5% depending on the year. A look at how farms are used for production and the corresponding need for farm labor on these farms may be helpful in clarifying county farm labor employment.

FOOD DISTRIBUTION⁴ SYSTEM EMPLOYMENT

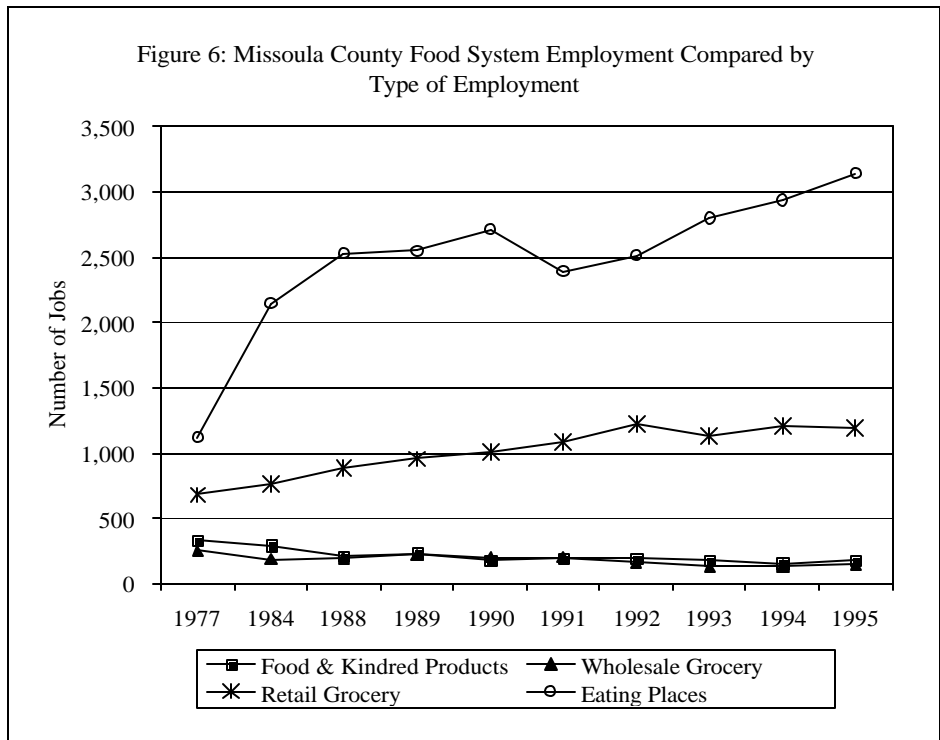
The trends.

The food distribution system describes how food gets to consumers, including processors, wholesalers, retailers, and eating places. Total Missoula County employment (all sectors) increased between 1988 and 1995 by 30% as was shown in Figure 1 (see also footnote 1). Combined food distribution system employment in Missoula County grew by 22% during that same time period (see Figure 4). Maintaining a fairly steady segment of overall county employment, food distribution system employment ranged from 12% to 14.5% of total county employment (all sectors) in the same years (see Figure 5).





However, a closer look at the data specific to each type of employment within the food distribution system may be more revealing (see Figure 6). Both Food & Kindred Products and Wholesale Grocery and Related Products experienced decreases in employment, 12% and 26% respectively, between 1988 and 1995. Meanwhile Retail Food Stores & Grocery increased employment by 35%; Eating Places increased employment by 24%. Thus, food distribution employment typically associated with the service sector (i.e. restaurants and retail food stores) increased while total jobs in the food manufacturing, processing and wholesale grocery sector experienced some loss in jobs.



Why are these trends occurring?

The greatest growth in food system jobs has occurred in eating places. This trend makes sense because the number of food service establishments (e.g., restaurants) in Missoula County has grown considerably in recent decades, as described in Chapter Four. Likewise, the declining number of jobs in businesses that process food and kindred products (and to a certain extent wholesale grocers) reflects the reduction in the number of such establishments.

Why is this important?

It appears Missoula County is experiencing an overall increase in jobs associated with retail service and sales of food, often minimum wage and entry level positions. At the same time there has been a decrease in jobs associated with higher paying food manufacturing and processing and wholesale grocery industries. Further investigation into the possible impact of the decreased food manufacturing and processing and wholesale grocery jobs on markets for local farmers and in turn on the need for hired farm labor is recommended.

¹ **Total Employment** (as reported in U.S. Census, County Business Patterns): An estimated number of jobs, full-time plus part-time, by place of work, excluding most government, railroad, and self-employed persons. Full-time and part-time are counted at equal weight. Employees, sole proprietors, and active partners are included, but unpaid family workers and volunteers are not.

² *Terms that may be helpful in this section:*

Farm Operator: According to the agricultural census, the term "operator" designates a person who operates a farm, either doing the work or making day to day decisions about the farm. The operator can be the owner, a member of the owner's household, a hired manager, tenant or share cropper. A person is considered the operator only for the land which is retained for his/her own operation. For partnerships, only one partner is counted as the operator. The number of "farms" in the county is not always equal to the number of "farm operators" in a given census year.

Farm: Any place that had, or would normally have had over \$1000 or more in agricultural product sales during the census year.

³ **Farm Labor Employment:** The number of workers engaged in the direct production of agricultural commodities, either livestock or crops; whether as a sole proprietor, partner or hired laborer, working 150+ days in the given year.

⁴ The food distribution system describes how food gets to us. In U.S. Census terms, this includes Food & Kindred Products, Wholesale Grocery and Related Products, Retail Food Stores & Grocery, and Eating Places. Food and Kindred Products is a wholesale category encompassing establishments that manufacture or process foods and beverages for human consumption, and certain related products, such as manufactured ice, chewing gum, vegetable and animal fats and oils, and prepared feeds for animals and fowl.

CHAPTER 6

FOOD CONSUMPTION INDICATORS

SHELLAN MILLER, JEN EUELL, AND JOSH KLAUS

OVERVIEW

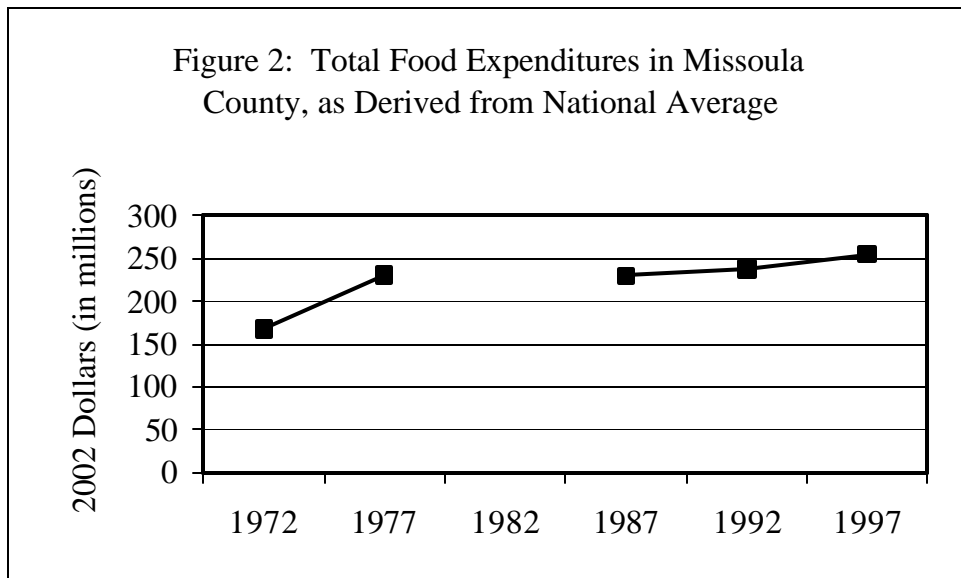
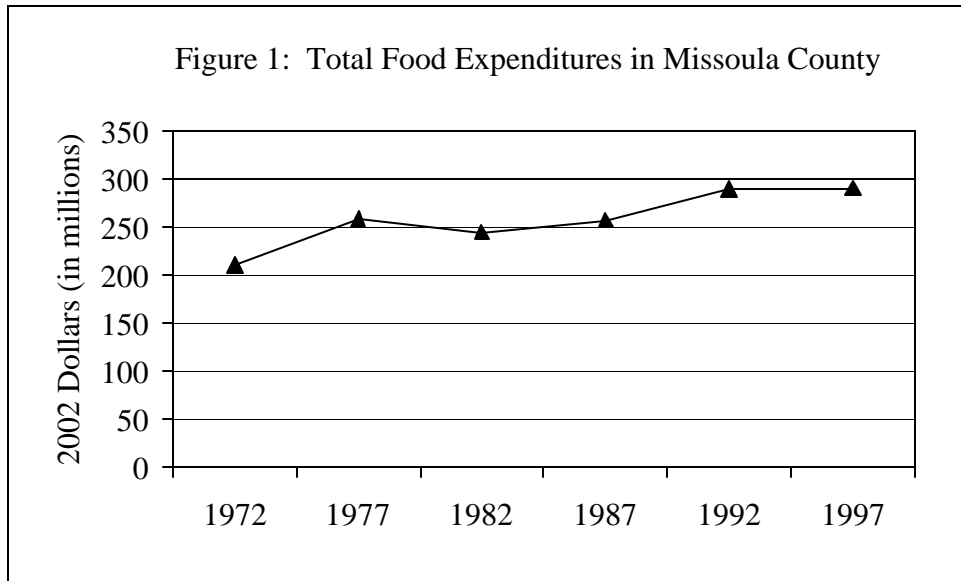
Detailed data from consumers on food consumption habits in Missoula County are unavailable. Expenditures can be calculated by adding food retailers' and food servers' gross receipts. This calculation provides basic information indicating how much Missoula County residents spend on food, and whether they spend it on food eaten 'at home' or 'away from home.'

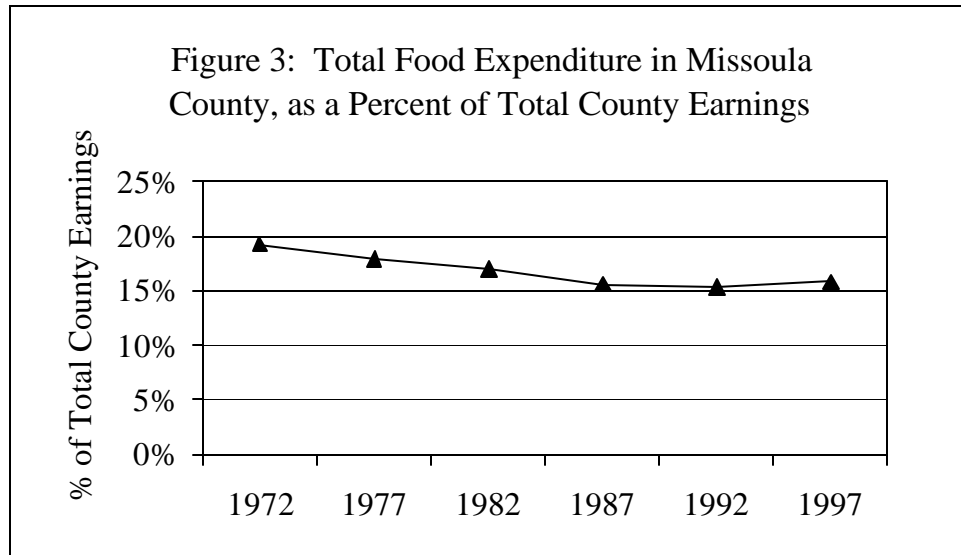
According to this estimate, total county food expenditures have shown steady growth since 1972, punctuated by a spike in total county spending in 1977, while per capita spending has fluctuated, showing no true trend. The percent of Missoula County residents' income spent on food decreased from 1972 until 1992. From 1992 to 1997 it increased by 3.5%. Missoula County residents are spending relatively more each year to eat out than to eat at home, as is the case on the national level. However, despite mirroring national eating habits, in Missoula County per capita expenditures on food during the 1972-1997 period were on average 21.6% higher than the per capita expenditures of the average American, and in 1997 Missoula county residents spent 36% more on food than the national average. In part, this might be a reflection of food expenditures by consumers not represented in population estimates, such as tourists and students.

TOTAL FOOD EXPENDITURES

The trends.

Total food expenditures in Missoula County, as estimated from the U.S. Census of Retail Trade¹ and adjusted for inflation to 2002 dollars, increased overall by 37.8% from 1972 to 1997 (see Figure 1). Total county food expenditures derived from the national average of food expenditures² shows a 52.5% increase over the same time period (Figure 2). Total county food expenditure as a percentage of total county earnings showed a steady decrease until 1987, when this downward trend evened out and rebounded by 3.5% in 1997 (see Figure 3).





Why are these trends occurring?

The increase in total food expenditures in the County over the years certainly reflects increasing population. There may be other influencing factors as well. It is important to notice that between 1992 and 1997 the method used in compiling the data changed from the Standard Industrial Classification System to the National Industry Classification System, which may account for some of the deviation from the primarily downward trend seen previously. Finally, in this data non-resident spending is included in the total county expenditure numbers, however the county earnings include only resident income. Thus, our estimates of percent of county earnings spent on food do not take into account spending by tourists, students and other non-resident consumers.

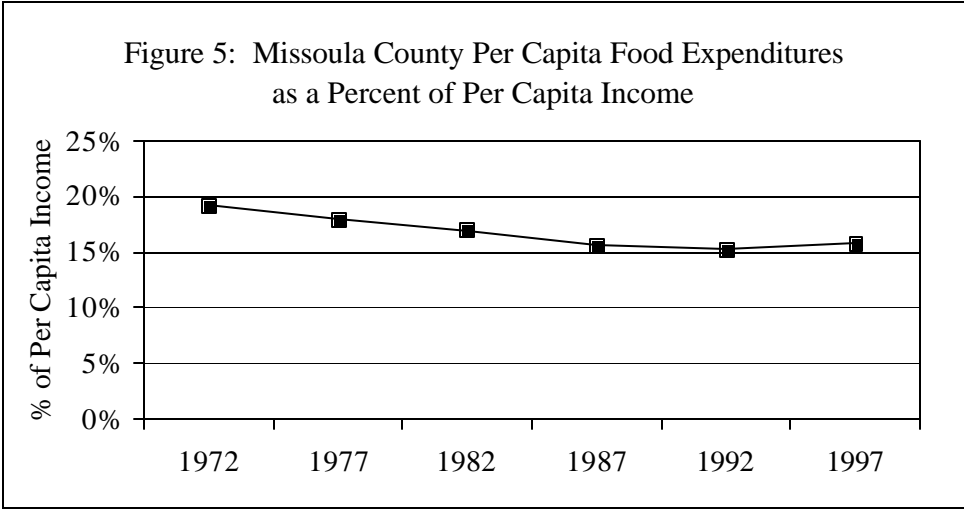
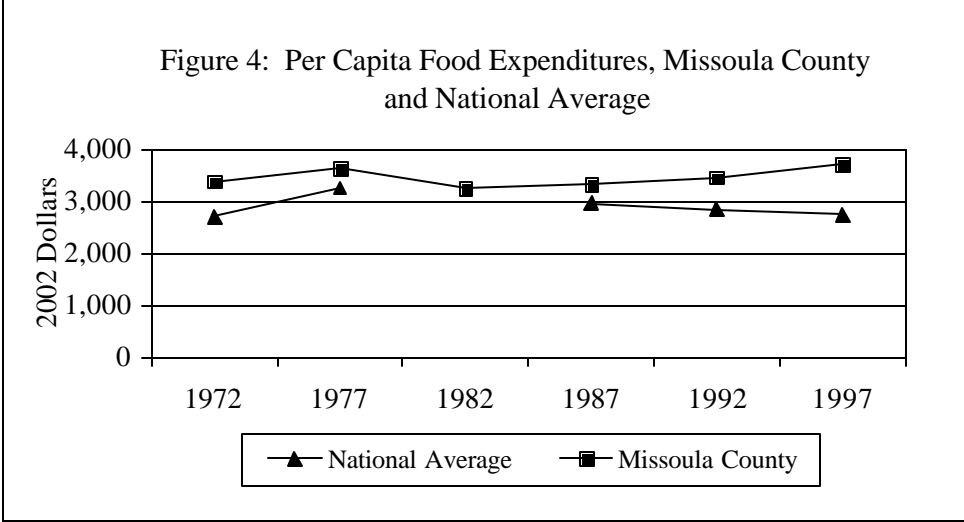
Why is this important?

Total food expenditure is one important factor in determining future market opportunities that may or may not exist for Missoula producers. The expenditures of non-resident consumers undoubtedly have an impact on the market that necessitates further study.

PER CAPITA FOOD EXPENDITURES

The trends.

Missoula county per capita food expenditures, based upon Economic Census data, have fluctuated and increased slightly over time (see Figure 4). As a percentage of per capita income, per capita food expenditures have fluctuated somewhat, but decreased by 18% overall since 1972 (see Figure 5). In 1997, Missoula County residents spent nearly 16% of their per capita income on food. One interesting trend to note here is that between 1972 and 1997 Missoula county residents spent an average of 21.6% more on food than the typical US citizen (Figure 4), and by 1997 they spent 36% more on food than the average U.S. Citizen.



Why are these trends occurring?

The difference between per capita spending by Missoula residents and average per capita spending at the national level may be a function of non-resident consumers. Food expenditures by students, tourists, and other non-resident consumers are reflected in the receipts of local businesses, but these consumers are not represented in the county population numbers. In addition, the number of non-resident consumers is difficult to quantify because there are no comprehensive estimates of travel expenditures for Missoula County. The only data available that gives any indication of the number of tourists who visit Missoula County each year is the state accommodations tax collected by hotels. This gives a rough estimate of how many non-residents stay in the county each year, but it tells us little about their food spending habits and does not take into account non-residents who may camp or stay with friends.³ The number of students is easier to determine. Between 1972 and 1997 the number of University of Montana students increased from 8,624 to 12,124.⁴ However, this does not tell us the number of *non-resident* students in Missoula. Furthermore, many students are in Missoula for only nine months of each year. Even if tourists and non-resident students make the per capita food expenditures look higher than they actually are for the County, it is unlikely that this

effect accounts for *all* the difference between Missoula County per capita expenditures and the national average.

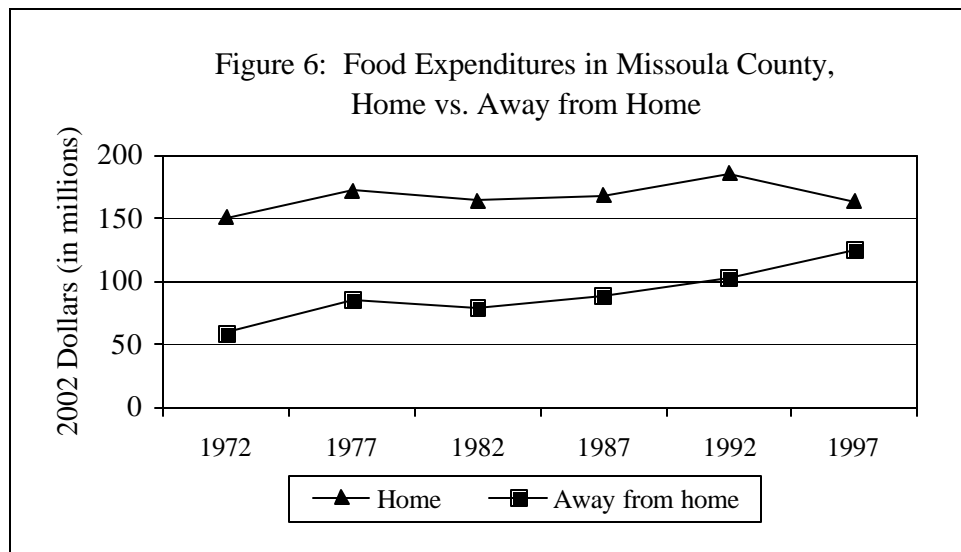
Why is this important?

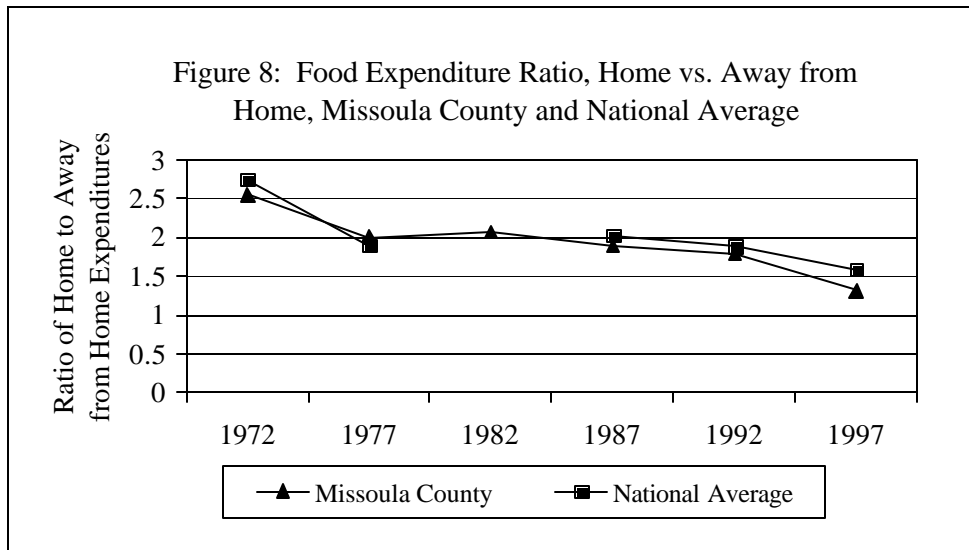
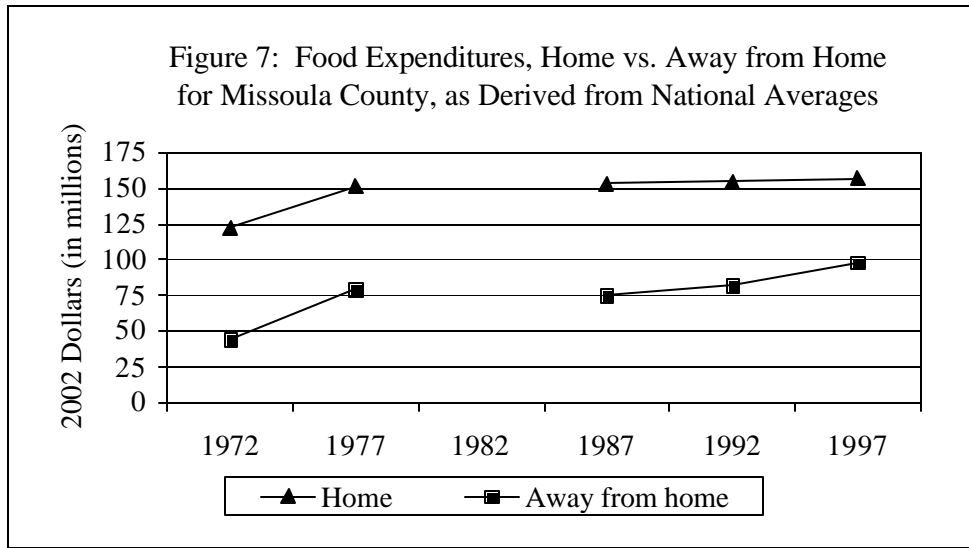
Missoula County residents are spending a slightly smaller percentage of their income on food over time, but they may be spending a larger percentage of their income on food than Americans in other parts of the nation. The cause of this occurrence is impossible to determine with the available data.

DOLLARS SPENT ON FOOD: HOME VS AWAY FROM HOME

The trends.

Food expenditures ‘at home’ and ‘away from home,’ both at a local and a national level, whether estimated from Economic Census data or from national averages, have increased since 1972 (Figure 6 and Figure 7). For every dollar that eaters in Missoula County spent on food to eat away from home in 1972, they spent \$2.55 for food to eat at home. By 1997, however, for every dollar spent on food to eat away from home, eaters in the County spent only \$1.31 on food to eat at home. In other words, the ratio of ‘at home’ food expenditures as compared to ‘away from home’ food expenditures has decreased by 49% over time. Except for 1977, the ratio of ‘at home’ to ‘away from home’ expenditures in Missoula County has been smaller than the equivalent ratio at the national level (see Figure 8).





Why are these trends occurring?

Missoula County residents, like most Americans, are undoubtedly dining away from home more frequently than in the past. Based on the number of convenient fast-food restaurants and eateries, Americans and Missoula County residents have opportunities to purchase food prepared away from home. At the same time, many tourists fall into this ‘away from home’ eating category as well.

Why is this important?

Retail food servers are playing a larger role in feeding people than ever before, changing the historically familial culture of eating. Eating is, in effect, now shaped increasingly by the market and external forces of food service, and decreasingly by domestic influences.

¹ We collected data from the U.S. Census of Retail Trade, Geographic Area Series, at both county and national levels. In both cases we added food retailers' and food servers' gross receipts to calculate total food expenditures. More detailed or itemized data on food consumption expenditures on a county and national level are unavailable. For the purposes of this document 'at home' food and 'away from home' food are defined according to the 1997 US Census definitions. That is, 'at home' food is food purchased at a food store, "primarily engaged in selling food for home preparation and consumption," while 'away from home' food is food purchased from an eating or drinking establishment "engaged in selling prepared food and drinks for consumption on the premises." (United States Census. 1997. *SIC Major Group Definitions*. Washington, DC: US Census Bureau. <http://www.census.gov/epcd/ec97sic/def/G54.TXT> (Date accessed: 22 September 2003)). It is important to note that gross retailers' receipts sometimes include non-food items such as alcohol or gasoline. All food consumption data was gathered from 1972 through 1997 because new 2002 Economic Census data will not be available until 2004. Due to an Internal Revenue Service error, no data is available for 1982 at the national level (United States Census of Retail Trade. 1982. Geographic Area Series. See Table 1. Summary Statistics for the United States: 1982).

² County expenditures derived from national averages simply divide the County population by the US population and then multiply by total US expenditures.

³ Institute for Tourism and Recreation Research – The University of Montana – Missoula. 2002. *Visitors to Montana Counties: A Pilot Analysis for the Madison and Lincoln Counties*. Missoula, MT: The University of Montana. <http://www.forestry.umt.edu/research/mfces/programs/itr/research/county.htm> (Date accessed: 21 October 2003)

⁴ Institute for Tourism and Recreation Research – The University of Montana – Missoula. 2002. *Visitors to Montana Counties: A Pilot Analysis for the Madison and Lincoln Counties*. Missoula, MT: The University of Montana. <http://www.forestry.umt.edu/research/mfces/programs/itr/research/county.htm> (Date accessed: 21 October 2003)

CHAPTER 7 FOOD SECURITY AND ACCESS INDICATORS

SHELLY CONNOR, JEN VON SEHLEN AND VALERIE LAURENCE WIDMER

OVERVIEW

Food security can be thought about at a variety of different levels -- from the individual to the global. In this chapter, we focus on the individual, household, and to a lesser extent, the community level.

Food security is measured by a number of important indicators, such as government food program participation, food pantry usage, gleaning programs, and community gardens. Among these indicators were a number of salient findings.

It is imperative to recognize the impact of the Personal Responsibility Work Opportunity Reconciliation Act or PRWORA, the welfare reform act of 1996, on the trends describing participation in government food and nutrition programs and use of emergency food sources. Policy changes have created barriers to women's participation in the WIC program in Missoula County. In addition, the Farmer's Market Nutrition Program (FMNP) has experienced serious funding setbacks. Only 30% of the Missoula County students who are eligible for the Free and Reduced School Lunch Program actually participated during 1999 through 2002. The average monthly number of food stamp recipients steadily began to decrease after 1996 due to significant changes in eligibility; however, since 2000 Missoula County has been experiencing an increase in the number of participants.

As a result of cutbacks in funding and changes in eligibility and requirements for participants in government food programs, people are becoming more dependent on emergency food programs, such as food banks or soup kitchens. Over the last few years, most of these places in Missoula County have experienced significant increases in the number of people who use their services. In addition, community gardens are an important source of fresh produce for those in need.

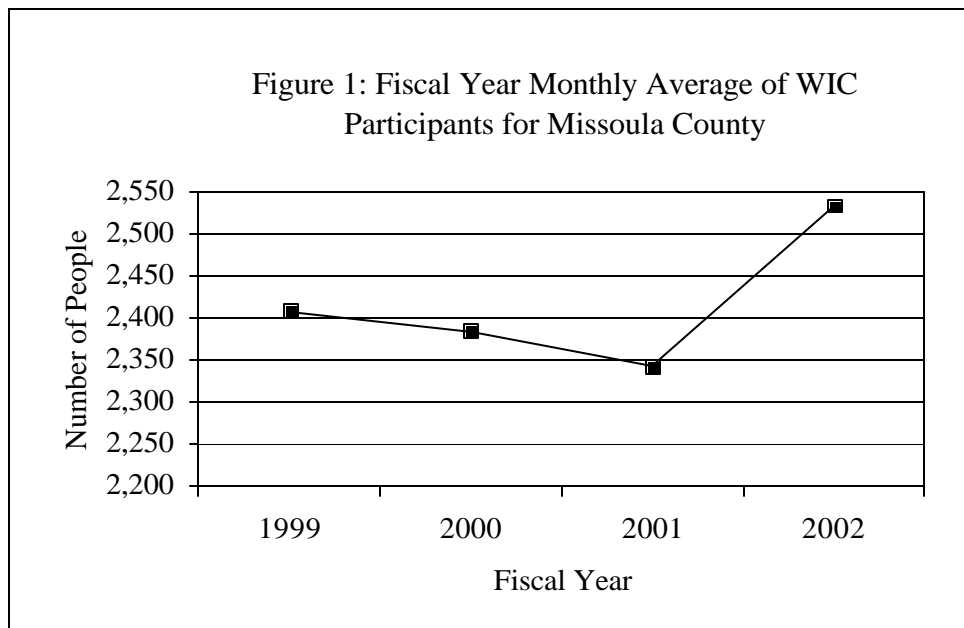
The food security and access indicators suggest that many people living in Missoula County are experiencing food insecurity. Further research will aid in our understanding of what can be done to prevent an increase in the number of people facing this problem.

GOVERNMENT FOOD PROGRAM PARTICIPATION

The trends.

Government food program participation statistics are useful indicators of a community's food security. Below are descriptions of four government food programs used in Missoula County, including the WIC program, Farmers' Market Nutrition Program, School Lunch Program, and Food Stamps.

The WIC Program (Women, Infants and Children) supplements family income with coupons for food items. These coupons are for food items that are high in calcium, which is necessary to meet the nutritional needs of children and pregnant women.¹ Allotments are based on family income and size, and the WIC program supports families that are pregnant and/or have children under the age of five.² The WIC Program is federally funded. A downward trend from 2,420 to 2,357 average monthly participants occurred between 1999 to 2001 (see Figure 1), but there was a rebound to 2,533 in 2002. Mary Pittaway, Missoula County WIC Coordinator, estimates the total number of WIC participants in the county to be about 30% higher than the monthly average because WIC clients do not necessarily participate consistently throughout the year.³

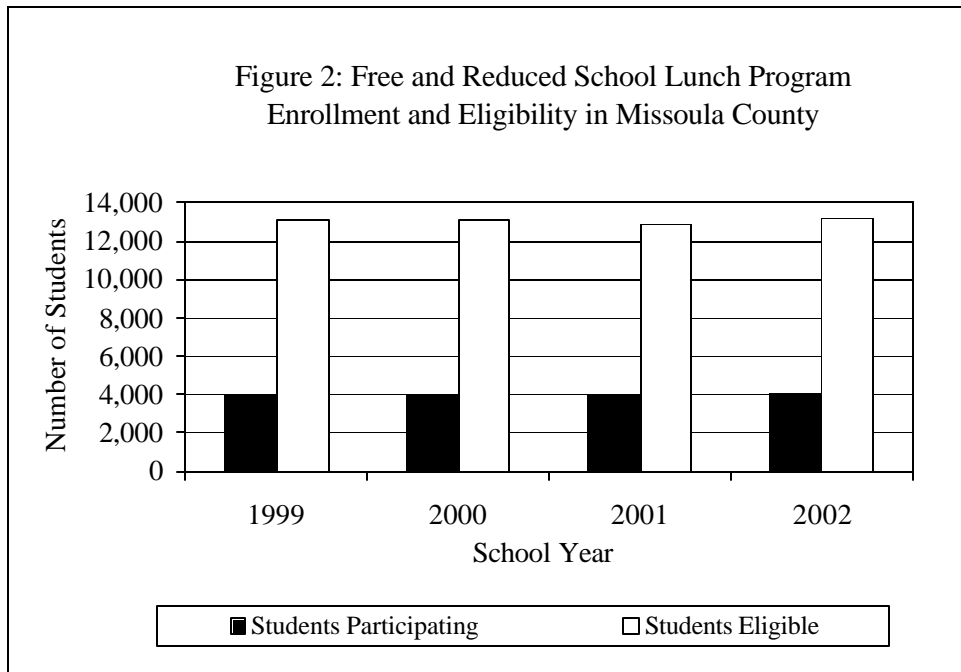


The Farmers' Market Nutrition Program (FMNP) is administered through the WIC Program. The FMNP gives families that are participating in the WIC program access to fresh, local, and nutritious produce during the months of May through October (when Missoula's Farmers' Market is operational). This program is funded through federal and state matching monies. There is only one FMNP in Missoula County. The program started in 1992 with only \$1000.⁴ From 1993-2001, the WIC program received no matching state money to run the program. Between 1993-2001, the FMNP was funded through private donations and grants applied for by Missoula County.⁵ However, beginning in 2002, Missoula County received money from the United States Department of Agriculture (USDA) and matching funds from the Department of Public Health and

Human Services, for a total of \$30,000. In 2003 however, the state decided against matching the federal funds and only provided funding to bring it to \$15,000 for the program's total budget.⁶

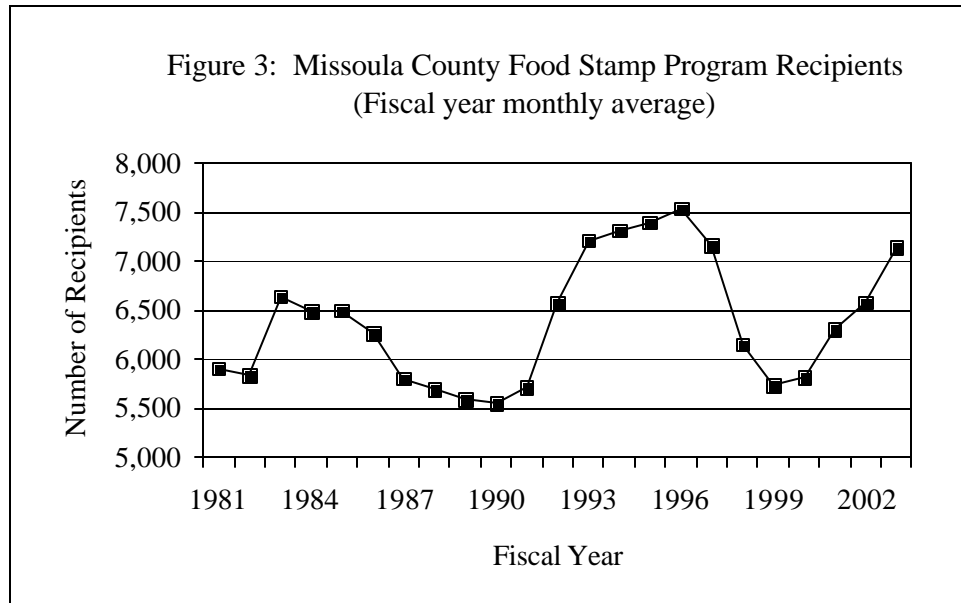
The Free and Reduced School Lunch Program is a federally funded program that provides free or reduced school lunches to students from low income families.⁷ To qualify for the Free School Lunch Program, the student's household income must be at or below 125 percent of the poverty line.⁸ For a student to qualify for the Reduced School Lunch Program the household income must be at or below 185 percent of the poverty line.⁹

The number of *eligible* students for the Free and Reduced School Lunch Program dropped slightly between 1999 to 2001, dropping from 13,140 to 12,882. However, between 2001 to 2002, the number of *eligible* students increased slightly from 12,882 to 13,164 (see Figure 2). The number of students *actually participating* in the program has slightly increased since 1999; rising from 4010 in 1999 to 4083 in 2002 (see Figure 2). The gap between those students eligible for the program and those who are actually participating has consistently been between 69-70% for the years 1999 through 2002.



The number of people receiving food stamps in Missoula County has fluctuated over time (see Figure 3). From 1993 through 1996, an average of about 7,350 people per month received food stamps in Missoula County, which is roughly 3,100 households.¹⁰ After 1996 there was a dramatic decrease in the number of people in the Food Stamps program until 2000, and then the numbers began to climb once again. At the time of the last Census of Population in 2000, 14.8% of the population lived below the poverty line but only about 6% of the County's population (5,820 monthly average) received food stamps

monthly. This suggests that many people who are eligible for food stamps do not receive them, a problem recognized by anti-hunger advocates in Missoula County. Although food stamp participation increased to a monthly average of 7,144 in 2003, it is clear that the program is not reaching many people in need.



Why are these trends occurring?

The Personal Responsibility and Work Reconciliation Act (PRWORA) of 1996 was a major turning point for government food programs. Welfare became welfare-to-work, and each of the states developed its own version within the broad parameters of the federal legislation. Montana first created FAIM (Families Achieving Independence in Montana), and in 2002 Temporary Assistance for Needy Families (TANF) was approved at the federal level.

Welfare reform has been portrayed as a success because the caseloads dropped 50% nationally between 1996-2000. However, according to WEEL (Working for Equality and Economic Liberation), a welfare advocacy group in Missoula:

Families have been disappearing off the radar screen and moving into deeper poverty than this country has seen since the depression. Montana reduced welfare caseloads 60% by 1999, primarily through sanctioning families off of assistance. Meanwhile, Montana has the highest number of people working more than one job to make ends meet, the fastest growing poverty rate in the country, and the third highest child poverty rate in the country.¹¹

Around half of those who are eligible for the WIC Program know about the services and use them.¹² Fluctuations in the number of WIC participants can be due to PRWORA requirements. Since 1996, PRWORA requires mothers enrolled in the WIC Program to attend one-hour appointments every other month, in order to receive WIC benefits. This poses a difficulty for many working mothers.¹³

The FMNP in Missoula County has been forced to run its operations on a very small budget. This past year the legislative funding to food and nutrition programs such as FMNP was cut due to a budget crisis, thereby affecting the state's ability to sustain or improve existing programs.¹⁴

The fact that only 30-31% of those who are eligible for the School Lunch Program are actually participating may be due to a number of factors. Children coming into the school district in the middle of the school year may not be enrolling in the program. Most children are enrolled in the program at the beginning of the school year, although it is possible to apply at any time throughout the school year.¹⁵ Families also may not be enrolling because change in household income levels could happen after the start of school. Another barrier for families applying to the Free and Reduced School Lunch Program may be "perceived income confidentiality issues."¹⁶

Eligibility for food stamps is now a complex process, determined by both financial and non-financial criteria established by the federal government. The gap between participation rates and poverty rates may be due in part to this complexity. Staff from the Missoula Food Bank and other agencies report that their clients often feel the food stamp application process is too cumbersome. National participation rates for food stamps have fallen considerably more than rates of poverty, suggesting that millions of families eligible for these benefits are not receiving them.¹⁷

More research is needed on the barriers to participation in food-related government programs.

Why is this important?

The Center on Hunger and Poverty at Brandeis University has documented levels of food insecurity and hunger among specific at-risk populations in the United States, such as children, the elderly, immigrants, emergency food assistance recipients, and welfare recipients.¹⁸ The national data shows that Montana had the ninth highest level of food insecurity (13%) in the United States, and it ranked second in the states whose relative hunger status worsened most (i.e., moved up more than 10 places in the rankings) during the comparative time periods (1996-1998 versus 1998-2000).

A lack of food and/or poor nutrition can lead to a variety of problems. For example, if a pregnant woman does not gain enough weight, her infant is at a significant risk of being low birth weight. If a student goes to school hungry and does not participate in the School Lunch Program, her academic performance and health will suffer. Low participation in government nutrition programs (combined with changes in the economy, welfare policy, etc.) means more people become dependent on emergency food sources, as discussed below.

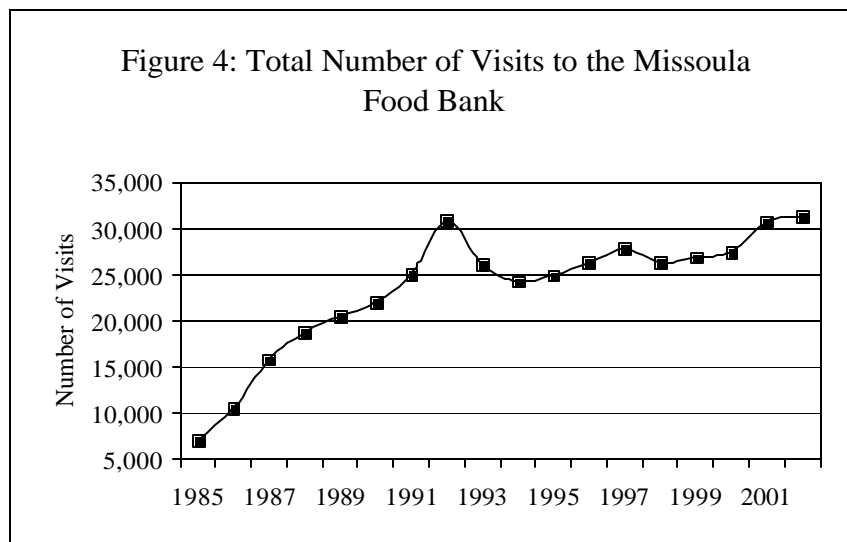
FOOD BANKS AND PANTRIES IN MISSOULA COUNTY

The trends.

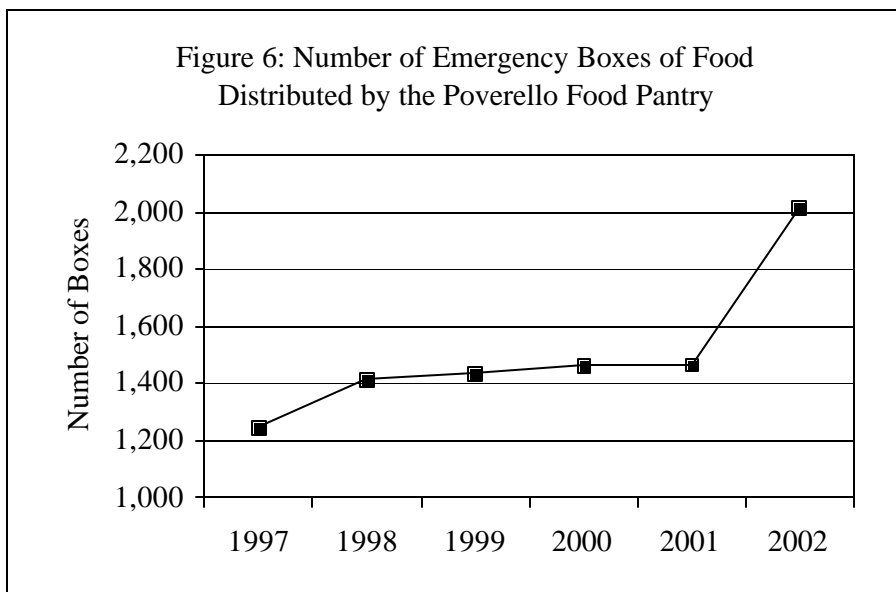
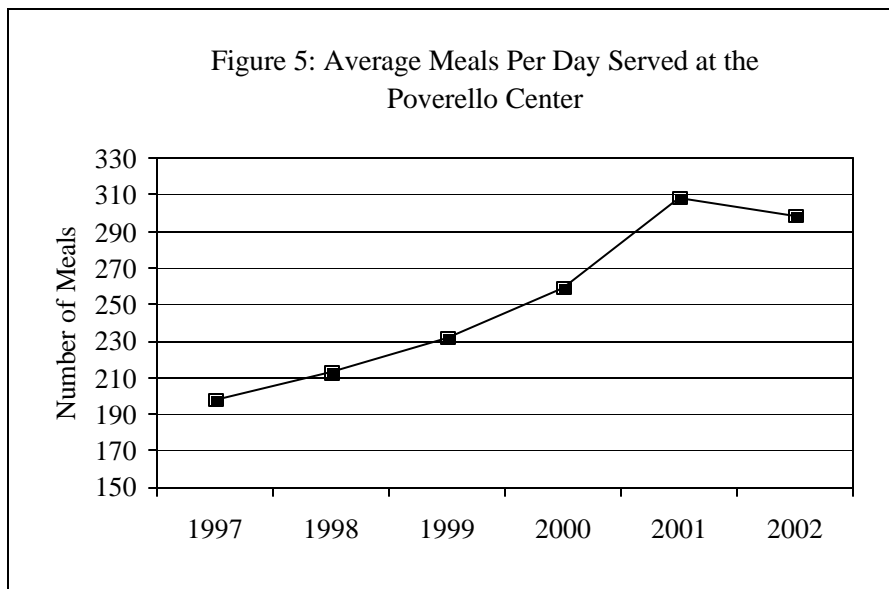
There are several places in Missoula County where people can access free food. These places are commonly referred to as “emergency food” agencies or programs. According to the Montana Food Bank Network (MFBN), their affiliates are likely to be the predominant places in Missoula County where people can go to get food or be served a meal. The MFBN’s affiliates in the county are Clark Fork City Church, Christian Life Center, Seeley-Swan Food Pantry, Missoula 3:16, the Salvation Army, the Poverello Center and Food Pantry, and the Missoula Food Bank. Many affiliates of the MFBN (for example, Clark Fork City Church and the Seeley-Swan food pantry) receive a good portion, if not all of their food supplies, from the MFBN, while others use a variety of sources.

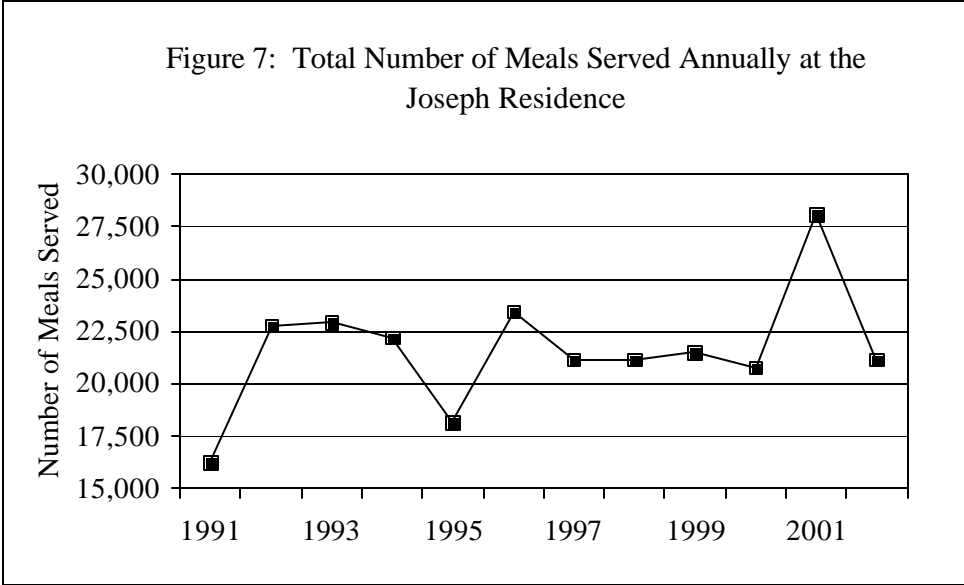
Available statistical data for five of these emergency food agencies suggests that most of these facilities are seeing an increased usage of their services. It is important to point out that not every emergency food distribution agency in the county is discussed here. There are at least half a dozen more emergency food distribution agencies in Missoula County that have no recorded statistical data, meaning it is difficult to know exactly how many more people are being served by emergency food agencies.

The Missoula Food Bank (MFB), established in 1982, provides both perishable and non-perishable food for thousands of people in Missoula County. People either go directly to their location in Missoula, where they can pick out from a list (which is dependent upon supply and how many people are in the family) what food they would like to take home with them. The MFB also donates to other emergency food agencies such as the Missoula Indian Center or Missoula 3:16. The MFB has been experiencing a steady increase in the number of people it serves in a year (see Figure 4).¹⁹ For example, from 1998 to 2002, the MFB experienced a 19% increase in the total number of visits (this figure includes those clients that needed to use the MFB’s services more than one time in a year).²⁰

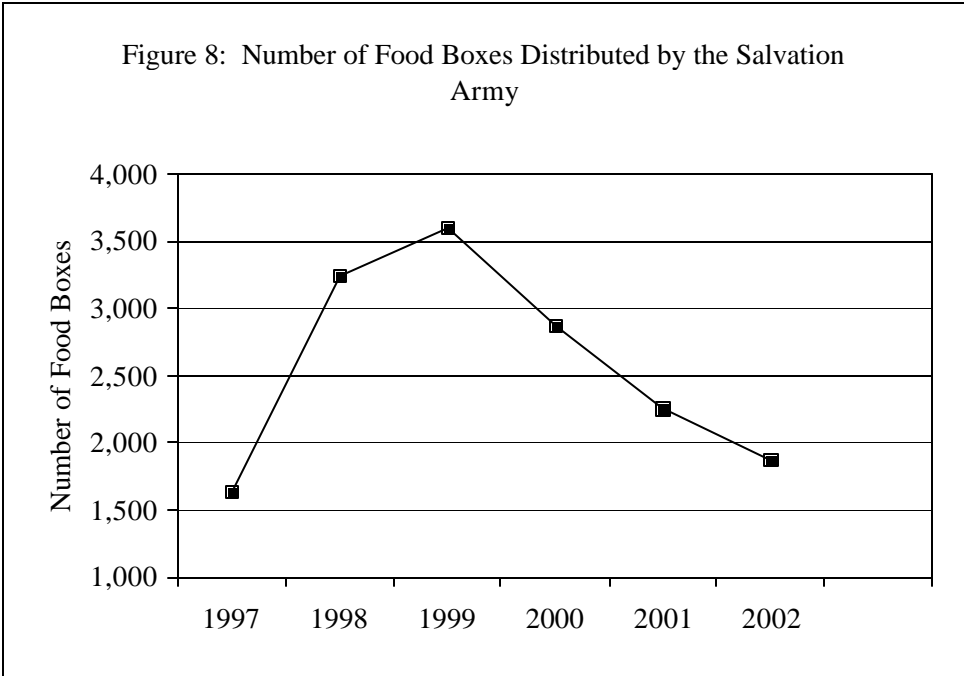


Another leading food agency in Missoula is the Poverello Center and food pantry. The Poverello Center, which was established in 1974, serves three meals daily and also distributes food boxes. From 1997 to 2002, the average number of meals the Poverello Center served increased by 51% and the number of food boxes they distributed has increased by 61% (see Figures 5 and 6).²¹ The Joseph Residence, a transitional living center for homeless families run by the Poverello Center, has a set number of families it can serve. In 1996, the Joseph Residence increased its housing capacity since its opening in 1991 and subsequently experienced an increase in the number of meals it served each year (see Figure 7).²² In 2001, the Joseph Residence saw a jump in the number of meals they served during that year; however this is due to a group of travelers who used their facilities and services.²³





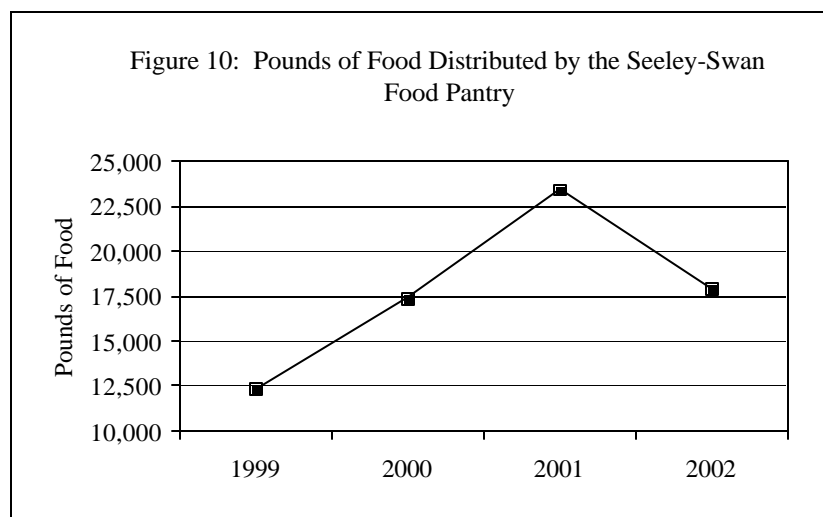
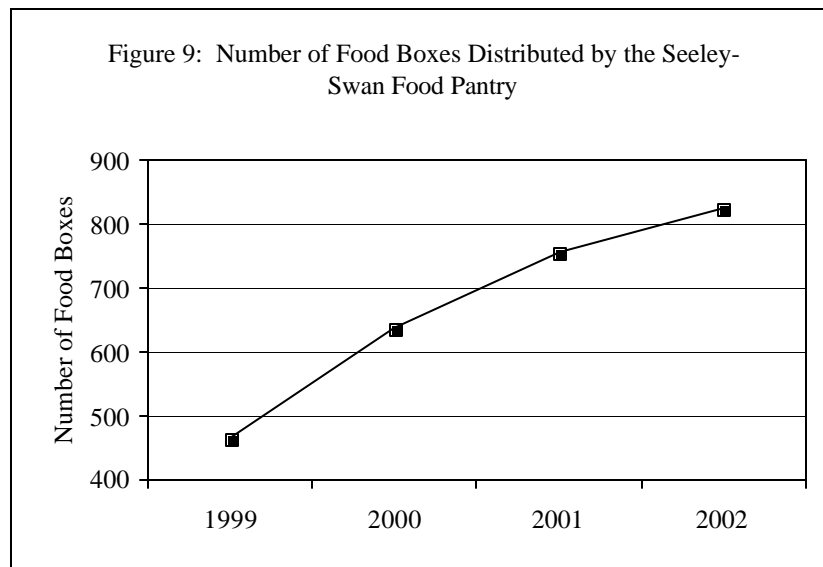
The Salvation Army of Missoula, which has been serving the Missoula community for over 100 years, is another agency that provides boxes of food to individuals and families. The type and amount of food clients receive is contingent upon the size of the family and their living situation (i.e., do they have access to a stove, oven, etc.). The total number of food boxes the Salvation Army distributed reached 3,601 in 1999, but has been steadily decreasing since then, resulting in a 48% decrease from 1999 to 2002 (see Figure 8).²⁴



Missoula 3:16, one of the newest feeding agencies in Missoula County, provides meals and food boxes to its clients. They were established in 2001, and in their first year of operation, they served 7,673 meals and distributed 1,372 food boxes.²⁵ In 2002, they

served 24,181 meals and distributed 1,501 food boxes.²⁶ The dramatic increase in numbers from 2001 to 2002 is due to the fact that they were not open for the entire year in 2001 and have since experienced an increase in donated supplies.

Finally, the Seeley-Swan food pantry, located in Seeley Lake, opened in 1999. The pantry distributes food boxes filled with non-perishable food items and personal care items. They also provide their clients with food vouchers which they can use to purchase perishable food items such as milk, cheese, bread, and meats at local grocery stores. The grocery stores are later reimbursed by the Seeley-Swan food pantry.²⁷ From 1999 to 2001, the Seeley-Swan food pantry distributed food boxes filled with a six-day supply of food. However, in 2002 they decreased the amount to a three-day supply of food. Since its opening, the number of food boxes the Seeley-Swan food pantry has distributed has gradually increased by 77% (see Figure 9). The amount of pounds of food the Seeley-Swan Food Pantry distributed from 1999 to 2001 increased by 90%, but they experienced a 24% decrease from 2001 to 2002 (see Figure 10).



Why are these trends occurring?

The Personal Responsibility Work Opportunity Reconciliation Act (PRWORA), has often been cited as a leading cause behind the increase in food assistance programs such as food banks and soup kitchens (as well as an increase in usage).^{28,29,30} The Missoula Consolidated Plan summary of 1999 states, “Food banks, the Salvation Army Food Pantry, and other service providers are already experiencing an increased demand for repeated services that previously were provided on an emergency-only basis.”³¹ As a result of PRWORA, by 1999, welfare caseloads in Montana had dropped by 60%. However, Montana has the highest number of people working more than one job, has the fastest growing poverty rate, and is ranked as the third highest in child poverty in the country.³² This suggests that PRWORA has done little to alleviate poverty for low-income Montanans.

Those who are eligible for food stamps may not be receiving enough to make it through the month. Nationally, 30% of the people who visit food pantries also receive food stamps.³³ The prevalence of emergency food agencies in the United States “represents a fundamental failure of government to adequately feed its citizens.”³⁴ In 1997, the Missoula Food Bank reported that 32% of the total households that used their services reported receiving food stamps, 26% reported that they did not qualify for food stamps, and 16% indicated “out of food stamps” as the situation that influenced their visit to the MFB.³⁵ In 2002, 29% of the MFB’s total households received food stamps, 31% indicated that they do not qualify for food stamps and 13% claimed “out of food stamps” as the impetus for needing to use their services.³⁶ The percentages of families who must use the MFB’s services and also receive food stamps match nationwide statistics.

In addition to the significant changes implemented by PRWORA, the Poverello Center reports that a steady increase in the homeless population leads to a constant need for their services, and they affirm that their resources are never adequate to meet the demand.³⁷ The 2000 census indicates that Montana ranks fourth in the nation based on the percentage of the population living in poverty.³⁸ The unemployment rate for Missoula County in 2001 was 3.6% and is likely a contributing factor with regard to why people may need to use emergency food relief agencies such as the MFB, the Seeley-Swan food pantry, or the Salvation Army.³⁹ The MFB, for example, reported in 2002 that 32% of its clients indicated that they were unemployed. This percentage of MFB clients who were unemployed has decreased by only 4% since 1997.⁴⁰

Why is this important?

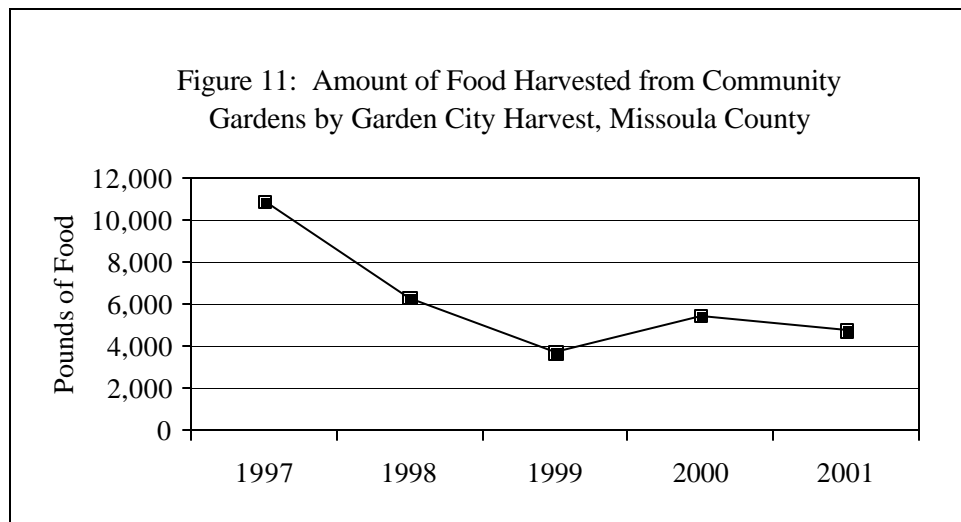
These measures are important because they show that there are thousands of people residing in or near Missoula County who are food insecure. Furthermore, it highlights the possibility that people on welfare are not receiving enough aid to sustain themselves for an entire month.

COMMUNITY GARDENS AND GLEANING

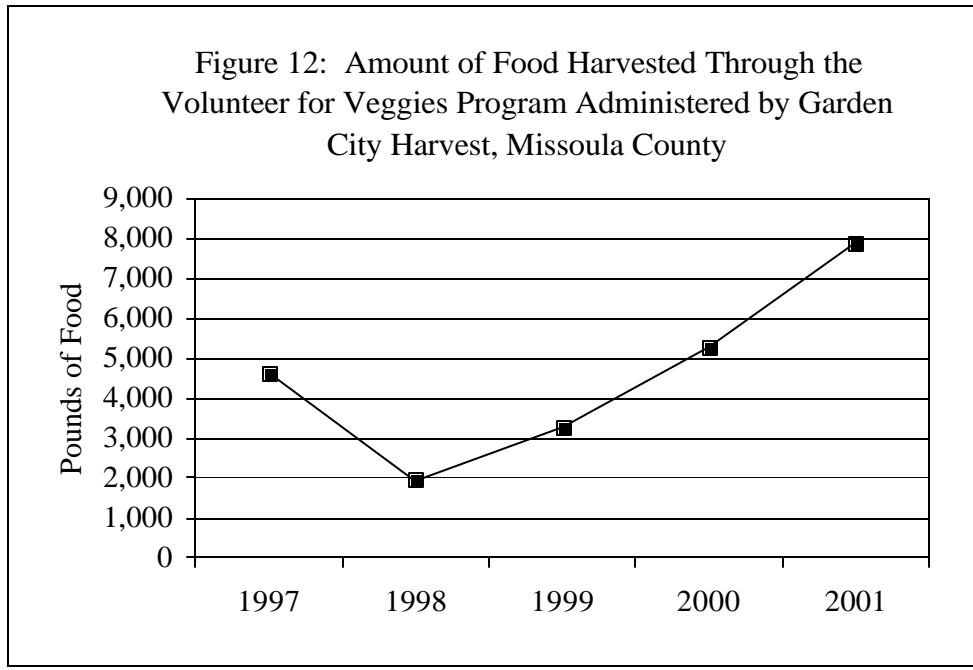
The trends.

Garden City Harvest (GCH) is an organization that administers the community gardens in Missoula County. This organization has been managing community gardens since 1997. The total number of gardens that are in Missoula County is five: ASUM (Associated Students of the University of Montana) Garden, Mullan Road Garden, River Road Garden, East Missoula Garden, and the Northside Garden. Throughout the past seven years, GCH has been inconsistently running all five of the gardens, although they have been in production for most of the time.

The amount of food harvested (in pounds) from the Community Gardens (excludes PEAS Farm) by GCH and given to the Food Bank, Poverello Center, Joseph Residence, and the Missoula Indian Center (food drop sites) over the last five years has varied. In 1997 the highest amount of vegetables were harvested. The amount of harvested food given to the food drop sites decreased from 1997 to 1999 by 66% (see Figure 11). From 1999 to 2000 the amount increased by about 1500 pounds. In 2001, however, the poundage decreased again.



The Volunteer for Veggies Program is a program where volunteers help with the food aid plots at any of the community garden sites. They receive a portion of the vegetables from the plots in exchange for their labor. During the first year of the program, 4,620 pounds of food were harvested. This dropped in 1998 to 1,944 pounds of food. However, since 1998, the Volunteer for Veggies Program has increased the yields each year thereafter (see Figure 12). Since 1998 (the low), the Volunteer for Veggies Program has increased its pounds of food harvested by 306%.



Missoula County does not have an official gleaning program. In 1997, Garden City Harvest had an AmeriCorps volunteer who initiated a gleaning program. This program operated on a volunteer basis through Garden City Harvest for two summers.⁴¹ The amount of fruit gleaned (in pounds) was never specifically recorded at the Food Bank as "gleaned fruit." When the AmeriCorps volunteer moved over to work at the Food Bank, she took the program over as a Food Bank Program. It operated again on a volunteer basis, without recording the amount specifically as "gleaned fruit." During the summer of 2003, no gleaning activities by the Food Bank occurred due to the lack of volunteers and because the Food Bank did not have the proper insurance.⁴² However, Garden City Harvest does glean the community gardens (food aid plots and PEAS Farm) to provide food to the food drop sites, and that food is included in GCH totals presented above and in Figure 11.

Why are these trends occurring?

GCH has been running community gardens since 1997, however, certain community garden locations have changed, thus either smaller or larger sites have been used over the last 7 years. Therefore, the amount in pounds of food harvested yearly has varied. GCH has also been instrumental in helping to establish the Northside Community Garden. In 2002, however, the Missoula Demonstration Project took over the garden, therefore eliminating one community garden from GCH administration. But GCH is reassuming responsibility for the Northside Garden in 2004. The ASUM Community Garden was not administered through GCH until 2003.⁴³

Why is this important?

The services of GCH are important because the programs it administers empower Missoula County community members. The programs teach and allow people to grow their own food in order to provide fresh, nutritious food for their families. The Volunteer for Veggies Program also provides an opportunity for community members to volunteer

at various times and allows the volunteers to bring along their children (if needed) in order to get fresh and nutritious food. The gleaned and growing that GCH does throughout the summer in all of the gardens also provides fresh, nutritious food to many sites that distribute the food to members of the community who may otherwise not have access to fresh fruits and vegetables.

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- ¹ Missoula County Measures. 2003. *Basic Needs*. Missoula, Montana.
<http://www.co.missoula.mt.us/measures/BasicNeeds.htm> (Date accessed: 15 September 2003).
- ² Missoula County Measures. 2003. *Basic Needs*. Missoula, Montana.
<http://www.co.missoula.mt.us/measures/BasicNeeds.htm> (Date accessed: 15 September 2003).
- ³ Pittaway, Mary. Missoula County WIC Coordinator. 17, November, 2003. Personal Communication.
- ⁴ Pittaway, Mary. Missoula County WIC Coordinator. 23, September, 2003. Personal Communication.
- ⁵ Pittaway, Mary. Missoula County WIC Coordinator. 23, September, 2003. Personal Communication.
- ⁶ Pittaway, Mary. Missoula County WIC Coordinator. 23, September, 2003. Personal Communication.
- ⁷ Office of Public Instruction. "National School Lunch Program." Helena, Montana: Office of Public Instruction. <http://www.opi.state.mt.us/schoolfood/lunch.html> (Date accessed: 8 October 2003).
- ⁸ Missoula County Measures. 2003. *Basic Needs*. Missoula, Montana.
<http://www.co.missoula.mt.us/measures/BasicNeeds.htm> (Date accessed: 15 September 2003).
- ⁹ Missoula County Measures. 2003. *Basic Needs*. Missoula, Montana.
<http://www.co.missoula.mt.us/measures/BasicNeeds.htm> (Date accessed: 15 September 2003).
- ¹⁰ Food Stamp Data from 1999-present can be found at: Department of Public Health and Human Services. 2003. *DPHHS Program Statistics including TANF, Food Stamps, LIEAP, Medicaid, CHIP, Child Care and Mental Health*.
www.dphhs.mt.us/services/statistics/statistical_information/tanf_stats/tanf_statistics.htm (Date Accessed: 21 November 2003).
- Food Stamp Data from 1981-1998 were reported from: McMahan, Carl. 29 September 2003. Personal Interview.
- ¹¹ Working for Equality and Economic Liberation (WEEL). 2003. Missoula, Montana. *Welfare Reform: A WEEL Overview*. www.weelempowers.org. (Date accessed: 8 October 2003).
- ¹² Missoula County Measures. 2003. *Basic Needs*. Missoula, Montana.
<http://www.co.missoula.mt.us/measures/BasicNeeds.htm> (Date accessed: 15 September 2003).
- ¹³ Missoula County Measures. 2003. *Basic Needs*. Missoula, Montana.
<http://www.co.missoula.mt.us/measures/BasicNeeds.htm> (Date accessed: 15 September 2003).
- ¹⁴ Pittaway, Mary. Missoula County WIC Coordinator. 23, September, 2003. Personal Communication.
- ¹⁵ Strasberg, Paul J. Ph.D. 2003. School Food Authority Administration of National School Lunch Program Free and Reduced Price Eligibility Determination. Washington, D.C.: USDA, Food and Nutrition Services. <http://www.fns.usda.gov/oane/MENU/Published/CNP/FILES/rova.pdf> (Date accessed: 8 October 2003).
- ¹⁶ Emerson, Christine. Nutrition Section Manager, Montana WIC Program. 15, October, 2003. Personal Communication.
- ¹⁷ Morgen, Sandra. 2002. The Politics of Welfare and of Poverty Research. *Anthropological Quarterly*, 75(4): 745-57.
- ¹⁸ Sullivan, A; Choi, E. "Hunger and Food Insecurity in the Fifty States: 1998-2000". Center on Hunger and Poverty, Brandeis University; August 2000.
- ¹⁹ Missoula Food Bank Data Analysis Summaries and Statistics. 2003. Missoula, Montana: Missoula Food Bank.
- ²⁰ Missoula Food Bank Data Analysis Summaries and Statistics. 2003. Missoula, Montana: Missoula Food Bank.
- ²¹ Missoula County Measures. 2003. *Basic Needs*. Missoula, Montana.
<http://www.co.missoula.mt.us/measures/BasicNeeds.htm> (Date accessed: 15, September, 2003).
- ²² DeGarmo, Larry. 30, September, 2003. Personal Communication.

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- ²³ Missoula County Measures. 2003. *Basic Needs*. Missoula, Montana.
<http://www.co.missoula.mt.us/measures/BasicNeeds.htm> (Date accessed: 15 September 2003).
- ²⁴ Peitg, Lindsey. 30, September, 2003. Personal Communication.
- ²⁵ Lester, Deb. 27, September, 2003. Personal Communication.
- ²⁶ Lester, Deb. 27, September, 2003. Personal Communication.
- ²⁷ Richards, Lin. 15, October, 2003. Personal Communication.
- ²⁸ Poppendieck, Janet. 1998. *Sweet Charity? Emergency Food and the End of Entitlement*. New York, NY: Penguin Putman Inc.
- ²⁹ Poppendieck, Janet. 2000. Want Amid Plenty: From Hunger to Inequality. In F. Magdoff, J. B. Foster, and F. H. Buttel (eds.), *Hungry for Profit: The Agribusiness Threat to Farmers, Food, and the Environment* (pp. 189-202). New York: Monthly Review Press.
- ³⁰ Lieberman, Trudy. August 18/25 2003. Hungry in America. *The Nation*, pp. 17-22.
- ³¹ Missoula Consolidated Plan Summary 1999. *Missoula Human Services in the 1990s*. Missoula, Montana. <http://www.co.missoula.mt.us/measures/humanservices.htm> (Date accessed: 17 October 2003).
- ³² Peitg, Lindsey. 30, September, 2003. Personal Communication.
- ³³ Lieberman, Trudy. August 18/25 2003. Hungry in America. *The Nation*, pp. 17-22.
- ³⁴ Lieberman, Trudy. August 18/25 2003. Hungry in America. *The Nation*, pp. 17-22.
- ³⁵ Missoula Food Bank Data Analysis Summaries and Statistics. 2003. Missoula, Montana: Missoula Food Bank.
- ³⁶ Missoula Food Bank Data Analysis Summaries and Statistics. 2003. Missoula, Montana: Missoula Food Bank.
- ³⁷ Missoula County Measures. 2003. *Basic Needs*. Missoula, Montana.
<http://www.co.missoula.mt.us/measures/BasicNeeds.htm> (Date accessed: 15 September 2003).
- ³⁸ Missoulian Editorial. 5 January 2003. *For some, it's the 'Least Best Place.'*
- ³⁹ Missoula City-County Health Department. 2002. *Missoula County Healthy Profile*. Helena, Montana. www.dphhs.state.mt.us/hpsd/pubheal/healplan/profiles/missoula.pdf . (Date accessed: 17 October 2003).
- ⁴⁰ Missoula Food Bank Data Analysis Summaries and Statistics. 2003. Missoula, Montana: Missoula Food Bank.
- ⁴¹ Hall, Tim. Garden City Harvest Director. 23, September, 2003. Personal Communication.
- ⁴² Moss, John. Missoula Food Bank. 23, September, 2003. Personal Communication.
- ⁴³ Hall, Tim. Garden City Harvest Director. 23, September, 2003. Personal Communication.

APPENDIX A: DATA TABLES

CHAPTER 1: DEMOGRAPHIC INDICATORS

Year	1960	1970	1980	1990	2000
<u>POPULATION</u>					
MONTANA STATE POPULATION	674,767	694,409	786,690	799,065	902,195
MISSOULA COUNTY POPULATION	44,663	58,263	76,016	78,687	95,802
MISSOULA COUNTY POPULATION AS % OF MONTANA STATE POPULATION	6.62	8.39	9.66	9.85	10.62
POPULATION DENSITY PERSONS PER SQ MILE, MISSOULA COUNTY	17.1	22.3	29.4	30.3	36.9
<u>ETHNIC DISTRIBUTION</u>					
White				75,707	90,073
Black/African American				175	261
American Indian or Alaskan Native				1,799	2,193
Asian				776	978
Native Hawaiian, Pacific Islander				18	80
Hispanic or Latino				1,014	1,543
Other				212	431
<u>EMPLOYMENT AND INCOME</u>					
TOTAL EMPLOYMENT FOR THE COUNTY OF MISSOULA		14,573	37,285	40,011	53,742
CIVILIAN UNEMPLOYMENT RATE (PERCENT)		7.2	10.7	7.2	6.2
# OF CIVILIANS UNEMPLOYED		1,049	3,989	2,881	3,332
COUNTY OF MISSOULA RANK IN STATE FOR PER CAPITA INCOME			4	8	7
<u>POVERTY</u>					
PERCENT OF MISSOULA COUNTY'S POPULATION BELOW POVERTY LINE		11.2	11.6	17	14.8
PERCENTAGE OF MISSOULA COUNTY'S FAMILIES BELOW POVERTY		8.6	7.5	12.4	8.8
Year			1979	1989	1999
<u>MEDIAN HOUSEHOLD INCOME FOR THE COUNTY OF MISSOULA</u>					
Not Adjusted for Inflation			16,269	23,388	34,454
Adjusted to 2002\$			40,269	33,944	37,207
<u>COUNTY OF MISSOULA PER CAPITA ANNUAL INCOME</u>					
Not Adjusted for Inflation			7,256	11,944	17,808
Adjusted to 2002\$			17,960	17,335	19,231

			YEAR	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
<u>AVERAGE MONTHLY NUMBER OF AFDC/TANF RECIPIENTS BY YEAR IN MISSOULA COUNTY</u>				852	698	669	682	709	820	947	977	994	1,032
1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	
1,000	1,149	1,193.9	1,229	1,202.8	1,152.1	890.4	632	463.4	389.4	454	522.8	530.1	

CHAPTER 2: AGRICULTURAL RESOURCE BASE INDICATORS

	Year	1950	1954	1959	1964	1969	1974	1978	1982	1987	1992	1997
<u>NUMBER OF OPERATORS IN MISSOULA COUNTY BY TENURE</u>												
Number of Full Owners		429	444	320	277	233	215	257	303	336	303	362
Number of Part Owners		107	123	145	114	76	80	104	111	107	117	100
Number of Tenants		55	65	42	37	18	15	24	29	30	30	20
<u>ACREAGE IN OPERATION IN MISSOULA COUNTY BY TENURE</u>												
Acres Owned by Full Owners		115,100	122,238	115,361	99,551	139,518	73,738	70,891	74,658	69,374		114,238
Acres Owned by Part Owners		138,288	167,170	184,100	212,387	127,899	121,638	134,665	103,884	108,120	113,229	61,538
Acres Operated by Tenants		27,425	32,789	20,212	21,399	72,067	66,648	77,262	77,671	75,604		86,643
<u>AVERAGE AGE OF OPERATORS IN MISSOULA COUNTY</u>												
					50.9	53.4	51.8	50	49.2	52.8	54.8	56.1
<u>NUMBER OF OPERATORS OF COLOR IN MISSOULA COUNTY</u>												
							2		4	6	7	5
<u>NUMBER OF FARMS BY ACREAGE CLASS SIZE FOR MISSOULA COUNTY</u>												
1 to 9 Acres		118	153	45	16	32	29	31	54	59	57	79
10 to 49 Acres		95	89	88	77	57	77	111	160	173	155	177
50 to 69 Acres		17	20	12	12	13	10	19	29	28	28	34
70 to 99 Acres		26	32	24	19	17	22	25	24	30	27	24
100 to 139 Acres		26	33	33	37	25	24	17	27	23	25	22
140 to 179 Acres		55	45	52	48	22	12	29	25	20	31	19
180 to 219 Acres		24	26	28	16	7	12	21	14	19	16	19
220 to 259 Acres		31	26	14	16	11	12	6	16	11	8	7
260 to 499 Acres		73	71	64	63	42	30	46	31	37	24	34
500 to 999 Acres		69	71	70	50	41	39	27	21	37	44	22
1000 to 1,999 Acres		60*	76*	79	36	30	17	24	19	17	14	20
2,000 or more Acres					41	30	26	29	23	19	21	25

	Year	1950	1954	1959	1964	1969	1974	1978	1982	1987	1992	1997
MISSOULA COUNTY FARM SIZE DISTRIBUTION BY NUMBER OF ACRES												
1 to 9 Acres		118	153	45	16	32	29	31	54	59	57	79
10 to 49 Acres		95	89	88	77	57	77	111	160	173	155	177
50 to 99 Acres		43	52	36	31	30	32	44	53	58	55	58
100 to 499 Acres		209	201	191	180	107	90	119	113	110	104	101
500 to 999 Acres		69	71	70	50	41	39	27	21	37	44	22
1000 + Acres		60	76	79	77	60	43	53	42	36	35	45
MONTANA STATE FARM SIZE DISTRIBUTION BY NUMBER OF ACRES												
1 to 9		1,236	1,455	675	704	1,283	1,177	1,359	1,551	1,940	1,209	898
10 to 49		2,225	1,893	1,690	1,641	1,485	1,550	2,148	2,673	2,745	2,804	3,570
50 to 69		502	483	397	385	386	394	526	563	554	628	813
70 to 99		1,503	1,209	956	897	771	731	896	806	818	818	946
100 to 139		1,256	1,106	889	758	627	694	711	724	718	745	852
140 to 179		2,399	2,002	1,562	1,353	1,007	888	1,041	987	929	870	964
180 to 219		957	879	717	640	545	496	497	504	525	567	570
220 to 259		968	842	690	626	552	507	623	452	481	400	494
260 to 499		4,785	4,231	3,531	3,130	2,660	2,433	2,437	2,141	2,309	1,997	2,308
500 to 999		6,200	5,553	4,671	3,954	3,339	2,990	2,950	2,640	2,737	2,521	2,675
1,000 to 1,999		13,054*	13,408*	13,181*	5,101	4,700	4,053	4,139	3,345	3,460	3,040	3,127
2,000 or more					7,184	7,142	7,411	7,596	7,831	7,352	7,222	7,062
FARM SIZE DISTRIBUTION FOR THE STATE OF MONTANA BY NUMBER OF ACRES												
1 to 9 Acres		1,236	1,455	675	704	1,283	1,177	1,359	1,551	1,940	1,209	898
10 to 49 Acres		2,225	1,893	1,690	1,641	1,485	1,550	2,148	2,673	2,745	2,804	3,570
50 to 99 Acres		2,005	1,692	1,353	1,282	1,157	1,125	1,422	1,369	1,372	1,446	1,759
100 to 499 Acres		10,365	9,060	7,389	6,507	5,391	5,018	5,309	4,808	4,962	4,579	5,188
500 to 999 Acres		6,200	5,553	4,671	3,954	3,339	2,990	2,950	2,640	2,737	2,521	2,675
1000 + Acres		13,054	13,408	13,181	12,932	12,296	11,464	11,281	10,529	10,812	10,262	10,189
AVERAGE FARM SIZE IN MISSOULA COUNTY BY ACRE												
		481.9	618.3	733.5	902.9	1,038	845	735	565	535	552	544
AVERAGE FARM SIZE IN MONTANA BY ACRE												
		1,688.70	1,859.30	2,212.80	2,436.50	2,522	2,665	2,618	2,568	2,451	2,613	2,414

Year	1950	1954	1959	1964	1969	1974	1978	1982	1987	1992	1997
PERCENT OF MONTANA'S FARM ACREAGE LOCATED IN MISSOULA COUNTY	0.48%	0.65%	0.58%	0.59%	0.54%	0.42%	0.46%	0.41%	0.42%	0.42%	0.45%
ACRES IN FARMING IN MISSOULA COUNTY	286,233	396,979	373,333	389,132	339,484	262,024	282,808	250,213	253,098	248,215	262,419
ACRES IN FARMING IN MONTANA	59,247,434	61,468,903	64,081,391	65,833,760	62,918,247	62,158,351	62,269,824	60,539,209	60,203,993	59,642,536	58,607,778
NUMBER OF FARMS IN MISSOULA COUNTY	594	642	509	431	327	310	385	443	473	450	482
NUMBER OF FARMS IN MONTANA	35,085	33,061	28,959	27,020	24,951	23,324	24,469	23,570	24,568	22,821	24,279

CHAPTER 3: AGRICULTURE-RELATED ENVIRONMENTAL INDICATORS

YEAR	1974	1978	1982	1987	1992	1997
NUMBER OF FARMS REPORTING TOTAL FARM PRODUCTION EXPENSES IN MISSOULA COUNTY	309			472	450	481
TOTAL FARM PRODUCTION EXPENSES FOR MISSOULA COUNTY	\$4,897,000			\$6,394,000	\$6,984,000	\$9,221,000
FARM EXPENDITURES ON PETROLEUM, CHEMICALS AND FERTILIZERS						
Number of Farms Reporting Expenditures on Petroleum, Fertilizer and Chemicals	162	210	230	252	239	307
Number of Farms Reporting Petroleum Products	300	387	443	395	384	472
Number of Farms Reporting Chemical Expenditures	64	95	102	171	167	222
Number of Farms Using Fertilizer	122	149	144	191	167	228
Petroleum Expenditures (Adjusted for Inflation)	\$678,861	\$707,160	\$423,017	\$557,881	\$585,500	\$630,654
Chemical Expenditures (Adjusted for Inflation)	\$47,304	\$89,474	\$96,564	\$199,020	\$132,396	\$188,466
Commercial Fertilizer Expenditures (Adjusted for Inflation)	\$207,570	\$257,895	\$127,674	\$242,105	\$269,010	\$449,780
Petroleum Expenditures (Not Adjusted for Inflation)	\$289,000	\$426,000	\$623,000	\$456,000	\$500,000	\$534,000
Chemical Expenditures (Not Adjusted for Inflation)	\$18,000	\$49,000	\$78,000	\$155,000	\$118,000	\$202,000
Commercial Fertilizer Expenditures (Not Adjusted for Inflation)	\$102,000	\$165,000	\$123,000	\$205,000	\$245,000	\$523,000
Sum of Expenditures on Petroleum, Chemicals, and Fertilizers (Not Adjusted for Inflation)	\$409,000	\$640,000	\$824,000	\$816,000	\$863,000	\$1,259,000
Total Farm Expenditures (Not Adjusted for Inflation)	\$4,897,000			\$6,394,000	\$6,984,000	\$9,221,000
Percent of Total Expenditures Spent on Petroleum, Chemicals and Fertilizers	8.30%			12.70%	12.30%	13.60%

	YEAR	1978	1982	1987	1992	1997
NUMBER OF IRRIGATED FARMS IN MISSOULA COUNTY		279	270	309	285	273
NUMBER OF IRRIGATED ACRES IN MISSOULA COUNTY		25,760	19,748	18,941	22,161	22,291

CHAPTER 4: ECONOMIC PRODUCTIVITY INDICATORS FOR AGRICULTURE AND FOOD DISTRIBUTION

YEAR	1956	1959	1965	1970	1977	1982	1987	1992	1995	1997	2001
NUMBER OF FOOD MANUFACTURERS IN MISSOULA COUNTY	15	16	13	10	8	11	6	9	10	11	9
NUMBER OF FOOD WHOLESALERS IN MISSOULA COUNTY	7	11	12	10	19	15	19	12	13	15	16
NUMBER OF FOOD RETAILERS IN MISSOULA COUNTY	35	33	28	29	57	58	67	60	54		52
NUMBER OF FOOD SERVERS IN MISSOULA COUNTY (INCLUDING RESTAURANTS)	76	77	94	84	146	152	194	217	249	258	264

MARKET VALUE OF AGRICULTURE PRODUCTS SOLD

YEAR	STATE TOTAL (\$)	ADJUSTED STATE TOTAL (\$)	COUNTY TOTAL (\$)	ADJUSTED COUNTY TOTAL (\$)	PRODUCER PRICE INDEX (used as multiplier to adjust for inflation into 2002 Dollars)
1982	1,033,239,000	1,321,512,681	4,826,000	6,172,454	1.279
1987	1,177,454,000	1,329,345,566	6,008,000	6,783,032	1.129
1992	1,547,160,000	1,531,688,400	5,584,000	5,528,160	0.99
1995	1,547,286,000	1,604,535,582	6,127,000	6,353,699	1.037
1997	1,730,237,000	1,654,106,572	7,743,000	7,402,308	0.956
2001	1,870,732,000	1,640,631,964	8,022,000	7,035,294	0.877

YEAR	1978	1982	1987	1992	1997
GROSS RECEIPTS FROM DIRECT MARKETING; ALL TYPES, ALL FARMS, IN MISSOULA COUNTY (Adjusted to 2002 Dollars)	\$87,010	\$122,760	\$99,840	\$89,864	\$78,053
NUMBER OF FARMS ENGAGED IN DIRECT MARKETING IN MISSOULA COUNTY	42	66	46	42	33

YEAR	1977	1982	1987	1992	1997
FOOD SERVER SALES (EATING AND DRINKING PLACES) (in \$1000) (Adjusted to 2002 Dollars)	85,831	79,627	88,908	103,588	125,740
FOOD STORES (RETAIL SALES IN \$1000) (Adjusted to 2002 Dollars)	172,430	164,498	168,231	185,899	164,215

CHAPTER 5: FARM AND FOOD DISTRIBUTION EMPLOYMENT INDICATORS

	YEAR	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
TOTAL EMPLOYMENT, MISSOULA COUNTY (NUMBER OF EMPLOYEES)		20,164							23,706		
			1987	1988	1989	1990	1991	1992	1993	1994	1995
			25,534	26,294	27,304	28,716	29,357	31,501	32,097	32,330	34,242

	YEAR	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
TOTAL FOOD DISTRIBUTION SYSTEM EMPLOYMENT IN MISSOULA COUNTY		2,392							3,391		
			1987	1988	1989	1990	1991	1992	1993	1994	1995
				3,816	3,959	4,099	3,876	4,087	4,243	4,434	4,662

	YEAR	1977	1984	1988	1989	1990	1991	1992	1993	1994	1995
% OF TOTAL COUNTY EMPLOYMENT WORKING IN THE FOOD DISTRIBUTION SYSTEM		11.8%	14.3%	14.5%	14.5%	14.3%	13.2%	12.9%	13.2%	13.7%	13.6%

	<u>RATE OF CHANGE IN NUMBER OF JOBS, 1988-1995</u>										
NUMBER OF JOBS IN FOOD & KINDRED PRODUCTS	336	293	208	231	179	191	191	183	157	182	12% Decrease
NUMBER OF JOBS IN WHOLESALE GROCERY & RELATED	253	186	196	224	200	205	161	129	137	144	26% Decrease
NUMBER OF JOBS IN RETAIL FOOD & GROCERY	681	764	882	956	1,006	1,087	1,221	1,132	1,205	1,192	35% Increase
NUMBER OF JOBS IN EATING PLACES	1,122	2,148	2,530	2,548	2,714	2,393	2,514	2,799	2,935	3,144	24% Increase

	YEAR	1974	1978	1982	1987	1992	1997
FARMING PRINCIPAL OCCUPATION OF OPERATORS IN MISSOULA CO		145	140	152	167	182	171
OTHER PRINCIPAL OCCUPATION		153	245	291	306	268	311

FOR OPERATORS IN MISSOULA
CO.

TOTAL NUMBER OF OPERATORS IN MISSOULA CO	298	385	443	473	450	482
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PERCENT OF OPERATORS WHOSE PRINCIPAL OCCUPATION IS FARMING IN MISSOULA CO.	49%	36%	34%	35%	40%	35%
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NUMBER OF FARM WORKERS IN MISSOULA COUNTY		123	75		113	166
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CHAPTER 6: FOOD CONSUMPTION INDICATORS *

YEAR	1972	1977	1982	1987	1992	1997
TOTAL FOOD EXPENDITURES						
Total Food Expenditures (TFX), County	210,394,111	258,261,120	244,124,995	257,139,452	289,487,170	289,955,150
TFXC derived from National Average	167,058,984	230,748,823		229,490,723	237,100,148	254,930,223
Total County Earnings (TCE)	1,090,081,800	1,439,504,400	1,437,235,000	1,647,469,000	1,893,073,000	2,191,947,300
TFXC as % TCE	19.25%	17.94%	16.99%	15.61%	15.29%	15.82%
TFX National	566,478,448,276	715,774,480,712		714,141,522,979	723,737,917,948	732,854,554,810
NATIONAL POPULATION (ESTIMATES)	209,896,021	220,239,425	231,664,458	242,288,918	255,029,699	267,783,607
PER CAPITA FOOD EXPENDITURES (PCFI)						
COUNTY POPULATION (ESTIMATES)	61,900	71,000	75,242	77,680	83,549	93,151
COUNTY PER CAPITA INCOME (PCI)	17,603	20,281	19,100	21,209	22,658	23,531
PCFX, NATIONAL AVERAGE	2,699	3,249		2,947	2,839	2,737
PCFX, COUNTY	3,388	3,638	3,246	3,311	3,465	3,721
PCFX, C DEVIATION FROM NATIONAL AVERAGE	689	389		364	626	984
PCFX as % PCI	19.25%	17.94%	16.99%	15.61%	15.29%	15.82%
\$ SPENT ON FOOD, HOME VS. AWAY						
FOOD RETAILERS' GROSS RECEIPTS, County	151,176,720	172,430,260	164,498,130	168,231,370	185,898,710	164,215,240
FOOD SERVERS' GROSS RECEIPTS, County	59,217,391	85,830,860	79,626,865	88,908,082	103,588,460	125,739,910
\$ SPENT ON FOOD AT HOME in County derived from National Average	122,507,549	151,086,450		153,367,341	155,065,764	156,678,801
\$ SPENT ON FOOD AWAY in County derived from National Average	44,551,435	79,623,373		75,592,835	82,034,384	98,251,422
RATIO FOOD CONSUMED Home vs. Away, County	2.55	2	2.07	1.89	1.79	1.31
RATIO FOOD CONSUMED Home vs. Away, derived from National Average	2.75	1.9		2.03	1.89	1.59

*All figures adjusted to 2002 \$

CHAPTER 7: FOOD SECURITY AND ACCESS INDICATORS

	YEAR	1997	1998	1999	2000	2001	2002
NUMBER OF FOOD BOXES DISTRIBUTED BY THE SALVATION ARMY		1,636	3,248	3,601	2,871	2,253	1,879
NUMBER OF EMERGENCY BOXES OF FOOD DISTRIBUTED BY THE POVERELLO FOOD PANTRY		1,247	1,415	1,435	1,466	1,468	2,016
AVERAGE MEALS PER DAY SERVED AT THE POVERELLO CENTER		198	213	232	259	309	299
POUNDS OF FOOD DISTRIBUTED BY THE SEELEY - SWAN FOOD PANTRY				12,327	17,389	23,429	17,894
NUMBER OF FOOD BOXES DISTRIBUTED BY THE SEELEY - SWAN FOOD PANTRY				465	637	756	825

	YEAR	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
TOTAL NUMBER OF MEALS SERVED AT THE JOSEPH RESIDENCE		16,227	22,797	22,911	22,242	18,171	23,460	21,170	21,170	21,535	20,805

	2001	2002
	28,105	21,170

	YEAR	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
TOTAL NUMBER OF ANNUAL VISITS TO THE MISSOULA FOOD BANK (Duplicated)		7,000	10,575	15,825	18,709	20,511	22,068	25,094	30,839	26,076	24,243

	1995	1996	1997	1998	1999	2000	2001	2002
	24,968	26,289	27,808	26,330	26,901	27,446	30,763	31,287

	FISCAL YEAR												
	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990			
NUMBER OF FOOD STAMP RECIPIENTS (MONTHLY AVERAGE) FOR MISSOULA COUNTY	5,907	5,840	6,639	6,485	6,498	6,266	5,800	5,695	5,590	5,551			
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
	5,714	6,571	7,213	7,317	7,396	7,541	7,167	6,154	5,737	5,820	6,305	6,586	7,144

	FISCAL YEAR			
	1999	2000	2001	2002
MONTHLY YEAR AVERAGE IN WIC PARTICIPANTS FOR MISSOULA COUNTY	2,408	2,384	2,343	2,533

	YEAR						
	1997	1998	1999	2000	2001	2002	2003
FREE AND REDUCED SCHOOL LUNCH PROGRAM ENROLLMENT AND ELIGIBILITY IN MISSOULA COUNTY							
Enrollment Eligibility Count			13,140	13,107	12,882	13,164	
Program Participation Count			4,010	4,009	4,017	4,083	
POUNDS OF FOOD HARVESTED THROUGH THE VOLUNTEER FOR VEGGIES PROGRAM ADMINISTERED BY GARDEN CITY HARVEST	4,620	1,944	3,278	5,300	7,888		
POUNDS OF FOOD HARVESTED BY GARDEN CITY HARVEST IN MISSOULA COUNTY	10,950	6,322	3,711	5,500	4,753		
NUMBER OF COMMUNITY GARDENS ADMINISTERED BY GARDEN CITY HARVEST MISSOULA COUNTY	3	3	3	3	3	2	3
\$ AMOUNT AWARDED BY USDA AND STATE FOR FARMERS MARKET NUTRITION PROGRAM						30,000	15,000

APPENDIX B: DATA SOURCES

Chapter 1 Demographic Indicators

Indicator	Years	Measure/Graph	Source
Population			
State Population	60,70,80,90,2000	Number of people in state vs. time	Census of Population
County Population	60,70,80,90,2000	Number of people in the county vs. time	Census of Population
County Population as Percent of State Population	60,70,80,90,2000	Percent of state population resident in county vs. time	Calculated from sources on this page
Population Density, Persons per square mile	60,70,80,90,2000	Number of persons per sq. mile average for county vs. time	Census of Population
Ethnic Distribution			
Asian Hawaiian and Pacific Islander African American White Hispanic or Latino Native American and Alaskan Native	1990, 2000	Percentage of county population that classify themselves in each of the following groups: Asian, National Hawaiian and Pacific Islander, African American, White, Hispanic or Latino, Native American and Alaskan Native	Census of Population
Employment and Income			
Inflation Adjustment	79, 89, 99	Factor used as multiplier to convert dollar values for a given year to 1997 equivalent	Consumer Price Index data compiled by Robert Sahr, Political Science Department, Oregon State University, Corvallis, Oregon
Total Employment for the County	70, 80, 90, 2000	Number of people employed vs. time for census year	Census of Population
Median Income per household	80, 90, 2000	Median income per household vs. time for census year	Census of Population
County Per Capita Annual Income	80, 90, 2000	County per capita annual income vs. time	Census of Population
County's Rank in the State for Per Capita Income	80, 90, 2000	Rank of county per capita income in state vs. time	Census of Population
Poverty			
Number of Welfare Recipients (AFDC/FAIM)	1981 to 2003	Number of people receiving welfare vs. time	Carl McMahon Montana State Department of Public Health and Human Services
Civilian Unemployment Rate, Percent	70, 80, 90, 2000	Percent of county labor force unemployed vs. time	Census of Population
Percent of County's Population Below Poverty Line	70, 80, 90, 2000	Percent of county's population below poverty level vs. time	Census of Population
Percent of County's Families below poverty	70, 80, 90, 2000	Percent of total number of families in county below poverty level vs. time	Census of Population

Chapter 2
Agricultural Resource Base Indicators

Indicator	Year	Measure/Graph	Source
Farm Numbers and Acreage			
Number of Farms in Montana	50, 54, 59, 64, 69, 74, 78, 82, 87, 92, 97	Total number of farms in state vs. time for ag. census years	U.S. Census of Agriculture, Geographic Area Series
Acres in Farming, total for Montana	50, 54, 59, 64, 69, 74, 78, 82, 87, 92, 97	Acres in farming for state vs. time for ag. census years	U.S. Census of Agriculture, Geographic Area Series
Number of Farms in Missoula County	50, 54, 59, 64, 69, 74, 78, 82, 87, 92, 97	Total number of farms in county vs. time for ag. census years	U.S. Census of Agriculture, Geographic Area Series
Acres in Farming in Missoula County	50, 54, 59, 64, 69, 74, 78, 82, 87, 92, 97	Acres in farming for county vs. time for ag. census years	U.S. Census of Agriculture, Geographic Area Series
Percent of Montana's Farms in Missoula County	50, 54, 59, 64, 69, 74, 78, 82, 87, 92, 97	Number farms in county as percent of state total vs. time for ag. census years	U.S. Census of Agriculture, Geographic Area Series
Percent of Montana's Farm Acreage in Missoula County	50, 54, 59, 64, 69, 74, 78, 82, 87, 92, 97	Acreage in farming for county as percent of state total vs. time for ag. census years	U.S. Census of Agriculture, Geographic Area Series
Average Farm Size in Missoula County, Acres	50, 54, 59, 64, 69, 74, 78, 82, 87, 92, 97	Average farm size in county vs. time for ag. census years	U.S. Census of Agriculture, Geographic Area Series
Number of Farms in Missoula County by Acreage Size Class	50, 54, 59, 64, 69, 74, 78, 82, 87, 92, 97	Number of farms per size class of 1-9, 10-49, 50-179, 180-499, 500-999, and 1000+ acre categories vs. time for ag. census years	U.S. Census of Agriculture, Geographic Area Series
Farm Ownership			
Acres in Full Ownership Acres in Part Ownership Acres in Tenant Farming	50, 54, 59, 64, 69, 74, 78, 82, 87, 92, 97	Acres under full owner, part owner, and tenant owner (3 lines on a single graph) in county vs. time for census year	U.S. Census of Agriculture, Geographic Area Series

Number of Full Owners Number of Part Owners Number of Tenant Farmers	50, 54, 59, 64, 69, 74, 78, 82, 87, 92, 97	Number of full owners, part owners, and tenants of farms (3 lines on a graph) in County vs. time for ag. census years	U.S. Census of Agriculture, Geographic Area Series
Minority Farm Operators, Number of Farms	74, 78, 82, 87, 92, 97	Number of minority- operated farms in county vs. time for ag. census years	U.S. Census of Agriculture, Geographic Area Series
Age of Farmers			
Average Farmer Age	74, 78, 82, 87, 92, 97	Average farmer age in county vs. time for ag. census years	U.S. Census of Agriculture, Geographic Area Series
Organic Farming			
Number of Organic Farms Acreage in Organic Farming	No Data Available		
Land Conservation			
Acres of land enrolled in Conservation Reserve Program/ Wetlands Reserve Program	87, 92, 97, 2001	No Graph	U.S. Census of Agriculture, Geographic Area Series; Missoula County Office of Planning and Grants

Chapter 3
Agriculture-Related Environmental Indicators

Indicator	Years	Measure/Graph	Source
Groundwater Pollution			
Well water nitrate pollution	N/A	N/A	Clark Fork Voluntary Nutrient Reduction Program 1998 Report, John Harvala, Environmental Health Specialist with the Missoula Valley Water Quality District Dr. Vicki Watson and Will McDowell, VNRP Coordinator.
Total Supplemental Water Use by Agriculture			
Use of State and Federal Subsidized Water by Agriculture	N/A	N/A	Mark Phares attorney at the Department of Natural Resources and Bill Schultz, resource manager at the Missoula Water Resources Regional Office.
Number of Farms Using Irrigation	78, 82, 87, 92, 97	Number of farms in county using irrigation vs. time for agriculture census years	Census of Agriculture
Total Number of Irrigated Acres in the County	78, 82, 87, 92, 97	Total county irrigated acreage vs. time for agriculture census years	Census of Agriculture
Synthetic Input Expenditures			
Expenditures on Petroleum, Fertilizer, and Chemicals	74, 78, 82, 87, 92, 97	Expenditures on petroleum, fertilizer, and chemicals reported under specified farm expenditures.	Census of Agriculture, adjusted for inflation using the Producer Price Index provided by the US Bureau of Labor Statistics
Total Specified Farm Expenditures	74, 87, 92, 97	Total specified farm expenditures (not adjusted)	Census of Agriculture
Cost of inputs as Percent Total Farm Costs	74, 87, 92, 97	Total specified expenditures spent on petroleum, chemicals and fertilizer for all farms in county as a percent of total farm expenditures (not adjusted) vs. time for ag. census years.	Census of Agriculture

Chapter 4
Economic Productivity Indicators for Agriculture and Food Distribution

Gross Agricultural Productivity

Indicator	Years	Measure/Graph	Source
Inflation Adjustment, Agricultural Producers	74, 78, 82, 87, 92, 97	Factor used as a multiplier to convert dollar values for a given year to 2002 equivalent. Shown in table only.	Bureau of Labor Statistics Producer Price Index data, non-seasonally adjusted annual average, farm products group.
State Gross Agricultural Productivity	74, 78, 82, 87, 92, 97	Market value of agricultural sold was deemed to be most accurate value for representing gross agricultural production consistently on both the state and county level. Shown in a table only.	U.S. Census of Agriculture, Geographic (Area) Series, State Highlights.
Gross Agricultural Productivity, County	74, 78, 82, 87, 92, 97	Market value of agricultural sold was deemed to be most accurate value for representing gross agricultural production consistently on both the state and county level.	U.S. Census of Agriculture, Geographic (Area) Series, County Highlights.
County Gross Production as Percentage of State Total	74, 78, 82, 87, 92, 97	Market value of all agricultural products sold in the county presented as a percent of the state total as calculate from census data.	U.S. Census of Agriculture, Geographic (Area) Series, State and County Highlights.

Direct Marketing

Indicator	Years	Measure/Graph	Source
Gross Receipts from Direct Marketing, all Types, all Farms	78, 82, 87 extr., 92, 97	Gross receipts for direct marketing, all types, for county vs. time, ag. census years (1987 no data published, extrapolated).	U.S. Census of Agriculture, Geographic (Area) Series.
Number of Farms Engaged in Direct Marketing, all Types	78, 82, 87 extr., 92, 97	Number of farms participating in direct marketing, all types, for county vs. time, ag. census years (1987 no data published, extrapolated).	U.S. Census of Agriculture, Geographic (Area) Series.
Number of Farmers Markets	2003	No Graph	Representative from Missoula County Farmers Market

Number of CSA programs and individuals	2000, 01, 02, 03	No Graph	Garden City Harvest Records
Number of Roadside Stands	2003	No Graph	Common Ground Farm, Mary Stranahan

Food Distribution System

Indicator	Years	Measure/Graph	Source
Number of Farm Product Raw Wholesalers (Packers, Shippers)	77, 87, 92, 97	No Graph	U.S. Department of Commerce County Business Pattern, MT; U.S. Economic Census, Geographical Area Series
Number of Food Manufacturers	56, 59, 65, 70, 77, 82, 87, 92, 95, 97	Number establishments in county vs. time for economic census years	U.S. Department of Commerce County Business Pattern, MT; U.S. Economic Census, Geographical Area Series
Number of Food Wholesalers	56, 59, 65, 70, 77, 82, 87, 92, 95, 97, 2001	Number establishments in county vs. time for economic census years	U.S. Department of Commerce County Business Pattern, MT; U.S. Economic Census, Geographical Area Series
Number of Food Retailers	56, 59, 65, 70, 77, 82, 87, 92, 95, 2001	Number establishments in county vs. time for economic census years	U.S. Department of Commerce County Business Pattern, MT; U.S. Economic Census, Geographical Area Series
Number of Food Servers (incl. Restaurants)	56, 59, 65, 70, 77, 82, 87, 92, 95, 97, 2001	Number establishments in county vs. time for economic census years	U.S. Department of Commerce County Business Pattern, MT; U.S. Economic Census, Geographical Area Series
Food Manufacturers Net Value Added to Products	No years reported	none	U.S. Economic Census
Farm Product Wholesalers Sales	No Years Reported	none	U.S. Economic Census
Food Wholesalers Sales	1997	none	U.S. Economic Census
Food Retail Sales	1977, 1982, 1987, 1992, 1997	Sales for the county over time adjusted for inflation (Consumer Price Index-CPI)	U.S. Economic Census
Food Servers Sales	1977, 1982, 1987, 1992, 1997	Sales for the county over time adjusted for inflation (CPI)	U.S. Economic Census

Chapter 5
Farm and Food Distribution Employment Indicators

Indicator	Years	Measure/Graph	Source
Employment as Farmers			
Number of Principal Occupation - Farm Operators in the State	74,78,82, 87,92,97	# of State Farm Operators: farming as principal occupation vs. Ag Census Year	U.S. Census of Agriculture
Number of Principal Occupation - Farm Operators in the County	74,78,82, 87,92,97	# of Co. Farm Operators: farming as principal occupation vs. Ag Census Year	U.S. Census of Agriculture
Percent of State Non-Farm Principal Operators	74,78,82, 87,92,97		Calculate using preceding data sets.
Percent of County Non-Farm Principal Operators	74,78,82, 87,92,97		
Percent of Farm Operators in Mlsa. County	74,78,82, 87,92,97		
Farm Labor Employment			
County Total Employment	74,77,84,87,88,89, 90,91,92,93,94,95	Total number of people employed in the county, all occupations, for time vs. ag. census years.	County Business Patterns
State Farm Labor Employment	74,77,84,87,88,89, 90,91,92,93,94,95	Number of people employed on farms in state for 150 days/year or more vs. time, ag. census year.	U.S. Census of Agriculture
County Farm Labor Employment	74,77,84,87,88,89, 90,91,92,93,94,95	Number of farm workers working 150 days/year or more in county vs.. time, ag. census years.	U.S. Census of Agriculture
County Farm Labor Employment as Percent of State Total	78,82, 92,97	Number hired farm workers in county as percent state total vs. time, ag. census year.	Calculated from two preceding data sets.
Farm Labor Employment as Percentage of County Total	1978	not graphed	U. S. Census of Agriculture
Food Distribution System Employment			
Total Food Distribution System Employment for the County	74,77,84, 87,88,89, 90,91,92, 93,94,95	Number workers employed in food system in the county vs. time, county business pattern years.	County Business Patterns
Food Distribution System Employment as Percent County Total Employment	74,77,84, 87,88,89, 90,91,92, 93,94,95	Number workers employed in food distribution system as percent of total county work force vs. time for county business pattern year.	Calculated from preceding sets of data.

Chapter 6
Food Consumption Indicators

Indicator	Years	Measure/ Graph	Source
Inflation Adjustment	72, 77, 82, 87, 92, 97	Factor used as a multiplier to convert dollar values for a given year to 1997 equivalent.	Consumer Price Index data compiled by Robert Sahr, Political Science Department, Oregon State University, Corvallis, Oregon
Total Food Expenditure			
Total Food Expenditures, County	72, 77, 82, 87, 92, 97	Sum of food retailer and food server gross receipts reported in the Economic Census vs. time, Economic Census Years	U.S. Census of Retail Trade, Geographic Area Series
Total Food Expenditures in County Derived from National Average	72, 77, 82, 87, 92, 97	County Population divided by US population, multiplied by total US food expenditures from Food Consumption, Prices, and Expenditures vs. time, Economic Census Years	Calculated from Bureau of Economic Analysis: Regional Economic Accounts, Population Estimates Branch, U.S. Census of Retail Trade, Geographic Area Series
Total County Earnings	72, 77, 82, 87, 92, 97	Total county wages vs. time, Economic Census Years	Bureau of Economic Analysis: Regional Economic Accounts,
Total Food Expenditures in county as % Total County Earnings	72, 77, 82, 87, 92, 97	Total food expenditures as percent of total county earnings vs. time for Economic Census Years	Calculated from U.S. Census of Retail Trade, Geographic Area Series and Bureau of Economic Analysis: Regional Economic Accounts.
Per Capita Food Expenditures			
County Population	72, 77, 82, 87, 92, 97	County Population vs. time, Economic Census Years	Population Estimates Branch, U.S. Census Bureau
County Per Capita Income	72, 77, 82, 87, 92, 97	County per capita income vs. time, Economic Census Years	Bureau of Economic Analysis: Regional Economic Information System
Per Capita Food Expenditures, National Average	72, 77, 82, 87, 92, 97	Total U.S. food expenditures reported in Food Consumption, Prices, and Expenditures divided by U.S. population vs. time, Economic Census Years	Calculated from U.S. Census of Retail Trade, Geographic Area Series, Population Estimates Branch, U.S. Census Bureau
Per Capita Food Expenditures, County	72, 77, 82, 87, 92, 97	Total food expenditures for county from Economic Census data divided by county population vs. time for Economic Census Years	U.S. Census of Retail Trade, Geographic Area Series, Population Estimates Branch, U.S. Census Bureau

Per Capita Food Expenditures, County Deviation from National Average	72, 77, 82, 87, 92, 97	Difference between per capita food expenditures, county and per capita food expenditures, national average, vs. time for Economic Census years.	Calculated from preceding 2 variables
County Per Capita Food Expenditures as % Per Capita Income (adjusted for inflation)	72, 77, 82, 87, 92, 97	Per capita food expenditures, county as percent county per capita income vs. time, Economic Census Years	Bureau of Economic Analysis: Regional Economic Information System and U.S. Census of Retail Trade, Geographic Area Series
National Average Derived County Per Capita Food Expenditures as % Per Capita Income (adjusted for inflation)	72, 77, 82, 87, 92, 97	Inflation adjusted per capita food expenditures, national average, divided by inflation adjusted county per capita income vs. time, Economic Census Years	Bureau of Economic Analysis: Regional Economic Information System and U.S. Census of Retail Trade, Geographic Area Series
Dollars Spent on Food, Home vs. Away			
Food Retailers' Gross Receipts (Home)	72, 77, 82, 87, 92, 97	Food retailers' gross receipts vs. time, Economic Census Years	U.S. Census of Retail Trade, Geographic Area Series
Food Servers' Gross Receipts (Away)	72, 77, 82, 87, 92, 97	Food servers' gross receipts vs. time, Economic Census Years	U.S. Census of Retail Trade, Geographic Area Series
Money Spent on Food at Home in County, Derived from the Nat'l Average	72, 77, 82, 87, 92, 97	Total U.S. food expenditures for home reported in Food Consumption, Prices and Expenditures divided by U.S. population, multiplied by county population vs. time for Economic Census Years	Calculated from Bureau of Economic Analysis: Regional Economic Accounts, Population Estimates Branch, U.S. Census of Retail Trade, Geographic Area Series
Money Spent on Food Away from Home in County, Derived from the Nat'l Average	72, 77, 82, 87, 92, 97	Total U.S. food expenditures away from home reported in Food Consumption, Prices and Expenditures divided by U.S. population, multiplied by county population vs. time for Economic Census Years	Calculated from Bureau of Economic Analysis: Regional Economic Accounts, Population Estimates Branch, U.S. Census of Retail Trade, Geographic Area Series
Ratio, Food Consumed Home vs. Away, County	72, 77, 82, 87, 92, 97	Ratio, food retailer's gross receipts divided by food servers' gross receipts for county vs. time for Economic Census Years	U.S. Census of Retail Trade, Geographic Area Series
Nat'l Averages, Ratio Food Consumption, Home vs. Away	72, 77, 82, 87, 92, 97	Ratio, total U.S. food expenditures for home divided by expenditures away data reported in Food Consumption, Prices, and Expenditures vs. time for Economic Census Years	U.S. Census of Retail Trade, Geographic Area Series

Chapter 7
Food Security and Access Indicators

Indicator	Years	Measure/Graphs	Source
Government Food Program Participation			
Number of People Receiving Food Stamps	1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002	Monthly average number of people participating in the Food Stamp Program in Missoula County. Year end totals are not available; state records the monthly totals then calculates the "monthly average" number of recipients.	State of Montana Department of Public Health and Human Sources website and main office in Helena, MT
Number of People in WIC Program	2000, 2001, 2002, 2003	Number of people in county in WIC vs. Time	Missoula County WIC Office (Mary Pittaway)
Funding of FMNP	2002, 2003	Funding of FMNP vs. Time	County WIC office (Mary Pittaway)
Number of Children enrolled in School Meal Program	1999, 2000, 2001, 2002,	Number of children enrolled and number of children eligible vs. time	State Office of Public Instruction (OPI)
Food Banks			
Number of Food Banks	1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002	Number of food bank/pantries/soup kitchens in Missoula County	Local food banks/pantries/soup kitchens Montana Food Bank Network Missoula County website
Community Gardens			
Number of Community Gardens	1997, 1998, 1999, 2000, 2001, 2002, 2003	Number of community gardens vs. time	Garden City Harvest (Tim Hall)
Poundage harvested and gleaned for Food Drop Sites from Community Gardens	1997, 1998, 1999, 2000, 2001	Amount harvested and gleaned vs. time	Garden City Harvest (Tim Hall)
Poundage harvested through the Volunteer for Veggies Program	1997, 1998, 1999, 2000, 2001	Amount harvested vs. time	Garden City Harvest (Tim Hall)