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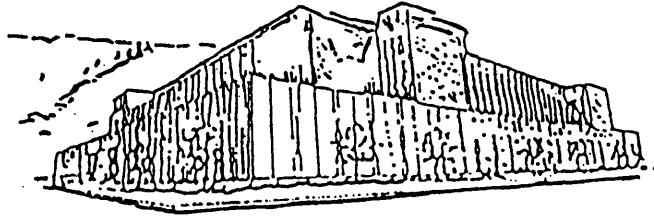
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IDENTIFICATION, MEASUREMENT, AND APPLICATION OF
LEADING INDICATORS
AS A TOOL TO PREPARE FOR GROWTH IN RURAL REGIONS

by

Lara Hagan Soward

B.A. The University of Colorado, 1995

presented in partial fulfillment of the requirements

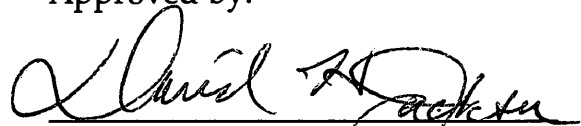
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The University of Montana

1996

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Dean, Graduate School

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Identification, Measurement, and Application of Leading Indicators as a Tool to Prepare for Growth in Rural Regions (211 pp.)

Director: David H. Jackson 

The purpose of this thesis is to assist rural communities in addressing the growth that is occurring in the Rocky Mountain West. Though a few academic studies do suggest that economic transition and growth are impacting rural communities, they do not offer ways to avoid or manage the impacts. It became increasingly clear that there was a need for the creation of indicators which could warn of the effects of growth prior to their occurrence.

This project satisfies that need by identifying, measuring, and applying leading indicators, which can serve as harbingers of growth in rural regions. Like a miner's canary, leading indicators are used to warn of danger before it arrives. Until this thesis, growth lacked such a canary, or found it too late in the form of traffic, increased prices, polluted air and water, and loss of sense of community.

The sixty-two leading indicators identified - a sample of which appear in this thesis - are categorized into four areas of growth-induced change. The demographic and economic changes cited in previous rural development studies are evident, but also documented are environmental and socio-cultural impacts on communities. The methodology described in this thesis can produce indicators that effectively identify growth-related issues, that measure their status, and that present conclusions to enable the practitioner to act to avoid the often overwhelming consequences. The goal is to help residents of Missoula County, Montana, in particular, and rural residents in general, not only avoid the problems associated with growth, but to take advantage of its benefits in an effort to become sustainable.

*A civilization flourishes when people plant trees
under whose shade they will never sit.*

-Greek Proverb

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The opinions expressed here are my own. Yet I am indebted for some of the ideas - and for any contribution they may make - to the communities about whom this work is written.

CHAPTER I

INTRODUCTION

The West is a region of extraordinary variety within its abiding unity, and of an iron immutability beneath its surface of change.

Stegner, *The American West as Living Space*

1.1 The Issue

Growth.

Even Eden had a serpent. Lurking beneath the peaceful and serene facade, a serpent of a different type threatens Missoula County and other rural communities of the American West.

Until recently, population growth was not even considered a probable issue with which many rural communities would have to contend. Now however, rural communities of the American West are not only experiencing demographic changes, but economic, environmental, and socio-cultural changes as well. To many, these changes seem frightening and overwhelming. It is not surprising, then, that there is a yearning for the "days gone by" as a refuge from the changes of the present. But, by ignoring the changes that accompany growth, communities deny the future that likely awaits and miss valuable opportunities to shape its outcome.

Communities cannot move forward by looking to their own past for easy solutions. Even if things were different or better ten years ago, communities cannot simply return to the way things once were. Times have

changed, and today, the challenge facing rural communities is to arrive at a consensus of local values and a common vision of what can be done, individually and collectively, to avoid the pitfalls of growth and to build strong, sustainable communities. Creating that community consensus depends on developing tools to address rural growth and change. Without such tools, there are no means to preserve the unique economic, environmental, and socio-cultural attributes of rural communities.

Leading indicators can serve as a tool to prepare for growth. Indicators are often used to guide decision-making, as touchstones or standards against which to compare success or failure, agreement or disagreement. Like a miner's canary, leading indicators are used to warn of "danger" before it arrives. Growth currently lacks such a canary, or finds it too late in the form of traffic, overly crowded classrooms, polluted air and water, and deteriorating infrastructure. It is increasingly clear that there is a need for the creation of indicators which can capture the effects of growth prior to their occurrence. This project satisfies that need by identifying, measuring, and applying leading indicators that can serve as harbingers of growth.

Indicators can help to define limits, needs, and values, thereby serving as a framework for community action. But we are still not doing enough of what works. As of this writing, the population of the Montana stands at 850,000, up 7.1% from 1990 (see Time, November 4, 1996)!

I write these words looking out through the window at the town of Jackson, Wyoming - a town for whom the issue of growth is all too familiar. My worry for towns like Jackson has increased, but so have my hopes for their futures. The resources available and the body of knowledge focused on growth-related issues is ever-growing. When we put the resources and the knowledge into practice, the results can be incredible. This project, then, is

my contribution to the resources available to rural western communities. It is a practical guide to plan for growth, by identifying, measuring, and finally applying leading indicators.

1.2 The Background

The growth and change of the rural West is occurring as areas that historically depended on resource-extractive industries are undergoing a profound transition from an extractive, export economy, based on timber, mining, and grazing, to a service economy, often based on tourism, and recreation.

The economic history of many western counties is closely linked to the natural resource base of the surrounding lands. These communities have long been defined by their ties to extractive industries, and, for the most part, many people still assume that their economies are still largely dependent on resource extraction. Though extractive industries continue to play some role in the economies of many western communities, new technologies coupled with the globalization of labor, and advancements in telecommunications and transportation, have fostered job mobility and the reality of working from home whether or not that home is in a metropolitan setting (Soward 1995). Such changes not only can help to diversify the local economy, but can create unprecedented opportunities for growth and economic activity by generating jobs and direct revenue and increasing the tax base.

But, while economic transition can have positive ramifications on rural communities, the growth that accompanies economic transition is not without its challenges. Western states have grown faster than the country as a whole since the 1970s (Riebsame, Theobald, Gosnell 1995), and research

indicates that "public lands" or "wilderness counties" grew two to three times faster than all other counties in the country, both rural and urban, beginning in the 1970s (Rudzitis and Johansen 1989). It seems evident that counties with or near "high natural amenity recreation areas" will continue to grow into the foreseeable future, whatever the broader fate of rural America might be.

Events in a remote corner of the world can illuminate central questions about the organization of communities. This thesis discusses the growth and change of rural communities in one western county as a means to better understand and respond to growth occurring in elsewhere in the rural Rocky Mountain West. Specifically, this thesis is a guide to understanding and planning for the growth that faces communities of rural Missoula County, Montana.

Missoula County offers a saga replete with cowboys, loggers, and other details that connect to traditions of the American West. In an attempt to better understand the growth already underway, this story is informative in and of itself. But, the events reported here are of more than ordinary interest for another reason. Rural Missoula County is especially suited to providing a real-world perspective on growth and change. Missoula County, Montana is an ideal setting within which to explore the realism of assumptions that underlie the battle between the new and old West, between planners and communities, between what we say we want and what we actually do. The Missoula County findings add to a growing library of evidence that shows that most rural communities are unprepared to deal with the effects of rapid growth. When unexplained and unexpected, growth-induced change can undermine communities.

1.3 The Research

The purpose of this thesis is to assist rural community residents and practitioners in identifying, measuring, and applying leading indicators in such a way that they are defensible and useful tools to guide and shape growth. The general task of this thesis is to define leading indicators of growth and to measure and apply those indicators as they pertain to rural Missoula County, Montana, in order to recommend ways in which this County in particular and rural residents in general can address growth in areas where it is expected to occur.

The specific objective of this project is to provide a tool to help local governments and rural residents meet an impact situation, provide technical expertise, and suggest ways to mitigate or avoid growth-related problems.

The general objectives of this study are to:

- aid local governments and residents in management and planning for growth by recognizing its costs and benefits to the public;
- aid in planning for, and preserving, the unique qualities of rural communities by giving local residents a sense of ownership;
- create a local understanding and agreement that creation of a growth monitoring and management plan is important and necessary;
- promote pro-active growth planning by providing a foundation for rural community action;
- enable local government and residents to overcome difficult decisions by encouraging action toward a sustainable future for their community;
- enable communities to achieve a sense of vision to overcome tensions and conflicts that occur with change; and to

- strive to implement solutions based on identifying, monitoring, and applying indicators.

The overarching goal of this effort is to create and maintain sustainable rural communities which are able to gather, analyze, and act on information about their present growth status and desired future.

This research is justified because though a few academic studies indicate that the economic transition is accompanied by rapid growth and is significantly affecting rural communities, most of these studies neither explore the ways in which rural communities can manage this growth nor provide a means to do so. The importance of this work lies not only in the discussion of rural growth and growth management strategies but in the identification, measurement, and application of indicators as a tool to prepare for and direct growth in rural areas.

1.4 The Plan

The thesis is divided into seven chapters. The introduction in Chapter I acts as an overview, providing an explanation of the issue at hand and some background as a means to understand the context. The introduction also defines the tasks, objectives, and goals of the project and explains the organization of the paper.

Chapter II is largely descriptive, and details the terms used in a rural community growth dialogue. The literature review in Chapter II provides a general introduction to the concepts associated with growth and change. The review also provides an in-depth description of indicators, their types and attributes. The review serves to locate the contribution of this work within work previously done in the field.

With this background in place, Chapter III, the methods section, expands upon the idea of indicators and explains the way in which they are used in this project. This section addresses the steps involved in the identification, measurement, and application of leading indicators. Chapter III is a "how-to" guide explaining the steps involved in a leading indicators project.

Chapter IV explains the dimensions of growth and the indicators within each dimension. Shifting from the general to the particular, Chapter IV then provides examples of the identification and measurement of leading indicators. This section focuses on the indicator concepts and the steps explained earlier, specifically as they address growth in Missoula County, Montana.

Chapter V begins the endeavor of implementation by providing a discussion on applications of the indicators. Building on the specific indicators in Chapter IV, this section addresses the uses of indicators and provides a specific example of the application of several indicators.

Based on the previous two chapters, Chapter VI identifies the challenges and limitations associated with studies using indicators. Based on the experience gained during the completion of this project, solutions are suggested to remedy the problems.

Chapter VII provides a discussion of the implications of the indicator research. Generally, this section provides an explanation of recommendations, their definition and purpose. More specifically, this chapter offers recommendations based on the indicators. While each indicator includes several specific recommendations provided in the results section, general suggestions fall into two key areas of recommendation - rural growth planning and community development - and are discussed here.

This chapter also serves to summarize and conclude the project. This final chapter includes contributions of this thesis and opportunities for further research.

This thesis may be used by people with many different backgrounds. Some will have graduate degrees in sociology, geography, or forestry and should be familiar with the concepts and research methods. Others will be new to the field of rural community growth and, for them, an introduction to the basics may be important. Within the chapters, it is my hope that each person would be able to find the information he or she needs at an appropriate level.

CHAPTER II LITERATURE REVIEW

It is not an unusual life-curve for Westerners - to live in and be shaped by the bigness, sparseness, space, clarity, and hopefulness of the West, to go away for study and enlargement an the perspective that distance can give, and then return to what pleases the sight and enlists the loyalty and demands the commitment.

Stegner, Where the Bluebird Sings to the Lemonade Springs

The terms defined in this chapter represent those often used in a dialogue of rural community growth and change. The purpose of this chapter is to establish a common understanding of what the terms are mean as they appear in the literature and the way in which they are used in this thesis.

2.1 The Meaning of "Rural"

The term "rural" is often used by social scientists, but few agree upon its meaning. The Census Bureau along with other governmental agencies, uses population density parameters to define rural: "places of less than 2,500 population." Yet, this definition not only avoids discussion of what makes rural areas significantly different from urban areas, but uses a "view of population...as a definer of place" instead of viewing rural population as a

"function of social processes rooted in the structural and cultural characteristics of place" (Garkovich 1989, 23).

To avoid the problems associated with defining the concept of "rural," a more thorough definition is required. This paper will adhere to the three themes that currently characterize rural geographers' definition of ruralness. A rural area is dominated (either currently or recently) by extensive land uses, notably agriculture and forestry; contains small, lower order settlements which demonstrate a strong relationship between buildings and extensive landscape, and which are thought of as rural by most residents; and engenders a way of life which is characterized by a cohesive identity based on respect for the environmental and behavioral qualities of living as part of an extensive landscape (Freeman 1992).

The rural-to-urban movement that characterized population migration for decades has been reversed. Today, city people are flocking to rural areas, and not only are urban workers willing to live outside of city limits, but so too are second home owners, telecommuters, and retirees and footloose migrants. As of 1990, 24.1% of the total US population resided in rural areas, which is up from previous decades (Johnson and Beale 1994).

2.2 What Is "Community"?

A community is one of several units of social organization and may be defined in many ways. While most social scientists and practitioners have agreed that comprehensive definitions for community are not available, several perspectives can offer some insight on what the term can mean. Defined as a "group of people living in proximity to one another in a defined area," community becomes geographic place, but the definition can also draw

upon the broader concept of community as people who share a common "cultural space" (Bates 1993, 2). This definition refers to those communities made up of people who unite in response to perceived threats under a common identity, people who share common beliefs and values, and, as Bates (1993) argues, even people whose support for or opposition to a political issue is proclaimed by the same bumper sticker.

Much of the difficulty in defining community stems from its reference to these two very different types of phenomena - the geographic and the cultural. Though the sociological literature offers more detailed definitions of community, for purposes of this paper, community is defined by "regular, sustained interactions of people who live in the same general area" and who share a common sense of identity (Bates 1993, 3). Later writers, including DeVilbiss (1993, 5), affirm Bates' definition, explaining that community encompasses not only a physical "place" but a locus of "interest and culture" as well. Gilbert (1982) recognizes five analytical components of rural communities, among them, the relations between humans and land as modulated by resource production. He argues that culture is determined by the dominant mode of production (e.g., extraction, manufacturing, service), as well as by specific effects of logging, industry, and tourism, in addition to the social organization of space.

Communities in Missoula County, Montana are not the first rural communities of the West to face rapid growth and economic transition. In fact, sociologists studied similar issues during the dramatic, but short lived, increase in the western energy industry in the 1970s and 1980s. Most of the research focused on gathering evidence that would support the theory of social disruptions in boomtowns. While some studies concluded that a social disruption theory could not be validated, other studies determined that there

were, indeed, visible social disruptions, like strained public services and higher crime rates. The results of one study demonstrated that the changes in social structure affect the community for a much longer period of time than the shorter term population expansion (Freudenburg 1992).

Still, these studies tended to focus on quantitative impacts: crime, divorce rates, etc. One western author, Wallace Stegner (1992), has managed to capture the more qualitative and cultural ramifications of economic transition and growth. Throughout his life, Stegner both witnessed and participated in the migration of extractive industry workers, or "boomers" as he called them, and the boom and bust of many western communities. To Stegner, the constant migration and instability associated with extractive industries precluded any achievement of community stability. He concluded that a "sense of place" was needed among people within a community in order for it to become sustainable. Stegner (1992, 202) wrote that a "sense of place" is evident only in "stickers," that is, those who settle and "love the life they have made and the place they have made it in."

It is difficult for people whose lives are built on the commodity economy to make the commitment to place because of the inherent instabilities noted earlier. Not only do the "boomers" suffer hardship and instability, but their attitudes about resources put them at odds with both the "stickers," who are willing to adjust to new economic opportunities, and the newcomers who are attracted by the new economy. This dissonance between attitudes linked to the out-going economy and the need to adjust to the new economy has led to significant personal and interpersonal conflict, as the differences between these cultural communities often result in contradicting perceptions of what is right for their future. This negativism of us/them, inside/outside, the polarization of communities that is evident in media

reports about the West (see Time, September 6, 1993) seems to manifest as a loss of sense of traditional community. Certainly, as supported by literature in rural sociology and related fields, this polarization reflects the growing sense that economic transition and growth has economic, environmental, and social and cultural costs that are not easily quantified or mitigated (Soward 1995).

2.3 Defining "Community Capacity"

Keeping the definition of community in mind, community capacity refers to the "collective ability of residents in a community to respond (or communal response) to external and internal stresses; to create and take advantage of opportunities; and to meet the needs of residents, diversely defined" (Kusel 1995, 16). Communities are interdependent, share common values, and, according to Kusel (1995), their ability to withstand change and pressure depends on three broad areas: 1) physical capital, which includes community infrastructure, resources, and financial capital; 2) human capital, which refers to the abilities and competence of residents; and 3) social capital, which includes the willingness of residents to unite toward common community goals. Jackson and Sperry (1996, 4) agree that rural communities which are experiencing major change must "develop their capacities as communities to tolerate change if they are to survive and thrive in the future."

2.4 A Definition of "Sense of Place"

Former Missoula Mayor Dan Kemmis defines "sense of place" as the "evaluation residents and potential residents make of the quality of a

particular living environment; quite simply, the quality of life" (Boone and Crockett Wildlife Conservation Program 1994, 67). In Kemmis' view, sense of place helps develop mutual community goals and leads the community to direct its future. It creates a sense of possibility to maintain the qualities from which the sense is derived.

This responsibility creates a need for a collaborative approach to community problem solving and planning. Once a community has identified characteristics that define its place, there exists common ground from which to direct community planning. This planning should enable communities to maintain the qualities that sustain the sense of place.

2.5 Understanding "Quality of Life"

Again, this term refers to a large set of criteria, is hard to define, and even more difficult to measure. This term has been used in studies to characterize a good and healthy life, or critical components of one. While most agree with that fact, this term may mean different things to different people and consequently has led to confusion about what well-being is and how it is measured. Economist Thomas Power has researched and written extensively on the topic of quality of life. According to Power (1980, 3), quality of life is the "quality of the social and physical (both human-made and natural) environment in which people pursue the gratification of their wants and needs." Further, Power (1980, 3) explains that quality of life is the "backdrop against which all human activity takes place and provides the flow of valuable services to people, which makes their pursuit of happiness both possible and easier."

Quality of life is often referred to as an "intangible" because it is easier to feel, to describe, than to quantify. Quality of life cannot be counted, per se, but at an emotional level, it is part of what makes life pleasurable and worth living. Branch et al. (1982, 2-2) suggest that, among other things, quality of life can include:

feeling a part of the community where you live; knowing where you stand in relationship to other people, having a sense that you and people in your community have control over decisions that affect your future; knowing your government strives to act in ways that benefit everyone equitably...and feeling confident that your children will get a fair start in life.

Branch et al. (1982) note that while these components are intangible, their absence can contribute to other conditions that are tangible and quantifiable, such as suicide, divorce, health problems, delinquency, crime, etc..

The factors pulling people into "rural Edens" are mostly non-economic and intangible and, according to Ray Rasker (1994), have a great deal to do with the quality of life. But Power (1988) warns that growth may not increase that quality. Power (1988, 140) argues that growth planning should carefully weigh intended benefits and costs, as "the quality of life is heavily influenced by the size of cities and the geographic distribution of the population."

Growth is cyclical, and the role that quality of life plays is integral to that cycle. Newcomers are attracted by the very things that their arrival may change or destroy. Communities are beginning to acknowledge the need to preserve an integrity of place in the cycle of growth. Research now too realizes this trend, and, as Branch et al. (1982, 2-1) explain, "a quiet revolution has taken place in what we believe we must pay attention to when making decisions."

2.6 Describing "Economic Transition"

Growth in rural communities of the American West seems to go hand-in-hand with economic transition. Rural economies of the American West have historically depended on resource-extractive industries. The region, however, is now undergoing a profound transition from an extractive, export economy based on timber, mining, and grazing, to a service economy often based on tourism, and recreation; Rasker (1994) and Power (1989) convincingly demonstrate that economic change is occurring in the rural communities of the American West. Indeed, the notion that the West's economy still solely, or even primarily, depends on commodities is inaccurate (Rasker 1994; Power 1989; Jackson and Sperry 1996; Soward 1995).

This economic transition has two components. First, communities undergoing such a transition experience a declining commodity presence. Second, the position commodities once held is replaced by the increasing presence of service industries, including tourism and recreation.

2.6.1 The Declining Commodity Presence

Rasker (1994) recognizes that price, application of labor, international competition, the availability of capital, and changing consumer preferences - along with the supply of raw materials - all affect the economic health of rural communities. In general, he finds that these forces work against the commodity economy of the West.

Power (1989) further demonstrates that while the declining commodity presence is partially fueled by national and global macro-economic trends, it also stems from regional and local goals of reduced dependency on exports of commodities and associated boom and bust cycles. Societal relationships with

natural resources in the West appear to have changed so fundamentally that extractive industries no longer represent an effective route to economic development (Freudenburg 1992). Instead, sole dependence on commodities leads rural regions to what Freudenburg (1992) calls economic "addiction."

This addiction is marked by several trends, including an increase in the operation costs of extractive facilities and a decrease in many world commodity prices - with the present exception of timber. Freudenburg (1992) demonstrates that just as addictive substances give users a short-term impression of much greater potency than is actually present, extractive industries are assumed to single-handedly support the rural West; and Westerners are afraid, much like drug addicts, to wean themselves from their dependence on the commodity economy. The U.S. Forest Service's Economic Diversity and Dependency Assessment (DeVilbiss 1992) further weakens the argument that the lumber, minerals, and forage from Rocky Mountain public lands are the prime supports of rural communities. It demonstrates that, with few exceptions, rural communities show a decreased dependency on lumber, minerals, and forage from public lands for either direct or indirect forms of employment. In Wyoming and Montana, for example, the order of primary economic activities ranks logging fifth, after a second-place tourism.

Rasker (1994) defines the cornerstone of successful economic transition as the creation of a favorable business climate while simultaneously protecting the natural, social and cultural attributes of the community. Unfortunately, the very regions having the greatest need to heed this logic often have the lowest ability to respond to it. Instead, in many instances, these transition communities have suffered from vicious boom and bust cycles because their economies have revolved around single export

production, such as timber, gold, or cattle. This cycle produces not only addiction, but "overadaptation."

Overadaptation occurs when a community becomes too finely tuned to a given economic niche (Freudenburg 1992). Like addiction, overadaptation is marked by negative effects. These include the depreciation or destruction of social or physical capital that might have otherwise been used to aid in a successful economic transition by enabling the economy to grow and diversify.

Economic diversification increases opportunities that are available to local residents and allows them to provide for their own needs. Increased local self-reliance buffers the community from fluctuations in world markets and permits local control of economic resources, thereby increasing economic security. Without this security, communities are susceptible to command by outside forces; an area's near total dependence on a single economic sector can be dangerous: when conditions change or prices fall, a large portion of the population is unemployed, without the means, training, or opportunity to seek other sources of income.

2.6.2 The Increasing Service Presence

Despite this historical dependence on resource extraction and commodity export, rural western communities are realizing opportunities for economic benefit from service activities, such as tourism and recreation. The West is becoming a land of "attraction" rather than "extraction." Yet, Rasker (1994) points out that just as some towns historically dependent on natural resources are evolving and successfully transitioning, others follow the natural tendency to substitute the extractive sector with an equally narrow service focus. He warns against this, because complete transition from

resource extraction to tourism or recreation neglects the need for diversification.

The growth of the service sector of the economy is a national trend that has reached even the smallest western communities. America has, by far, the largest service sector in the world, accounting for 72% of its gross domestic product (Rasker 1994), and it is growing rapidly. In the last twenty years, the growth in extractive industries has slowed while other sectors of the economy, such as retailing, banking, and government, are rapidly growing. In much of the rural West, the majority of new jobs and growth in labor occurred in non-extractive sectors; the number of people employed by extractive industries has fallen, and, in terms of dollars earned, the extractive industries contribute far less than they once did to the economy (Rasker 1994).

Researchers attribute the transition and rise of the service sector to trends such as changing demographic and retirement patterns, increase in demand for recreation and tourism opportunities, technological advancements fostering the creation of the "telecommuter," and service sector promotion efforts, such as convention centers, resorts, and the extensive establishments of second homes (DeVilbiss, Preston, and Siverts 1993). The tourism sector grows as rural communities focus on archeological attractions, mining heritage, gallery and museum development, and the renovation of their historic downtowns. In Montana, annual tourism revenues recently reached \$1 billion, surpassing mining revenues in the process (Elson 1993).

Bike trails, visitor centers, outfitters, scenic byways, gambling, and skiing are, indeed, transforming the region's reputation, making it a place that families are eager to include in their vacation itinerary. Many once-rural communities now boast coffee houses and specialty boutiques that rival

major metro centers. This scenario has occurred in many towns across the American West, and while Rasker (1994), Power (1989) and Freudenburg (1992) seem sensitive to the non-economic aspects of the West's transition, on the whole, the current body of work tends to neglect the more subtle aspects of this change. Most studies avoid any analysis beyond a description of income, employment, retirement, and revenue, and omit the equally significant environmental and social-cultural changes that accompany transition. These changes deserve attention and demand understanding if rural communities are going to survive the growth that seems inevitable.

2.7 An Explanation of "Growth"

For purposes of this paper, population growth is discussed as an integral part of a larger economic transition occurring in the Rocky Mountain West. Growth of the population is often accompanied by other economic, environmental, and socio-cultural changes.

Defining and conceptualizing a dynamic concept like growth is difficult; and it is not only difficult, but nearly impossible to define it in a way that all can agree on. Growth is currently a topic that excites scholars across a broad spectrum of disciplines. In particular, studies of rural communities are not only trying to gain an understanding of the meaning of growth, but learn to anticipate its impacts and avoid its problems.

An investigator of growth can find much value in the works of Bogue (1985), Greenwood (1975, 1981, 1985), and Graves (1979). Most of these scholars and experts have their roots not in planning or rural sociology, but in geography and studies of migration. Perhaps, as a result, some of these experts focus primarily on the quantitative rather than the qualitative aspects

of growth. By contrast, Jobs, Rasker, and Power mention and offer some discussion of other factors of growth, which are less quantifiable and, often, more difficult to measure. One would think that there would occur some sort of a synthesis, a joining together of these schools of research. But, in fact, these two camps appear to be divided, with neither of them thoroughly joining the quantitative with the qualitative.

This project is written with one foot firmly placed in each of these separate camps. The migration studies provide the foundation and background necessary to build a quantitative understanding of the growth phenomenon occurring in the rural West. The quality of life and sense of place studies bring a more holistic perspective and begin the plunge into the qualitative. After studying both styles, the scope of this project will include the quantitative and the qualitative.

2.7.1 The Irony of Growth

Though growth has historically been viewed positively, a growing library of evidence suggests that growth has a downside (e.g., Power 1980; Soward 1995). Despite this mounting evidence, the impacts of growth remain too little appreciated. In everyday life, one commonly sees headlines championing growth - of industry, in stocks - which implies an acceptance of the very process that is simultaneously held responsible for many of the ills in the world including cancer and the national debt. An alert observer can find countless examples of the irony of growth, and although some have recognized this paradox, it remains misunderstood by many.

The contradiction of growth has been witnessed firsthand in rural communities, where their remoteness was once seen as a major obstacle to growth. Now the natural amenities and quality of life rural communities

offer serves as one of their biggest attractions. While many rural residents are pleased by the popularity of their area, others note that the very qualities that attract newcomers are often altered, even destroyed, by their arrival.

2.7.2 Growth in the Rocky Mountain West

Over the last ten years, the population of many small western communities has grown rapidly. In the 1990s, 7 of the 10 fastest-growing states are in the West (Elson 1993). Power explains that along with this population growth, associated economic change has reduced unemployment by creating jobs: "Growth reduces the forced out-migration of a region's young people and accompanying social disruption, personal pain, and loss of human capital" (Power 1988, 159). But while the growth has had some economic benefits, few communities have been prepared to handle the serious problems associated with growth, and thus, the benefits has been overshadowed by the problems.

Moreover, like other changes the West has faced, the problem of growth seems to be a matter of degree. Robbins (1994, 84) referred to the extreme nature of change in the West when he quoted K. Ross Toole as saying:

There is little or nothing moderate about the state of Montana. It has ricocheted violently down the corridor of possibility. What is good in reasonable measure is often bad in full measure, and Montana has been a place of full measure.

Yet this rapid nature of growth is not characteristic only of Montana, but is "the talk of the town" everywhere (Snow 1995). Booms and "boomlets" describe growth activity in Arizona, New Mexico, Colorado, Nevada, Utah, Wyoming, and Idaho. Fuguitt, Voss, and Doherty (1979, 75) explain that:

so much national attention was given to central city decline and suburban growth that the non-metros were all but ignored. Then along came the environmental movement, the boom in energy, the rising importance of US agriculture, the migration of bruised city dwellers to country towns, farms, and communities. Suddenly, rural was in.

"In" is an understatement. The new growth is West-wide, with a 2.6 percent growth rate for the eight-state region (Snow 1995). As Snow (1995, 11) explains, "That's a growth rate that rivals Africa, the fastest growing continent on the planet with a growth rate of 2.9 percent." In states like Montana, where the population remained steady during the 1980s, many rural areas are now growing at unprecedented rates. According to Jackson and Wall (1995), the census estimates for the first half of the 1990s indicate that the population in Montana has increased 7.1%. In 1992 alone, 350,000 newcomers descended on the Rocky Mountain West. Total US metropolitan growth that year was 880,000, which means that the West is "capturing between one-third and one-half of the national growth" (Snow 1995, 11).

Americans want small towns, and they want them complete with the historic signatures of the American West - the myths and legends, and that is changing everything. As Snow (1995, 4) remembers:

When I was a little boy...Moab was still a name trapped in the Bible. But now it's all changed. I recognize favorite canyons in the background of magazine ads for running shoes and off-road vehicles...Edward Abbey's desert solitaire is now a casino. On any spring weekend in the Canyonlands of today, you can find a throng that would make for respectable attendance at an NFL game.

He continues, "We've become the Last Best Place according to one poet and about 10,000 realtors" (Snow 1995, 8).

Certainly, part of the problem with this rapid fire growth is the speed with which it is occurring. The capacities of small towns may have been able to stand moderate growth over a period of time, but they are unable to withstand extreme, spontaneous growth, and their efforts to do so can only be compared to a desperate attempt to stop a train by standing on the tracks with your hand up.

Snow discusses a 1986 Farmland Trust study which discovered that "growth subsidies are highest when local governments allow or encourage the sprawl of urban expansion into rural areas" (Snow 1995, 20). Further, a 1993 Sonoran Institute study found that growth usually costs, not benefits, communities, as local taxpayers effectively subsidize development costs incurred as necessary services expand (Snow 1995). Jackson and Sperry (1996, 8) add that "Rapid economic growth is typically distributed unevenly among people and households in the economy." The urban expectations of newcomers, housing shortages, crime, traffic, inadequate roads, water shortages, declining agricultural tenure, and skyrocketing land prices strain the rural capabilities of many communities.

Like everything else, the view of the West held by many is also an extreme. But as Robbins (1994, 85) warns, "There is more to the corridor of possibilities than the extremes." And the chance to take advantage of those possibilities still exists, but in the quality, rather than in the quantity of growth. According to Snow (1995, 6), "We can't stop [growth], but we can't afford to be heedless about it either."

2.7.3 Reasons for Growth

Though growth in the West is not entirely new, the reasons for this most recent episode are. The growth of the 1970s was driven by national

energy policies and the quest for new sources of fuel. Snow (1995, 8-9) explains that:

We saw then the possibilities for a boom so rapid, so extreme, as to cause a cultural revolution out on prairies...there were dark visions of an energy megalopolis stretching from Pueblo, Colorado, at the south, to Billings, Montana, at the North, with Casper somewhere in the middle, swelling like an oil-fed cancer on the Wyoming plains.

In contrast, the growth of the 1990s is fueled by a nation-wide demographic shift, and the cumulative effect of push-pull factors associated with changes in economics, technology, and lifestyle. Since the natural component of population change has a substantially smaller effect on rural communities, in-migration represents the primary factor in the distribution of the population.

Americans are often characterized by their mobility. Migration has, and will likely continue to be, the primary cause of rural population change. One way to interpret migration is through the use of the cognitive-behavioral model. This model acknowledges both Ravenstein's traditional "laws of migration" and the perception-based theory of Lee. Lee (1966) suggests that while Ravenstein's four laws may impact migration, what actually drives migration is an individual's perception of those laws. In other words, it is not simply the characteristics of the place of origin and destination, but the individual's perception of those characteristics that influence the decision to migrate.

Another theory, posited by Lee (1966), propounds that "push-pull" forces act on an individual prompting migration. Jackson and Sperry (1996) refer to a noted work in the field of migration studies, the 1992 von

Reichert/Rudzitis study, which discusses these two classes of forces which impact migration: push and pull.

The "push" feature of this demographic shift is otherwise known as the negative imperative. It is what is driving many Americans away from their homes in cities, away from drive-by's and drive-thru's, away from overcrowded schools and streets, and into the towns of the rural American West. Consider that in the period between 1992 and 1993, 52% of California's net out-migrants fled increasing costs and natural disasters and moved to the Rocky Mountain West (Snow 1995). Therefore, to understand growth of communities, we must not only understand how desirable Taos, Elko, and Jackson are to migrants, but how undesirable LA, New York, and Chicago are. People migrate when both good and bad conditions exist, because of both satisfaction and dissatisfaction.

The second class of migration forces, the "pull" force, acts to bring individuals to a destination that can offset the negative attributes of their location of origin. Environmental amenities have become an important factor complementing economic advantages in generating regional population increase, especially in the American West. Rudzitis and Johansen (1989) explain that "counties that contain or are adjacent to federally designated wilderness have been among the fastest growing in the US." They continue, "National surveys revealed that people prefer to live in small towns if given a choice" (Rudzitis and Johansen 1989, 19-20). In fact, the amenities of those small towns, including slower pace, decreased crime, and higher quality of life, account for an increasing number of decisions to migrate. Individuals even appear willing to accept lower economic returns if they can hike, fish, and mountain bike right outside their back door. Ironically, though one of the main attractions of small towns is their vast

environmental quality and limited potential for development, if current trends continue, wilderness counties will continue to grow at the expense of those very environmental amenities.

There is another feature to the demographic shift, which is responsible for the growth of the American West. The negative imperative is pushing people away from homes in bigger cities, and the small town lifestyle of rural communities is pulling in many of the refugees, but once they arrive, studies show that they are leaving nearly as much as they are coming. According to a study completed by Jobes (1995, 11) in Bozeman, Montana, "Eighty percent of the people who have moved into the Bozeman area during the past ten years have already moved away." Jobes (1995) goes on to say that in resort communities, the "turnaround migration" rate may even be as high as 90 percent.

Overall, these areas do continue to grow, as the net in-migration still surpasses the rate of turnaround migration, and this is in great part due to the rapidly improving economy. Thus, "the rate of out-migration increases as the economy improves" (Snow 1995, 13). But why? Consider the cycle: the economic advancement makes the community an attractive location to migrants; the growth rate, therefore, increases; a surplus in labor prevents wage increases and accompanied by escalating property values, causes many newcomers to turn around and leave due to economic hardship. Again, it is the paradox of growth.

2.7.4 Impacts of Growth

So what is at risk for rural communities? Jobes (1995, 13) points out that the magnitude of migration "creates a fluid social structure with idiosyncratic problems. Despite the considerable knowledge and vitality

in-migrants bring to a community, they also pose special problems...." To begin, Jackson and Sperry (1996) claim that migration can cause conflict, when significant numbers of newcomers do not share traditional community values. Indeed, newcomers, lacking the historical perspective, are often more accepting of development, and often, few stay long enough to see the cumulative effects of development. Many newcomers also resent the lack of local opportunities. Though quaint, small town character initially attracted them, it is also responsible for the missing NFL team, the inability to buy Thomas' English muffins, and the not-yet-locally-established voice mail service. Then, once these "urban" demands are made on rural communities, their very nature is altered. Data from Jobes (1995, 11) indicated that "residents in recreational areas increasingly expected their towns to have a variety and quality of services and goods found in metropolitan areas." In turn, as local services are becoming more cosmopolitan, residents are becoming less aware of the meaning of undeveloped areas.

Just as it is the perception of conditions that drives migration, it is again perceptions which motivate residents actions. Jobes (1995, 11) notes that newcomers "frequently expressed attachment to nature, but their sentiments were largely symbolic rather fundamentally concerned..." They claimed to love nature, that it brought them to their new home, yet, they participate in it less and less. Old-timers "self-centeredly" favor development, only to later regret its presence in their towns. It is the problem of what people say they want, versus what they actually do. Paradox.

2.7.5 Great Changes in Montana

What about Montana? In the last ten years, the Continental Divide counties grew an average of 10 percent, while many eastern Montana

counties decreased in population (Snow 1995). Montana has been characterized as a "high amenity mountain state" (Power 1988), with the media and the mountains driving its growth. It is also suggested that Montana growth is due to footloose retirees able to relocate, the discovery of Montana as a tourist destination and the growing awareness of the state's open space, clean air, abundant fish and wildlife, and wilderness, and the return of former Montanans (Jackson and Wall 1995). Though the growth numbers are still higher, the specter of turnaround migration exists. In addition to in-migration from other states, demographic data shows that 12,000 Californians moved to Montana between 1985 and 1990, and during that same time, 16,000 people moved out, many returning to California and Washington (Sunrift Center for Sustainable Communities 1995). People are moving to Montana. The question remains, though, how do we accommodate them once they get here, and how can we preserve rural communities in the process.

In general, the changes in Montana reflect the broader regional and national growth trends. As they grow, rural communities are experiencing changing perceptions of the economy, the environment, and of themselves. The great demographic influx has led to economic, environmental, and socio-cultural community changes. These growth-induced changes are described in detail below.

2.7.6 Demographic Changes in Montana

The rapid influx of population to the rural West is expressing itself demographically, economically, environmentally, and socio-culturally. Studies of rapid growth in small communities generally discuss well-being in terms of population change. Demographic changes are specifically illustrated

in the changing population profiles of counties, sub-county areas, and in shifts in population age groups.

2.7.7 Economic Changes in Montana

Though the growth that accompanies an economic transition can often provide more jobs, better services, and generate direct revenue, growth can also have an economic downside. Especially when growth and economic change occur rapidly, the good of growth does not seem in balance with the bad. If communities are going to reap the benefits of growth, the local economy must be strong as marked by employment opportunities and the availability of financial resources, financial lending and loans. Communities must also work to ensure housing affordability for residents. Lastly, growth should not signal the abandonment of traditional economic activities, such as agriculture, but rather provide the opportunity to diversify the local economic base.

2.7.8 Environmental Changes in Montana

Population expansion and growth-related development phenomena are often followed by land-use changes, as demonstrated by a decreasing agricultural tenure. Growth can also prompt a loss of biodiversity, as seen in an increase in fishing pressure and the numbers of threatened, endangered, and sensitive species. Environmental changes also include an increased rate of conflict between wildlife and humans and greater conflict between recreational users.

2.7.9 Socio-Cultural Changes in Montana

Boomtown studies that focus on the social and cultural impacts of development (Soward 1995) demonstrate that communities are experiencing a loss of sense of community, a shifting of community roles, and a change in alliances; and communities are experiencing a distrust of new groups and a polarization of old-timers and newcomers.

Economic transition prompts not only a change in the economic and physical structure of communities, but an associated change in social networks. Growth-induced socio-cultural changes confronting Montana communities include an increase in service demands, information requests, and workloads of local government agencies. Socio-cultural changes also include changes in crime rates for major offenses and juveniles. The change in sense of community that often accompanies growth is characterized by changing perceptions of quality of life and neighborliness. Socio-cultural changes also include an increased mobility of residents, land sales and subdivisions, increased rates of permit issuance and utility installation. Another impact of growth is the attention the state is receiving as seen in the production of Montana-based major motion pictures, and in airport, lodging, and traffic statistics.

2.8 The Concept of "Sustainability"

The significance of sustainability began to be appreciated with the Brundtland Report (McCool and Haynes 1994). According to the Report (McCool and Haynes 1994, 1), sustainability is "development which meets the needs of the present [generation] without endangering the ability of future

generations to meet their own needs." Thus, sustainability is the link to the past, as well as to the future.

A complete understanding of sustainability requires an understanding of the subtle difference between economic growth and economic development. Economic growth, which is not sustainable, can occur simply by an increase in the quantity of material goods. Economic development, on the other hand, can improve the quality of life without necessarily increasing the quantity of resources consumed. The latter may be sustainable. Thus, according to Wight (1995, 2), sustainable growth is a contradiction in terms, "an impossibility, so sustainable development must become our primary long-term policy goal."

The achievement of sustainability is dependent upon the exercise of demographic, economic, environmental, and socio-cultural responsibility. Sustainability does not refer to a fixed state, but rather to a sustainable process of continuous change (Boulding, date unknown). Because sustainability is more a process than a point in time, it should be used to enable rural communities to measure the direction of their growth.

2.9 What is an "Indicator"?

Many western communities, including Seattle, Washington and Flathead Valley, Montana, are using indicators to gauge the *sustainability* of the growth that they are experiencing. Unlike those projects using indicators to measure progress toward sustainability, this paper details the use of indicators to foretell growth. While the indicators of sustainability serve as a useful model in theory, they differ in application from the leading indicators used here.

An indicator can be described in both general and specific terms. Indicators are repeated measurements made of the same phenomena over time, and generally, an indicator is a label for any concept that attempts to describe some aspect of society. An indicator serves to signal the presence or absence and size of the aspect in question. More specifically, indicators measure conditions and changes that affect people. For purposes of this project, indicators are a means to measure significant demographic, economic, environmental, and social changes which point to growth.

Bauer (1966, 20) defines indicators as, "yardsticks by which to know if things are getting better or worse." Indicators are selected key statistics that provide information on significant trends. Bauer explains indicators as statistical measures that forecast change in relation to values and policy enabling researchers to assess where we stand and where we are going with respect to values and goals. Thus, indicators give a current reading on some aspect of society and can help to determine whether future conditions are tending toward or away from some normative criteria.

2.9.1 Types of Indicators

Different types of indicators can be distinguished. Rossi and Gilmartin (1980) suggest that indicator typology can be organized according to *what* the indicator measures. On the other hand, Land suggests that indicators can be categorized according to the *way* in which the researchers measure the indicator (Freeman 1992). For example, organized according to what they measure, indicator types include subjective versus objective, direct versus indirect, descriptive versus analytic. Categorized according to the way in which they will be used by researchers, the indicator typology includes

normative welfare indicators, satisfaction indicators, and descriptive indicators.

Another equally valuable method, of organizing types of indicators is according to *when* they measure significant trends. Rossi and Gilmartin (1980) refer to whether an indicator leads, is coincident with, or lags behind the occurrence of a problem. For purposes of this project, leading indicators are the tool of choice. Leading indicators precede an event and allow for forecast and prediction. Leading indicators are used to assess potential conditions and the likelihood of change, much like the miner's canary. In the case of growth, leading indicators provide some means to anticipate change. Another type of indicator, the here-and-now indicator, occurs simultaneously with an event. This type of indicator is used to assess present conditions. The opposite of leading indicators, lagging indicators occur after the fact and are used to assess improvement or damage by analyzing attributes of an event after it has occurred.

2.9.2 Desirable Attributes of Indicators

Several characteristics are important for evaluating the acceptability of indicators as measures. According to *Flathead Gauges* (Sunrift Center for Sustainable Communities 1995), indicators should:

- point the way to root causes, not just to symptoms of problems; (In so doing, Gauges warns that it is important not to confuse the measurement with the cause.)
- include data that is measurable;
- involve an "agreed-upon baseline or standard."

(Gauges uses the example of 98.6 as the "normal" standard for body temperature.)

- be reproducible;

(In other words, two or more people using the same indicator should get identical measurements at any given time.)

- be repeatable;

(In other words, the measurements of an indicator should be able to be taken at various points over time.)

- use currently available data;
- reflect issues which residents and researchers can affect;
- be relevant to local policy making efforts; and
- strive for sustainability.

Sustainable Seattle is another well-known study that uses indicators.

In their report on indicators of sustainable community (1993, 1995),

Sustainable Seattle suggests that good indicators are:

- "bellweather tests" of sustainability, or in this case, of growth impacts;

(Indicators should fundamentally reflect the demographic, economic, environmental, and socio-cultural health of communities over time.)

- determined by the community;

(For purposes of this study, indicators must be understood as a valid sign of growth.)

- attractive to the local media;

(By attracting media attention, indicators will be well-known and often publicized.)

- "statistically measurable;"

(A practical method of data collection should either exist or be created to capture indicator information at the appropriate scale.)

- defensible, both logically and scientifically;

(The selection and use of a particular indicator should be justifiable and rational.)

The Bolle Center for People and Forests offers the last group of attributes desirable for a good indicator. Burchfield (personal interview, May 25, 1996) suggests that indicators are:

- valid in both theory and construct;
- policy relevant and able to serve as the foundation for community-based change;
- reflective of a time series and demonstrative of a measurable trend over time;
- easy to access; and
- robust, and thus capable of providing insights into other intervening variables.

(For example, by understanding the traffic level on the highway, one could also understand levels of certain other stresses, including pollution and roadkills.)

Freeman (1992) offers several other suggestions about indicator selection:

- Indicators should indicate changes that community growth causes.
- Indicators should indicate changes that significantly influence quality of life.

Lastly, Rossi and Gilmartin (1980) offer characteristics of indicators that serve as dimensions along which indicators can be assessed and compared:

- validity: the degree to which an indicator measures the concept it is intended to measure;

- reliability: the proportion of non-error variance of an indicator;
- stability: the ability of an indicator to measure other than extraneous or irrelevant influences;
- responsiveness: the speed and magnitude of an indicator's response to societal changes;
- understandability: the ability to comprehend what it is that the indicator measures;
- normative interest: the extent to which an indicator relates community values and goals;
- policy relevance: the extent to which an indicator can impact decision-making;
- timeliness: the availability of indicator data when needed.

According to Van der Ryn and Cowan (1996, 155), "Well-chosen indicators can help form a shared awareness of the issues facing a community. They can give us a way of evaluating our own activities and understanding their wider implications." Much as a litmus test or a fundraising tote board provides illustrative examples of the status of a given situation, indicators can serve as a compass on the community map, telling us from what direction we are coming and in what direction we should be going.

CONCLUSION

Indeed, the literature offers some insight on how each of the above concepts relate to a growth management dialogue. Only several of the previous concepts (e.g., economic transition, growth, indicator) are particularly important and relevant to the indicators project. But by providing

a broad discussion of terms, I hoped to create a comprehensive understanding not only of the primary issue but the related issues as well.

With the above conceptual foundation in place, the following chapters build upon these concepts to identify, measure, and apply leading indicators to the issue of rural community growth and change. Discussion of the problem is the first step, but a solution to the growth-induced changes facing rural communities demands action, and that is what the following pages suggest, because as the old saying goes, "You can't roll up your sleeves and get to work if you are still wringing your hands." The next chapter explains the leading indicators methodology used in this project and is followed by two chapters which then illustrate the steps of that methodology.

CHAPTER III

METHODS

The formulation of the problem is often more essential than its solution.

Einstein, *Source Unknown*

3.1 Indicator Methodology

This chapter was written to explain the way in which this particular leading indicators project was conducted in the hope that this project can serve as a model for others. The purpose of this chapter is to assist indicator practitioners in identifying, measuring, and applying indicators in such a way that they are defensible and can deliver useful information.

This chapter is based on the premise that the purpose of indicators is to assist the community decision-maker by providing information that he/she needs to make a more informed decision. If the information is not presented in a way that can be used, if its significance is not apparent, or if its validity is in question, then the potential value of the indicator is lost. The methodology described in this chapter is designed to create usable information. The methodology should produce indicators that effectively identify the issues, measure their status, and present the conclusions in a manner that enables the practitioner to understand and act on them.

This chapter is divided into three sections: identification, measurement, and application, which reflect the three stages of the indicator methodology. The first section details the steps involved in identifying

indicators. This stage includes four steps, and when completed should produce the framework for the following stages. The second section of this chapter discusses how to measure indicators, and in so doing includes an explanation of primary and secondary data. This second stage of the methodology includes two steps. The final section in this chapter - the last stage of the process - offers a two step sequence to complete the application of indicators. The stages are cumulative and meant to be followed in order. It is also intended that an indicator project include each of the three stages.

3.2 Identification of Leading Indicators

3.2.1. Steps 1. and 2.

- *What type of indicators should be used?*
- *Should those indicators be objective or subjective?*

When choosing an indicators methodology, the researcher must first determine what type of indicator to utilize: leading, here-and-now, or lagging indicators. The type of indicator chosen should be based on the goal of a particular project. Indicator practitioners should carefully devise their project objectives and tailor the indicator type to them.

For purposes of this project, the goal was to identify indicators that could anticipate the effects of growth prior to their occurrence. From the discussion of indicator types in Chapter II, it is apparent that leading indicators provided the best means to meet the goals of this thesis.

Once the indicator type is chosen, the researcher must further decide whether the indicators will be objective or subjective. Within the leading indicator type, the nature of the indicator chosen should be based on, among

other things, the desired information. Is the goal of the project to capture economic trends or to uncover local perceptions of quality of life? The first is perhaps best addressed through the use of objective indicators (e.g., income levels, tax collections and expenditures). The latter may require more subjective indicators (e.g., neighborliness, increased concern about crime). When choosing the nature of the indicator, the practitioner should also consider the method of data collection and the research resources available. Objective indicators will likely require different means of data collection than more subjective indicators. The practitioner should determine what kinds of people-power and funding are available to complete the data collection.

This project relied on the use of *both* objective and subjective leading indicators as a tool to prepare for growth in rural areas. Though most literature separates subjective from objective indicators, most researchers advocate using them both, therefore monitoring both the "subjects and the objected that affect them" (Freeman 1992, 69-70). By combining the two approaches, I was better assured of capturing the way in which change manifested in this community. Freeman (1992, 74) suggests that:

When combined with objective social indicators, subjective quality of life measures can be extremely useful in refining one's perspective about the needs of a community.

By deciding to use both objective and subjective indicators, I was not limited in my selection of indicators, and could capture both objective changes in Missoula and those that focused on attitudes, opinions, and points of view. But, at the same time, I realized that would my decision would require several methods of data collection and more time and money.

3.2.2. Step 3.

- *What specific indicators should be used?*

The next step involves selecting the specific indicators to be used in a project. The decision to include a particular indicator should be based on an evaluation of the measure against the desired indicator attributes mentioned in the previous chapter on pages 35-38. There are over thirty attributes listed, but an evaluation of an indicator against that many attributes is unlikely. Therefore, an indicator practitioner should examine the attributes and determine which are most appropriate to a project and relevant to its goals. Are there any attributes that should always be included in an indicator study? I hesitate to prescribe a single approach, as each project will have a unique set of opportunities and challenges. In *A Guide to Social Assessment*, Branch et al. (1982, 1-4) suggest that people "will value you and your skills to the extent that you are able to help them solve problems that are real to them." Though an indicator study is not a social assessment, the advice still applies. For indicators to be valued, they must be rigorous, they must help people solve problems, they must be presented in terms that have meaning to people, and they must be practical and realistic. Thus, choice of indicators will be influenced by the particular context of the research, and aside from suggesting that at least three attributes is ideal, I want to avoid mandating which three.

Once the set of attributes has been defined, the practitioner should strive to explain why a particular indicator does or does not meet the criteria. If availability is one of the desired attributes, an indicator that is not available should not necessarily be excluded, but the practitioner should take steps to explain why it is not available and what efforts can be made to ensure its availability in the future. A rating scheme can make this task easier to complete and to explain. Check marks or even a series of stars (similar to

movie ratings) can create an immediate understanding of whether and to what degree an indicator met a set of criteria. The purpose in evaluating an indicator and then explaining the evaluation method is to provide those using the indicator project with some justification for the choices that were made.

When choosing indicators, it is also important to ensure that a chosen indicator not only possess the desired attributes, but meets the criteria of the chosen indicator type. For example, if an indicator for use in a lagging indicator project is reliable, responsive, and valid, but occurs prior to an event, not after the fact, it should be excluded.

For purposes of this study, indicators served to measure the effects of growth prior to their occurrence. Initially a large number of indicators were considered for use in this project. The initial indicator list was the product of an extensive literature review and surveys of community members and indicator experts, which helped to identify community values and goals, and contributed to an understanding of the importance of certain indicators. According to Freeman (1992, 78), "A social group reflects its values when it identifies its goals, in that, often, people base their goals on their values," and so it was my desire to select indicators which reflected the values of the community around which the indicators were centered.

Evaluation of the list revealed that sixty-two indicators from the original pool fulfilled the criteria necessary for a leading indicator. Though certain indicators possessed the desired attributes, they lacked the ability to serve in a predictive manner, and were therefore excluded from the study.

After eliminating non-leading indicators, those that remained had to be evaluated against a defined set of attributes. For purposes of this study, the final indicator selection was primarily dependent on three qualities:

availability, reliability, and importance. These three qualities were chosen because they were easily understood, easily explained, and captured the essence of a particular indicator. Thus, an indicator was selected 1) when there was some data which, when available, would be useful, 2) when it was determined that the indicator could be measured, and 3) when the growth impact the indicator addressed was deemed important. I wanted to avoid using too many attributes, because, as a model project, that could become cumbersome and confusing. But while staying simple, I did not want to sacrifice scientific rigor, and the three attribute method seemed an appropriate compromise. I chose to use check marks to designate whether my indicators met the set of criteria. When I did not feel an indicator warranted a check mark, I provided an explanation.

Several indicators present in the study were adapted from similar studies, while others were identified, measured, and applied for the first time. Some of the indicators represented data that has already been collected, or information that was easily adapted. Other indicators required changes in information already collected or are presently unmeasured and required new data collection and analysis.

3.2.3 Step 4.

- *Into what dimensions should the indicators be divided?*

The next step of identification is to determine into what sectors, or dimensions, to divide indicators. Dimensions serve as categories into which the indicators are grouped. For example, if a project is focusing on indicators of community sustainability, the parts of a community (e.g., economic, social, and environmental) may serve as appropriate dimensions. If a project is focusing more specifically on indicators of local economic health, the

dimensions may be the components of the economy (e.g., employment, expenditures, and income).

It is the indicator practitioner who must determine what dimensions are most relevant to their study and appropriate to their community. Often, dimensions are created as logical extensions of indicators, as the indicators naturally fall into divisions and can be grouped together. At other times, more difficult decisions have to be made to link groups of indicators together. There is not a handy hint to make the process of categorizing indicators easy. Practitioners should network with each other and even consult community members to get ideas about grouping indicators, and it is always appropriate to consult previously completed indicator projects to see what has been done in the past.

Dimension, for the purposes of this project, refers to an area of growth-induced changes occurring in the Missoula community. This particular research effort is similar to the "social economic accounts system," an indicator methodology which "divides the community into sectors" and then determines which sectors are necessary to measure (Freeman 1992, 77). Through the use of objective and subjective leading indicators, this research examines the demographic, economic, environmental, and socio-cultural changes that occur as a result of growth.

These four dimensions of growth impacts were selected because they encompass a great many impacts of growth that are so often referred to in the literature. For example, Jackson and Sperry (1996, 46) explain that "Rapid rural residential development invariably means conversion of lands from traditional uses to residential ones with the associated needs for roads, law enforcement, domestic water supplies, sewage disposal and electrical power, and typical impacts on wildlife habitat and the general sense of crowding."

Indeed, descriptions of growth-induced community change often consist of four components: demographic, economic, environmental, and socio-cultural. However, many studies of the growth occurring as rural communities change from an extractive base to a service base often deal only with the demographic and economic components and neglect the critical environmental and socio-cultural ramifications. I chose to incorporate *each* of the four areas of change thereby capturing the more subtle socio-cultural aspects of growth along with the demographic, economic, and environmental changes.

3.2.4 Summary of Identification Steps

The sequence of steps to complete the identification stage of the indicator methodology is as follows:

1. Determine the indicator type of choice.
2. Within that type, determine whether to use objective or subjective indicators.
3. Determine which specific indicators to use.
4. Determine the dimensions, or categories, into which to divide the indicators.

-->Proceed to the measurement of those indicators.

3.3 Measurement of Leading Indicators

3.3.1 Step 1.

- *Should quantitative or qualitative data be used?*

Determining whether to use quantitative or qualitative data is the first step in the measurement of indicators. Like the identification of indicators, their measurement also demands that the practitioner make some decisions. Once the indicators have been selected, they must be measured to determine their past and present status and monitored to predict their future trend. But what type of measurements should be made? In deciding which research method to utilize, practitioners must, once again, consider the goals of an indicator project as well as the method of data collection and research resources.

Today, a great deal of research involves quantitative research methods. Quantitative, or numerical, data, while able to capture aggregate trends, rarely includes findings about perceptions, behavior, relationships, and feelings. Qualitative research, on the other hand, produces results that are rarely found through the many uses of numbers and statistics. Grounded qualitative research "seeks to illuminate social, cultural, historical, economic, linguistic, and other background aspects that frame and make comprehensible human practices and events" (Crabtree and Miller 1992, page unknown). Qualitative techniques can be applied to any research project, but are particularly useful when interpreting the results of the interviews aimed at eliciting perceptions and attitudes in specific cases or places. The table below illustrates the typical differences between the two approaches.

TABLE 1

TYPICAL DIFFERENCES BETWEEN QUALITATIVE AND QUANTITATIVE APPROACHES

Category	Qualitative	Quantitative
Design	Emerging	Predetermined
Data Discovery	Ongoing	One-shot
Nature of Data	Mutually Dependent	Independent
Relationship to Theory	Dynamic, Discovered	Predetermined, Confirmed
Symbols Used	Words	Numbers
Data Collection Instrument	Researcher	Physical (i.e., Paper/Pencil)
Data Summary	Rich and Deep Explanations	Statistics
Setting	Real Life or Natural	Laboratory or Controlled
Outcomes	Perspectives	Prediction
Interaction with People	Much	Limited
Values	Context dependent	Context free

Source: Unknown.

Neither research method is without bias, and therefore, quantitative and qualitative methods are often used to complement one another.

That was certainly the case in this project; I advocate the use of both quantitative and qualitative methods of research. My decision to use both methods originated from my desire to understand both the statistics and the personal perspectives that describe the Missoula community. I employed quantitative and qualitative data from public, private, and government sources to address demographic, economic, environmental, and socio-cultural trends.

3.3.2 Step 2.

- *Should primary or secondary data be used?*
- *By what methods should the primary and secondary data be collected?*

The second step in the measurement stage involves data sources and collection. There are two categories of data sources: primary and secondary sources. Primary data is that which is gathered firsthand. In contrast,

secondary data is that which was previously gathered by someone else. The researcher must decide which type data best provides the needed information.

This project involved the use of both primary and secondary data. I chose to utilize both types of data because "it is always best to use a variety of techniques in the study of any topic" (Babbie 1995, 231). Because each of the data types has its weaknesses, the use of several can help to fill in any gaps. The combination of the sources also made data collection less time consuming and expensive. I was able to gather some original data but also benefited from the use of pre-existing data.

After deciding whether to use primary or secondary data, the practitioner must also determine the most effective means of primary and secondary data collection. For example, the practitioner could consider: whether time and money are available to conduct interviews and what secondary sources of data are most reliable. When conducting an indicators project, the practitioner should also keep in mind that the results of the measurement of indicators should be both easy to access and use.

This project relied on the use of primary data gathered during personal interviews and while at public meetings. The project also incorporated secondary data, including census and crime data, which was gathered from sources, which appear on the indicator sheets in Chapter IV as well as in Appendix I. Primary and secondary data was most often gathered for the County as a whole, but, when possible, data was also gathered for specific regions within the County.

Though this study utilizes certain data sources for indicators that pertain to rural growth in Missoula County, Montana, this effort serves as a template, a model, of leading indicator research, and, as such, may require modification when applied to another area. The process of measuring

indicators is dynamic as well as site-specific; and, therefore, the sources of indicators used here may not only need to change over time to reflect the most current status of this community, but may not all apply to a similar study of a different community.

With that in mind, the following two sections discuss sources of primary and secondary data and the way they were utilized for this project. Section 3.3.2.1 provides primary data collection information about interviews and public meetings. However, the primary data sources presented here represent only some of the myriad options. So, too, the census and crime data discussed in Section 3.3.2.2 represents only two of the many secondary data references available.

3.3.2.1 Primary Data Sources

Along with secondary data, some of the data for this project was collected via personal interviews and public meetings, during the one year period between October 1995 and October 1996.

In years past, the more qualitative, primary research methods (e.g., personal interviews) were often overshadowed by the use of secondary, more quantitative, methods (e.g., statistics). However, past trends ignoring qualitative research methods appear to have been replaced with an over-dependence on interviews and public meetings. The danger of this over-dependence is that qualitative methods can intrude into the very setting they are attempting to describe (Babbie 1995). Thus, qualitative measures can alter the very thing they are measuring in a process known as "behavioral reactance," often eliciting atypical responses and producing skewed results (Babbie 1995).

The principal objections to primary data collection arise when it is used alone, without secondary data. Therefore, primary data collection proves most successful when it is supplemented by data with different methodological strengths (Babbie 1995). That said, the following two methods can serve as means to gather primary data.

Interviews - Interviews provide one means of primary data collection. Qualitative perceptions, beliefs, and expectations can be captured by analyzing interviews of "key informants" (county planners, local business owners, ranchers, loggers). Key informants are defined as "knowledgeable individuals from within the culture who teach the observer through modeling, interpreting, and supplying information" (Crabtree and Miller 1992, page unknown). By choosing people who have been in the community long enough, it is believed that their answers can be especially well-informed and insightful.

Interviews for this project were arranged with the intention of surveying a representation of key informants in Missoula County. Initially, key informants were chosen with the aid of the Missoula Office of Planning and Grants. Over time, the list of key informants expanded as those interviewed suggested the names of others, and interviews were conducted as potential informants became available, in what is known as the "snowball technique" (Babbie 1995). Along with local key informants, interviews were also conducted with experts in the field of rural community growth in order to understand the situation occurring in Missoula County within the larger context of growth in the American West. Fifty-four people were interviewed, and depending on scheduling limitations, the interviews were conducted either in person or via phone. A list of those interviewed appears as Appendix II.

The goal of the interviews was to understand the impact of growth in the context of everyday settings. The interviews followed a script, which ensured uniformity and consistency; the script used open-ended questions, designed to emphasize qualitative information. Key informants were asked about changes in their county and region, their opinions of those changes, and their perceptions of impacts occurring as a result of those changes. Several of the interview questions probed the informants' background and experience of living in Missoula County. A sample script is included in Appendix III, though this was only a guide to questions, and interviews frequently went beyond these guideline questions.

The first-hand findings and conclusions drawn from these interviews aided in the selection of the dimensions of growth impacts and indicators of those impacts as well; the range of responses from the open-ended questions proved extremely useful in determining the format of the thesis. Issues and concerns of key informants were readily apparent and grouped into dimensions, which later became the method of categorizing the indicators. The interviews also helped in the selection of the indicators themselves. Along with an evaluation of an indicator's success at meeting the desired attributes, the indicators were chosen based on information, such as community values, gathered during the interviews.

After all of the key informants were interviewed, the interviews, along with notes and reflections, were analyzed for words and phrases that stood out as significant, in a modified version of the process called "In Vivo Coding" (Crabtree and Miller 1992). This process requires that the researcher follow several guidelines: 1) the researcher must be well-informed about the key informant's world, 2) the researcher must look beyond individual actions to the larger background context, and 3) the interviewer must

maintain a constantly questioning attitude, always looking for misunderstandings. These conditions were met by the researcher's residence in the study area and extensive background reading about the area and the issue of growth. The last condition was met in both the interviews and the interpretation described here.

In conducting interviews, it is important to follow correct procedure. If the survey or questionnaire is improperly administered or inaccurately analyzed, the results can be quite misleading. Several books and manuals provide an easy to understand and thorough description of proper interview methods and are listed in Appendix IV.

Interviews, conducted either in person or over the phone, provide the opportunity to discuss issues with the subject. Interview questions can either be informal and spontaneous in nature, or formal and structured. The major advantage of this method of qualitative research over others is that a high rate of response is possible (Babbie 1995). Also, subjects often appreciate the opportunity to voice their opinions, especially if they feel those opinions will influence local decision-makers or impact policy.

Face-to-face interviews provide an advantage over interviews conducted over the phone. In person, the interviewer can monitor the subject for signs that will contribute to the validity of the responses such as obvious confusion or emotion over an issue. Aside from the opportunity to make physical observations, the interviewer is more likely to know whether or not a question was understood or if the topic made the subject uncomfortable.

But both face-to-face and phone interview methods can produce excellent results, and when a personal meeting is not possible, phone interviews are certainly superior to the low response rates of mail-back

questionnaires. When conducting an indicator study, the researcher should determine what method of data collection is most likely to capture community values and which is most economically and logistically feasible.

Public Meetings - Another source of qualitative information is the public meeting. To a lesser degree, this study utilized perceptions and impressions gathered during public meetings held in the fall of 1995. Public meetings, workshops, and local groups served as a rich source of information about community values and residents' expectations. Due to time and scheduling constraints, researcher attendance was limited to only two community groups. Attendance at the Seeley Lake Community Council meetings and the Swan Valley Citizens Ad Hoc Committee meetings enabled the researcher to monitor the attendance, topics discussed, and general response to issues on the agendas.

Though meetings and groups often attract a diverse population of citizens, it is important to recognize that information gathered in this manner may not be reflective of the community as a whole. In fact, citizens who attend a meeting may only represent a specific faction or stakeholder group (e.g., those with strong opinions or those with more free time). The researcher must keep these limitations in mind when using public meetings as a method of primary data collection.

3.3.2.2 Secondary Data Sources

Along with primary data, this project relied on data collected by someone else, perhaps for some purpose other than that of subsequent analysis. There are numerous secondary sources of community information, that involve both qualitative and quantitative data. Refer to Appendix I for a list of secondary data sources used to measure indicators for this project.

Much of the data used in this study was collected for Missoula County from secondary data sources including public and private records, power and telephone companies, government offices, and the Census Bureau. Two examples of secondary data, census and crime data, deserve particular attention, due mostly to their limitations.

Census Data - The Census Bureau represents one source of secondary data. Census data is published in a series of reports every ten years. Census data includes information on population, housing, social, and economic characteristics. That data is classified into two categories, as explained by Rasker, Johnson, and York in their 1995 workbook Measuring Change in Rural Communities: A Workbook for Determining Demographic, Economic, and Fiscal Trends.

TABLE 2

HOW CENSUS DATA ARE COLLECTED

100 Percent Data: The 100 percent data are obtained from questionnaires sent to individuals and households in the United States during the official census (in April of the census year). Two different forms - the long form and the short form - are circulated. All individuals and households are supposed to fill out whichever form they receive. The 100 percent data items are those that appear on both the short and long forms and therefore represent (ideally) 100 percent of the population.

Sample Data: About 17 percent of the population, or one in six randomly selected housing units, receives the long-form questionnaire used to derive the sample data. This data set is referred to as a sample because only a proportion of the population is "sampled" through responses to the long form.

Source: R. Rasker, J. Johnson, and V. York. *Measuring Change In Rural Communities: A Workbook for Determining Demographic, Economic, and Fiscal Trends* (Bozeman, MT: Wilderness Society, Bolle Center for Ecosystem Management, 1995) 1:9.

Thus, some census data is limited by sample size, and may only be available at a certain geographic level of detail. In 1990, for the first time, the Census created data for "small and unincorporated areas within counties" known as the block level (Rasker, Johnson, and York 1995, 11). "Only 100 percent data items are available down to the block level, while sample items are available only to the block group level" (Rasker, Johnson, and York 1995, 11-12).

TABLE 3

GEOGRAPHIC AVAILABILITY OF CENSUS DATA PRODUCTS

Geographic Level	Information Source		
	100 Percent	Sample	Current Pop Reports
United States	X	X	X
Region	X	X	X
Division	X	X	X
State	X	X	X
County	X	X	X
Minor Civil Division/Census County Division	X	X	
Census Tract/Block Numbering Area	X	X	
Block Group	X	X	
Block	X		
Indian Reservation	X	X	
Metropolitan Area	X	X	
Urbanized Area	X	X	
Congressional District	X	X	

Source: Source: R. Rasker, J. Johnson, and V. York. *Measuring Change In Rural Communities: A Workbook for Determining Demographic, Economic, and Fiscal Trends* (Bozeman, MT: Wilderness Society, Bolle Center for Ecosystem Management, 1995) 1:13, table 2.

Though one advantage of Census data is that it is often able to provide information at finer levels of geographic detail, such as place, it is problematic because even place only includes "incorporated areas of more than 2,500 population" (Rasker, Johnson, and York 1995, 12). Unfortunately, many rural studies center on unincorporated areas, making data collection difficult, at best, and more often, impossible. The use of Census data also requires an awareness of changes in the presentation and arrangement of data from census to census.

Crime Data - One further example of secondary data is worthy of mention. The Montana Board of Crime Control provides data about major juvenile and criminal offenses. While the Board proves a cooperative and helpful data source, it is the data itself and not the source that is problematic. Crime data may not provide accurate information. As Doyle (1990, 31) explains, "Because population is the denominator in the formula used to calculate crime rates, underestimating population will result in an overestimation of the crime rate, while overestimating the population will result in an underestimation of the crime rate." Further, Doyle (1990) adds that even if the population figures provide an accurate estimate of residents, the crime rate may be inaccurate, as crimes are often committed by non-residents. Doyle (1990) uses Missoula as an example to illustrate this flaw in the data. Because of the nature of the city as a regional hub, non-residents who commit crimes in the area may inflate the crime rate.

Each source of secondary data has advantages and disadvantages, and because of that, as Rasker, Johnson, and York (1995, 4) suggests, it is best to consult a variety of sources in order to achieve "the most complete picture of a local area."

3.3.3 Summary of Measurement Steps

The sequence of steps to complete the measurement stage of the indicator methodology is as follows:

1. Determine whether to employ a quantitative or qualitative research method.
 2. Determine whether to use primary or secondary data and by what means it should be collected. Determine whether to rely on interviews and/or public meetings for primary data. Heed the warnings about the limitations of census and crime data.
- > Proceed to the application of indicators.

3.4 Application of Leading Indicators

3.4.1 Step 1.

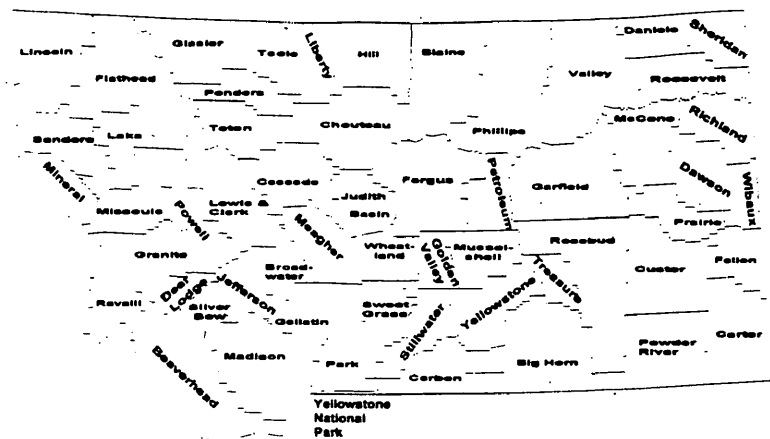
- *At what geographic level of detail should the indicators be applied?*

The selection of a geographic level is the next step in the application stage of the indicator methodology. The geographic level of detail is dependent upon the nature of the research. The indicator practitioner should determine what level of geographic detail best addresses the changes the indicators are meant to capture.

For purposes of this study, the county level appears to be the most appropriate geographic unit. This unit is often the smallest for which data is available and it is capable of capturing trends that would be omitted with the use of a smaller unit.

Missoula County, a region of 2,625 square miles in west central Montana, is bounded by Lake County to the north, Sanders to the northwest, Mineral to the West, the State of Idaho to the southwest, Ravalli to the South, Granite to the southeast, and Powell to the East. Refer to Figure 1 below.

FIGURE 1
MAP OF THE STATE OF MONTANA

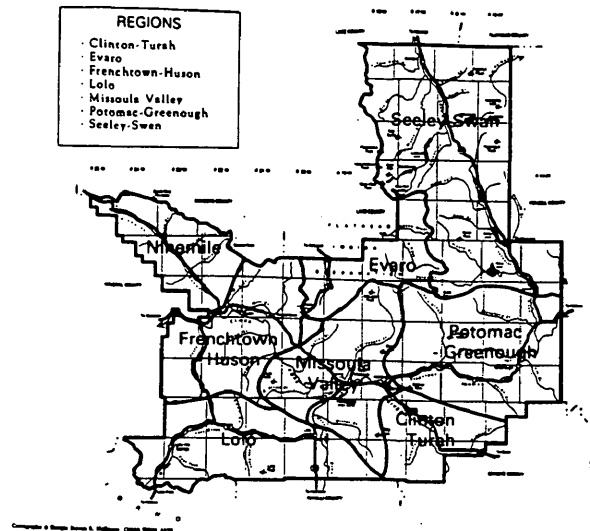


Source: Christiane von Reichert.

The study area was chosen because the region well represents rural areas and because the phenomenon of growth has not yet arrived in some rural regions of the County, and just begun in others, making the time right for the use of leading indicators.

There are eight regions in Missoula County, as shown in the map below. Excluding the already growing urban area, the study focuses on the seven rural regions, and these are: Clinton-Turah, Evaro, Frenchtown-Huson, Lolo, Ninemile, Potomac-Greenough, and Seeley-Swan. Refer to Figure 2 below. When appropriate and possible, the data does also reflect these sub-county, rural regional trends.

FIGURE 2
MAP OF MISSOULA COUNTY, MONTANA



Source: Missoula Office of Planning and Grants.

Though the county/sub-county level was ideal for purposes of this study, the geographic scale of indicators depends on the context of the research and the availability of data.

3.4.2 Step 2.

- *How do trends impact the application of leading indicators?*

There are several ways in which leading indicators can be applied, once they have been identified and measured. Chapter V provides an in-depth explanation of leading indicator application. The application of indicators is dependent on the desired outcome of the project. Regardless of the specifics, to complete a general application of indicators, the first step is to understand the impact of trends. Trends not only provide an historical perspective by

illustrating changes in the past, but can provide a current status report by illustrating current conditions. Trends can also be used to make predictions about the future, though care must be taken to avoid the dangers of extrapolation and natural rates of variability.

Even with the hazards of trends, government officials, businesses, citizens, and planners will likely do a better job of community planning if they have a solid understanding of the nature of local trends.

The focus of this particular project is on demographic, economic, environmental, and socio-cultural *trends* - analyzing how these components of a community have changed over time to understand the way in which they will be impacted by growth. By employing the use of trends, the changes occurring in rural Missoula County could be placed in a context, allowing residents and local government officials to evaluate where the community is going based on where it has been and where it is presently.

3.4.3 Summary of Application Steps

The sequence of steps to complete the application stage of the indicator methodology is as follows:

1. Determine the appropriate geographic level of detail at which the indicators should be applied.
2. Understand the way in which trends impact the general application of leading indicators. Base the specific applications of indicators on community preference and desired outcomes.

CONCLUSION

Of course, the indicator methodology will vary slightly depending on community context, policy, values, and goals. The methodology could also

change as a result of demographics, economics, environmental aspects, the socio-cultural milieu, and unexpected events or circumstances. One thing remains constant, for leading indicators to be 100% effective, they must not only be identified, but measured and applied.

The next two chapters provide the results of the identification, measurement, and application of the leading indicators of growth in rural Missoula County, Montana. These chapters are followed by an explanation of the limitations of indicator research in Chapter VI.

CHAPTER IV

IDENTIFICATION AND MEASUREMENT OF LEADING INDICATORS

The nail that sticks up gets hammered down.

Japanese Proverb

Like the canary in the mine announcing danger before it is too late, leading indicators warn local governments and citizens of potential areas of concern. Leading indicators emphasize the need for action to prevent anticipated problems. In this paper, an initial step has been taken to identify and measure indicators that are early warning signs of growth, red flags, signals of what might be coming as this place grows.

The following pages include indicators that are divided into four different dimensions (the four elements of growth-induced community change I referred to on pages 30-32). These dimensions represent areas of growth-induced change. The indicators needed to help rural communities recognize the impacts of growth include demographic, economic, environmental and resource, and socio-cultural measures. The indicators within each of the dimensions represent the specific effects of growth. Taken together, these indicators provide a status report of rural Missoula County, and adapted, can do the same for other growing rural communities.

While this section does include an explanation of each of the four dimensions, it does not include all of the indicators within each dimension. The indicators provided in this report serve as a sample of a larger

number of indicators presented to the Missoula Office of Planning and Grants.¹

The following pages include the index of indicators in its entirety, but detail only those indicators that appear in italics. The four dimensions are broken into main indicators. These main indicators are signified by bullets in the indices. Within each of the main indicators, there are several sub-indicators. The sub-indicators are distinguished from the main indicators by the way in which they are reported. In selecting which of the indicators to include, it seemed most representative to incorporate each of the main indicators within a dimension and one of the sub-indicators under each main category. The results also include "How To" sheets that address various aspects of the indicators and provide tips for implementing the indicators process.

¹For further information on those indicators not included in this report, please contact either the author or the Office of Planning and Grants in Missoula, Montana.

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Index of Leading Indicators

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- SUGGESTED INDICATOR - Riparian Habitat	In County Report
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4.2 Demographic Indicators

Index of Demographic Indicators

- *Population*
 - * *Missoula County Population*
 - * *Rural Population*
 - * *Elderly Population*

Demographic Dimension

The dynamics of rural communities are neither simple nor uniform. Pulver and Dodson (1992, v) perhaps best summarize this dimension when they explain:

Every region or locality is subject to a unique interplay of critical factors. Location, the quality of character of the economic base, the mix of human and natural resources, and the leadership capacities of institutions and citizens all conspire to determine whether a community is in a position to grow or decline. Community success hinges on the recognition and management of all of these factors, and should therefore rest on a careful reading of the strengths, weaknesses, challenges, and opportunities that are unique to each community.

The current surge in rural population increase is characterized by immigration that not only dramatically alters the economic profile of rural communities, but impacts their environmental and socio-cultural profiles as well.

INDICATOR

Demographic Population

Description

It was once said that, "It is human nature to keep doing something as long as it is pleasurable and you can succeed at it, which is why the world population continues to double every 40 years." Yet, even though people continue to have children, births are only one component of population change. In the western United States, it is migration, not births, that is the primary component of population increase.

By examining the trend in population growth, projections as to the future fate of Missoula County can be made. It is important to realize, though, that population growth is not strictly a leading indicator, as once the population increase occurs people have already arrived.

Instead, the significance of population change rests in its relation to the growth-induced changes rural communities are experiencing. The current surge of population in the West is characterized by in-migration that not only dramatically alters the demographic profile of rural communities, but the economic, environmental, and socio-cultural profiles as well. The Missoula County "Where Do We Grow" Survey (1995) states that an estimated 26,000 more people will live in Missoula County within the next 20 years. Of those surveyed, about 75% of respondents felt this projection was "pretty realistic." Two-thirds of respondents were "concerned" with this growth, while 25% were "alarmed" by it.

HOW TO INTERPRET THE SUB-INDICATOR SHEETS

**On each sheet, the name appearing on the first line describes the dimension.
On each sheet, the name appearing on the second line describes the particular
indicator within that dimension.**

Definition

This section of the indicator profile provides information on the indicator as it relates to growth.

- Why is this indicator important to measure and in what ways will it be impacted by growth?

Explanation

In this section, an interpretation of the indicator data is made.

- What does it all mean?
- What is occurring with respect to this indicator not only in the regions of Missoula County, but in the County as a whole, the State, the Rocky Mountain West, and the Nation.

Recommendations

The recommendation section provides suggestions, options, and alternatives to addressing the impacts of growth on the particular indicator. Recommendations may be in the form of a particular action, or another indicator that should, in the future, be measured for a better understanding of growth impacts.

- What can communities do now that the indicator has been identified?

Connections and Questions

This section also explains the connections between this and other indicators.

- To what other issues does this particular indicator relate? What will a change in this indicator change?

This section provides a series of questions for communities to consider. The background information used to compile the questions came from Branch (1982) and Rasker (1995), as well as from the locally-created Planning For Growth in Missoula County document (1994). Though the questions provided are only some of the many that rural communities must address in preparing for growth, they are a start, a springboard for action. The goal in asking the questions is to prompt an answer that promotes sustainable communities.

Data

- Source:** •What type of data was used?
- Contact:** •From what agency/group did the data come?
•Who is the particular contact at that agency/group?
•What is the telephone number?
- Cost:** •What is the cost of obtaining the information from the particular agency/group?
- Notes:** •What is the specific name or title of the data?

*Any other necessary information regarding the data will appear here, preceded by an asterisk.

Attributes

- Availability:** A check signifies that the indicator has met the requirements of the attribute. If a check is not present, an explanation details the reasons the indicator does not meet the requirements.
- Reliability:** Indicators with checks in all three of the attribute rows are the most preferable.
- Importance:**

The information provided here has been thoroughly researched. There may, of course, be disagreements about how the indicators relate to growth, what they actually mean, the recommended course of action. There may be sources of data beyond those provided here, and the significance of any indicator is always subject to debate. However, what these indicators do provide is the spark to a match, the means to an end, a way to begin community dialogue and to prompt community action.

Notes

This seems the appropriate place to mention several details worthy of note.

- The term "community" is often personified throughout the indicator sheets, as an entity.
- The names of each of the tables provided from the US Census and the Census of Agriculture are given along with the table number, to enable the collection of this data in the future regardless of whether that name or number should be changed.
- The area code for contact telephone numbers is only provided for those numbers outside of the Missoula dialing area.

Demographic Missoula County Population

Description

Population. In one word, all of the growth-related issues are summarized. The growing population of Missoula County is the impetus behind the expected changes.

Explanation

The 1980 Montana population numbered 786,690, 76,016 of which live in Missoula County. More recently, the 1990 figures show growth, with the state population numbering 799,065, and the Missoula County population increasing to 78,687. The 2,671 additional people in Missoula County represent a 3.5% change.

Intercensal estimates show the Montana and Missoula County populations on the rise since 1990. The state population, as of 1995, measured 870,281, a 8.9% change since 1990. The Missoula County population grew 10.7% since 1990 and now stands at 87,130.

Two population projections place the 2015 Missoula County figure between 109,130 and 114,000. The state population is expected to top one million residents.

As mentioned earlier, net in-migration is the primary factor in Montana's population growth, exceeding the impact of natural increase.

Recommendations

The need to acknowledge growth and subsequent changes is apparent. Montana, and Missoula more specifically, is experiencing rapid growth and development, and some measure of continued growth is likely in the future. It is essential, if communities are to survive and not be overwhelmed, to preserve the unique characteristics and values of rural towns. Accomplishing this aim is possible, while simultaneously experiencing growth and development. To do so requires a commitment to direct development and manage growth. Growth may not be stopped, but it can be shaped.

Connections and Questions

Population is inextricably linked to each of the indicators presented in this report. It is the driving force behind change. Population has major effects on the economy, the environment, and the socio-cultural health of a community. To name a few, population specifically impacts education, health, communications, transportation, social services, housing, and infrastructure.

-
- What actions or changes could alter the community population?
 - What actions would increase the local population?
 - What actions could reverse the recent population trends?
 - Is the population changing due to out-of-county in-migration or are people moving within Missoula County?
 - Are people moving into or out of the County?
 - Is there significant movement within the County?
 - Will growth introduce a sufficient number of people to affect the characteristics of service provision?
 - What is the age distribution of the population and how is it changing?
 - Are any specific groups of people increasing or decreasing in number?
 - How do County population trends compare to those of the State?
 - How have migration trends changed over time?
 - Is the population segmented with respect to demographic characteristics?

Data

Source: US Census
Contact: Census and Economic Information Center, Montana Department of Commerce
 Jan Clack or Dave Martin
 406.444.4214/406.444.2896

Cost: Price varies depending on the amount of information requested

Notes:

- Missoula County Database - Table 1.1 - Area, 1990, and Population
 Table 1.2 - Components of Population Change
 Table 1.3 - Censuses and Intercensal Estimates
 Table 1.12 - Population Projections
- Estimates of Montana's Resident Population: Counties Net Domestic Migration
- Estimates of Montana's Resident Population: Counties Net International Migration

Attributes

Availability: ✓

Reliability: ✓

Importance: ✓

TABLE 4

Missoula County Population - US Census Figures

<u>YEAR</u>	<u>POPULATION</u>
1940	29,038
1950	35,493
1960	44,663
1970	58,263
1980	76,016
1990	78,687
2000	-----

Source: Missoula County Office of Planning and Grants.

TABLE 5

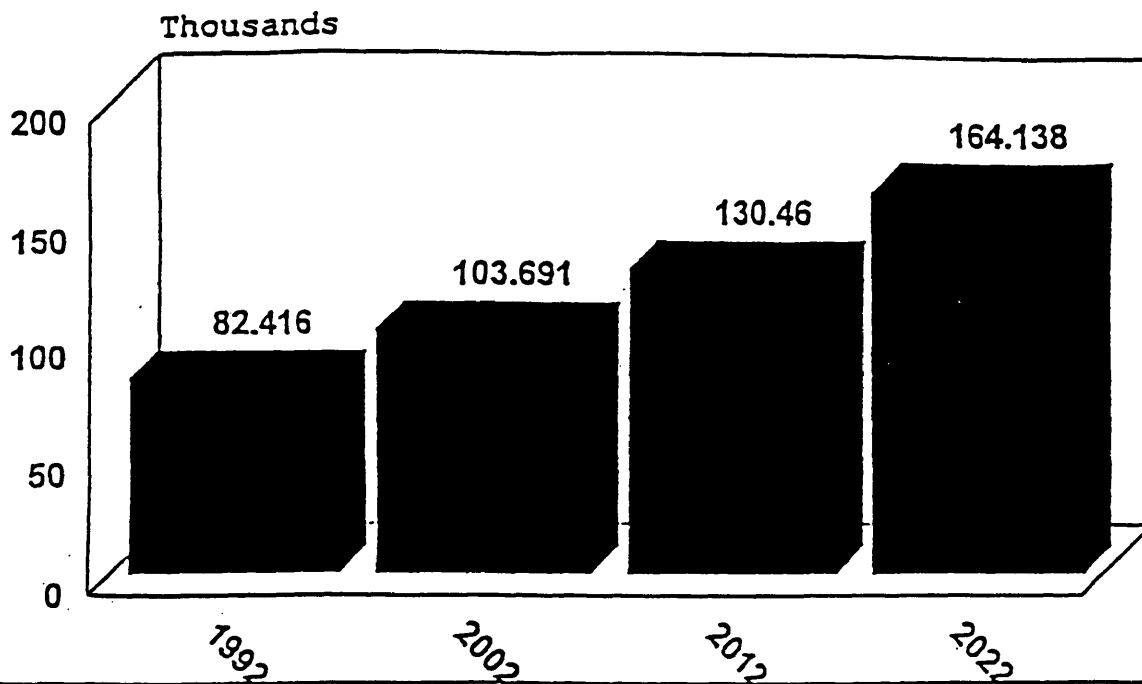
Montana Population 1980-1995 and Future Projections

<u>YEAR</u>	<u>POPULATION</u>
1980	786,690
1981	795,328
1982	803,986
1983	814,031
1984	820,905
1985	822,320
1986	813,789
1987	805,063
1988	800,202
1989	799,636
1990	799,065
1991	799,827
1992	808,238
1993	823,251
1994	841,033
1995	870,000
	Projections
2000	920,000
2020	1,071,000

Source: D. Jackson and S. Sperry. *Sustainable Rural Community Development, Conflict, and Sustainable Community Development Groups* (Missoula, MT: School of Forestry, University of Montana, 1996) 14, table 2.

FIGURE 3

Population Projections
Missoula County at 4.7%* Growth Rate



Source: Missoula County Cumulative Effect/Carrying Capacity Project.

*Bureau of Census data indicates 4.7% growth rate for Missoula County between 1990 and 1992,
an annual rate of 2.35%

4.3 Economic Indicators

Index of Economic Indicators

- *State of the Local Economy as Related to the National Economy*
 - * *Economic Status of Source States*
 - * *Change in Income and Consumer Prices*
 - * *State and Local Tax Collections*
 - * *State and Local Expenditures*
 - * *Transfer Payments*
 - * *Per Capita Personal Income*
 - * *Poverty*
- *Employment*
 - * *Unemployment*
 - * *Employment Concentration*
 - * *Average Annual Employment for Selected Industries and Per Worker Earnings*
 - * *Service Sector Employment*
 - * *Natural Resources Employment*
 - * *Self-Employment and Wage Salary Earners*
 - * *Potential for Creation of Entrepreneurship and New Businesses*
 - * *- SUGGESTED INDICATOR - Potential for Location or Relocation of Business Headquarters*
 - * *Potential for Location or Relocation of Chain Stores*
- *Financial Capital, Lending, and Loans*
 - * *Financial Capital and Lending*
 - * *Small Business Administration Loans*
- *Housing*
 - * *Housing Affordability*
- *Agriculture*
 - * *Missoula County Farm Income and Expenses*
 - * *Commodity Prices*
 - * *Farm Operators by Age*
 - * *Livestock Producers*

Economic Dimension

The transition from extractive to service industries occurring in many rural, western communities is often accompanied by rapid growth and development. The ability of communities to withstand changes that occur as a result of growth greatly depends on the state of the local economy. Much like addiction and over-adaptation lead communities toward the cycle of boom and bust. The development community capacity can steer communities away from that very cycle.

INDICATOR

Economic

State of Local Economy as Related to the National Economy

Description

A comparison of economic measures between Montana and the nation as a whole is instructive in measuring the relative level of local economic well-being. A prosperous diverse national economy will help to foster a successful Montana and Missoula County economy. A healthy economy provides job opportunities, and businesses and individuals working in such an economy provide the revenues which fund schools, recreational and cultural attractions, public facilities and services. The opportunities created by a healthy economy can reduce the rate of unemployment and poverty, and can contribute to a climate for growth. Growth is also a possibility when the nation's economy is relatively unhealthy as compared to the Montana state and local economies.

Perception of the economy is as important as the actual conditions. Missoula County is experiencing the same structural change in its economy that the rest of the nation is facing, with the majority of new jobs created being involved in the delivery of services rather than with the production of goods. Therefore, if the perception of Missoula County's tax collections and expenditures, per capita earnings, income, poverty, and school budgets is favorable, Missoula County can expect growth.

Though several of the following economic components are not strictly leading indicators, their value is in their relation to residents' perception of the local economy.

Economic Economic Status of Source States

Description

The relative economic viability of Missoula County is dependent upon not only the economy's existing strength and diversity, but also its ability to adapt quickly and positively to future changes and conditions.

Similar to an understanding of the national economy, an analysis of the economies of those states supplying Missoula County with immigrants leads to an understanding of the potential for future growth.

Explanation

According to Michael Jaworsky of the Chamber of Commerce, California is the leading contributor to Montana immigration. Though migration occurs when both good and bad conditions exist, understanding and tracking the state of the economy of states like California may provide a leading edge in forecasting growth.

Recommendations

Communities should identify and monitor those states responsible for the majority of community in-migration. In the meantime, communities must identify and implement ways to further develop their economic base so that it can successfully adjust to the introduction of newcomers.

From Internal Revenue Service immigration data, determine which states are supplying Missoula County with immigrants. For those source states, take measurements similar to those taken for Missoula County, including: economic status of its source states, change in income and consumer prices, state and local tax collections and expenditures, per capita net earnings, per capita personal income, and poverty.

Connections and Questions

An understanding of in-migration from key source states provides a glimpse into the future of the population of rural communities.

- Have there been recent episodes of natural disaster or political unrest in areas of the country?
- How does the purchasing power of Missoula County residents compare with that of residents from source states?
- Do tax collection rates of source states exceed those of Missoula County?
- Does the net earning potential of Missoula County exceed that of source states?
- Does per capita income of Missoula County residents exceed that of source states?
- How does the poverty rate of Missoula County compare with that of source states?
- Do source state unemployment rates exceed those of Missoula County?
- How do rates of bank lending and loans in Missoula County compare with those of source states?
- Does Missoula County offer affordable housing as compared to that of source states?

Data

- Source:** US Census
- Contact:** Census and Economic Information Center, Montana Department of Commerce
Jan Clack or Dave Martin
406.444.4214/406.444.2896
- Cost:** Price varies depending on amount of data requested
- Notes:**
- Missoula County Database - Table 2.3 - Place of Birth and Place of Residence
 - State of Residence by State of Birth

Attributes**Availability:** ✓**Reliability:** ✓**Importance:** ✓

INDICATOR

Economic Employment

Description

Employment is more than a means of providing the necessities of life; jobs are not simply what a community does, but who it is. Jobs - and the ease of getting one - contribute to the perception of the local economic well-being.

In Montana, major job growth is heavily concentrated in the retail and service sectors. Even with the relatively lower wages, large numbers of new jobs are being created. Business loan activity and self-employment rates indicate long-term confidence in the area's economy, as seen in the potential for the location of new businesses, business headquarters, and chain stores.

HOW TO USE THE TABLE TEMPLATES

- In an effort to encourage continued monitoring of the indicators provided in this report, table templates are included. The templates occur in two forms. They are either separate tables that mimic those already completed or they are added to the bottom of an already existing table and appear in bold.
- These templates are modeled from existing tables and graphs. By noting the format and material included in present tables and graphs, local governments and citizens can prepare to gather the necessary information to update and maintain the indicators in the future.
- Whether or not the particular templates in this report are used, communities must develop some means to track and monitor the indicators over time.
- In order for this leading indicators project to be successful in the long-term, communities must make the commitment to carry the process all the way through. The process cannot stop at the identification of leading indicators, it must continue through the measurement and application of those indicators.

Economic Unemployment

Description

Unemployment rates do not serve as a leading indicator of growth, but rather as one component of the local economy. Unemployment is a traditional measure of economic vitality. Understanding the way in which these components compare to other counties and states can serve to understand the relative draw of Missoula County's economy.

Explanation

With the exception of 1990, Montana unemployment rates have been lower than the national average. Unemployment typically shows seasonal patterns, due to the dependence on tourism. In Missoula in 1990, 7.2%, 2,889, of the civilian labor force was unemployed. This rate is lower than the 10.7% unemployment rate of 1980.

Recommendations

Communities should explore opportunities to sponsor workshops focusing on job training and re-training.

Connections and Questions

Examining this indicator proves complicated, as low unemployment often signifies a vital economy, but a vital economy attracts people, and thus increases crime and decreases overall sustainability.

- Will growth provide needed jobs, or will it aggravate labor competition?
- How many local residents are qualified to obtain employment in economic sectors that will grow as a result of growth?
- Is any particular livelihood threatened (or perceived threatened) by growth?
- Will growth significantly alter local lifestyles by changing local occupational characteristics?
- What are the trends in types of employment?
- What industries used to be the largest employer?
- With growth, what industries can be expected to be the largest employer in the future?

Data

Source:	US Census
Contact:	Census and Economic Information Center, Montana Department of Commerce Jan Clack or Dave Martin 406.444.4214/406.444.2896
Cost:	Price varies depending on the amount of information requested
Notes:	<ul style="list-style-type: none"> • Missoula County Database - Table 5.1 - Employment Status of Persons 16 Years and Older Table 5.2 - Employment Status of Persons 16 Years and Older by Race and Hispanic Origin, 1990 Table 5.4 - Annual Average Estimates of the Civilian Labor Force and Unemployment Rates Table 5.5 - Civilian Labor Force Employment: Percent Change from Previous Year

Table 5.10 - Employment and Wages Covered by
Montana Unemployment Insurance
Laws

Table 5.12 - Work Disability Status and
Employment Status by Gender and by
Age of Civilian Non-institutionalized
Persons 16 Years and Older

*To be unemployed, you must first be a member of the labor force, which means you are available for work and have actively searched for work in the last 4 weeks. You are not unemployed if you are on strike, ill, incarcerated, under 16, retired, in school, taking care of your family, or simply no longer looking for work.

Source: Missoula Community Profile
Contact: Missoula Area Chamber of Commerce
Beverly Jones
543.6623
Cost: Free
Notes: •Employment Section

Attributes

Availability: ✓

Reliability: ✓

Importance: ✓

TABLE 6

Unemployment Rates: Montana versus United States

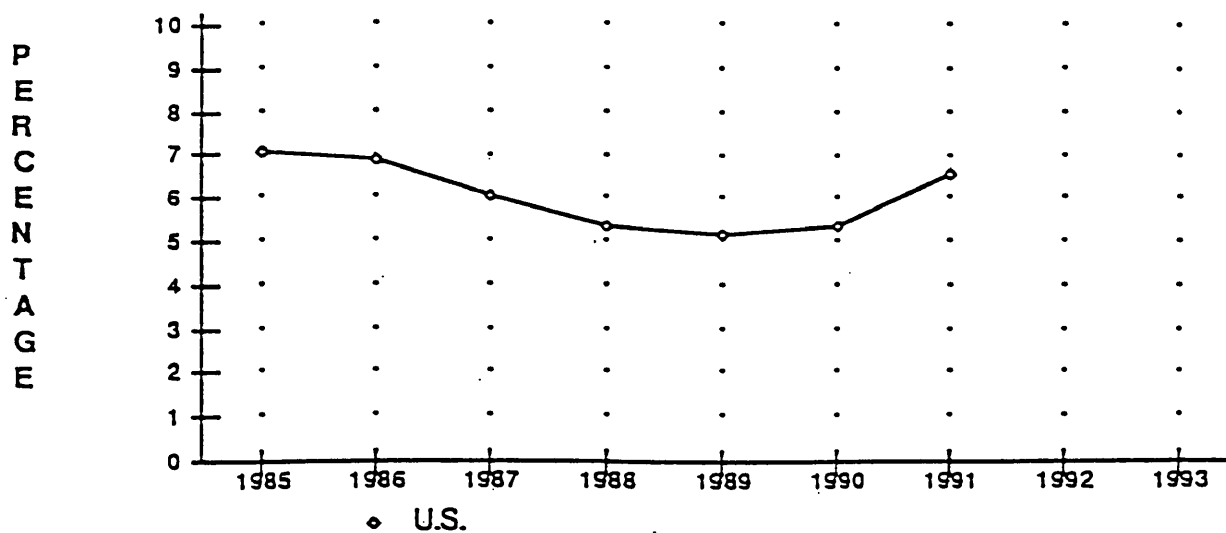
	1970	1980	1990	1992	1993	1994	1996	2000
MONTANA	4.3%	6.1%	5.8%	6.7%	6.2%	5.1%	---	---

UNITED STATES	8.3%	7.1%	5.5%	7.4%	6.8%	6.1%	---	---

Source: Sunrift Center for Sustainable Communities. *Flathead Gauges* (Kalispell, MT: Flathead Economic Policy Center, 1995) 6, table 2.

FIGURE 4

Missoula County Unemployment



	1985	1986	1987	1988	1989	1990	1991	1992	1993
U.S.	7.1	6.9	6.1	5.4	5.2	5.4	6.6	---	---

Source: Missoula Office of Planning and Grants.

INDICATOR

Economic Financial Capital, Lending, and Loans

Description

One measure of the likelihood of entrepreneurial and business success and growth is the availability of capital. This availability most often occurs in the form of bank financial resources and lending and small business administration loans.

Economic Financial Capital and Lending

Description

In the Missoula Valley, most businesses rely on local bank financing as their primary source of capital access. This measure looks at the assets of local financial institutions and the amount and types of loans being made. Examining this measure over time will demonstrate the willingness of financial institutions to participate in and support local growth.

Explanation

In Montana as a whole, loan categories as a percent of total bank loans in 1993 were led by real estate at 33.4%. A broad diversity is apparent in both size and loan activity, with some banks posting commercial loan percentages far below state averages, and other institutions showing far higher numbers. Of the four financial institutions Missoula County, excluding credit unions, three made the highest percentage of their loans in the commercial and industrial sector; while one, the Bitterroot Valley Bank, made the highest percentage of its loans to real estate.

Recommendations

Communities should monitor the number of local financial institutions, as well as the number and types of loans they are granting. Tracking these measures will enable communities to understand the direction in which local growth is heading.

Connections and Questions

The availability of capital contributes to the perception of economic well-being. Capital can also attract new businesses, business headquarters, and chain stores.

- How many local financial institutions are there?
- How many loans do these institutions grant?
- What sector receives the majority of local financial institution loans?
- How does growth in an economic sector mirror loans to that same sector?

Data

Source:	US Census
Contact:	Census and Economic Information Center, Montana Department of Commerce Jan Clack or Dave Martin 406.444.4214/406.444.2896
Cost:	Price varies depending on amount of information requested
Notes:	•Missoula County Database - Table 10.1 - Financial Institutions
Source:	Directory of Ninth District Banks and Indicators of Their Financial Performance
Contact:	Federal Reserve Bank of Minneapolis Rob Grunewald 800.328.8355/612.340.2443 http://woodrow.mpls.frb.fed.us
Cost:	Free
Notes:	•Missoula County Banks

Attributes**Availability:** ✓**Reliability:** ✓**Importance:** ✓

INDICATOR

Economic Housing

Description

The largest single investment most families make is the purchase of a home. This measure examines how possible the realization of this part of the American Dream is for residents of Missoula County. Though growth tends to increase the value of property, this measure is not a leading indicator of growth, but rather demonstrates the availability of affordable housing in Missoula, relative to other areas.

Aside from impacts to natural amenities, employment, infrastructure, and social services, development of the service economy will bring other changes to the communities. These changes include increased housing costs, borne mostly by those in service-oriented jobs at the lower end of the pay scale. While the tourism economy typically offers a great number of jobs, they are primarily minimum wage, preventing workers from being able to afford local housing. Seasonal immigrants tend to have more financial resources than do long-time, local residents, and as such, lack of affordable housing means that traditional community members are not only pushed out, but pushed out to accommodate people who only occupy their homes for part of the year.

It is clear that escalating prices of land, infrastructure, and building costs have pushed the floor of market-rate housing higher. Increased housing costs create a gap between what housing the private sector market can provide, and the full range of housing affordability Missoula needs even for moderate income households.

Economic Housing Affordability

Description

"Affordable housing" has not only been accepted and named, but even institutionalized. Community requirements demand that community development include a certain percentage of affordable housing.

With growth, rent often surpasses the ability of the working poor to pay. Though the rule of thumb says the proportion of a household's income spent on rent or mortgage payments and expenses (including utilities) should be less than 30%, many low income households pay a large portion of their income on housing-related costs. The number of households paying more than 30% toward housing costs is likely to increase with growth.

Explanation

Housing that doesn't qualify to be called "affordable" still sells, but for many native Missoulians, who have grown up where high paying jobs are limited, the prospects of being able to afford an ever-more-expensive home are increasingly slight. Nearly half (49%) of Missoula residents surveyed support efforts to ensure the availability of affordable housing. According to the Missoula Housing Task Force, Missoula continues to have a shortage of housing units, creating a cost that most looking for housing cannot afford. Consider that Summit County, Colorado has had a 13% increase in housing prices during the last three years; Missoula County housing prices rose 12% in just one year.

Missoula's rents are also among the highest in the state, and in a recent Community Opinion Survey, 56% of respondents were paying more than 50% of their income on rent or mortgage. The report notes that "not surprisingly, an overwhelming majority of respondents saw Missoula County's greatest housing problems as being the lack of affordable apartments (74%), the lack of rental housing (73%), and of home buying opportunities (65%)" (Missoula Office of Planning and Grants, Missoula Community Opinion Survey 1995).

Recommendations

A county-wide Commission on Affordable Housing should continue to formulate a more comprehensive approach to the area's housing problems. New construction should be encouraged in areas accessible to existing public services. Residential development should be discouraged in areas outside of existing utility infrastructure, and incentives should encourage higher density development. An adequate number of mobile home and leased land sites should be created. Consideration should be given to placing a development fee on new construction or in some other way generating revenue to be set aside to facilitate the provision of affordable housing.

Communities should encourage local builders to consider the use of alternative building materials to lower the economic and environmental cost of housing. The principles of local housing development should include and accommodate social change. Housing should be located in proximity to physical, technological, social, and economic infrastructure. Communities should utilize information from resource documents, the Missoula Housing Task Force Report, for example, to design and carry out policies that assure housing affordability for a diverse population. Especially significant in the Missoula Task Force Report are the four lessons based on experience from other areas in the country and the twenty recommendations.

Connections and Questions

Housing affordability relates to population in that Missoula is growing at a rate in excess of 2.3% each year, as compared to a national average of 1% per year. Growth is occurring on top of a cyclical upswing in the need for new construction. Housing affordability is obviously also related to per capita personal income. Missoula's vacancy rates for both home ownership

units and rental units have been below 10%. As a result, cost of housing has increased. The availability of adequate affordable housing also directly relates to the quality of neighborhoods.

- How can the community sustain diverse households and a combination of housing alternatives across all economic strata?
- In what ways will community housing needs change as a result of growth?
- What is the most effective way to ensure that housing exists in close proximity to physical, technological, social, and economic infrastructure?
- How can private, governmental, and non-profit groups work together to most effectively ensure adequate housing for people of all income levels?
- How, if at all, should housing densities change in response to growth?
- What is the median value of a home?
- How has that value changed over time?
- What is the median rent?
- How has it changed over time?
- Are the number of vacant housing units increasing or decreasing?
- How has the quality of housing changed?
- How is the quality of housing expected to respond to growth?
- Can a typical worker in the area afford to purchase a home in the area?
- Has the number of non-resident homeowners risen?
- Is the homeless or transient population significant?

Data

- Source:** US Census
- Contact:** Census and Economic Information Center, Montana Department of Commerce
Jan Clack or Dave Martin
406.444.4214/406.444.2896
- Cost:** Price varies depending on amount of material requested
- Notes:**
- Missoula County Database - Table 4.1 - Urban and Rural Housing Units
 - Table 4.2 - Occupancy Characteristics of Housing Units
 - Table 4.3 - Structural Characteristics of Housing Units
 - Table 4.4 - Structural Characteristics of Occupied Housing Units
 - Table 4.5 - Selected Characteristics of Occupied Housing Units
 - Table 4.6 - Value of Specified Owner-Occupied Housing Units
 - Table 4.7 - Contract Rent of Specified Renter-Occupied Housing Units
 - Table 4.8 - Mortgage Status and Selected Monthly Owner Costs for Specified Owner-Occupied Housing Units
 - Table 4.9 - Occupied Housing Units and Home Heating Fuel
 - Table 4.10 - Occupied Housing Units and Available Vehicles

*"Affordable housing" is defined as housing for which total costs (including rent or mortgage payments, utilities, property taxes, and insurance) do not exceed 32% of the household's income. This is best assessed by removing all premium properties with waterfront or large acreage. The remaining housing sales for a given year are used to calculate "average" housing costs

Source: Missoula Housing Policy Report and Recommendations
Contact: Missoula County Housing Task Force
 Nancy Leifer
 728.7666
Cost: Free
Notes: •Affordable Housing Income Levels for Missoula County

Source: Result Statistics
Contact: Missoula Office of Planning and Grants
 Cindy Wulfekuhle
 721.5700 x3402
Cost: Free
Notes: •Missoula Community Opinion Survey

Attributes

Availability: ✓

Reliability: ✓

Importance: ✓

TABLE 7

Affordable Housing Income Levels for Missoula County

Household Income	1 person	2 persons	3 persons	4 persons	5 persons	6 persons
50% of median	\$12,250	\$14,000	\$15,750	\$17,500	\$18,900	\$20,300
80% of median	\$19,600	\$22,400	\$25,200	\$28,000	\$30,250	\$32,500
Median	\$24,500	\$28,000	\$31,500	\$35,000	\$37,800	\$40,600
120% of median	\$29,400	\$33,600	\$37,800	\$42,000	\$45,360	\$48,720
Housing Cost Comparisons:	Median Household Income 1990				=	\$22,500
-Lowest cost new free-standing home outside Missoula					=	\$82,000
-Salary/year to purchase (assuming FHA financing)					=	\$30,870
-Low cost new construction 2 bedroom unit rent/month					=	\$500
-Salary /year required for affordable \$500/month rent + utilities					=	\$24,000
-Average sale price of homes in Missoula area, 1992					=	\$85,910
-Estimated lowest cost new free-standing home in Missoula					=	\$88,000
-Estimated cost shared wall townhouse in Missoula					=	\$73,000
-Current FHA loan limit for Missoula, 1992					=	\$83,600
-Potential FHA loan limit for Missoula, 1994					=	\$98,000
-Salary/year to purchase (assuming 1994 FHA limit)					=	\$36,660

Prepared by the Missoula County Housing Task Force using income limits as prepared by HUD on 12/23/92 and housing cost data from Nancy Leifer, coordinator, Missoula County Housing Task Force.

Source: Missoula County Housing Task Force.

INDICATOR

Economic Agriculture

Description

Agriculture has long been a component of the Missoula County economy, but studies document a decreasing agriculture tenure with rapid growth. The decreasing tenure manifests itself in a decrease in Missoula County farm income, an increase in farm expenses, a decrease in commodity prices, and a decrease in the number of farm operators and livestock producers.

Decreasing agricultural tenure also manifests in a decrease in farm and ranch acreage. This indicator appears under the Environmental and Resource Dimension.

Economic

Missoula County Farm Income and Expenses

Description

Though not a direct leading indicator of growth, farm income and expenses demonstrates the increasing difficulty of maintaining an agricultural livelihood. With growth, agricultural tenure weakens and leads to lower farm incomes and higher farm expenses.

Explanation

Weak commodity prices, which have held incomes down even while production costs were increasing, predominate, and, thus, the number of family farmers is declining overall. According to Jackson and Sperry (1996), the farm/ranch employment decline corresponded with a decline in real agriculture cash receipts, which began in 1973. The economic viability of remaining farms in Missoula County is in decline. Of the 473 farms in the county in 1987, only 167 reported that farming was their primary occupation. The remaining 306 support themselves through other off-the-farm employment.

Recommendations

Communities should sponsor and attend educational seminars addressing the pressures on agricultural and ranching activities and agricultural decline.

Connections and Questions

A decline in agriculture, like the collapse of dominoes, sets off a chain reaction. With decreasing agricultural tenure comes the probable sale and subdivision of land, the conversion of land use, urban sprawl, loss of wildlife habitat, increased demand for metropolitan services in rural areas, and on and on.

- How will growth affect the agricultural workforce?
- Will growth change agricultural employment characteristics?
- Will growth introduce people who would challenge or compete with existing residents?
- Is growth perceived as a threat to agricultural workers?
- Will growth change full-time/part-time agricultural employment?
- Will the characteristics of newcomer agricultural employees differ from those already working in the area?
- Will growth introduce workers whose duration in the community may disrupt community balance?
- What are the trends in types of agricultural employment?
- What size of agricultural businesses are adding the most new jobs?
- What industries used to be the largest employer?
- With growth, what industries can be expected to be the largest employer in the future?
- How do agricultural wages compare to the average annual wage for all industries?
- What proportion of agricultural sector workers earn above and below average wages?

Data

Source:	US Census
Contact:	Census and Economic Information Center, Montana Department of Commerce Jan Clack or Dave Martin 406.444.4214/406.444.2896
Cost:	Price varies depending on amount of information requested
Notes:	• Missoula County Database - Table 7.4 - Taxable Value of Property Table 9.6 - Farm Income and Expenses

Table 9.7 - Farms by Market Value of
Agricultural Products Sold
Table 9.8 - Farms by Market Value of Sales by
Commodity
Table 9.10 - Taxable Value of Agricultural Land,
Livestock, Machinery and Improvements

Source: US Census of Agriculture
Contact: Montana Agricultural Statistics Service
Curt Lund
406.441.1240
Cost: Free
Notes: •Missoula County Data - Table 1 - County Summary Highlights
Table 2 - Market Value of Agricultural Products Sold
and Farms by Standard Industrial
Classification
Table 3 - Farm Production and Expenses
Table 4 - Net Cash Return from Agricultural Sales,
Government Payments, Other Farm-Related
Income, Direct Sales, and Commodity Credit
Corporation Loans

Attributes

Availability: ✓

Reliability: ✓

Importance: ✓

4.4 Environmental and Resource Indicators

Index of Environmental and Resource Indicators

- *Land-Use*
 - * *Primary Land-Use*
 - * *Farm and Ranch Acreage*
 - * *Number of Farms and Ranches*
 - * - SUGGESTED INDICATOR - *Impervious Surfaces*
 - * - SUGGESTED INDICATOR - *Riparian Habitat*
- *Biodiversity*
 - * - SUGGESTED INDICATOR - *Threatened, Endangered, and Sensitive Species*
 - * *Fishing Pressure*
- *Conflict*
 - * *Wildlife-Human Conflict*
 - * *Recreational and Public Land User Conflict*

Environmental and Resource Dimension

Growth in rural areas has begun to significantly impact the rural areas of the Rocky Mountain West. Resource extraction formerly characterized the relationship between communities and the environment. Now, however, Flathead Gauges (Sunrift Center 1995) notes that population growth, increased affluence, mobility, and leisure time, exert pressure on rural environments and resources.

Rural lands are rapidly subdivided, causing a change in rural land use, a declining agricultural tenure, increased impervious surfaces, and decreased riparian areas. The recent rural development has also led to a loss of biodiversity, and increased conflict between wildlife and humans and between recreational user groups.

While there is no perfect solution for the environmental and resource problems of Missoula County, acknowledging the connection between growth and the local environment and resources is a good place to begin. Preserving or enhancing the condition of our environment should be one of the most important goals for well-managed growth.

INDICATOR

Environmental and Resource Land-Use

Definition

The past and future growth of rural areas will continue to play a significant role in the demand for Missoula County land. The development of rural areas of Missoula County can produce considerable change in the local environment and natural resources.

With growth, the primary land use changes from formerly agricultural or forestry to commercial and residential, as seen in the decreasing number and acreage of farms and ranches. The percentage of impervious surfaces increases, while riparian habitat decreases as it is converted to development.

Growth also impacts the number of threatened, endangered, and sensitive species and fishing pressure. With an increase in the numbers of people using nearby lands, wildlife-human and recreational user conflicts can also be expected to increase.

Environmental and Resource Primary Land Use

Definition

By tracking this indicator over time, residents and planners can analyze what percentage of Missoula County land is supporting residential and commercial development, agriculture, and open space.

With growth, the percentage of developed land will increase, as agricultural and forest land decreases. Open space should be monitored in order to create an even balance in local land uses.

Explanation

The land-use changes associated with growth will likely create more land-use conflicts and polarization among those with diverging interests in public lands. Land-use conflicts include the traditional ones, such as wilderness versus mineral development, livestock grazing versus riparian restoration, timber harvests versus wildlife habitat, but also new conflicts including maintaining viable ranch units versus subdivision.

Results of a recent survey showed 58% of Missoula residents in support of the passage of a bond issue to purchase open space. This support translated into the recent purchase of Mt. Jumbo open space lands.

Recommendations

A great body of literature exists discussing methods and tools available to land-use planners for creating a balance in use and mitigating rural sprawl. These tools include controls for farmland conversions, creation of a committed lands program - using vacant tracts lying within governmental service districts to absorb growth and reduce public costs, and establishment of open space. There are also voluntary actions that can be used to help private landowners conserve their lands.

A useful future indicator would be the percentage of Missoula County industrial acreage identified in comprehensive plans that is suitable for development. This indicator would identify how many acres of industrially zoned land in Missoula County are developable. To be developable, the land in question must have no development restrictions - such as wetland designation, and the site must be utility served or able to be quickly connected to utility and transportation infrastructure. This measure may be made using a survey technique.

The establishment of open space lands can also help to counter leapfrog development. By working to increase the percentage of total land within Missoula County that is preserved, a balance in land use can be achieved. A well-conceived, aggressive policy of open space is also a key component in establishing urban growth boundaries (which Missoula is currently in the process of doing). Don Snow recommends, if nothing else, to "promote the acquisition of open space in the name of fiscal conservatism. A 1994 study found that when agricultural lands were subdivided, the new required services to the suburbanites in every instance exceeded the new tax revenues. But the more surprising finding was this: as farmland, the land generated twice as much local tax revenue as it demanded in public services" (Snow 1995).

The City of Boulder, Colorado, provides a constructive example of the public value of open space. Boulder possesses the finest system of city-owned park lands in the US. A citywide conservation fund, enacted in the 1970s, allowed Boulder to purchase tens of thousands of private acres that were prime for development. City officials have discovered that while public costs of servicing and maintaining subdivisions runs on the order of \$3,000 per acre per year, the public costs of maintaining the same land as open space is \$75 per acre per year.

Communities should create densely populated, multi-zoned, neighborhoods with easily accessible services.

Communities should also identify critical lands so that growth or development can be guided for their protection. Communities should impact people's desire to live on the fringe by instituting disincentives, such as impact fees. These fees would be higher, the further out a person chooses to live.

Urban growth boundaries could be useful in determining what lands should be used for development and what lands should remain undeveloped. Communities should identify those areas suitable for development and identify what types and levels of development are suitable and why. For areas designated as best left undeveloped, communities should clarify concerns about environmental quality to protect these lands, while respecting the rights of private property owners.

Connections and Questions

This indicator emphasizes the need for balance. When land use is too heavily skewed toward development, residents lost the benefits of undeveloped land, which include recreational potential, wildlife habitat, and a good view. Increased open space equals decreased impervious surfaces. Increased integrated open spaces create more livable communities. Conversely, increased development reduces riparian habitat.

- What are the implications of economic transition on land use in the County?
- Will growth spawn the creation of new land-use regulation or policy?
- Would the introduction of new regulation or policy require the introduction of new groups, agencies, or organizations?
- Will growth require the increased presence of state or federal environmental or resource agencies?
- Where are the critical areas that must be identified to guide growth for their protection?
- Where are open spaces, park lands, ball fields, and golf courses desired?
- How will infrastructure resulting from growth impact land use?
- How will protection, acquisition, and creation of certain land uses be funded?
- What are the re-development opportunities for developed and undeveloped areas?
- Where in Missoula County should certain types of growth occur?
- How can the integration of developed lands and open spaces be best accomplished?
- For those areas designated as developable, what types and levels of development are suitable?
- For areas designated as undevelopable, why do they deserve protection?
- How can protection of land area be most effectively integrated with private property rights?
- How can the already completed work of local groups and governments help guide decisions?
- What guidelines must be established to preserve fragile elements of the local environment?
- What are the environmental and resource limitations to growth?

Data

Source: US Census of Agriculture
Contact: Montana Agricultural Statistics
 Curt Lund
 406.441.1240
Cost: Free
Notes: •Missoula County Data - Table 5 - Farms, Land in Farms, and Land Use

Source: Missoula County Office of Planning and Grants
Contact: Pat O'Herren
 721.5700 x3456
Cost: Free
Notes: •Approximate Extent of Land Use Regulations Graphs

Attributes**Availability:** ✓**Reliability:** ✓**Importance:** ✓

TABLE 8

Missoula County Land Ownership by Percent, 1996

<u>LAND OWNERSHIP</u>	<u>PERCENT</u>
Lolo National Forest	31.0%
Plum Creek Timber Company	28.0%
Other Private	18.0%
Flathead National Forest	9.9%
Tribal	6.0%
State	6.0%
Bureau of Land Management	.8%
Bitterroot National Forest	.3%
TOTAL	100%

Source: Missoula Office of Planning and Grants.

TABLE TEMPLATE 1

Missoula County Land Ownership by Percent, 2000

<u>LAND OWNERSHIP</u>	<u>PERCENT</u>
Lolo National Forest	---
Plum Creek	---
Private	---
Flathead National Forest	---
Tribal	---
State	---
Bureau of Land Management	---
Bitterroot National Forest	---
TOTAL	--

TABLE 9

Approximate Extent of Land Use Regulations,
April 1994

<u>LAND USE</u>	<u>ACREAGE</u>	<u>PERCENT</u>
No Building or Zoning Regulations	1,041,440	88.8%
Building Regulations/No Zoning	33,690	2.1%
Building and Zoning Regulations	86,630	5.5%
Zoning Regulations/No Building	57,600	3.6%
TOTAL	1,219,360	100%

TABLE TEMPLATE 2

Approximate Extent of Land Use Regulations,
1996

<u>LAND USE</u>	<u>ACREAGE</u>	<u>PERCENT</u>
No Building or Zoning Regulations	-----	---
Building Regulations/No Zoning	-----	---
Building and Zoning Regulations	-----	---
Zoning Regulations/No Building	-----	---
TOTAL	---	--

INDICATOR

Environmental and Resource Biodiversity

Definition

High biodiversity is not only a trademark of healthy ecosystems, but has significant implications for human health and prosperity. When an ecosystem or community system experiences great change, such as growth, biodiversity can decline. The decline in biodiversity is often due to the habitat conversion and degradation, pollution, and decrease in air and water quality that often characterize growth.

Though locals continue to argue that natural amenities are the key attraction fueling rural growth, they routinely note that those very amenities are often strained by the arrival of newcomers. By monitoring plant and animal species and the pressure exerted by development, residents and planners can be forewarned and prepared to take protective action.

HOW TO GET THE MOST OUT OF THE "SUGGESTIONS"

- Two types of suggestions are provided in this report. The first is the "suggested indicator." Indicators of this type are not presently measurable, but hold importance for the community, and should be measured in the future.
- Suggested indicators are presented in various degrees of completion. In some cases, it was possible to explain the indicator, and provide likely sources of the necessary information to measure the indicator. In other cases, details about the indicator were unknown and require local communities to complete some research.
- The second suggestion applies to contacts. "Suggested contacts" include the names and, in some cases, numbers of those who could potentially be helpful in measuring a particular indicator in the future.
- Like the other contacts, those that are suggested should be treated courteously and politely.

SUGGESTED INDICATOR

Environmental and Resource Threatened, Endangered, and Sensitive Species

Definition

This indicator addresses the ability of natural habitat to sustain native mammal, bird, reptile, amphibian, fish, and plant species. This ability declines with construction and associated pressures on the Environmental and Resources that accompany growth.

Explanation

The information for this indicator is presently unavailable. However, its importance in forecasting development warrants collection of the necessary data. To measure this indicator, it would be necessary to know the percentage of native plant and animal species that are threatened, endangered, sensitive, (T, E, and S) or have an uncertain status in Missoula County. This information would then determine whether there is a correlation between the number of T, E & S species and construction, for example. According to John Firebaugh at Fish, Wildlife, and Parks, Missoula County is not home to a great many T, E, & S species, and those that do live here are often tolerable of the increasing human presence. Consider the osprey, whose nests are often spotted atop telephone or power poles.

Recommendations

The data necessary to measure and apply this indicator is presently unavailable. At the suggestion of the Missoula Office of Planning and Grants, this indicator is significant and worthy of the effort necessary to monitor it in the future. It is an indicator recommended for future data collection and measurement.

Communities should identify areas of concern and recognize the fragile status of air and water quality. Communities should define and monitor the County's carrying capacity. Communities should develop funding mechanisms for environmental education and protection programs. The restoration of species will not only require immediate work to repair damage, but also a rethinking of the concepts of growth and development.

Flathead Gauges (Sunrift Center 1995), which uses a similar indicator to monitor community well-being, offers several other recommendations, including:

1. The use of Federal, state, and private land exchanges to protect habitat;
2. The creation and maintenance of wildlife corridors, and habitat networks;
3. The creation of a "riparian management corridor;"
4. The creation of laws to prevent the introduction of non-native plants and animals into riparian and critical habitat areas;
5. The prevention of development in riparian areas'
6. The use of land acquisition, easements, and land exchanges to protect habitat;
7. The protection of critical habitat areas including: riparian habitat, winter range, migration corridors, and habitat for T, E, and S species;
8. The encouragement of native plant use and the enforcement of noxious weed laws;
9. The careful use of fencing to "minimize impacts on wildlife movements;"
10. The use of clustered development practices to protect habitat;
11. The development of objectives for private land management.

Connections and Questions

Species are sensitive to a broad range of human activities. This indicator, as a measure of biodiversity, is directly related to the presence of riparian habitat. The health of threatened, endangered, and sensitive species is linked to the economy, the presence of tourism

and recreation, as well as to primary land use. The link between T, E, and S species and other indicators, such as farm acreage, is complicated. An increase in acreage may displace riparian or other habitat, while a decrease may reflect the spread of higher-impact development.

Runoff from streets carries oil-based pollutants and pesticides into watersheds. Soil erosion due to runoff, dams that supply electricity, and a disruption in food chain can significantly pressure native mammal, bird, reptile, amphibian, fish, and plant species.

- Will growth spawn the creation of new land-use regulation or policy?
- Would the introduction of new regulation or policy require the introduction of new groups, agencies, or organizations?
- Will growth require the increased presence of state or federal environmental or resource agencies?
- Where are the critical areas that must be identified to guide growth for their protection?
- Do the critical areas adequately represent habitat for T, E, and S species?
- How will infrastructure resulting from growth impact habitat?
- How will protection, acquisition, and creation of certain land uses be funded?
- How will protection of and education about species be funded?
- Where in Missoula County should certain types of growth occur?
- How can the integration of developed lands and open spaces be best accomplished to effectively preserve habitat?
- For those areas designated as developable, what types and levels of development are suitable?
- For areas designated as undevelopable, why do they deserve protection?
- How can protection of habitat be most effectively integrated with private property rights?
- How can the already completed work of local groups and governments help guide decisions?
- What guidelines must be established to preserve fragile elements of the local environment?
- What are the environmental and resource limitations to growth?

Data

Source: **Suggested:** Missoula Office of Planning and Grants
Contact: County Planning
 Pat O'Herren
 721.5700 x3455

Cost: Free
Notes: •Candidate species and habitat

Source: **Suggested:** Montana Department of Fish, Wildlife, and Parks
Contact: Wildlife
 John Firebaugh
 542.5516

Cost: Free
Notes: •Candidate species and habitat

Attributes

Availability: The data necessary for measuring and applying this indicator is presently unavailable. Because of the potential importance of this indicator, it is included in this report as a suggestion of an indicator that should be developed in the future.

Reliability: Because this indicator is presently not measurable, its reliability is unknown.

Importance: ✓

INDICATOR

Environmental and Resource Conflict

Definition

Increased visitation to and use of Montana's lands, natural environments, and resources creates more conflicts. Conflicts occur between wildlife and humans, as well as between recreational users. Wildlife-human conflicts range from complaints to roadkills, and also include animal trappings and relocations and game damage.

Growth in use of Montana's wildlands often causes polarization among those with diverging interests. Anglers may feel threatened by floaters, and motor boats may disturb non-motorized floaters.

Environmental and Resource Wildlife - Human Conflict

Definition

With increased tourism, visitation, and growth, rural areas will experience increased conflict between wildlife and the growing human population. Conflict does not necessarily imply a injurious or fatal outcome for either the human or the animal. It does refer to their interaction in unexpected or non-traditional ways. By tracking the rates of wildlife-human conflict, communities can monitor their growth and help to ensure that it is sustainable.

Explanation

If other growing Rocky Mountain communities are any indication, Missoula can expect rates of wildlife-human conflict to increase. Boulder, Colorado reports that on one summer night, an employee of Boulder Community Hospital encountered a cougar with cubs on a hospital patio. Also in Boulder, a black bear eating a bagel was sighted on a city bicycle path.

The data necessary to measure this indicator has just recently been established. Aside from that fact, data related to wildlife-human conflict is inherently complicated. Bureaucratic, seasonal, and logistical variations make consistency a problem. A basis for analyzing the trend in wildlife-human conflict over time does not exist to any great degree. Instead, the Montana Department of Fish, Wildlife, and Parks has records of game damage reports, those reports made when agricultural damage occurs, for 1993-1994, 1994-1995 and 1996 to date. Fish, Wildlife, and Parks also has limited information on responses by game wardens. While relatively new and incomplete, this data does show relatively high numbers of calls related to bears and mountain lions in 1995 and 1996.

In Fiscal Year 1995, wardens spent 182 total hours addressing bear-related issues and 74 total hours addressing lion-related hours. In the Rattlesnake area alone, there were 28 bear calls/complaints, 4 lion calls/complaints, and 5 bear relocations. According to the wildlife specialist, John Firebaugh, the increased number of people living in wildlife habitat is much the cause of the increasing rates of roadkill. Game damage reports show complaints about bear, mountain lion, and deer related to safety and livestock and property damage.

Recommendations

The data necessary to measure and apply this indicator has only recently been established. Based on the information gathered so far, this indicator is significant and worthy of the effort necessary to monitor it in the future. The Fish, Wildlife, and Parks' program of mapping game damage should be restarted and supported. Public awareness and education programs should be created or continued. Fish, Wildlife, and Parks should continue and be supported in their efforts to participate in subdivision planning. Community growth and development covenants should address problems caused by increased human presence in wildlife habitat.

Connections and Questions

This indicator clearly impacts biodiversity. An increase in conflict means a decrease in biodiversity, as humans are usually the victors in a "battle between the species." Conflict is impacted by fishing pressure, riparian habitat, average annual daily traffic count, and increased construction. Fishing pressure means more people are frequenting the sensitive and highly biodiverse riparian habitats, possibly resulting in more cases of conflict. Average annual daily traffic count will impact roadkill numbers. Increased construction, especially that in formerly undeveloped areas, will invade the urban-wildlife fringe and certainly increase conflicts.

- What are the environmental and resource limitations to growth?

Data

Source: Montana Department of Fish, Wildlife, and Parks
Contact: Wildlife
John Firebaugh 542.5516
John Heron 542.5527/258.2769
Cost: Free
Notes: •Region Two Game Damage Reports - Areas: 201, 203, 204, 210, 240, 260, 283, 285, 292
•Missoula Area Wildlife Conflict Table

Attributes

Availability: The data necessary for measuring and applying this indicator is newly established. Because of the strong relationship between growth and wildlife-human conflicts, any efforts to further data collection should be encouraged and supported.

Reliability: Because the data for this indicator is newly established, its reliability is still questionable. With time, data collection and report will likely become more consistent, and thus more reliable.

Importance: ✓

4.5 Socio-Cultural Indicators

Index of Socio-Cultural Indicators

- *Services and Information Requests and Workloads*
 - * *Government Building Annex and Creation of Satellite Offices*
 - * *Requests to County for New and Different Types of Services*
 - * *Battles Over and Demands for Services*
 - * *Workloads of County Personnel and Utility Linemen*
 - * *Out-of-County Chamber of Commerce Information Requests*
 - * *Out-of-County Real Estate Information Requests and Web Page Hits*
- *Crime*
 - * *Crime Rates for Major Offenses*
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 - * *Neighborhood Watch Groups*
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 - * *Increased Concern about Taxes*
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 - * *Surrendered Out-of-County Licenses*
- *Land Sale and Subdivision*
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 - * *Rates of Subdivision of Land*
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- *Permits and Utilities*
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 - * *Building Permits*
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 - * *Electrical Installation*
- *In the Spotlight*
 - * *Montana-Based Productions*
 - * *Airport Statistics*
 - * *Lodging Demands*
 - * *Average Annual Daily Traffic Count*

Socio-Cultural Dimension

Missoula has grown in the past, but never before has the nature and character of the community been so rapidly altered. Observers routinely cite the irony that the very reasons people migrate to the Rocky Mountains are degraded by their arrival. While the economic, demographic, and environmental effects of rural development can be significant, the associated social change and stress are often foremost on people's minds. Indeed, Culbertson et al. concluded from their study of Colorado's Yampa Valley that "the problems brought about by increased urbanization and mass tourism are predominantly social and cultural, and center around a change of lifestyle" (Riebsame, Theobald, Gosnell 1995, 6).

It is almost impossible to catalogue all dimensions of social impacts because change has a way of creating other changes. A freeway extension facilitates residential growth, which leads to increased traffic and air pollution, creation of new schools, retail centers and other services, and the decline of a downtown neighborhood.

Social impacts are described as the consequences to human populations of any public or private actions - that alter the ways in which people live, work, play, relate to one another, organize to meet their needs, and generally cope as members of society. The term also includes cultural impacts involving changes to the norms, values, and beliefs that guide and rationalize their cognition of themselves and their society. In summation, social indicators are "aggregated statistics that reflect the social condition of a society or social subgroup" (Babbie 1995, 359).

Kusel (1995) determined that communities are deeply affected by forces outside of their control, including growth. Only by identifying and understanding the indicators that reflect these forces can we find a way to mitigate the problems of rampant growth.

INDICATOR

Socio-Cultural Services and Information Requests and Workloads

Definition

As the rural population of Missoula County increases, citizens will make new and different requests and demands on County and utility personnel, requiring more staff power, more office space, longer hours, and bigger workloads.

Growth will also be preceded by out-of-county information requests to the Chamber of Commerce and local real estate firms.

Socio-Cultural

Government Office Annex and Creation of Satellite Offices

Definition

The recent resurgence of population gain in the non-metropolitan US raises many questions about the implications such population change has for the institutions and organizations serving rural people. The cycle of growth will generate new and different requests for public services, prompting more staff power, more office space, the annexation of government buildings, and eventually the creation of satellite offices in rural regions.

Explanation

The information for this indicator is very limited. However, its importance in forecasting development warrants collection of the necessary data. To measure this indicator, local governments must begin to acknowledge new and different service requests and the subsequent creation of annex and satellite offices. Thus far, the police department has responded to the growth in rural areas by sponsoring a kiosk and hosting meetings in Frenchtown and Seeley, and holding a community services day in Lolo and Clinton. A counselor has been assigned to the Seeley Lake area to assist residents on issues of physical and substance abuse and family and marital matters.

Recommendations

The data necessary to measure and apply this indicator is presently limited. The potential for this indicator to warn of impending growth can only be realized if its measures are acknowledged by local governments. Governments should monitor and track new and different service requests and institutional responses.

Connections and Questions

This indicator relates to service and information requests, workloads of government and utility employees, and the phenomenon of sprawl, resulting from growth in remote, rural areas.

- Will growth cause increased demands for services? In what ways will growth change service demands?
- In what areas can demands for new services or new demands for services be expected?
- What groups can be expected to make service demands?
- To what agency or organization will the demands be made?
- Would increased demands result in the need to expand service location or facilities?
- Do the necessary institutions and organizations exist to respond to growth-induced changes?
- Or are certain service providers missing?
- Are present service providers appropriate to meet new needs and demands caused by growth?
- If service providers are missing, what agency will be responsible for creating/responding to the service need?
- What policy or regulatory changes will need to be made to provide adequate service in the future?
- What changes in the budgets of local governments or groups may be required to implement policy or regulatory changes?
- Would budget changes occur quickly or over a period of time?
- Will growth create a strain in local resources that would require outside funds or technical assistance?

Data

Source: Missoula City and County Offices
Contact: Employees
721.5700
Cost: Free
Notes: •Query changes in service requests and responses

Attributes

Availability: This indicator is one that requires the cooperation of all local government employees. In order to measure this indicator, local governments must be aware of changes in requests by the public for services and in responses by the agency to the request.

Reliability: ✓

Importance: ✓

INDICATOR

Socio-Cultural Crime

Definition

As Missoula County becomes increasingly attractive to those with financial resources, costs are driven up while wages simultaneously decrease. Therefore, those with little money are bumped further and further away from Missoula, so that places like Seeley Lake will become a hodgepodge of wealthy landowners and those on back roads living in substandard housing. According to sociologist Paul Miller (personal interview, Fall, 1995), when people are "pushed out," they see the world as a hostile place, and as such, rates of domestic and substance abuse and violent crime can rise.

Socio-Cultural Crime Rates for Major Offenses

Definition

One of the reasons rural residents have chosen to make Missoula County their home is the feeling that they are safe here, that crime rates are lower, and types of crime less violent here. Thus, while crime statistics may not lead, but lag behind growth, they certainly act as a push-pull migratory force. The relative safety and security of Missoula County residents draws those from more urban areas, thereby causing growth.

Explanation

Montana's 1993 crime rate was 25-30% lower than the national rate. Over 30% of the total offenses reported were solved, being cleared by arrest or by exception. Of the \$20.1 million of property lost, \$4.2 million was recovered, for an overall recovery rate of 21%.

Overall, Missoula County still seems to be relatively safe. The Montana Board of Crime Control reports that in 1988, the rate of crime (for the seven major offenses) per 1,000 persons in Missoula was 58.8. That rate rose sharply between 1989 and 1991 and now stands at 59.2. In contrast to the sharp increase in offenses, the number of dispatched calls, according to the Missoula County Sheriff, has steadily increased.

Recommendations

Many sociological and environmental factors influence the type and volume of criminal activity in a particular geographical area. Some are not beyond the control of local communities and institutions to impact, and increasing community stability could have a positive effect on economic, environmental, and socio-cultural characteristics, in addition to engendering a greater public responsibility and commitment to the preservation of a fair and equitable society.

According to Dan Doyle (1990), if a particular community exhibits an unusually high rate of a specific crime, it is necessary to investigate further in order to understand why this might be the case. If statistics show a large increase in crime in a particular area, it would be advisable to examine whether the increase is real, or is a function of an increase in reporting or an increase in police activity.

Connections and Questions

The evidence that violent crime increases with demographic and economic growth is at best ambiguous. A high rate of violent crime suggests that patterns of hostility and disruption are found in the social organization of a community as a whole, not only in the experiences of particular victims and offenders.

Crime relates not only to the push-pull forces of migration, but to juvenile crime, neighborhood watch groups, tax expenditure, and rates of employment and income.

- Does violent crime increase with demographic and economic growth in small towns and rural areas?
- Do residents feel safe?
- Do residents feel more or less safe than they did five years ago?
- How quickly do officers respond to calls?
- Are residents satisfied with the quality of police service?
- Are statistics kept to measure the impact of community policing on specific neighborhood crime problems?
- Are crime rates increasing such that the "pull" migratory force will be overshadowed?

Data

Source: US Census
Contact: Census and Economic Information Center, Montana Department of Commerce
 Jan Clack or Dave Martin
 406.444.4214 / 406.444.2896

Cost: Price varies depending on the amount of information requested
Notes: •Missoula County Database - Table 2.9 - Criminal Offenses and Crime Rates

Source: Crime Statistics
Contact: Montana Board of Crime Control, Department of Justice
 Don Crabbe
 406.444.2077

Cost: Free
Notes: •Table 8 - Major Offenses Reported by Individual Agencies, by County; Law Enforcement Manpower in Montana

Source: Missoula Office of Planning and Grants
Contact: Planner
 Pat O'Herren
 721.5700 x3456

Cost: Free
Notes: •Missoula County Growth Rates - Missoula County Sheriff Table

Attributes

Availability: ✓

Reliability: Criminologist Dan Doyle (1990) suggests that crime rates are an important but potentially misleading source of data. If using crime statistics, communities should be aware of the complications, the compounding variables, and the sources of inaccuracy.

Importance: ✓

INDICATOR

Socio-Cultural Change in Sense of Community

Definition

A major impetus behind the arrival of newcomers to Missoula County and other areas of the Rocky Mountain West is the quality of life offered by rural communities. The small towns, the scenery, the friendliness of areas in Missoula County, those intangible qualities, serve as a major draw for those trying to escape big cities. Yet, upon their arrival, their quality of life increases, often at the expense of long-time residents.

There is a growing awareness that Missoula needs to acknowledge growth and have a management plan to shape the community's future, so that it continues to provide the quality of life Missoulians value.

Socio-Cultural Perceived Quality of Life

Definition

Economic transition and growth are responsible not only for a change in physical structure, but an associated change in social networks and the perception of quality of life in a community. Quality of life is defined as how people feel about the quality of their individual lives. Thus, in an important sense, the conflict centered around growth-induced change is not determined by objective facts, but by the perceptions of local residents. Changes are also the result of the perceptions of newcomers, which tend to be overly romanticized. Many visit Montana and develop serious misconceptions about life in the Rocky Mountains. Visitors fall in love with a fantasy, a dream about life in the mountains. But, when people visit, they can avoid overcrowded schools and streets, subdivision reform, and loss of elk wintering range. When they live here, they cannot; the harsh winters and strained communities do not fit into the fantasy.

Explanation

Missoula County blends economic and cultural opportunities of affluent metropolitan life with the beauty and space of the countryside. And while local communities seem in favor of some kind of change, conflicting opinions arise as to how much change should occur. A large portion of the locals seem to feel comfortable with the simple and informal way of life that is slowly disappearing.

Some residents see their futures in towns like Boulder and Jackson, and their fear of the community being replaced by institutional service, department stores, and unfamiliar faces discourages them from supporting the change. Perhaps one of the most poignant example of this is found in the Swan Valley, where Jackson and Sperry (1996) report that many valley veterans felt that the community "is a worse place to live than it was ten years ago." The fact that long-time residents no longer dominate the community causes a shift from "traditional western" community values to newly imported values (Jackson and Sperry 1996).

To residents that have just arrived from Salt Lake City, Missoula is a small town, but to those who have lived here all of their lives, Missoula is rapidly growing and changing. Customer satisfaction measures can be measured by determining the percent of those who feel Missoula County is doing a fairly good or good job at a particular service.

The overall results of the Missoula Community Opinion Survey show that Missoula County residents place a great deal of importance on intangibles such as open spaces, neighborliness, and small town character. Changes in public health and personal safety are also important because they can affect both objective measures and subjective perceptions of quality of life.

Recommendations

Many locals are asserting new demands and seeking better representation in decisions concerning the transition of their area. For the economic transition to be successful in meeting local goals and aspirations, it must be the product of local involvement and leadership. There appears to be a growing awareness that it is communities themselves that are ultimately responsible for the outcome of the economic transition and growth. Economic development plans should be based on the inherent strengths and values of rural communities, as recognized by community members.

Rural Missoula County is faced with changing economic realities, and, while, in some places, communities have responded in fear and anger, in Missoula, the divisive reactions of the past must be put aside in favor of pro-active approaches to the future. By promoting

cooperation between community leaders, businesses, advisors, and development experts, the local quality of life may be preserved.

Connections and Questions

The factors used to determine quality of life may vary between communities, but a high quality of life can decrease crime, increase economic vitality, and increase biodiversity. Conversely, increased crime, a decrease in biodiversity, and economic hardship can negatively impact quality of life and sense of well-being.

-
- Do you expect your quality of life to improve, stay the same, or decline
 - in the next year?
 - in the next 5 years?
 - in the next 10 years?
 - If people are content, will they be willing to make the necessary changes to address growth?
 - What do residents like about their community?
 - What do they like about the County? The state?
 - What do residents dislike about their community? County? State?
 - What do community members think will happen if growth continues at present rates?
 - What types of growth-related changes, if any, does the community expect or anticipate?
 - What do they feel is most significant about growth and the changes it may cause?
 - How can communities create a life that includes the best of small town and big city life while avoiding the worst of each?
 - How can communities best preserve and enhance their diversity, integrity, and unique values?
 - What are the cultural limitations to growth?
 - Do neighborhoods anticipate a sense of loss if community is to change due to growth?
 - To what extent do County residents see areas positively, as positive reference groups, areas they would like to be similar to? What are these areas?
 - To what extent do County residents see areas negatively, as negative reference groups, areas they would like to be different from? What are these areas?

Data

Source: Survey Data
Contact: Missoula Office of Planning and Grants
 Cindy Wulfekuhle
 721.5700 x3402
Cost: Free
Notes: • Missoula Community Opinion Survey

Source: Survey Data
Contact: Missoula Office of Planning and Grants
 Pat O'Herren
 721.5700 x3456
Cost: Free
Notes: • Where Do We Grow From Here?

Attributes

Availability: ✓

Reliability: ✓

Importance: ✓

INDICATOR

Socio-Cultural Migration

Definition

Evidence from Census anecdotal migration data indicates that Missoula is receiving national attention as a desirable place to live. That same attention put growth pressure on Rocky Mountain cities including Boulder, Fort Collins, Aspen, Santa Fe, Jackson, and others for the past 15 years. This growth pressure promises to continue and can be seen in the statistics of moving companies, the number of mail boxes by zip code, and surrendered out-of-county licenses.

Socio-Cultural Moving Statistics

Definition

An obvious way to get ahead of growth is to track who is moving into and out of Missoula County by examining U-Haul and local moving and storage company data.

Explanation

According to Census, 40,106 persons five years and older resided in Missoula County in 1990. Of those reported, 15,430 lived in the same house in 1985, 24,209 lived in a different house in the US, and 467 lived abroad. Of those that lived in a different house, 17,924 lived in Montana and 6,285 lived in a different state. The majority of those that moved to a different house within the same state, moved within Missoula County. The majority, 54.2%, of the population of Missoula County was born in Montana.

Data from U-Haul shows that in the period between Memorial Day through Labor Day 1994, there were 33.4% more families moving into the Missoula area than moved out. During that same period in 1995, there were 21% more families moving into than out of the Missoula area. More recently, between Memorial and Labor Day 1996, there were 25.1% more people moving into than out of the area.

Recommendations

Communities and local government should carefully monitor moving statistics. These statistics not only provide information as to the numbers of in-migrants, but their location of origin and their destination. U-Haul statistics serve as one example of a company whose service directly relates to in-migration. Other moving and storage companies should be consulted to expand the available moving data.

Connections and Questions

This statistic is directly related to home rental, sales, and construction. Those moving to the area may also make service demands including utility installations and permitting. Newcomers also add to traffic, crime, and place increased burden on the natural environment.

- How does the number of people moving within Montana relate to those moving into the State?
- How does the number of people moving within Missoula County relate to those moving into the County?
- Where, in particular, are people locating when they move into the State?
- Where, in particular, are people locating when they move into the County?
- What are future in-migration predictions?

Data

Source: US Census
Contact: Census and Economic Information Center, Montana Department of Commerce
 Jan Clack or Dave Martin
 406.444.4214/406.444.2896
Cost: Price varies depending on the amount of information requested
Notes:

- Missoula County - Residence in 1985
- Nativity and Place of Birth

Source: Moving Statistics
Contact: U-Haul International
 Diane Segura
 800.528.0361/602.263.6194

Cost: Free
Notes:

- Annual Migration Report
- General Moving Statistics
- Missoula County Moving Statistics

Attributes

Availability: ✓

Reliability: ✓

Importance: ✓

INDICATOR

Socio-Cultural Land Sale and Subdivision

Definition

According to a *Newsweek* article:

Other economic and cultural conflicts are less sensational but equally important in this, the nation's fastest growing region. Ranchers lose grazing land to California software buyers buying up real estate; small towns with shared values are swamped by chic new settlers. The West is at war with itself (Elliot et al. 1995, 24).

Rural community development manifests itself as the sale and subdivision of land. Increased development appears to have two major components. First, people wishing to own property near where they camp, hike, and ski on public land has driven land sales and second home construction. Second, emerging national employment trends in telecommunications and advancements in transportation have enabled job mobility and the reality of working from home whether or not that home is in a metropolitan setting.

Rural community development is often characterized by condominiums, strip malls, and "trophy homes" - large square footage residences, often built on subdivided sections of former ranches.

Socio-Cultural Land For Sale

Definition

Monitoring the land for sale is one means to understand what growth trends lie ahead. This is a pivotal period, as large blocks of once-contiguous, undeveloped land are rapidly sold, fragmented, and developed. Land for sale can indicate a weakening agricultural tenure, which can lead to subdivision, and eventual construction. It is difficult to look at one component of this cycle without acknowledging the others, and the sale and transfer of lands is an integral part of rural Missoula County growth.

Explanation

According to Paul Polzin, real estate is the state's fastest growing industry. Karen Kemple-Jones of Lambros Realty explained that the number of agents presently working at Lambros rivals the number employed during the 1970s boom. Kemple-Jones notes that there is a change in attitude in buying homes: clients want new, and they want it now. People enter the market thinking they will purchase acreage, but then are surprised by its cost. Land is expensive, she explains, due to the "no-growth" attitude.

Data from the Multiple Listing Service (MLS) of the Missoula County Association of Realtors shows that in 1993, 490 units of land were sold. In 1994, that number dropped only slightly to 480 units. In 1995, 372 units were sold, and thus far - August - in 1996, 204 units have been sold. These numbers reflect only those land transactions that have been recorded through the MLS. Although the MLS primary market is Missoula County, listings can be submitted from outside the area as well. It is also important to note that not all listings taken by Association members are submitted to the MLS. In addition, there are real estate licensees who do not belong to the Association whose transactions are not recorded in these numbers. Even though these numbers may not be reflective of the total land sales activity in the County, they do provide an indication of the trend in land sales.

Recommendations

Communities should organize and sponsor workshops to educate residents about trends in sale and subdivision of local land. Local residents and governments should strive to obtain a more thorough record of land transactions in the County, to supplement the above informational

The County should provide technical assistance on issues of land-use management and policy. and the County should also lead local dialogue on the use of zoning as a growth management tool.

Connections and Questions

This indicator directly relates to a weakening agricultural tenure, an increased level of subdivision and subsequent construction, and the need for permits and utilities.

-
- Where in Missoula County is the majority of land for sale?
 - What is the average cost of land for sale?
 - For how long is land for sale usually on the market?
 - What is the source state of most of the buyer?
 - Prior to selling land, are owners educated or advised about conservation easements?

Data**Source:** Real Estate Information**Contact:** Lambros Realty
Karen Kemple-Jones
543.6663**Cost:** Free**Notes:** •Market and Sales Data**Source:** Land Statistics**Contact:** Missoula Association of Realtors Multiple Listing Service
Mae Hassman
728.0650**Cost:** Free**Notes:** •Units Sold by Year**Attributes****Availability:** ✓**Reliability:** ✓**Importance:** ✓

INDICATOR

Socio-Cultural Permits and Utilities

Definition

Following subdivision and sale, but prior to any occupation, the issuance of permits and the need for utilities signals impending growth. Septic and building permits provide the most appropriate indication of future growth. Estimates based on past trends of telephone and electrical installation serve as a good indication of what can be expected in the future.

Socio-Cultural Septic Permits

Definition

The statewide building boom and construction recovery is especially noticeable in Missoula County and will not only contribute to but signal growth. The number of new septic permits indicate growth and impending development.

Explanation

According to Bob Campbell (personal interview, February 27, 1996), of Montana Business Connections, "Utility and permits can't keep up with the demand." Fifty-six percent of Missoula residents recently surveyed support the requirement of infrastructure before development, thus placing a greater burden on the developers themselves. In order to determine the number of new septic permits issued, the township, range, and section numbers for private, non-corporate lands - those lands most likely to require permits - can be used to query the local health department database.

In Missoula County, between 1990 and September of 1996, the Frenchtown-Huson region saw the largest number of permits issued - 473. The combined totals of the Seeley and Swan regions follow in a close second at 390 permits issued. There were 278 permits issued for the Lolo region between 1990 and 1996. There were 173 permits issued for the Clinton-Turah region, 127 permits issued for the Potomac-Greenough region, 54 permits issued for the Ninemile region, and 50 for the Evaro region.

Recommendations

Infrastructure should be developed to accommodate present development and planned to meet the needs of anticipated growth. One goal of growth management should be to determine the location of existing infrastructure, to document all land-use decisions, and to use that information to develop more infrastructure funding possibilities throughout the planning process. Communities should consider development design and site planning as elements of each broad or specific infrastructure decision. Communities should identify those developed and developing areas that are served by inadequate infrastructure.

Communities should also identify the most critical infrastructure needs and explore alternative strategies to encourage new development to locate in areas close to existing service systems. Communities should also attempt to prevent development which does not have the infrastructure necessary to support it. Lastly, communities should employ cost reduction strategies including affordable financing programs.

Connections and Questions

The costs for land, water, sewer, and other infrastructure now add up to \$30,000 or more per lot. This issue directly relates to housing affordability. The indicator also impacts requests for new and different services, workloads of county and utility employees, increased concern about taxes, moving statistics, mail boxes by zip code, and building permits.

- In what areas are most requests for septic permits occurring?
- What is the present rate for septic permitting?
- How has this rate changed over time?
- How do developers and new development impact rates of septic permitting?
- What is the average cost of septic permitting?
- Are most permits issued for residential or commercial construction?

Data

Source: Permit Data
Contact: Health Department
Jim Carlson or Margaret Siemens
721.5700 x3366
Cost: Free
Notes: •Septic Permit Statistics

Attributes

Availability: ✓
Reliability: ✓
Importance: ✓

TABLE 10

New Septic Permits Issued for Rural Regions of Missoula County,
1990 - September 1996

CLINTON-TURAH REGION

<u>Total</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
173	19	19	33	33	34	16	19

EVARO REGION

<u>Total</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
50	2	4	7	10	10	14	3

FRENCHTOWN-HUSON REGION

<u>Total</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
473	18	46	87*	74*	99*	90*	59

LOLO REGION

<u>Total</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
278	30	35	59	44	56	30	24

NINEMILE REGION

<u>Total</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
54	6	6	2	13	14	5	8

POTOMAC-GREENOUGH

<u>Total</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
127	14	22	23	12	30	18	12

SEELEY-SWAN REGION

<u>Total</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
390	35	36	60	61	79	70	49

Total	124	168	271	247	322	243	174
-------	-----	-----	-----	-----	-----	-----	-----

*Four fields of information were missing for the Frenchtown-Huson region; therefore, extrapolations based on a township, range, and section total were made.

Source: Missoula City-County Health Department.

INDICATOR

Socio-Cultural In the Spotlight

Definition

Researchers attribute the economic transition and rise of the service sector in Missoula County to trends such as changing demographic and retirement patterns, but also to an increase in demand for recreation and tourism opportunities.

Bike trails, visitor centers, outfitters, scenic byways, blue ribbon trout streams, and skiing are transforming the region's reputation, making it a place families are eager to include on their vacation itineraries. Indeed, Montana is seen as "The Last Best Place," as demonstrated by the attention the state has received in national movies, the number of airport deboardings, the demand for local lodging, and the number of visitors traveling through the state by car.

Socio-Cultural Montana-Based Productions

Definition

Montana's natural resources have always been important to its economic welfare but recently, Montana culture has gained value. The stimulation of interest and resulting growth in Montana is due in part to the media's depiction of the good life. Not only have Montana-based writers and painters earned a high profile, but in 1993 alone, 7 feature-length movies were filmed in Montana.

Explanation

"A Stage of Dramatic Proportions." That is the slogan used by the Montana Film Office (MFO), and given recent trends, one that appears to be capturing a great deal of attention. Motion pictures is one of the state's fastest growing industries. The goal of the Montana Film Office is twofold, first, to attract productions for the "overall economic benefit of the state." Second, the MFO strives to make the state "film friendly" because of the belief that the state benefits by exposing its "beauty and flavor to audiences worldwide." They have succeeded on both counts. Though no roads are built and no sewer lines constructed, the impacts of production may be far-reaching.

The Film Office provides a production guide with information on economic incentives, permits, accommodations, travel details, and climate and weather data. Recent Montana-based filming has employed many local workers and has resulted in spending \$20 million (1993) locally in production costs. The attached tables list the businesses directly affected by local production.

The Montana Film Office was created in 1974, and since that time the number of projects filmed in Montana has grown from a mere three, to 49 in 1989, to 79 in 1995. Until 1989, data only reports motion picture filming in the state, but in the last seven years, commercials, documentaries, educational and television productions, still shoots, videos, as well as feature films, all show the sights and sounds of Montana.

Recommendations

As suggested by Lonie Stimac in her guest comment column (Stimac 1994), it is important for "Montana's private sector to capitalize on the upcoming exposure," but it is also important for communities not to become overwhelmed in the spotlight, like a deer frozen in the headlights.

Connections and Questions

This indicator is related to quality of life, airport statistics, lodging demand, fishing pressure, and average annual daily traffic count.

- What is the outlook for travel and tourism in Montana and in Missoula County?
- What are the rates of visitation to the State and the County?
- Have any major motion pictures been filmed in the State or in the County recently?
- Are any major motion pictures planned for filming in Montana or Missoula County in the near future?
- How many information request calls is the Chamber of Commerce receiving?
- How many information request calls are local real estate firms receiving?
- How many people are traveling to Montana through the Missoula airport?
- What are the present hotel occupancy rates?
- What are the present fishing pressure rates?
- How many people are traveling through Missoula County in their cars?

Data

Source: Film Industry Data
Contact: Montana Film Office, Montana Department of Commerce
Maribeth Goodrich
406.444.2654
Cost: Free
Notes: • Workscapes brochure
• MFO Statistics Sheet
• Yearly list of Productions Filmed in Montana

Attributes

Availability: ✓

Reliability: ✓

Importance: ✓

TABLE 11

Montana Production Projects and Estimated Revenue, 1974-1995

YEAR	TOTAL PROJECTS	ESTIMATED REVENUE*
1974	3 (only films reported)	Unknown
1975	2 (only films reported)	Unknown
1976	3 (only films reported)	Unknown
1977	4 (only films reported)	Unknown
1978	2 (only films reported)	Unknown
1979	4 (only films reported)	Unknown
1980	2 (only films reported)	Unknown
1981	-- (only films reported)	--
1982	1 (only films reported)	Unknown
1983	2 (only films reported)	Unknown
1984	-- (only films reported)	--
1985	1 (only films reported)	\$4.9 million
1986	4 (only films reported)	\$5.7 million
1987	2 (only films reported)	\$5.8 million
1988	2 (only films reported)	\$6.0 million
1989	49	\$8.0 million
1990	59	\$8.2 million
1991	58	\$12.0 million
1992	65	\$6.5 million
1993	56	\$20.0 million
1994	71	\$4.0 million
1995	79	\$12.0 million
1996	--	-----
1997	--	-----
1998	--	-----
1999	--	-----
2000	--	-----

*Estimated revenue reflects only expenditures directly related to production costs and excludes any personal expenditures by cast and crew members.

Source: Montana Film Office, Montana Department of Commerce.

CONCLUSION

Developing effective indicators to predict the impacts of growth is challenging, as the problem is multidimensional. Manning (1992, 8) explains that "selecting the right indicators reduces the wide range of potential information to a smaller set of meaningful measures of those factors important to the decision-maker."

Unlimited time and money would enable communities to establish a comprehensive indicator system, which would include all facets of rural growth. However, without limitless time and money, a more limited, but practical, set of indicators can still be identified, measured, and applied to growth. The on-going monitoring, maintenance, and evaluation of the indicators is the responsibility of local communities. This leading indicators approach has great potential, which will only be met by a strong commitment to acquire and utilize the best available information. Tracking these indicators is never going to enable local citizens and government to anticipate big surprises, but monitoring these indicators will allow for the prediction of local fluctuations.

The next chapter explains the ways in which indicators can be applied once they have been identified and measured.

CHAPTER V

APPLICATION OF LEADING INDICATORS

Never mistake motion for action.

Hemingway, *Source Unknown*

Aside from identification and measurement, there remains a third and equally significant aspect of indicators. Application of leading indicators provides a means to understand the impacts of growth on rural communities and to act on their sustainability potential.

This report uses leading indicators of the impacts of growth in several key ways:

- to advocate the articulation of local interests by including the opinions of local government and citizens in the selection, measurement, and application of indicators
- to act on the theory of "anticipated regret" - how people respond to predicted loss (Burchfield, personal interview, May 25, 1996).
- to work toward an algorithm - if indicator "A" increases, then action "B" follows, and
- to analyze gaps in data and determine what is known as well as what remains unknown - what indicators are presently available and what indicators need further attention.

According to Sustainable Seattle (1995), there are several other noteworthy applications of indicators. Indicators:

- must be used to guide changes;

- must reflect the priorities, the process of decision-making, and the policy development of a community;
- must be used to teach planners, politicians, and local residents;
- should serve as a model for other, related projects;
- should challenge communities to become pro-active not reactive;
- should force communities to evaluate choices and decisions based on how they contribute to trends; and
- must be used as a benchmark to evaluate success in addressing and managing growth.

5.1 Types of Applications

While indicators can be valuable signals of important trends, the value of indicators is also found in their ability to catalyze action. The key to using indicators is not only to design them carefully, watch them closely, and interpret them wisely, but to act on them!

Though there are numerous ways in which leading indicators can be applied, depending on the nature of the community and characteristics of its growth, this paper focuses on three applications of leading indicators: connections, forecasts, and benchmarks.

5.2 Connections

Communities, are connected by complex cause and effect chains. To apply indicators to an interconnected system such as a community requires an understanding of the connections. As the John Muir (*My First Summer in the Sierra*) adage states, "When you try to pick anything out of

the universe, you find it is hitched to everything else." Tracing the connections within a system can help to interpret the effects a single action may have. In this case, indicators provide a means to reveal the linkages between areas of growth-related change. Indicators need to be regularly reviewed and refined; an item having a given weight or importance may have a different, or no, weight at another.

5.3 Forecasts

Another unique use of indicators is to forecast and evaluate the probable effects of growth. According to Branch et al. (1982, 11-1), a forecast is "a statement of likelihood about the future of a particular place for a particular time." Basing forecasts on experience invariably produces errors; the world is full of surprises. Usually, forecasting does not define exact outcomes or assign probabilities to occurrences. Instead, forecasting acknowledges the complexity of situations and provides a "reasoned, logical judgment" (Branch et al. 1982, 11-1).

Forecasting enables prediction over time. Therefore, if growth continues at current rates, then forecasting can help to determine what rural Missoula County can expect in the future - demographically, economically, environmentally, and socio-culturally. The ability to predict changes that could result in conflicts may minimize growth-caused community risk.

Successful forecasting requires an evaluation of existing conditions before recommending a future plan of action. Forecasting also requires both a knowledge of future community growth as well as an understanding of the ability of the community to withstand that growth. A community may be predisposed to certain changes by virtue of its history, its demographic,

economic, environmental, and socio-cultural profile. Growth may exacerbate, lessen, or maintain present conditions.

Forecasting involves what is, perhaps, the most challenging component of this project. Forecasting helps communities achieve an understanding of growth and its impacts *before* it occurs. Indicators serve as a means to reveal what might happen in rural communities if nothing is done. That is, indicators show what might happen if rural Missoula County chooses to ignore impending growth; indicators portend what it is that residents are likely to lose if they do nothing.

To forecast the probable impact of growth and development, indicators may be applied in several ways: regionally, comparatively, and graphically. This section includes an explanation of these three types of forecasts. Then, using several indicators presented earlier in the results section, as well as several from the master list of indicators presented to the County, this section presents an application example.

5.3.1 Regional Forecast Application

Perhaps the most meaningful way to understand growth, and one that is advocated by groups like the Center for the Rocky Mountain West, is in relative terms. To do this, the city of Missoula is recognized as a regional trade center. Missoula is the core that is linked demographically, economically, environmentally, and socio-culturally to the surrounding areas and counties. Advocates of this method contend that it is reasonable to look at indicators not only as they exist in rural areas of Missoula County, for example, but in neighboring counties and urban areas as well. The long-term well-being of Missoula County and the vitality of the surrounding area are seen as inextricably related.

This regional perspective has several advantages. Approaching indicators in this fashion could potentially encourage more people to become involved in growth management. If growth impacts more people, then more people can be targeted as an audience for growth planning. Regionalism also increases the chances of achieving sustainability. If a particular community component is in decline, then residents can look to a neighboring community to ensure the survival of that component. A broader area provides a broader base for balance.

A further advantage of regional analysis may be likened to the use of ecosystems to evaluate the environment. When studying a lake, for instance, measurements would not just include those factors within the boundary of the water, but would take into account all components of the environment that impact the lake: the air, the surrounding soils, vegetation, and wildlife, and the temperature - the lake ecosystem. So too, to be effective, community studies require analysis beyond arbitrary political boundaries. The regional approach does not rely on lines drawn on a map, but on the connections between areas that go beyond mere geography.

5.3.2 Comparative Forecast Application

Many projects are now using a comparative approach to growth management. Characteristics of one region are compared to characteristics of another region with similar demographic, economic, environmental, and socio-cultural traits. Decision-makers can then use indicators to assess growth in Missoula County, for example, against that of other peer regions. The Center for the Rocky Mountain West has completed a study on the "Recent Performance of the Five Valleys Region Economy Relative to Other Regions of the West" (Montana Competitiveness Council 1995). The study identifies

nineteen regions in the western United States that are similar to the Missoula Five Valleys Region. Places like Bend, Oregon and Logan, Utah were used to evaluate how well the Missoula region is performing.

With further research, the development of peer regions will be refined and more appropriate for use with growth indicators. Peer regions could have limited use. Local governments and residents in areas similar to rural Missoula County might be consulted to understand how they are addressing growth, if at all. In this sense, peer regions are not directly compared to Missoula County, but queried in an effort to gather recommendations and ideas for a better awareness of growth.

5.3.3 Graphic Forecast Application

One last application of indicators relates to a visualization of avoidable transformation. Similar to the idea of anticipated regret, or getting people to respond to growth by warning them of what they may lose if they do not, visualization of avoidable transformation uses graphics to illustrate change. In the case of Missoula County, visuals could be used to depict the threat or potential for loss, in an effort to encourage residents and governments to act in a preventive rather than a prescriptive way. If Missoula citizens could envision 200 houses on the grass-covered slope of Mount Jumbo, the Open Space campaign would likely receive more donations.

Because of time and budget constraints, the scope of this project does not include the visuals themselves, but rather a mention of their significance. Appendix V provides further information on graphic applications of leading indicators for those who are interested.

The use of visuals also provides an excellent way to address physical versus perceived impacts. Much of the discussion of rural growth centers

around the way people feel, rather than the way things necessarily are. It is important to acknowledge the difference, and graphics provides a forum in which to make the distinction.

5.3.4 Leading Indicators of Growth: A Forecasting Example

This report contains sixty-two indicators of growth effects categorized into four dimensions of growth-induced changes. To demonstrate the application of these leading indicators as a tool to prepare for growth in rural areas, I will use several of them to forecast growth in rural areas of Missoula County, Montana. By applying only several and not all of the indicators, I am not implying that some indicators are more important others, or that my personal interpretation of them is the correct one, or that a correct interpretation even exists. By using the indicators to forecast growth-induced changes, I am only attempting to illustrate one of the ways indicators can be applied.

Before providing the forecasting example, I need to establish the context. As mentioned earlier, this leading indicators project focuses on the rural regions of Missoula County, those areas that have not yet or are just beginning to experience rapid growth.

To demonstrate the application of the indicators, I want to first focus on the population indicator. The population of rural regions of Missoula County has only been estimated once, in 1990. Therefore, in order to examine a trend in rural population figures, it is first necessary to establish the County and City population. Table 12, below, illustrates the Missoula County population according to the US Census in 1980 and 1990. The table also provides a the estimated 1996 population and the projected population for the year 2002.

I relied on a Missoula County Cumulative Effect/Carrying Capacity Project population estimate to establish the 2002 County population estimate. This project estimated that, based on the 2.35% Census-reported annual growth rate for Missoula County during 1990 and 1992, the Missoula County 2002 population would be 103,691.

It is worth noting that this Missoula County estimate differs from each of three population projections reported in the 1990 Census. According to the Census report, NPA Data Services projects a 2000 Missoula County population of 93,140, and a 2005 population of 98,570. The US Bureau of Economic Analysis projects 81,800 people will be living in Missoula County in the year 2000, and 83,100 will call Missoula County their home in 2005. Finally, Woods and Poole Economics estimates a 2002 Missoula County population of 93,600, and a 2005 population of 100,300 for the County. While each of these projections is compelling, I chose to base my forecast on the Missoula County estimate.

TABLE 12

MISSOULA COUNTY POPULATION FIGURES

YEAR	POPULATION
1980	76,016
1990	78,687
1996	92,000
2002	103,691

Source: US Census and the Missoula Office of Planning and Grants.

There are three components of the County population: 1) the City of Missoula population, 2) the population of the urban fringe - those areas not within City limits, but not considered rural either, and 3) the population of the seven rural areas of the County. Beginning with the first component, the City of Missoula population figures are provided in Table 13 for 1980 and 1990. A 1996 population estimate is made, as is a 2002 projection.

TABLE 13

CITY OF MISSOULA POPULATION FIGURES

YEAR	POPULATION
1980	33,388
1990	42,918
1996	50,956
2002	83,463

Source: Missoula Office of Planning and Grants.

By providing the City population figures, a comparison can be made between City and County to determine the number of people living in either the urban fringe or rural areas. The numbers of non-City Missoula County residents are provided in Table 14.

TABLE 14

MISSOULA COUNTY NON-CITY POPULATION FIGURES

YEAR	POPULATION
1980	42,628
1990	35,769
1996	41,044
2002	20,228

Source: Missoula Office of Planning and Grants.

It can be noted that the relative proportion of the non-City component of the County population is declining. This can be explained in several ways. First, it should be understood that the City population can grow without the County growing. This is due to annexation of formerly non-City areas to the City limits. It is expected that, while the rural areas of the County are growing and will continue to do so, the City will continue to annex, thus decreasing proportion of the rural component of the population.

Now, with the County and City population trends established, I offer the rural population figures. As I mentioned, the populations of the rural regions have been estimated only once. In 1990, David Dewing at the Missoula Office of Planning and Grants overlaid the Missoula County rural regions planning area boundaries with the 1990 Census data map. Dewing's rural regional estimates appear below in Table 15.

TABLE 15

RURAL REGION POPULATION FIGURES

RURAL REGION	1990 POPULATION
Clinton-Turah	1,888
Evaro	766
Frenchtown-Huson	3,650
Lolo	5,017
Ninemile	76
Potomac-Greenough	2,171
Seeley-Swan	1,777
TOTAL	15,345

Source: Missoula Office of Planning and Grants.

Table 16 takes the 1990 rural figures one step further. Table 16 provides the 2002 population projections for each of the seven rural areas. These projections were made by determining the percentage of the 1990 County population captured by each of the rural areas. Then, using the 2002 Missoula County population projection, I estimated the population for each of the rural areas, assuming their 2002 share would equal their 1990 share. Some would argue that a "constant shares" estimate is not accurate, however, based on past County/City trends, the majority of the Missoula population is likely to live in the City or urban fringe. Certainly the figures demonstrate that the rural regions are growing, but the rural growth is unlikely to rival that of the City and its continuous annexation.

TABLE 16

RURAL REGION POPULATION PROJECTIONS

RURAL REGION	1990 POPULATION	% OF 1990 COUNTY POPULATION	2002 POPULATION
Clinton-Turah	1,888	2.40%	2,489
Evaro	766	.97%	1,006
Frenchtown- Huson	3,650	4.64%	4,811
Lolo	5,017	6.38%	6,616
Ninemile	76	.01%	101
Potomac- Greenough	2,171	2.76%	2,862
Seeley-Swan	1,777	2.26%	2,343
TOTAL	15,345		20,228

Now, the populations of the rural regions have been established and explained. How does this relate to the application of indicators? I wanted to determine which of the rural regions was experiencing the most growth. I knew their populations, but, more than that, I wanted to demonstrate how the areas compared to one another. To do this, I assigned each area a rank to designate its relative level of growth. Thus, the rural region with the largest population was assigned the number one ranking; the rural region having

the smallest population received a ranking of seven. The rank did not change between 1990 and 2002, as the constant shares conversion assumes that their relative growth remains the same between now and then. These rankings are provided in Table 17 and provide a means to compare the indicator of population with other indicators.

TABLE 17

RURAL REGION RANKINGS BASED ON POPULATION

RURAL REGION	1990 and 2000 POPULATIONS	RANK
Clinton-Turah	1,888 to 2,489	4
Evaro	766 to 1,006	6
Frenchtown-Huson	3,650 to 4,811	2
Lolo	5,017 to 6,616	1
Ninemile	76 to 101	7
Potomac-Greenough	2,171 to 2,862	3
Seeley-Swan	1,777 to 2,343	5

To check the accuracy of the results using the population indicator, I evaluated it against several other indicators, including septic permits, phone installations, and mail boxes by zip code. In other words, the population data provided a ranking of each of the rural regions based on their proportion of the total population. In what order did the other indicators rank the rural regions? And, how should divergent indicator rankings be addressed?

Septic permits data for each of the rural region is provided in Table 18.

TABLE 18

NEW SEPTIC PERMITS ISSUED FOR RURAL REGIONS OF MISSOULA COUNTY, 1990 TO 1996

RURAL REGION	1990 PERMITS	1995 PERMITS	TOTAL PERMITS ISSUED 1990-1996	RANK
Clinton-Turah	19	16	173	4
Evaro	2	14	50	7
Frenchtown-Huson	18	90	473	1
Lolo	30	30	278	3
Ninemile	6	5	54	6
Potomac-Greenough	14	18	127	5
Seeley-Swan	35	70	390	2

Source: Missoula City-County Health Department.

Septic permit data shows that between 1990 and 1996, 473 permits were issued in the Frenchtown-Huson region. Though this region was ranked second in the above population projection, the large number of permits issued should serve to warn residents and planners of the potential for dramatic growth in this area. A further examination of septic permits highlights Seeley-Swan and Lolo as other areas with high growth possibilities.

Phone installation data serves as another means to evaluate the accuracy of the population estimates. Table 19 provides the rates of phone installations for each of the rural regions. By examining the numbers of new phone line installations, it is possible to determine what rural areas are experiencing growth.

TABLE 19

BLACKFOOT TELEPHONE COOPERATIVE, INC. PHONE INSTALLATION
RATES BASED ON SUMMARY OF TARIFF CODES

YEAR	RURAL EXCHANGE	RURAL AREA	TOTAL # LINES	NEW LINES
January 1993	244	Potomac	377	40
January 1994	244	Potomac	399	22
January 1995	244	Potomac	442	43
January 1996	244	Potomac	455	13
August 1996	244	Potomac	479	22
TOTAL NEW LINES FROM 1993 TO AUGUST 1996 = 140			Rank = 5	
January 1993	677	Seeley Lake	931	68
January 1994	677	Seeley Lake	1008	77
January 1995	677	Seeley Lake	1094	86
January 1996	677	Seeley Lake	1193	99
August 1996	677	Seeley Lake	1276	83
TOTAL NEW LINES FROM 1993 TO AUGUST 1996 = 413			Rank = 1	
January 1993	726	Evaro/Arlee	830	41
January 1994	726	Evaro/Arlee	889	59
January 1995	726	Evaro/Arlee	937	48
January 1996	726	Evaro/Arlee	953	16
August 1996	726	Evaro/Arlee	963	15
TOTAL NEW LINES FROM 1993 TO AUGUST 1996 = 179			Rank = 2	
January 1993	754	Condon	480	43
January 1994	754	Condon	510	30
January 1995	754	Condon	545	35
January 1996	754	Condon	556	11
August 1996	754	Condon	588	32
TOTAL NEW LINES FROM 1993 TO AUGUST 1996 = 151			Rank = 3	
January 1993	825	Clinton	537	12
January 1994	825	Clinton	577	40
January 1995	825	Clinton	622	45
January 1996	825	Clinton	648	26
August 1996	825	Clinton	668	20
TOTAL NEW LINES FROM 1993 TO AUGUST 1996 = 143			Rank = 4	

Source: Blackfoot Telephone Cooperative, Inc.

Unfortunately, phone installation data was not available for all of the rural regions. Blackfoot Telephone, from whom the data was obtained, does not service all seven of Missoula's rural regions. Those regions for which data was available do not necessarily directly correspond with the Missoula County rural region planning boundaries. Therefore, the available phone installation data was not in a form entirely consistent with other indicators. Even so, it does show the highest rates of installation in the Seeley-Swan region. By combining the installation rates, shown below, for Seeley Lake and Condon, the data demonstrates that Seeley-Swan is the rural region with the highest phone installation rate.

The final means I used to evaluate the population results involved the use of US Postal Service Data. The Postal Service Business Center provides annual reports documenting the number of mail boxes by zip code. A comparison of 1995 and 1996 reports shows that Condon, in the Seeley-Swan region experienced the greatest growth, as seen in an increase from 60 residences in 1995 to 140 in 1996. The second highest increase in deliveries was in Greenough, where postal deliveries rose from 80 residences in 1995 to 84 in 1996. In Lolo, the creation of a new mail route decreased the number of deliveries on the three previously existing routes, but increased the number of deliveries overall. In 1996, number of Lolo deliveries stood at 1210, up from 1127 in 1995. Accurate postal delivery data was not available for the other rural regions.

Is it in fact possible to forecast the effects of our actions? While no model can predict the future, the use of leading indicators can at least forecast some possible consequences. By applying the identification and measurement of leading indicators, residents and planners can gain an

understanding of the degree of change that is likely. The table below summarizes the above indicator information and highlights, in bold, those regions experiencing the greatest growth-induced changes. If current trends continue, it is in these rural areas that significant growth-induced changes are the most likely to occur.

TABLE 20

RURAL REGIONS AND THEIR RANK AS ILLUSTRATED BY LEADING INDICATORS

RURAL REGION	POP RANK	SEPTIC RANK	PHONE RANK	POSTAL RANK
Clinton-Turah	4	4	3	N/A
Evaro	6	7	2	N/A
Frenchtown-Huson	2	1	N/A	N/A
Lolo	1	3	N/A	3
Ninemile	7	6	N/A	N/A
Potomac-Greenough	3	5	4	2
Seeley-Swan	5	2	1	1

Thus it seems that leading indicators have the potential to be a good tool, in theory and in practice, for reporting conditions and planning action. The question, then, that remains, is how the leading indicators can inform the growth management process. An answer to that question begins with the

last application of leading indicators. I have discussed the utility of connections and forecasts in the above portions of this chapter; the next section discusses the use of benchmarks to track and evaluate the community status and progress in identifying, measuring, and applying leading indicators.

5.4 Benchmarks

This last application of indicators is one worthy of discussion. While an indicator is used in the process of measurement and monitoring, a benchmark, more specifically, establishes a defined period over which measures are made in an effort to track progress toward a pre-determined point. Benchmarks are individual measures that demonstrate progress toward or regression from a desired state. Benchmarks are integrally related to indicators, as they serve as a starting and an ending point from which to gauge success in achieving a goal. Why then have they not been mentioned sooner in this report?

While benchmarks keep efforts focused on achieving a specified point, they demand that those using indicators reset priorities and adapt or modify programs as it becomes obvious "what works" and what doesn't. For this reason, establishing benchmarks, priorities, and the appropriate course of action remains the task of the local government and citizens, those integrally related to decision-making and policy.

TABLE 21
BENCHMARKING

	Historical		Target	
TYPICAL BENCHMARKS	1980	1990	1997	2010
Number of Farms				

Source: Adapted from Oregon Progress Board. *Oregon Benchmarks: Standards for Measuring Statewide Progress and Government Performance* (Salem, OR: Oregon Progress Board, 1992) 11.

That said, several guidelines can serve to get the process started. Consider the above example. Begin by selecting an indicator of the phenomenon in question. In this case, the number of farms indicates agricultural tenure, which, in turn, relates to development pressure and likelihood for growth. In tracking the number of farms, it is first necessary to determine a "start" line - the point at which measurements would begin. This is where benchmarks differ from indicators. In Table 21, 1980 is the time of the first measurement to be recorded. Historical data is used to establish a baseline, a starting point, for the indicator measurement. Then, after evaluating the indicator at the starting point, it is the community that must determine how it desires the measured level of the indicator to change. In other words, if the number of farms stands at 100, is that an adequate amount that should be maintained over time, or is it too low, or too high? By placing the benchmark decisions in the hands of local government and citizens, the process of implementation is not only likely to be easier but more successful.

Depending on the community's decision, a timeline is then created over which the indicator is tracked. Periodic data measurements are taken,

compiled, reported, and the graph is filled-in. In this case, the number of farms is tracked between 1980 and 1997.

The timeline concludes with the "finish" - the end point by which a desired state is hoped to be achieved. Assume the community has decided that 100 farms is not enough, and that, instead, there should be 150 farms. The community, beginning in 1980, would monitor the number of farms, with the endpoint in mind. While tracking the number, the community would implement actions and policy to enable the desired number of farms to be achieved by the decided upon finish. In fact, the community could create a list of suggestions to achieve the target number of farms by the target endpoint. That suggestion list may look something like the grid in Table 22.

TABLE 22

BENCHMARK ACTION GUIDE

Action/Tool	Description	Advantage	Disadvantage

Source: Adapted from Missoula Office of Planning and Grants. *Scenarios Planning Process* (Missoula, MT: Missoula Office of Planning and Grants) 1.

By detailing the actions or tools that will be used to achieve the target, the communities can articulate their goals. Each action should be described and evaluate in terms of its advantages and disadvantages.

Benchmarks are just another means of using indicators to guide and monitor public policy, assess needs for and consequences of growth, improve present indicators, and develop other indicators to be used in the future.

CONCLUSION

Application represents the cumulative result of the identification and measurement of leading indicators. Without application, the project would only be only an exercise in data gathering. Instead, making connections, producing forecasts, and establishing benchmarks not only describes the most likely results of growth but determines how they will be interpreted.

Application is not an easy task. Connections between various indicators are not always clear and often change. The experience of other rural communities, while sometimes helpful, is, for the most part, unable to provide a solid foundation of information needed to forecast to any degree of certainty. And benchmarks, whose establishment is dependent upon the input of the community, are susceptible to the changing political tides and prevailing public sentiment. Despite the problems that application may pose, it is a stage of the methodology that is critical to the successful completion of indicator work.

The information provided in the next chapter is designed to help the indicator practitioner plan and organize an indicator project by explaining some of the challenges and limitations of indicator studies and suggesting solutions.

CHAPTER VI

CHALLENGES AND LIMITATIONS OF INDICATOR RESEARCH

The trouble with using experience as a guide is that the final exam often comes first and then the lesson.

Unknown

6.1 Leading Indicator Research: Challenges and Limitations

The purpose of this section is to identify some of the challenges associated with a leading indicators project. Because the rural growth planning literature offers so little information on the practical application of leading indicators, I turned to a project in another new and burgeoning field for suggestions on addressing challenges. As Trombulak, Noss, and Strittholt (1995/96) - of the Wildlands Project - explain, there are several good reasons for addressing the assumptions and limitations of the research. First, by recognizing the challenges and understanding how to deal with them rural communities will be armed with the best information to proceed with the identification, measurement, and application of leading indicators. Second, once the challenges are recognized, local governments and citizens can work together toward solutions. Next, Trombulak, Noss, and Strittholt (1995/96)

suggest that it is necessary to indicate to other researchers that the challenges of indicator research are acknowledged, even as the use of indicators to identify and measure sources of change in communities is advocated. Recall that the goal of this indicator project is, first, to identify changes caused by growth before growth actually occurs, and then to measure those changes. Once identified and measured, the leading indicators are meant to be applied.

The following challenges and solutions apply not only to projects involving the use of leading indicators, but relate to any work that involves the use of demographic, economic, environmental, and socio-cultural information to identify and measure community growth. The challenges are grouped into two categories: technical and non-technical.

6.1.1 Indicators: Technical Challenges and Solutions

- **Collection of Data**

A lot of data is available, and more is becoming so each year. Information on the demographic, economic, environmental, and socio-cultural characteristics of rural communities is gathered by many agencies, groups, and organizations. However, it is difficult to collect all of the necessary data for all of the study area at the needed time intervals. For example, much of the data available for indicator identification and measurement is available only from the Census and, thus, only at ten-year intervals at the state level. Such data sets present challenges in developing indicators accurate enough to guide decisions at the local level, where the work of implementation will have to occur. An increasing amount of data is available in more regular time increments, but many of these data sets are incomplete within a region. Other data is theoretically available, but its cost is so prohibitive as to be unattainable. There is also the reality that though

studies such as this one are becoming more common, the groups completing the studies are often unaware of each other and, therefore, unable to share information. Finally, there is some data that has not been collected. The difficulty of data collection will likely be solved as more data becomes available and as more groups and communities begin to utilize it.

There is also the issue of when and how frequently indicators should be measured. The researcher and users must come to a decision that balances thorough and complete analysis of the necessary data with the realities of schedule and budget. Thus, data collection must be exhaustive, within reason.

- Quality of Data

The accuracy of data is a significant problem, especially in terms of data classification. Data classifications are strongly influenced by operational definitions used at the time of data collection. Operational definitions change, and data collection during one year may drastically differ from data collection during another. Measurements also represent conditions at the time the measurements were taken. The longer ago a measurement was taken, the more likely it is to be out of date, and hence to provide an inaccurate picture of current reality.

There is also a lack of consistency of quality. Practitioners will find it tempting to emphasize those indicators for which the best data is available, rather than those for which the best data is reliable or valid.

With respect to community development, the relevance of a data set must also be considered. Though current sustainability indicator projects can serve as models for other indicator projects, their utility in addressing leading indicators of growth is limited. A great number of recent projects (e.g., Sustainable Seattle and Flathead Gauges) have used indicators to measure

sustainability. While in concept other indicator projects are similar to this one, they differ in practice. The approach to data used for indicators of sustainability is very different from the approach to data used for leading indicators of growth.

There are several solutions to the problems associated with the quality of data. It is important that data is verified, revised, and critically evaluated. It is also important that the methodology used to collect the data is understood. The researcher must be prepared to make revisions as better information becomes available. Indicator researchers must not only commit to rigorously reviewing available data, but to adapting as new and better information is developed. Finally, those using indicators must acknowledge previous efforts in the field, while simultaneously exploring new options and strategies for identifying, measuring, and applying indicators.

- Management of Data

The amount of data necessary to complete an indicator project may prove problematic. Depending on the size of the study site, the data collected, and the number of measurements made and revised, data management can become expensive, time consuming, and logistically complicated.

The establishment of a computer database is likely the most effective solution to the dilemma of data handling. A computer can efficiently store, sort, and manipulate data for easy collection, revision, and implementation of indicators.

- Reporting of Data

The way in which indicator data is both collected and reported is vulnerable to the subjectivity of the researcher. This challenge particularly applies to qualitative data. The reporting of the data can be impacted by an attempt to persuade decision-makers or affect policy.

To overcome this obstacle, careful evaluation of motive and meaning must be made both by the researcher who gathered the data and by the people who will use it, a process known as "bracketing."

- Reduction of Data

One of the greatest strengths of indicators also represents one of their weaknesses. The ability of indicators to capture trends makes them an invaluable time and money saving tool. However, it is important to realize that their use implies the reduction of broad, complicated phenomena to several, limited measures. Researchers and users of indicators must question what meanings the measures hold.

- Application of Data

Several limitations need to be considered when applying the results of this study to different conditions or situations. Even within Missoula County, there are differences between the rural regions. The regions may be in different stages of development, possess different resources, and have varying economic, environmental, and socio-cultural backgrounds. For this reason, the indicators may pertain to the regions to varying degrees. So, too, those regions outside of Missoula County must carefully evaluate their status and determine the relevance of these indicators to their conditions.

- Scale

Geographic and time scales are an important, but often neglected, component of indicator application. Indicators are used at a variety of scales and depending on the nature of the project, researchers should use data with the most relevant scale possible. In some cases, it is not a choice between an incorrect and a correct level of scale, but a question of choosing the "lesser of two evils."

It is important to realize that often the more specified and appropriate an indicator is, the less measurable it is. Any given indicator represents the sum total of such a variety of variables, that if any should change, the indicator itself may be altered.

To avoid problems of scale, flexibility is again the solution. Communities should be willing to adapt their measurements as conditions and available data changes.

6.1.2 Indicators: Non-technical Challenges and Solutions

Each of the above problems represents a challenge to community planning efforts. Sustainable Seattle (1995, 5) reminds its readers that, "Measuring progress is not the same as making it." Trombulak, Noss, and Strittholt (1995/96, 86) concur: "simply designing a strategy does not bring it into being."

But even if those completing an indicators project can clear the above hurdles, there are still non-technical barriers that pose considerable hazard. It is the non-technical, political problems that most threaten the success of community growth management efforts.

- **Subjectivity**

Indicators are ideal when they relate to aspects of the community significant to its members. "Social indicator models derive, explicitly or implicitly, from values" (Freeman 1992, 55). Therefore, indicators can mean different things to different people. Freeman (1992, 78) suggests that people should "choose indicators to measure categories of social phenomena that they construct according to their value-based sensibilities." By centering the choice of indicators around local values, the appeal of those indicators is

likely to be greater, attracting citizen groups of all stripes, and encouraging citizen participation.

Even with the numerous complications, the use of indicators is on the rise. The increased use of indicators represents a time-saving, cost-effective alternative to identifying and measuring an exhaustive set of variables. Indicators can enable government agencies to recognize that certain problems surpass their boundaries and require the participation of the community as a whole. Indicators are also favored as place-based management begins to gain acceptance.

- Sources of Funding

Sources of funding for all components of an indicator project are necessary, yet often difficult to obtain. Communities may have the resources available for data collection, but an indicators project is not complete without on-going measurement and monitoring. Likewise, monitoring and measurement of indicators may be included in the local budget, but without application, indicators are useless. Communities must consider where the money for all of this data collection and implementation will come from.

- Consistency

The success of community-based leading indicator projects will depend, to some degree, on the consistency of the work various components of the community produce. It is often local communities that are best qualified to develop practical community growth management strategies. For this reason, and because many local residents are not scientists, Trombulak, Noss, and Strittholt (1995/96) note that it is likely that an area-wide growth management system will be developed by many independent groups, each completing a piece of the larger puzzle. The ability of the community to complete that larger puzzle relies on how well the parts connect. The ability

to achieve a good fit depends on how various community groups approached the issue. Trombulak, Noss, and Strittholt (1995/96, 86) caution that with many groups, there will be many approaches, though, it is suggested that "the value in prescribing a single approach to developing indicators and stability would be offset by its danger. Each region has a unique set of opportunities and limitations that make flexibility and initiative essential." Therefore, the most effective means to take advantage of the willingness and initiative of local communities while still maintaining consistency is to create a set of guidelines, such as those described in this paper, and to apply them as necessary.

- Implementation

Indicators of community change serve as guidelines for the establishment of practical planning efforts. But following the identification and measurement of an indicator, over what time period is the implementation of indicators to be applied? As Trombulak, Noss, and Strittholt (1995/96) point out in their discussion of "Obstacles to Implementing the Wildlands Project," anything is possible if the implementation deadline is in 100 years. However:

Very little is possible if the implementation target is next week. Some intermediate, but identifiable, time frame is necessary if the strategy has any real hope of being implemented within the context of the existing culture of a region, and in a length of time short enough to make a meaningful contribution...

to promoting community stability, in this case (Trombulak, Noss, and Strittholt 1995/96, 86).

Implementation demands that communities not stop once indicator have been measured. Instead, implementation requires that communities consider the best way to apply the indicators to growth management.

Trombulak, Noss, and Strittholt (1995/96, 86) suggest that due to political and cultural sensitivity and economic limitations, growth management strategies will be most successfully implemented "if done over a period of time as a series of coordinated projects." However, the rapid and ever-increasing development and growth of rural communities calls for the immediate establishment of a comprehensive growth management system. Political, social, and economic constraints cannot be ignored, and so, the need for a comprehensive approach must wait until the community is ready to embrace such an approach.

This Indicators Project advocates a tiered approach to implementation. Once identified and measured, the application strategy for the indicators can be implemented in stages, with goals set for 1 year, 5 years, 10 years, 20 years, and 50 years from now, recognizing that achieving rural community sustainability may take that long.

Local governments and citizens must meet, discuss, and agree upon a desirable and realistic time frame for implementing responses to growth-induced change. Communities should draw upon the principles of benchmarking to establish an application strategy that can be implemented in steps over time. Local governments and citizens should work together to set immediate, near future, and advanced goals.

Local governments and citizens can begin to address growth on a small scale. As the larger community becomes educated and more aware of the need to adopt and apply the indicator research, more and more individuals will join growth planning efforts. Communities must remain flexible, creative, and patient.

This is a complex issue, as many projects have suggested solutions and made recommendations to address growth. Many projects have then been

placed on a shelf only to collect dust. The success of a project does depend on the identification and measurement of indicators, but relies most heavily on the application of those indicators to institute response.

- Misinformation

Community growth experts and those familiar with the use of indicators are growing in number, but are still relatively rare. The number of experts is not keeping pace with the demand for their expertise. This creates a dangerous situation, as communities desperately in need of information turn to any available source, whether or not that source is reliable. Communities appear very non-critical and willing to make major decisions based on any written material, without evaluating the accuracy of that material. Therefore, many bad decisions are being made.

Again, communities must remain eagerly patient. Correct information is worth waiting for, and a good decision is based on the best available information, not any available information. Communities should critically evaluate all materials on which major growth management and policy decisions will be based. Local governments and citizens should be unafraid to criticize and question what is unclear or confusing - their future depends on a solid understanding of what lies ahead.

CONCLUSION

The use of leading indicators does not guarantee a community success. Though the use of leading indicators is not without its challenges, applying leading indicators as a tool to prepare for rural community growth does have many advantages. One of the apparent advantages is that the identification, measurement, and application of leading indicators provides a framework for "aligning a community's values with development activities and clarifying

the relationship between the two" (Freeman 1992). Rural residents and local governments can evaluate their past, present, and probable future status and guide growth according to their preferences. Further, the use of leading indicators enables residents and planners to clarify the relationships between the demography, economy, environment, and culture of their community. Conflicts become evident and goals solidify, and indicators can serve to track the progress of those community goals.

Another advantage of the indicator process is that it requires that goals and actions be integrated. In other words, a community must not only identify and measure indicators, but must apply them.

Lastly, the process of identifying, measuring, and applying leading indicators fosters participation and communication between all stakeholders in a community. The selection of community indicators requires community participants to voice their opinions. Communities can determine who among them agrees and disagrees, where consensus and conflict lie. Leading indicators provide a framework within which community participants can work together to create their common future.

The next and final chapter offers several recommendations, which can serve as the foundation for community growth policies, programs, and projects. Chapter VII also serves as a summary and conclusion, by providing a description of the contributions of this thesis and a discussion of ways to incorporate further research.

CHAPTER VII

IMPLICATIONS AND CONCLUSIONS OF LEADING INDICATOR RESEARCH

We should all be concerned about the future because we will have to spend
the rest of our lives there.

Kettering, *Unknown*

6.1 Recommendations

I want to begin this chapter with an explanation of the implications of indicators as a tool for rural growth management. A significant implication of indicators is in their ability to catalyze action. That action often begins as a recommendation. The next three sections detail the way in which recommendations were used in this project. Section 6.1.1 explains what a recommendation is. Section 6.1.2 provides a list of some of the desirable attributes of indicators, and Section 6.1.3 defines the audience to which my recommendations were presented.

6.1.1 Definition

Recommendations are the foundations for decisions on long-term policies, programs, and projects and can help to generate cooperative action.

Further qualities of recommendations require that they be:

- purpose-driven;
- flexible;
- inclusive, not exclusive;

- respectful of diverse interests; and
- adopted by a community on a voluntary basis.

6.1.2 Desirable Attributes of Recommendations

Recommendations should:

- suggest a plan of action for the identification of leading indicators;
- suggest a plan of action for the continued measurement of indicators and monitoring of growth;
- suggest a plan of action for the application, or implementation, of the indicator findings;
- support a comprehensive community growth strategy based on needs, goals, and objectives for a desired future outcome;
- incorporate the sentiments of locals by serving as a litmus test of local opinion;
- help local governments meet an impact situation;
- suggest resources and provide a tool of technical expertise; and
- suggest ways to mitigate or avoid growth-related problems.

Recommendations should also adhere to the principles of conflict resolution and consensus.

6.1.3 Recommendation Audience

Recommendations and findings of this project are aimed at several distinct groups:

- City and County government, more specifically, the Missoula Office of Planning and Grants,
- local decision-makers,
- rural Missoula County community residents,

- community development experts, groups, and researchers, and
- other communities undergoing a similar phenomenon.

It is important to keep in mind that with nearly 86,000 people in this County, the opinion of each cannot be polled. When selecting indicators for a particular community and targeting them to a particular audience, the indicators chosen should center around key community issues. In that sense, indicators can serve as a rallying point, behind which community members can unite. A local approach to common problems offers a more efficient means of indicator selection, measurement, and application. Communities themselves must be integrally involved in the growth management process.

The recommendations of this project fall into two categories. General recommendations center on a series of steps that comprise the indicators process. Specific suggestions take that process one step further and discuss two ways in which a community can prepare to use indicators.

6.2 General Recommendations

Based on the experience gained from conducting this project, the general recommendations suggest that the use of indicators occur as a series of steps. The process of identifying, measuring, and applying indicators as a growth management tool has several steps. Initially, the community should indicate its values. Members of the community, with the help of local government, should meet to identify the key community stakeholders, their views on the state of the community, and their desires for the community's future. The second task is to identify demographic, economic, environmental, and socio-cultural community features using social indicators derived from the community values in step one. Next, the

community should describe and assess its present state, using the indicators. Based on that status, the community should then develop an action plan. Finally, the use of indicators should allow for continued monitoring of the community's status.

6.3 Specific Recommendations

In addition to the steps necessary to identify, measure, and apply indicators, the recommendations of this project suggest two specific ways in which a rural community can prepare to use the indicators. The first of the two specific recommendations assesses the need for indicators, the second explains how, once established, the indicators can be incorporated into rural growth planning. By engaging in the processes of community assessment and rural growth planning, the implementation of an indicators project is more likely to occur and to be successful.

6.3.1 Community Assessment

The goals of this document would not be met without the discussion of this specific recommendation. Community assessment enables a community to determine whether and to what extent the above recommendations are appropriate and necessary. Assessment is the process of evaluating the traits of a community. Pulver and Dodson (1992, v) emphasize the importance of assessment as an opportunity to ensure that "the actions a community chooses will fit its circumstances and abilities."

In completing an assessment, communities explore their strengths and weaknesses, identify stakeholders, and uncover changes that are likely to occur and the way in which those changes will affect the community.

Community assessment is a complex process, and often, results of an assessment are difficult to understand. Assessment findings can contradict popularly held beliefs and values and can challenge vested interests. Nonetheless, to be effective in addressing potential sources of community change, an assessment should be conducted.

6.3.2 Rural Growth Planning

Community planning is essential to sustaining the economic, environmental, and socio-cultural heritage of a place. In fact, planning is an essential element of community organization. It is a process that involves locating and defining an issue, exploring its scope, considering various solutions, selecting an alternative from all possible solutions, designing an appropriate response to the issue, and implementing the proper course of action.

The literature is full of stories of the drama surrounding land use planning. Jackson and Sperry (1996, 30) note that, "In recent times, some of the most dramatic community conflicts in Montana have surrounded the issue of land-use planning." Jobes (1979, 8), too, offers that, "Few subjects have the ability to evoke such extremes and impassioned responses in the United States as does the concept of planning." Perhaps it is because people from the Rocky Mountain West are known for their rugged individualism; these are people who endure both scorching heat and freezing cold, who have had to eke out a home in some of the harshest terrain in the Country. Perhaps the need for a communal response to growth contradicts the very nature of the rural residents of the Rocky Mountain West. Whatever the reason, the objections to rural growth planning must be overcome if rural residents hope to preserve the very place that has made them what they are.

While many people appreciate the need for planning, others are completely ignorant of its benefits. Still other residents are vehemently opposed to planning, viewing it as an infringement on personal liberty and private property rights. In Missoula County, though, the great majority, 84%, of residents recently surveyed felt that Missoula should manage growth. By a margin of more than 3-to-1, the majority of Missoula County residents surveyed support land-use planning. Ten percent of those surveyed felt that Missoula should do anything legally possible to stop it.

Yet, the consequences of growth-induced change are often ignored until they become critical. Don Snow (1995), of the local Northern Lights Institute notices that at the local level, government tends to react to the problems of growth rather than to enact a pro-active growth management strategy. Often, even if a community does respond to growth, it is only a superficial and short-term response. Instead, in her book, Little Town Blues, Ringholz (1992, 172) warns that, "The price of a good community is eternal vigilance...The community is changing everyday and somebody has to be paying attention all the time."

In Missoula County, the problem is not a lack of interest on the part of local government. On the contrary, numerous organizations, agencies, and groups have issued planning guides, sponsored workshops, and hosted conferences to guide organizations like the Missoula Office of Planning and Grants. However, it was not until recently that much the planning literature actually began to address small town conditions and became useful to rural planners. It is also true that while community members may support planning in theory, once plans begin to take form, objections surface. The City and County of Missoula jointly established the basis for a growth plan.

The effectiveness of our growth management strategy:

will depend largely upon our collective ability to address pertinent issues in an integrated, coordinated, and on-going manner, and upon our ability to respond flexibly and intelligently to events that are unforeseen and beyond our control (Missoula County Growth Management Task Force 1994, 1).

It is the rapid transition from rural to urban communities with which growth planning in Montana, and across the West, must deal.

CONCLUSIONS

This project examines community change and takes the research out of the laboratory and into the world by linking communities to the contexts in which they exist. In the 1800s, the challenge for western communities was to grow and expand by using the natural amenities of the region. Today, the challenge for western communities lies in preserving those same amenities even under pressures exerted by growth.

So, how can we, as concerned citizens and practitioners, act together to strengthen communities? How can we enable communities to take advantage of the benefits but avoid the detrimental impacts of growth, which threaten to undermine their sustainability? We can encourage rural communities to use leading indicators to prepare for growth.

Leading indicators can serve to motivate communities to shape their own destinies. Indicators allow rural communities to measure their growth, while constantly monitoring their progress toward sustainability. The whole point of indicators is to establish a process in rural communities that will set standards and offer real guidance as to what should be done and how performance should be measured so that progress toward goals can be assessed. Indicators act as a report card, a tool for charting the results of local growth planning efforts. Indicators give communities help in determining

where, amid the flurry of growth and change, they need to focus their attention.

But even the completion of the steps presented in this thesis, while a useful tool for identifying, measuring, and applying indicators, will not change policy or promise planning. An indicator is nothing more than a signal, which once received requires a response, an action. Only with action is there likely to be a change in the status of the indicator. This action could be a simple change such as an individual's decision to create a neighborhood alliance or a complex, multi-year effort to modify subdivision codes. In either case, the indicator serves as the beginning, the foundation for further action.

The rural communities of Missoula County are wrestling with how to grow and change in ways that have positive impacts on their well-being. The critical question remains: can these rural communities, and others around the West, grow and still be healthy and sustainable. My answer to that question is "YES," if prepared to identify, measure, apply, and act on leading indicators.

APPENDIX I SECONDARY DATA SOURCES

These sources are alphabetically listed by name of source. The indicator information provided by each source is listed under its dimension.

- **SOURCE:**

Blackfoot Telephone Cooperative, Inc.
Nina Duncan or Mary Kelly
721.2121

Socio-Cultural: Workloads of utility linemen
Phone installation

- **SOURCE:**

Bolle Center for People and Forests, University of Montana
Jim Burchfield
243.6650

Socio-Cultural: Likelihood model

- **SOURCE:**

Census and Economic Information Center, Montana Department of
Commerce
Jan Clack or Dave Martin
406.444.4124/406.444.2896

Demographic: County population
Rural population
Elderly population

Economic: Economic status of source states
Change in Income and consumer prices
State and local tax collections
State and local expenditures
Transfer payments
Per capita personal income
Poverty
Employment
Employment concentration
Average annual employment for selected industries and
per worker earnings
Service sector employment
Natural resources sector employment
Self-employment and wage salary earners
Bank resources and lending
Housing affordability

Missoula County farm income and expenses
 Commodity prices
 Farm operators by age
Environmental: Farm and ranch acreage
 Number of farms and ranches
Socio-Cultural: Crime rates for major offenses
 Juvenile crime
 Moving statistics
 Building permits

• **SOURCE:**

Center for Research Management
 Terry Minger or Meredith Miller
 303.832.6855

Economic: Potential for location or relocation of chain stores

• **SOURCE:**

Center for the Rocky Mountain West
 Larry Swanson
 549.4820

Demographic: County population

Socio-Cultural: Average annual daily traffic count

• **SOURCE:**

City of Missoula Police
 Willie Reed
 721.5700 x4668

Socio-Cultural: Neighborhood watch groups

• **SOURCE:**

Federal Reserve Bank of Minneapolis
 Rob Grunewald
 800.328.8355/612.340.2443

Economic: Bank resources and lending

• **SOURCE:**

Institute for Tourism and Recreation Research, University of Montana
 Norma Nickerson or Neil Christensen
 243.5686/243.2328

Socio-Cultural: Lodging statistics

- **SOURCE:**

Lambros Realty
 Karen Kemple-Jones
 543.6663

Socio-Cultural: Out-of-County information requests and web page hits
 Land for sale

- **SOURCE:**

Missoula Association of Realtors, Inc.
 Mae Hassman
 728.0650

Socio-Cultural: Land for sale

- **SOURCE:**

Missoula City-County Health Department
 Jim Carlson or Margaret Siemens
 721.5700 x3366

Socio-Cultural: Septic permits

- **SOURCE:**

Missoula City-County Offices
 721.5700

Socio-Cultural: Government office annex and creation of satellite offices
 Requests to County for new and different types of
 services
 Battles over and demands for services
 Workloads of County personnel

- **SOURCE:**

Missoula Electric Cooperative, Inc.
 Kirk Flynn
 721.34433

Socio-Cultural: Workloads of utility linemen
 Electrical installation

- **SOURCE:**

Missoula Housing Task Force
 Nancy Leifer
 728.7666

Economic: Housing affordability

- **SOURCE:**

Montana Agricultural Statistics

Curt Lund

406.444.1240

Economic: Missoula County farm income and expenses
Commodity prices
Farm operators by age
Livestock producers

Environmental: Primary Land Use
Farm and ranch acreage
Number of farms and ranches

- **SOURCE:**

Missoula Area Chamber of Commerce

Beverly Jones

543.6623

Economic: State and local tax collections
Per capita personal income
Employment

Socio-Cultural: Out-of-County information requests

- **SOURCE:**

Missoula Office of Planning and Grants

721.5700 x3456

Environmental: Primary land use - Pat O'Herren
Riparian habitat - Pat O'Herren
Threatened, endangered, and sensitive species -Pat
O'Herren

Socio-Cultural: Crime rates for major offenses - Pat O'Herren
Juvenile crime - Pat O'Herren
Quality of life - Cindy Wulfekuhle - survey
Neighborliness - Cindy Wulfekuhle - survey
Increased concern about taxes - Cindy Wulfekuhle -
survey
Public meeting attendance - Planners
Subdivision statistics - Lisa Moisey
Building permits - Pat O'Herren

- **SOURCE:**

Missoulian

Steve Woodruff

523.5200

Socio-Cultural: Number of letters to the editor of local newspaper

- **SOURCE:**

Montana Board of Crime Control, Department of Justice
Don Crabbe
406.444.2077

Socio-Cultural: Crime rates for major offenses
Juvenile crime

- **SOURCE:**

Montana Department of Fish, Wildlife, and Parks
542.5506

Environmental: Riparian habitat - Don Peters
Threatened, endangered, and sensitive species - John
Firebaugh
Fishing pressure - Dennis Workman
Wildlife-human conflict - John Firebaugh
Recreational and public lands user conflict - John
Firebaugh

- **SOURCE:**

Montana Department of Motor Vehicles
Lee Bain
406.846.6005

Socio-Cultural: Surrendered out-of-County licenses

- **SOURCE:**

Montana Department of Transportation
Dan Bison
406.444.6122

Socio-Cultural: Average annual daily traffic count

- **SOURCE:**

Montana Film Office, Montana Department of Commerce
Maribeth Goodrich
406.444.2654

Socio-Cultural: Montana-based productions

- **SOURCE:**

Research and Analysis Bureau, Montana Department of Labor and Industry
Marla Ducello
406.444.2430

Economic: Potential for creation of entrepreneurship and new
businesses

- **SOURCE:**

Travel Montana, Montana Department of Commerce
Janis Wannebo
406.444.2654

Socio-Cultural: Airport statistics

- **SOURCE:**

U-Haul
Diane Segura
800.528.0361/602.263.6194

Socio-Cultural: Moving statistics

- **SOURCE:**

United States Postal Service Postal Business Center
Sue Olsen
329.2231

Socio-Cultural: Mail boxes by zip code

- **SOURCE:**

United States Small Business Administration
Linda Kindrick
406.441.1090

Economic: Small business administration loans

APPENDIX II

LIST OF INTERVIEW CONTACTS

Badenoch, Geoff	Missoula Redevelopment Agency
Belsky, Jill	The University of Montana Sociology Department
Bender, Bruce	Missoula City Engineer
Burgess, Chuck	Graduate Student, The University of Montana School of Forestry
Burchfield, Jim	The University of Montana Bolle Center
Campbell, Bob	Montana Business Connections
Cates, Rosalie	Women's Economic Development Group
Chase, Douglas	Missoula County Sheriff
Christensen, Neil	The University of Montana Institute for Tourism and Recreation Research
Clough, Rich	Montana Department of Fish, Wildlife, and Parks
Cohn, Matthew	Travel Montana, Helena, MT
Daly, Carol	Flathead Economic Policy Center, Kalispell, MT
Deaton, Lucy	Missoula Rural Fire Administrative Manager
Dewing, David	Missoula Office of Planning and Grants
Doyle, Dan	The University of Montana Sociology Department
Duncan, Nina	Blackfoot Telephone Cooperative
Erickson, Lill	Corporation for the Northern Rockies, Livingston, MT
Flynn, Kirk	Missoula Electric Cooperative
Graham, Carole	Missoula Human Services Director
Hall, Tim	Missoula Office of Planning and Grants
Hammond, Vicki	Montana Association of Realtors
Hart, Fern	Missoula County Commissioner
Hassman, Mae	Missoula County Association of Realtors
Hefner, Bob	AT&T Capital Corporation
Jackson, David	The University of Montana School of Forestry
Jaworsky, Michael	Missoula Area Chamber of Commerce
Kailey, Ken	Missoula County Surveyor Office
Kaiser, Randy	Missoula County Residential Appraiser
Kaufman, Nick	WGM Group
Kemmis, Dan	Mayor of Missoula
Kemple-Jones, Karen	Lambros Realty

Klaphake, Ron	Missoula Area Economic Development Corp
Klette, Cindy	Missoula Office of Planning and Grants
Kress, Mike	Mountain Line
Landkammer, Mark	Missoula Office of Community Development
Leahy, Ellen	Missoula Health Director
Maiorano, Brian	Missoula Office of Planning and Grants
McCool, Steve	The University of Montana School of Forestry
Miller, Paul	The University of Montana Sociology Department
Mohesky, Zoe	Missoula Office of Planning and Grants
Nickerson, Norma	The University of Montana Institute for Tourism and Recreation Research
O'Herren, Pat	Missoula Office of Planning and Grants
Palmer, Kara	Sustainable Seattle, Seattle, WA
Power, Thomas	The University of Montana Economics Department
Rasker, Ray	Wilderness Society, Bozeman, MT
Riebsame, Bill	The University of Colorado Geography, Department, Boulder, CO
Snow, Don	The Northern Lights Institute
Sperry, Charlie	Graduate Student, The University of Montana School of Forestry
Supplee, Kate	Missoula Office of Planning and Grants
Swanson, Larry	Center for the Rocky Mountain West
Taylor, Alan (Pete)	Swan Valley Citizen's Ad Hoc Committee
Van Genderen, Heidi	Tyler Norris Associates, Boulder, CO
Woodward, Al	Seeley Lake Community Council
Woodruff, Steve	Editor of the <i>Missoulian</i>
Zimorino, John	Missoula County Association of Realtors

APPENDIX III CONTACT INTERVIEW FORM

Name:
Address:
Phone:
Organization/Company:

How long have you lived in Missoula County?

How long have you worked in your present position?

What changes have you noticed in Missoula County in the last:
year?

2 years?

5 years?

Do you view these changes positively or negatively?

Would you call any of these changes "indicators of growth?" If so, which ones?

Can you recommend any sources of data?

Other comments:

APPENDIX IV

QUALITATIVE RESEARCH METHOD GUIDES

- *The Practice of Social Research Seventh Edition*
Babbie, E.
Wadsworth Publishing Company, New York, NY
- *Doing Qualitative Research.*
Crabtree, B. and W. Miller.
Sage Publications, Newbury Park, CA
- *The Basics of Qualitative Research*
Strauss, A. and J. Corbin
Sage Publications, Newbury Park, CA

APPENDIX V

GRAPHIC APPLICATION OF LEADING INDICATORS

Those interested in learning more about the graphic forecasting possibilities currently available could contact:

- Wayne Freimund, Professor at the University of Montana School of Forestry, Missoula, Montana

or

- Bob Sneickus Landscape Architect at the Natural Resource Conservation Service, Davis, California

APPENDIX VI

COMMUNITY ASSESSMENT QUESTIONS

The following is a list of suggested questions for community assessment. Though by no means exhaustive, this list is a starting point and can serve to begin the process of acknowledging community growth and change. Answering these questions may be a start to identifying a growth management outcome and working toward it. Rural communities must understand that efforts, such as this project, are a local start to establishing a regional capacity to address the on-going issue of growth.

-
- How is this community changing?
 - What forms is that change taking - both locally and in the broader
 - How is the community presently affected by change?
 - How will these changes affect the community in the future?
 - What is Missoula County doing right to address these changes?
 - What must still be done to ensure community sustainability?
 - What are the particular areas of concern that will be affected by growth?
 - What components of Missoula County make it a healthy community?
 - How are these components connected?
 - How do we protect our communities while meeting everyone's basic needs?
 - How do we manage growth and keep our economy dynamic?
 - What are the resources available to the community that help in withstanding pressure from growth - "resistant resources"?
 - What are the components of the community that contribute to the stress of growth - "stressors"?
 - Can communities in rural Missoula County contend with the "stressors" and succeed?
 - How can planning for growth increase the community's likelihood of success?
 - How can planning act to create a community that contains people who can effectively use their "resistant resources" to contend with "stressors"?
 - How can community planners and decision-makers encourage the public to become more involved?
 - How can those community members who don't normally "toe the line" be encouraged to participate?
 - Who can further the pro-active, growth management efforts in a community? region?
 - How do local citizens accept ideas?

- Why do local citizens reject ideas?
- Why do local citizens get involved in community issues?
- When do local citizens resist change?
- When can sources of local resistance be reduced?
- How can local norms and values be characterized?
- Who or what in the community possesses sources of social power?
- How does local community power work?

APPENDIX VII COMMUNITY PLANNING AND DEVELOPMENT SOURCEBOOKS

While these are not the only sources of planning and development information available to communities, this list includes several very helpful guides. When possible, the price and publisher are listed following the title and author.

- *Take Charge: Economic Development in Small Communities*
Ayers, J. R. Cole, C. Hein, S. Huntington, W. Kobberdahl, W. Leonard, and D. Zetocha
North Central Regional Center for Rural Development,
1990
\$14.00
- *Communities in the Lead: The Northwest Rural Development Sourcebook*
Fosum, H.
Northwest Policy Center, University of Washington, Seattle, WA
1993
\$30.00
- *Flathead Gauges*
Sunrift Center for Sustainable Communities
Flathead Economic Policy Center, Kalispell, MT
1995
- *Atlas of Social Indicators for the Upper Columbia River Basin*
Machlis, G., J. Force, and J. McKendry with Middlebury College Students
Interior Columbia River Basin Ecosystem Management Project, Walla Walla,
WA
1995
- *Oregon Benchmarks: Standards for Measuring Statewide Progress and
Government Performance*
Oregon Progress Board
Oregon Progress Board, Salem, OR
1992

- *Designing Development Strategies in Small Towns*
Pulver, G. and D. Dodson
Aspen Institute, Aspen CO
1992

- *Measuring Changes in Rural Communities: The Workbook for Determining Demographic, Economic, and Fiscal Trends*
Rasker, R., J. Johnson, and V. York
Wilderness Society, Northern Rockies Regional Office, Bozeman, MT
1995
\$15.00

- *Toward Sustainable Communities: A Resource Book for Municipal and Local Governments*
Roseland, M.
National Roundtable on the Environment and the Economy, Ottawa, Ontario

- *Rural Environmental Planning for Sustainable Communities*
Sargent, F., P. Lusk, J. Rivera, and M. Varela
Island Press, Washington, D.C.
1991
\$25.95

- *Saving America's Countryside: A Guide to Rural Conservation*
Stokes, N., A. Watson, G. Keller, and J. Keller
Johns Hopkins University Press, Baltimore, MD
1989

- *Indicators of Sustainable Community*
Sustainable Seattle, Metrocenter YMCA, Seattle, WA
1993/1995
\$15.00

- *Sustainable Communities: A New Design Synthesis for Cities, Town, and Suburbs*
Van der Ryn, S. and P. Calthorpe
Sierra Club Books, San Francisco, CA
1986

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- Boone and Crockett Wildlife Conservation Program. "Considerations for Sustainability in the Crown of the Continent Ecosystem." Missoula, MT: University of Montana, School of Forestry, Final Report of Forestry 595-5, 1994.
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- Culbertson, K., D. Turner, and J. Kolberg. "Toward a definition of sustainable development in the Yampa Valley of Colorado." *Mountain Research and Development* 7 (1993) : 13-24.
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