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Tourism Dependency and its Correlation to Selected Socioeconomic Indicators in Utah

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SOCIOECONOMIC INDICATORS IN UTAH

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ABSTRACT

Tourism Dependency and Its Correlation to Selected

Socioeconomic Indicators in Utah

by

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This paper investigates the relationship between tourism and well-being, or quality-of-life, within eighteen counties in Utah. To evaluate the relationship, comparisons of the counties' differing levels of tourism versus their levels of welfare are necessary. To make these comparisons, three basic steps were followed. First, a social ordering model was derived. The proposed social ordering model was based upon Maslow's theory of the hierarchy of human needs. By utilizing his theory, both economic and noneconomic indicators were identified, and a basis was provided upon which to judge the differing positions of well-being. Factor analysis was applied to this model in order to aggregate the indicators and derive a single quality-of-life index. Second, a measurement of tourism was developed. A direct measurement of the level of tourist activity was not available. An indirect indicator of tourism was estimated by taking the proportion of total gross taxable revenue earned by eating and drinking establishments and taxable room sales. The

derived indirect variable was more reflective of comparative tourism dependency levels than of the actual level of tourism. Therefore, the variable was renamed tourism dependency. Third, the correlation between quality-of-life and tourism dependency was calculated. A Pearson correlation coefficient test was performed from which initial results suggested a potentially strong negative relationship between the particular qualifiers of well-being used here and tourism. It was apparent that the two variables that could be defined by certain available indicators were not perfect measurements of the proposed variables, but aspects or components of the desired variables. Each reflected certain attributes of the proposed variables, but not the total concept. A possible explanation for the strong inverse relationship between the qualifiers of quality of life and tourism in this study may be each county's potential for economic diversification. Other studies have shown that areas that are dependent upon a single resource may experience higher levels of economic, demographic, and social instability as compared to those areas with a more diverse economic base. These factors, which in this model would lead to lower values for the calculated quality-of-life indicator in those counties, were estimated to be more tourist dependent.

(104 pages)

CHAPTER I

INTRODUCTION

Utah is endowed with a rich physical resource base found in its land area and uncommon geological features. The state's geology provides numerous natural areas renowned for scenic beauty and recreational use.

The state encompasses 52.7 million acres of land. Of this, 71.5 percent (including Indian lands) is federally owned, 7.0 percent is state owned, and only 21.5 percent is privately owned (Wahlquist). The land that is federal and state owned is administered by agencies of the government, and, therefore, most land-management decisions are made within the public rather than the private sector. Thus, the people of the state are dependent upon the policies and decisions of politicians and planners as to how and to what ends most of the land will be utilized.

In 1987, supporting economic development was one of the three highest budget priorities in 22 states, including Utah (Myers). State planners and politicians are able to influence the type, direction, and distributional impacts of economic development through various policy instruments (e.g., tax-exempt bonds, general funds, special taxes, and the provision of incentives and technical assistance). The variables that are most commonly used to measure economic development are output, employment, and income. A positive change in any one of these three variables is considered an improvement in the level of economic well-being.

Economic development, as defined in the Executive Summary of the Economic Development Plan for Utah, Draft 4, involves "wealth creation through the discovery and application of better ways to use our natural resources to produce goods and services that we value" (Utah State

Planning Office, p. 1). David W. Adams, former head of Utah's Department of Community and Economic Development, specifies three general sectors in which land, a primary resource, is utilized: the agricultural sector, the goods-producing sector, and the service sector. Since much of the land is publicly owned, it is the role of the state planners to decide which of these sectors will most effectively promote the economic well-being of the state. Dependent upon their choice of policies, the role of any given sector will be enhanced or reduced.

The agricultural sector has predominated as the primary resource user at some point in the history of most states. Utah is not an exception. Since 1940, farm cash receipts have nearly doubled in real dollars. However, during the period from the 1950s to mid 1980s, real net farm income generally declined and farm debt increased. The number of bankruptcies, foreclosures, and forced sales has increased as farmers have no longer been able to borrow against equity. Financial problems in agriculture affect other sectors of the Utah economy, especially in rural areas. An out-migration from the rural agricultural regions due to high unemployment has led to diminishing viability in many communities (Andersen and Snyder).

Utah's goods-producing sector, which includes mining, manufacturing, and construction, also requires the use of the primary resource, land. During the 1970s, economic growth was supported by high demand for mined goods, which created 3,000 to 4,000 jobs annually in nonmetropolitan Utah. In 1981, employment in the mining industry peaked, and by early 1983, a decline had set in. Copper prices fell and there was a softening of demand for coal and uranium. Furthermore, after OPEC dropped its oil prices in

1983, drilling activity for Utah oil declined by 27 percent. These factors have caused several major companies to either cut back or shut down, creating high unemployment in the mining and oil-producing industries (Utah State Planning Office).

The decade of the 1970s was a time of strong economic growth for the state. From 1970 to 1975, employment increased by 23 percent. Between 1976 and 1980, employment grew by 25 percent. The recession of 1980-1982 caused the employment growth rate to decline to 13.6 percent, resulting in an increase in the unemployment level to 10.5 percent. Since 1982, employment has shifted from agriculture, mining, and construction to services and retail trade. In 1985, employment growth was concentrated in personal business services and amusements (5,500 new jobs), local government (2,700 new jobs), and eating and drinking establishments (2,500 new jobs) (Utah State Planning Office). It is recognized that there is little prospect that agriculture or natural resource development will return to the level of activity that characterized the 1970s. Given the decline in these two sectors and Utah policymakers' desire for economic growth, attention has shifted increasingly to the economic impacts of growth in the service sector.

The service sector includes everything not included in the agricultural and goods-producing sectors. It is a broad sector encompassing many industries. In particular, one of those industries, recreation and tourism, is receiving the attention of many politicians and state planners. Tourism is the nation's second largest employer, creating almost 5 million jobs, and is one of the top three employers in 75 percent of the states (Myers). State planners in Utah believe that tourism offers

a logical alternative to the decline of manufacturing, agriculture, and mining activities. David W. Adams said:

> Governor Bangerter and I feel that one of the prime targets within the service sector is the travel and tourism industry, or more correctly, the several industries that comprise the travel business. We feel travel and tourism are just beginning to realize their potential and that the state of Utah is largely untapped as far as its full tourism possibilities go. (p. 2)

There are high expectations for the positive benefits to be obtained from tourist expenditures in Utah. These expectations were expressed by Wayne Owens before the Salt Lake Area Chamber of Commerce: "I think every penny invested to promote economic development, tourism, and conventions is money well spent . . . and that a boost in tourism is the quickest economic fix available to us" (p. 20A). Adams supported this view: "Travel and tourism development, then, will play a key role in our economic development policy and will be a priority in the allocation of our resources" (p. 2).

However, questions about the merits of economic development have arisen with respect to the balance of the growth and the distribution of the material benefits. Even the definition of development itself "is being challenged, not only in its economic interpretation but in its social, political, and human dimensions as well" (de Kadt, p. xi). There is greater awareness that development frequently results in "nonquantifiable tradeoffs between material and sociocultural costs and benefits" (p. 45).

This tradeoff is particularly true of development that results from and is dependent upon increases in tourism. Tourism by its nature is an export industry. However, it differs from other export activities because

the consumer of tourism goods and services comes to the exporting region rather than the goods and services going from the region to the consumer. This factor increases the chance for social, cultural, and political impacts upon the local community (de Kadt). Many of these impacts will be positive while others will be negative.

Rarely are the changes in the social structure of tourism development areas assessed or predicted beforehand. The sociocultural changes, together with the effects on employment and income, must be considered jointly to provide a comprehensive understanding of the full relationship of tourism and the development and well-being of an area.

Statement of the Problem

Little empirical research has been done which incorporates and evaluates the sociocultural effects of tourism on economic development. Due to the difficulty of valuing these nonmonetary variables, the sociocultural factors are frequently omitted or excluded from any economic development theory. This deficiency in theories diminishes their relevance to applied research into either predicting or assessing the socioeconomic development of an area. To effectively evaluate the impact of tourism, time series data are needed that measure the socioeconomic development or decline of a region in relation to the level of tourist activity. With these data, it may be possible to explore whether there is a correlation between tourism and socioeconomic development.

Objectives

Utah's state planners are concerned with the economic development of the state. They believe the tourist industry can promote development

through economic growth and that economic growth is synonymous with social and economic welfare. It is generally thought that a simple and direct relationship exists between economic development and the well-being of the state. However,

> it is fully recognized that what we call economic development is only one, basic, but not the most important, aspect of an over-all social development. The purpose of economic development is attainment and maintenance of economic wellbeing. The latter is only one aspect of over-all human well being which is called quality of life. (Zinam, pp. 55-56)

The specific objectives of this research are the following:

1. To develop an approach to measure levels of tourist activity

2. To develop a social indicator model to measure changes in welfare

3. To develop a composite index of the quality of life for specified counties in Utah

4. To determine whether a correlation exists between the level of tourist activity, the socioeconomic indicators, and the quality-of-life index

CHAPTER II

LITERATURE REVIEW

Since the 1970s, interest has increased in tourism as a legitimate area of study. Jafari and Aaser compiled a list of all doctoral dissertations on tourism that were published from 1951 through most of 1987. One hundred and fifty-seven dissertations on tourism were completed. Of these, only 25 were published before 1970.

Most tourism researchers are trained in one of the social science disciplines. They apply concepts and methods from a variety of disciplines, including economics, anthropology, sociology, geography, recreation, and urban/regional planning. Within these disciplines, the literature on tourism can be divided into several general subject areas: economics, marketing/management, development, impact analysis, and motivation studies (Dann, Nash, and Pearce).

The economic research that has been done in the area of tourism is primarily statistical. It focuses on benefit/cost analysis, multipliers, the demand function of tourism, the estimation of dollar leakage from the host community, and tourism's contribution to the gross national product. Some economic studies have estimated the investment costs for the host society. Marketing and management are often associated with economic analysis. They treat tourism as a good or product that is packaged and sold to consumers.

Development theorists examine tourism within the framework of national progress. They are concerned with evaluating whether tourism has a positive or negative long-term impact on the well-being of a region or

nation. Whether tourism is viewed as beneficial or detrimental depends upon the particular development theory that is espoused. According to Loukissas, there are three views of the impact of tourism on regional development.

The first view is that there is a positive relationship between tourism and the influx of dollars from outside a region. As a result of the influx, there is an increase in income and employment opportunities. The local economy is strengthened; transportation and the supply of public services are improved; museums, theaters, cultural events, and the refurbishing of communities are supported by visitors; and small businesses that serve tourists achieve the margin of scale necessary for viability.

The second view is not as positive. Its advocates the belief that an emphasis on tourism attracts labor away from other productive sectors to "easy-profit" tourist enterprises. The local economy then becomes dependent upon the cycles and fluctuations of the national market.

The third view provides a neo-Marxist perspective of the impact of tourism. Its proponents believe that only those who control the resources allocated to tourism will gain from increases in the tourist industry. The majority of an area's populace will be exploited and used for the benefit of a few. Thus, until there is a change within the existing socioeconomic system, the impact of tourism will be negative.

The impact-analysis approach is closely associated with the development approach, but it examines the immediate impact rather than future implications of tourism. It measures effects of tourism on a host community without proposing alternative development strategies.

Conversely, motivation studies seek to understand the tourist and the inducements to becoming a tourist in an area. It examines the attitudinal and behavioral attributes of the tourist rather than of the host community.

The interdisciplinary nature of tourism research has both positive and negative aspects. One of the positive attributes is that it involves an array of fields that can and do contribute to studies on tourism. The methodological and theoretical approaches that are explored and used to advance the understanding of tourism are innumerable. Under the aegis of the various disciplines there has been a

> Tendency to gloss over questions of theory and method and concomitant failure to acknowledge their interrelationship. As a result, research often falls into one of the following three categories: theoretical discourse without empirical foundation; descriptive essays which assemble a collection of impressionistic and anecdotal material; and data analysis devoid of theoretical content. (Dann, Nash, and Pearce, p. 16)

As noted by Kjellstrom, the lack of available and quality data has further hampered the birth of a clear tourism methodology. Tourism data are rather poor and occasionally even nonexistent not only in developing countries, but also in most developed countries. In part, this is due to the tremendous difficulties of collecting many types of reliable tourism data. The result of this has been a decrease of motivation to create a coherent, conclusive tourist study methodology of general applicability.

Research on tourism is becoming more scientific, but there is still a need to standardize terminology, make data collection consistent, improve data validity, and systemize measurements of tourism and related variables.

Tourism Research in Utah

Researchers of tourism in Utah have focused on the development of methods of data measurement, collection, and validity. In 1968, Dr. John Hunt at the Institute of Outdoor Recreation and Tourism, Utah State University, began to develop an entrance-diary methodology. Diaries were given a sample of visitors as they entered Utah. The diaries were to be used to record information about the visitors' trips through Utah. This work was continued by several individuals in the 1980s. This methodology, in conjunction with a front-end questionnaire, was found to be a useful way of obtaining tourist information in Utah. The questionnaire was to be completed when the sample visitor party entered the state and was given the entrance diary. These methods of questionning provided extensive data by state, region, and community at a relatively low cost. In addition, Hunt relied on traffic data provided by the Utah Department of Transportation for estimating the total number of nonresident visitors. The data they gathered have been used to produce estimates of such variables as traveler numbers, expenditures, attractional visitation, and travel patterns. The emphasis of tourism research in Utah has been on the tourist, and impact-study findings have been based on the estimated value of expenditures by tourists. There have been few, if any, measurements of the social, political, cultural, or environmental impacts of tourism on host communities. Harrigan, writing about tourism in the Caribbean, observed:

> It is time to develop something that measures the relationships between the socioeconomics of tourism and the psycho-cultural well-being of the person living in an island system dependent on tourism. At present we do not even know

what elements to combine in order to make a sensible
measurement. (p. 23)

His statement is applicable to tourism research in Utah.

There are several reasons impact studies have emphasized economic
benefits rather than noneconomic effects. Two of the primary reasons are
the following:

1. Economic data have been collected and recorded. There are
scientific theory and methodology with which research can be conducted and
the data analyzed.

2. Generally, the interest of state and local governments is to
maximize the economic benefits to a given locale.

Benefits and Costs of Tourism Development

The leading reasons cited for the promotion of tourism, whether for
a small island nation, a lesser developed country, or a developed country,
are the economic benefits. The economic impacts are most obvious in the
creation of jobs and subsequent increase in employment opportunities for
the region. Boissevain studied the perceptions of tourism of the residents
of Gozo, Malta. In general, the Gozitans view tourism positively,
especially with respect to economic factors. Employment possiblities on
the island reduce the out-migration of young people. They also provide
modest incomes for the women and girls who produce Goza lace. Alan G.
LaFlamme reported similar findings in the Bahama Islands. He stated that
since the expansion of tourism in the 1960s, there have been dramatic
increases in the material living standards of all community members. As
in Goza, the employment opportunities for women have increased. As a
result, many women have left their homes to work in tourism-related jobs.

Even in the developed-country environment of Hawaii, the residents recognize and desire the employment and income that tourism generates (Liu and Var).

Furthermore, international tourism is expected to provide economic benefits at the macro level. It draws foreign monies and, thus, improves the balance-of-payment position of a nation (Jafari). There is also an expectation that the exposure of a region and the selling of its positive attributes will attract additional investment to sectors outside the tourist industry (LaFlamme; Liu and Var).

Many of the economic benefits also have negative impacts. After the introduction of casinos in Atlantic City, there was an increase in employment in the transportation and service sectors between 1975 to 1980; but the number of jobs in manufacturing, wholesale, and retail trade declined. The number of visitors to Atlantic City increased by 329 percent from 1978-1982. Although the casinos generated a substantial increase in tourism with some resultant economic benefits, there were also negative consequences.

> First there was a need for better public facilities such as access roads, parking, and public transportation. Second, the increase in property values has meant that fewer people could afford to buy real estate or rent apartments. Property values have nearly quadrupled between 1970 and 1980. The lack of skills among the local population has led to the continuation of a third problem: umemployment. Many professional workers had to be recruited from other counties and states to fill the newly created jobs. Fourth, the new facilities and patronage required increased essential public services such as police and fire departments. (Liu, p. 151)

Misunderstanding and resentment may also be factors in tourist/host interactions. Tensions and resentment sometimes arise as regional

resources are allocated to serve the tourist and are not used to meet the needs of the region. The argument to allocate local resources to develop the tourist industry with expectations of greater returns than costs is further undermined by leakages from the local economy (Jafari). These leakages occur because many of the large tourist enterprises are owned by investors from outside the region who reinvest their profits in other areas. These problems are not concerns solely of developing countries. Similar, if not identical, issues can arise in any nation or region that is experiencing an increase in tourism.

Another possible social cost is the loss of community cohesion (Runyan and Wu). In one small Vermont community a study found that

> The development of the phony-folk culture in Vermont is disruptive to traditional values, distorts and cheapens them especially for local children, and dilutes native commitment to the public ideology. The natives are strip-mining their culture, both material and non-material, in order to sell it to outsiders...

> ...Development of the phony-folk culture threatens Vacation Village. As the public image and ideology are eroded, Vacation-Village-- as a community and as an agent of socialization and social control-- fails to perform an important function for the native. (Jordan, pp. 50-51)

The impact of tourism on the environment is of additional concern to host-community residents (Liu, Sheldon, and Var). In many areas, coastal waters are threatened by garbage (Wall and Ali), litter is left on the beaches (Boissevain), and coral reefs are being destroyed (Britton). On the land, there is depletion of groundwater and high levels of soil erosion (Britton).

The social, cultural, and environmental benefits or costs of tourism will impact the economic returns either positively or negatively. When

these effects are negative, the cost of these factors is often perceived by residents to be greater than the economic gains, thereby mitigating the net benefits (Wall and Ali; Runyan and Wu; Liu, Sheldon, and Var). The concern residents express about these issues delivers a clear message to those advocating the development of tourism. Developers must consider the social/environmental impacts as well as the economic ones if they are to garner support for tourism development. It is possible with careful thought and planning to minimize the social and environmental costs of tourism. Positive social/environmental changes, in conjunction with increasing tourism, can be attained with preestablished objectives and implementation plans.

Social Indicators Movement

Until recently, there has been a tendency to approach the study of tourism with an either/or approach, either economically or social/environmentally (de Kadt). For a comprehensive understanding of the impacts of tourism, it is necessary to use a methodology that incorporates economic as well as noneconomic effects. The use of social indicators is one system of measurement that has been explored as a method to weigh both negative and positive economic and noneconomic factors and evaluate the net benefit. These indicators can be weighed and aggregated to form an index of the quality of life.

It is generally acknowledged that the work of William F. Ogburn is the major antecedent to the social indicators movement. In his 1922 work, Social Change, Ogburn argued that societal changes can be explained through the study of culture and its development. Ogburn believed that technological change is the leading cause of cultural and social change.

To test his theory empirically, he emphasized the need for quantitative descriptions in the form of statistical time series. If these were not available, carefully described observations were to be used (Land; Carley).

A renewed interest in the use and development of social indicators arose in the United States during the Kennedy administration. In 1962, the National Aeronautics and Space Administration commissioned the American Academy of Arts and Sciences to undertake a project to determine the nature and magnitude of the unintended consequences of the space program on American society. Because of the scarcity of data directly relating the space program to specific changes in society, those involved shifted the focus of the study to the more general issue of monitoring changing social conditions. Raymond Bauer edited the ensuing book, Social Indicators, which was published in 1966. Bauer and his colleagues argued for the development of improved statistical information, systematic social accounts, and methodologies for determining the relationship between social indicators, social goals, and policy-making (Rossi and Gilmartin).

Additional research on social indicators was endorsed and funded by the national government. At the same time, the Russel Sage Foundation set up an in-house project for monitoring social changes. Indicators of Social Change: Concepts and Measurements, edited by Eleanor Sheldon and William Moore, was the first work published by the organization. Human Meaning of Social Change, by Campbell and Converse (1972) is a companion piece to the book by Sheldon and Moore. The first is concerned with sociostructural or objective indicators and the second with psychological, or subjective, indicators of attitudes, expectations, aspirations, and values (Carley).

During the 1970s, there was a sense of the potential for the development and use of social indicators. Many countries set up special task forces or national ministries to collect data and monitor social changes. The goal was, and still, is to develop the appropriate theory and methodology in which indicators can be used to measure quality of life and welfare.

To clarify what is meant by a social indicator, a comprehensive definition is necessary. Land's definition is one that is widely accepted. He states that

> Social indicators are statistics which measure social conditions and changes therein over time for various segments of the population. By social conditions, we mean both the external (social and physical) and the internal (subjective and perceptional) contexts of human existence in a given society. (p. 14)

There are several types of social indicators which are used to measure society's welfare. Two, which are mentioned in the definition, are objective indicators and subjective indicators. Objective indicators are based on counts of behaviors and conditions associated with given situations. Subjective indicators are based on reports from people about their own feelings, attitudes, and perceptions (Carley). Other types are direct versus indirect, descriptive versus analytic, and input versus output indicators (Rossi and Gilmartin).

An indicator may or may not be a surrogate for a particular variable of interest. If it is a measure of the variable itself and not a surrogate, then it is a direct indicator. For example, a component of quality of life is the health status of the population. A direct indicator of health would measure the health of the society, mentally,

physically, and for all age, race, and sex groups. An indirect indicator would measure a variable that is closely related (as determined by theory or experience) to the variables of interest. Some indirect indicators of health include: (a) the number of deaths per 1,000 live births, (b) the number of deaths by age-group per 100 persons in that age-group, (c) the median number of school loss days for illness per student, and (d) the satisfaction rating: how satisfied are residents personally with services or benefits they receive from the health sector (Carley). It is preferable to use direct indicators when possible since changes in indirect indicators may not reflect a change in the variable of concern as accurately. Descriptive versus analytic indicators differ to the extent that they are derived from a social process theory or model. Descriptive indicators consist of variables of apparent fact. They are not embedded in any explicit model of cause and effect. The number of doctors per 1,000 residents in a community is a descriptive indicator. An analytic indicator is interrelated with other variables within a theoretical framework. The analytic indicators are considered normative (i.e., conclusions are drawn whether a social effect is good or bad and a social situation is better or worse). For example, it has been theorized that high unemployment rates among young males leads to higher levels of juvenile deliquency. The general opinion is that this situation has a negative social impact. In this example, the unemployment rate among young males would be an analytic indicator.

Social indicators may be measures of input, throughput, intermediate output, or final output. Input indicators are measures of the resources available to a specific process which affects the well-being of the

people. The number of doctors available per unit population would be an objective, indirect, descriptive, input indicator used to measure health. Throughput indicators generally measure workload or caseload, such as the number of doctor visits for flu shots. Intermediate output indicators are measures of the results of specific activities performed, for example, extension of life expectancy, reduction in mortality, or decrease in infant mortality. Output indicators actually measure the quality of life such as a healthy population or a better environment. The output indicators are generally measured by subjective indicators while the other three are usually measured by objective indicators (Carley).

Factor Analysis

To develop a composite index, or a quality-of-life index, the indicators must be aggregated. The advantage of deriving a single index is that a measurement of total welfare is calculated rather than the individual factors of welfare. However, given the nearly infinite number of indicators which can be included as a measurement of quality of life or development, the composition of the single index is extremely multidimensional. There are two main issues which may arise when deriving a composite index from this type of multivariate data set. One problem is that frequently many of the variables will be highly correlated to one another. Biased and inefficient estimators will result if the traditional statistical technique of multiple regression is applied. An appropriate method which has been used is factor analysis (Adelman and Morris; Liu; Ram). This technique reduces large, diverse data sets into a few factors in accordance to the closeness of the linear relationship between the indicators. The common factors that are formed are independent or

uncorrelated, thereby, eliminating the problem of biased and inefficient estimators.

The second issue which arises in developing a composite index is how to appropriately weigh the individual variables. It is common for the researcher to weigh the indicators using his knowledge of the variables and any pertinent information. The problem with this method is that the implicit weights may not have any relationship to the weights individuals would ascribe to them. Because of this difficulty, the indicators are frequently weighted equally. If the indicators are equally weighted, the prior selection of indicators is of marked significance since the value-weighting is transferred to the choice of indicators. By using factor analysis, weights are assigned to the variables from a mathematical formation. This method eliminates the need for a researcher to use subjective judgement on the importance of the variables.

Three Tourism Studies
Utilizing Social Indicators

Three studies have attempted to measure the impact of tourism comprehensively on a host community with the use of social indicators. The impact in all three cases was on economic, social, and environmental indicators. In one of the studies (Klar, Keegan, and Warnick) objective socioeconomic measurements were used, while in the other two studies (Pizam; Allen, Long, Perdue, and Kieselbach) subjective measurements were used. Objective measurements use quantifiable measures of behaviors and conditions of given situations. Subjective measurements are based on feelings, attitudes, and evaluations.

Abraham Pizam conducted a study on tourism in Cape Cod, Massachusetts, that evaluated the socioeconomic and cultural consequences of this activity. He developed two questionnaires, one for residents and one for entrepreneurs, that examined how residents, grouped according to sociodemographic characteristics, perceived the effects upon their community of increased tourist activity. The questionnaires investigated the perception of the impact rather than measuring actual impacts and were designed to assess the residents' perceptions about environmental, social, economic, availability, and quality factors. The entrepreneur questionnaire included a business-profile section.

Pizam hypothesized that heavy tourism concentration in a destination area would lead to negative resident reactions and resultant negative behavior toward the tourist. The results of the study supported the hypothesis of negative attitude but did not explore whether it led to negative behavior.

In a later study, Klar, Keegan, and Warnick attempted to measure the actual impact of tourism on Cape Cod. They developed a set of objective economic and noneconomic quality-of-life indicators to compare rural tourist and nontourist communities. Rural communities were defined as those having a population of less than 25,000. To determine the tourism levels, they used Massachusetts' hotel and room sales-tax data and data from the Standard Industrial Classification categories of eating and drinking establishments, hotels and motels, and amusement areas. The communities included in the tourist sample were required to have more than ten eating and drinking establishments, more than four hotels and motels, and more than three amusement areas.

Forty variables relevant to rural settings and measurable through secondary data sources were selected as quality-of-life indicators and used to measure both the economic and noneconomic aspects of the community. Factor analysis was performed on the indicators to determine groupings.

The study tested the hypothesis that there were differences in the quality-of-life indicators of rural tourist and nontourist communities. The study found significant differences among the mean scores of a number of the indicators. Overall, a trend emerged that suggested that a number of quality-of-life factors are lower in tourist communities than in nontourist communities.

Allen, Long, Perdue, and Kieselbach combined concepts and methodologies from the previous studies for Cape Cod. They hypothesized that residents' perceptions of community life vary with the level of tourism development. They wanted to determine whether variance in resident perception would provide information on the host communities' carrying capacity for tourism development. As in the Pizam study, they measured the residents' perceptions of the impact of tourism through the use of a questionnaire. The questionnaire garnered information about the residents' perceptions of the importance of and their satisfaction with 33 elements of community life. Using multivariate analysis and previous research, the indicators were grouped into 7 dimensions of community life: public services, economics, environment, medical services, citizen involvement, formal education, and recreation services and opportunities.

The degree of tourism development was determined through an analysis of lodging, eating, and drinking establishments' retail sales as a

percentage of the community's gross retail sales receipts. This measurement of tourism level is similar to that in the study by Klar, Keegan, and Warnick. The percentage of retail sales attributed to tourism activities was the independent or predictor variable. The measures of community life were the dependent variables.

The results of the study suggest that residents' perceptions of community life are impacted by the level of tourism. In particular, certain dimensions of community life appear to be more sensitive than others. These include public services, environmental concerns, and opportunities for citizen involvement. In general, the findings suggest that low to moderate levels of tourism development are beneficial to the community, but as development continues perceptions become increasingly negative.

Synopsis

State planners in Utah should examine the experiences of other regions to evaluate, assess, and possibly revise their expectations of tourism and its impact upon the total welfare of the state. It is particularly apropos with Utah's bid for the 1998 Winter Olympics, that the state planners carefully assess all potential impacts, not just the economic factors. Prior planning and analysis of the effects on all aspects of life in Utah will help decrease any socioeconomic or environmental costs, and increase the net benefits to the people of the state. In general, tourism can have positive economic returns, but that fact does not necessarily insure improvement of the total well-being of the people. As Pigou stated in The Economics of Welfare,"The real objection is not that economic welfare is a bad index of the total

welfare, but that an economic cause may affect noneconomic welfare in ways that cancel its effect on economic welfare" (p. 12).

The objective most frequently cited for promoting tourism is solely to enhance the economic stability and growth of an area without consideration for its total impact. It is notable that tourism is touted as a way to boost a failing or declining regional economy. A traditional economic order is no longer functioning at a level that meets the needs of the people, and a new economic order is sought and imposed on the old system. The development and imposition of a nontraditional economic system causes a spillover effect on the sociocultural aspects of the society. Traditional social values cannot support the new economic order. The resultant sociocultural impacts must be identified and appropriate structural changes made to aid the society during the transitional period.

Economic and sociocultural factors are threads interwoven into a tapestry that defines a society. If one thread is pulled from the weaving, the whole may unravel. To change one factor, the impact on the whole must be evaluated and modifications made if the tapestry is to remain harmonious. To ignore the interrelationships and dependencies among the factors will undermine the society. For these reasons, if tourism is to be a positive catalyst for a new, vibrant economic order, an evaluation of its impacts is mandatory.

CHAPTER III

WELFARE ECONOMICS AND SOCIAL ORDERING

The science of welfare economics can be defined as a "branch of study which endeavours to formulate propositions by which we can say that the social welfare in one economic situation is higher or lower than another" (Ng, p. 264). The intent of this study is to evaluate the alternative economic position due to increasing tourism on the socioeconomic well-being of the people in Utah. Historically, the economic principle of efficiency has provided a methodological basis for studying and evaluating changes in economic variables such as output, employment, and income. However, there are increasing pressures from those within the more developed societies to move beyond these purely economic indicators to develop a more comprehensive measure of the well-being of society. Zolotas hypothesizes that during the early development stages of primary accumulation, successive increases in the national product (a measurement of economic growth) assist a population in moving beyond an "almost universal state of poverty" (p. 7). After a society has satisfied the basic needs of its members and is approaching affluence, economic growth may cease to promote social welfare. There is no longer a one-to-one correspondence between economic growth and social well-being. In fact, social well-being may increase at a decreasing rate, off-setting or undermining any positive benefits from increases in economic growth.

Nevertheless, the political support for increasing tourism in an area generally arises from the desire for economic growth. Growth is measured in terms of physical augmentation or increased productivity in

land, labor, or capital. Quantitative data on these or related variables have traditionally been gathered and analyzed. Studies are conducted to determine whether a given policy that redistributes resources will lead to an improvement in productivity. A positive finding indicates an increase in economic efficiency and, thus, an increase in economic growth.

Economic researchers are aware of the limitation of examining all impacts only in terms of economic efficiency and growth and, therefore, many economists are attempting to broaden economic analysis by incorporating noneconomic factors into their studies. More attention is being focused on the issue of the distribution of resources and economic equity rather than solely on the distribution of resources and economic efficiency.

Economic Efficiency and the Pareto Principle

Most current analysis of economic efficiency is based on the Pareto optimality principle and its ramifications, which state that a change in either the consumption or production of goods is desirable if one individual benefits and no one else is hurt. The first-order necessary conditions or marginal conditions for Pareto optimality are exchange, production, and top-level. If these three conditions are satisfied, the efficient allocation of resources is assured.

In the optimum condition of exchange, the total amount of final goods have been produced. The problem is their allocation among individuals in the economy. This issue is resolved when the marginal rate of substitution (MRS) between any pair of goods is the same for all individuals consuming the goods. The set of all points that satisfies

this condition is called the contract curve. Any movement along the contract curve implies an improvement for one individual and a loss for another. It shows the maximum utility one person can attain given the utility of another.

The Pareto optimal condition for production states that the marginal rate of technical substitution (MRTS) between any two factors must be the same for all products and for all production units using the factors. This condition ensures that, with a constant amount of factor endowment, the production of each good has been maximized given the amounts of other goods produced. A production possibility frontier can be derived along which the ratio of marginal products is equal for the two goods produced. Movement along the production possibility frontier indicates that an increase in the production of one good has caused a reduction in the production of the other. It is necessary to be on this frontier for overall Pareto optimality, but it is not sufficient. The goods produced must be allocated to the consumers in an efficient manner. This implies that the consumers must be on their contract curve.

It is the top-level optimum that binds the exchange to the production conditions. It requires that for any pair of goods, the MRS (which is equalized over all individuals as required by the exchange optimum) be equal to the marginal rate of transformation (MRT). The MRT between any two goods is the marginal rate at which the economy can transform one good into another by allocating more resources to produce one and less to produce another. The MRT is assured if the MRTS is equal for all goods produced. If the MRT is not equal to the MRS for any pair of goods, we can produce more of one good and less of the other to benefit

all.

For each reallocation of resources and subsequent change in the amount of goods produced, a different contract curve is derived. Each contract curve has at least one point that satisfies the top-level Pareto criteria. The loci of the points which satisfy this condition for all potential contract curves is called the grand utility function. Each point on the grand utility frontier satisfies the efficiency condition of Pareto optimality. However, each point also represents the differing initial endowments of income and wealth of the individuals. In moving along the utility frontier, all necessary conditions for Pareto optimality are satisfied, but one person gains in utility only through the loss of utility to another. Pareto optimality cannot distinguish which point on the grand utility function is superior with respect to the maximization of a socially desirable distribution of resources.

To study the impact of tourism in Utah, methods of measuring and comparing alternative resource allocations are necessary. With Pareto optimality, costs and benefits are determined irrespective of who receives the benefits and who pays the costs. If the benefits are greater than the costs, then the overall impact of tourism is considered to be positive. This result indicates a more efficient use of resources and a consequential increase in economic growth. If the political goal is purely economic growth, a method based on the theory of Pareto optimality is the most suitable for analysis. However, if through the reallocation of resources, the expectation is for greater social and economic well-being and equity, the theory of Pareto optimality does not provide a basis for comparison and consequent policy decisions.

Equity and Welfare Economics

Government intervenes in the market to guide and implement certain economic policies for the redistribution of resources. "Any intrusion of government into the domain of public policy is bound to cost some and benefit others" (White, p. 11). To weigh the net result, interpersonal comparisons must be made. Pigou, as a representative of the 'old' welfare economic school of thought, assumes measureable and interpersonally comparable utility; but the practical difficulties of actually measuring utility have not been resolved. The impracticality negates the possibility of empirically testing and calculating the absolute value of any given individual's utility level. The 'new' welfare economics, marked by the Pareto principle, the compensation criterion, and Bergson's welfare function, attempt to circumvent the problem of interpersonal comparison (Ng). The Pareto criteria do not suffice to evaluate changes that bring positive returns to some while harming others. To overcome this difficulty, Kaldor resorted to the possibility of compensation. His criterion states that there is social improvement if gainers can fully compensate losers and still benefit. Kaldor does not require that the gainers actually pay the compensation, it must only be a possibility. Hicks supported Kaldor's criterion and even proposed a congruent one. He said that there is social improvement if the losers cannot profitably bribe the gainers to oppose the change. Both criteria are hypothetical and, because they are, contradictions may arise. To prevent contradictory situations, Scitovsky advanced stricter criteria. He proposed to (a) use the Kaldor criterion to see if the move from the initial point to the new point is an improvement, and (b) use Hick's proposition to make sure that

the return move from the new point back to the initial point is not an improvement. On this criterion, if and only if the move passes both parts of the double test is the move an improvement (as restated by Baumol, p. 530).

Among the three criteria, there is an innate conflict. The compensation approaches do not measure utility directly, rather they use money measures as a surrogate for welfare changes. The monetary compensation leads to the redistribution of income. If the marginal utility of income (MU_i) is diminishing, the three criteria set up a concealed interpersonal comparison (Baumol). The value placed on the potential money exchange varies among individuals. If the MU_i is not equal for all people, then problems associated with interpersonal comparison measurements are encountered.

Social Welfare Function

Another approach to the problem of evaluating the objective of equitable distribution of wealth and income was presented by Abram Bergson. He suggested the construction of an indifference map ranking the different combinations of utility accrued to the members of society. The function that defines these combinations is the social welfare function. It incorporates explicit value judgments on the importance of the people in a community. It theoretically provides a measurement of the social desirability of alternative economic choices and policies. If the function subsumes the Pareto conditions, it defines the point on which the grand utility frontier maximizes the society's welfare.

As defined by Land (pp. 18-19), the social welfare function is the grand function of the utility functions of all persons in a society:

(1) $W = W(U_1, U_2 \ldots, U_N)$.

Each utility function represents the satisfaction level of an individual. The level of utility obtained is a function of the goods and services (physical, psychological, social, cultural, and environmental) consumed:

(2) $U_i = U(O_{1i}, O_{2i}, \ldots, O_{mi})$ $i = 1, \ldots, N$.

By substituting each U_i in equation (1), the welfare function can be rewritten in terms of the arguments of the utility functions. The welfare function derived below can be defined when three postulates about utility functions are not violated. The three assumptions include nonsatiety, transitivity, and diminishing marginal rate of substitution.

(3) $W = W(U_1(O_{11}, O_{21}, \ldots, O_{m1}), U_2(O_{12}, O_{22}, \ldots, O_{m2}), \ldots,$ and

   $U_N(O_{1N}, O_{2N}, \ldots, O_{mN}))$.

There is difficulty with the measurement of the components in the utility functions. Potentially, there are an infinite number of arguments in equation (3). It is not possible to measure all the relevant factors because of the amplitude of factors and the immeasureable quality of some of the components. Thus, the factors chosen may vary, depending upon the subjective value judgment of the researcher and data availability. Furthermore, each individual's utility is theoretically weighed in accordance with some implicit value allowing for the aggregation and interpersonal comparison of utilities. If weights are not assigned, it is assumed that the values of all individual utilities are equal. The choice of either implicitly assuming equality or explicitly assigning weights is

subjective. This subjectivity complicates the ability of researchers to explicitly define a welfare function for empirical purposes.

In support of Bergson's social welfare function, Samuelson proposed an alternative welfare criterion that was summarized by Just, Hueth, and Schmitz.

> If there is some utility frontier which lies entirely outside another utility frontier, owing perhaps to technological change, any position on this new frontier is clearly at least potentially superior to any position on the old one. Only if the new frontier lies entirely outside the other, however, are potential increases in real income necessarily obtained. (p. 42)

Bergson advanced this condition to avoid violating the compensation principles.

Additional problems with the concept of the welfare function have been discussed by Kenneth J. Arrow. His work examines the procedures necessary for reconciling the relationship between individual and group decisions. Arrow determined a Bergson welfare function on the basis of individual orderings specified by collective-choice rules. This differs from Bergson's real-valued representation of ordering for a society (Sen, 1970).

Arrow proposed five minimal conditions that must be met for the construction of a social welfare function that will reflect an individual's preferences:

1. The social welfare function is defined for every pair of individual orderings. Social choices must be reflexive and complete.

2. There must be a positive association of social and individual values; the social welfare function should react in the same direction,

or at least not opposite to, alterations in individual values.

3. The independence of irrelevant alternatives: the social welfare function's ranking of any two alternatives must be unaffected by the addition or removal of some other alternative.

4. There must be citizens' sovereignty; the social welfare function is not to be imposed.

5. There must not be dictatorship; the social welfare function is to be nondictatorial (Silverberg; Ng).

Arrow has shown that any social welfare function that satisfies the first three conditions is either imposed or dictatorial. He has proved that it is impossible to construct a welfare function as defined in equation (1) without violating at least one of the five conditions.

Social Ordering

The derived shape of the traditional utility function is based upon a compensatory approach to the values placed on the components in equation (3). This approach suggests that as the quantity of one good diminishes, the same level of well-being can be maintained if the individual is compensated by an increase in another good. However, the compensatory model may not be the most appropriate or precise method for predicting or explaining the levels of social welfare. Bergson's social welfare function may be

> Unnecessarily restrictive. For the purpose of being able to choose between alternative social states, it is not really necessary that a real-valued W (social welfare) function must exist. What is needed is a complete social ordering R over all possible alternatives, and this can exist without there being any real-valued welfare function corresponding to it. (Sen, 1970, p. 34)

An alternative method, which provides a complete social ordering, is a lexicographic noncompensatory model. In lexicographical-preference ordering, alternatives are compared on an attribute-by-attribute basis, rather than by comparing evaluative scores as in the compensatory models (Watson and Roggenbuck). This model is conceptually based upon a hierarchy or ordered set of wants, needs, attributes, or criteria. In this decision model, one criterion does not compensate for another. Rather, if the attribute is not present in sufficient quantity, the alternative is excluded from further consideration. The needs of highest priority must be sufficiently satisfied before the next priority level can be considered. Lexicographical ordering violates the assumptions of diminishing marginal rate of substitution and nonsatiety. The defined social ordering is sound and binding, but it cannot be depicted by any real-valued welfare function. Amartya Sen (1982) has fully developed the concept of the relationship between Bergson's social welfare function and social ordering in <u>Choice, Welfare, and Measurement</u>. Using a lexicographical ordering model, the level of welfare an individual attains is determined by the level within the hierarchy of needs that has been reached.

If it was possible to measure utility, a social ordering could be derived; however, it is outside the realm of economics to explain and understand man's physical and psychological needs. To develop a hierarchy of human needs, knowledge from other disciplines, such as psychology and sociology, must be used. Abraham Maslow developed a theory of human motivation that provides one possible hierarchy of human needs.

The Hierarchy of Human Needs

Abraham Maslow, in his work Motivation and Personality defined a hierarchy of human needs involving five levels including basic physiological needs, security and safety, love and belongingness, esteem, and self-actualization. This hierarchy provides a conceptual framework with which to identify and organize the goals and concerns of a given community. In accordance with Maslow's hierarchy, people progress in the satisfaction of their needs to the ultimate development of their full potential. Thus, there is a progression of satisfaction of needs in social development. Once the lower-order needs have been met, the individual endeavors to satisfy the next-higher-order needs. Until the lower-order needs are met, there is little or no movement toward the higher-order needs. Growth and development is therefore viewed as movement from satisfaction of lower-order needs toward satisfaction of higher-order needs. This theoretical framework can be extended to depict a hierarchy of needs for society as well as for individuals. Thus, in developed societies most people are preoccupied with satisfying higher-order needs (social, esteem, and self actualization). In less-developed societies, the majority is preoccupied with satisfaction of lower-order needs (biological and safety) (Sirgy). Once lower-order needs have been met, a society will, according to this perspective, give greater priority to satisfying the needs of love, affection, esteem, and self-realization. If these higher-order needs are not attained, or the potential for achieving them is limited, the members of a society are likely to express greater collective dissatisfaction with their perceived well-being or quality of life.

The following theoretical argument is based on work by M. Joseph
Sirgy, "A Quality of Life Theory Derived from Maslow's Developmental
Perspective."

> Quality of life is defined as the hierarchical
> level of need satisfaction of the aggregate members
> of society. The greater the need for satisfaction
> (from lower-order to higher-order needs), the greater
> the quality of life of that society. (pp. 340-341)

Diagramatically, Sirgy presented the concept in the following
manner:

HIGH

SELF-ACTUALIZATION NEED

ESTEEM NEED

QUALITY OF LIFE

SOCIAL NEED

SAFETY NEED

BIOLOGICAL NEED

LOW
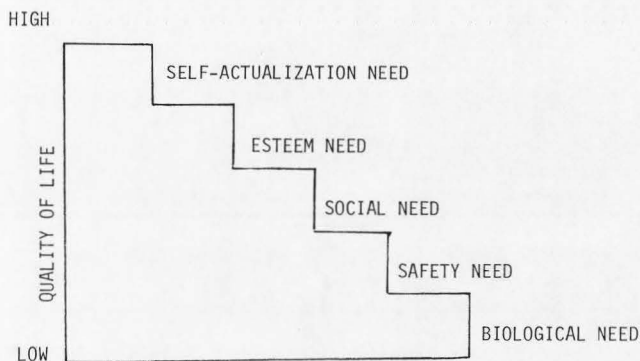
Figure 1. A human developmental perspective of quality-of-life (Adapted
from Sirgy, 1986.)

Components of the Hierarchy

As defined and discussed by Maslow, biological and safety needs are basic. Biological needs arise from physiological drives to maintain the body and meet its requirements. The most basic of needs is food, not just to satiate hunger, but to supply necessary nutrients for a healthy body. In addition, there is a primal need to protect the body from the natural elements with clothing and shelter. The term safety refers to the need for security, stability, dependency, protection; freedom from fear, anxiety, and chaos; need for structure, law, order, and limits. Included within this definition are the desires for family stability, protection from crime against the person and property, education, maintenance of health, and the ability to satisfy economic concerns.

The next three levels of human development are considered higher-order needs. The social (love and belongingness) need is to be a part of a community and a social environment. There is a desire for love and affectionate relations with people in general, whether within the family or the community. A community setting, and participation within it, allows individuals to participate in the development of the social structures upon which their lives are based (Wilkinsen). To be an entity incorporated into a social and environmental setting provides a sense of belonging and identity.

Esteem needs are satisfied at two levels. One is derived from within the individual and includes the desire for strength, achievement, adequacy, mastery, competence, confidence, independence, and freedom. The second is respect of others as perceived in the desire for reputation

or prestige, status, fame, glory, dominance, recognition, attention, importance, dignity, and appreciation.

Finally, self-actualization is the growth motive of human development that emerges when the other need levels (survival, safety, love, and esteem) are satisfied. Self-actualization is the desire to "grow toward full humanness, toward actualization of his potentialities, toward greater happiness, serenity, peak experiences, toward transcendence" (Maslow, p. 104). This growth is achieved in an independent and, yet, socially responsible fashion. Self-actualization is the need for beauty, aesthetics, creativity, and the freedom and ability of self-expression. The hierarchy is presented in a rigid format that implies little variance. In general, most people seem to have these needs in the approximate order discussed.

However, this hierarchy is not irrefutable, and there are exceptions. For various reasons, some individuals seek to satisfy a higher-order need without having satisfied or without regard to the loss of satisfaction of a lower-order need. Furthermore, there are degrees of relative satisfaction. It is not necessary for a lower-order need to be completely satisfied before the next need emerges. It is more realistic to view the hierarchy in terms of decreasing percentages of satisfaction at higher-order-need levels. An example, as given by Maslow, is that a person may have satisfied 85 percent of his physiological needs, 70 percent of his safety needs, 50 percent of love needs, 40 percent of self-esteem needs, and 10 percent of his self-actualization needs. The boundaries between the need levels are not strict. Often the individual seeks to satisfy a new objective without conscious recognition that he has

refocused his goals and desires to a higher level. In some cases, variables that are included under one need level may also be included in other levels, so there are overlapping variables between the hierarchy levels. A variable that illustrates this overlap is education. Basic education needs are included as safety needs. Basic education provides functional literacy, which enables one to work and earn an income. Income provides security for the self and family for the present and in the future. On the other hand, higher education may stress creativity and satisfy the higher-order needs of self-esteem and self-actualization. Family is another variable that is multidimensional. It provides safety and security, as well as love and a sense of belonging. Environment encompasses the dual concerns of pollution, safety and health, as well as satisfies the desire for aesthetic needs and tranquility that lead toward self-actualization.

In addition, the variables that have been incorporated into each level of hierarchy are merely representative of the factors that constitute human-development levels. There are many other components that could be included in the model. These are some of the general indicators that can be utilized to denote the satisfaction of needs reached by a given individual or community. The items selected for this model are those cited by Maslow and other researchers. The ultimate goal is to identify social indicators within these categories that measure the satisfaction of human development needs and, thus, the quality of life obtained by society.

Synopsis

The issue that is central to this study is to determine the best methodolgy for measuring the socioeconomic impacts of tourism on a society. The potential effect of tourism on so many dimensions of human existance necessitates a comprehensive approach that is capable of evaluating the changes in total welfare. Traditional economic methods of analysis cannot empirically evaluate these changes because they cannot directly incorporate the matter of social equity. To empirically study the well-being of a society, a surrogate measurement of total social welfare must be defined since a method of estimating well-being itself has not yet been developed.

To determine which factors to include in the definition of well-being and to be able to evaluate alternative positions of social welfare, it is necessary to develop a theory of social ordering. One possible theory of social ordering can be founded on Maslow's hierarchy of human development. This model can be used to assist in both the evaluation and comparison of alternative positions of social welfare, as well as the identification of the elements of well-being.

Maslow's hierarchy can be extended to the community, regional, or national level. If there is growth, as defined by Maslow's hierarchy, within the defined area, then the society is a dynamic, evolving unit whose priorities are continually being reevaluated and modified. These changes will be reflected in the community's ongoing development and realization of higher levels of well-being. Traditional economic analysis was developed to measure specific economic changes utilizing indicators (output, employment, income) that are usually included in the measurement

of lower-order needs. If we accept the assumption that the society has satisfied these lower-need levels and is striving to attain the higher-order levels, then present-day economic analysis must develop accepted methodologies for capturing, understanding, and explaining the higher-order values, desires, and aspirations of the society.

CHAPTER IV

MEASUREMENT OF THE QUALITY OF LIFE (QOL) AND TOURISM DEPENDENCY

A possible alternative analytical approach for the study of well-being incorporates Maslow's hierarchy of human development into the theory of social welfare to derive a model of quality of life.

The Social Ordering Function

The components deduced from Maslow's hierarchy can be formulated into a model that is founded or based on Sen's (1970) social ordering. The ordering will be referred to as the quality of life, QOL. In symbolic form the quality-of-life function is expressed as follows:

$$
\begin{aligned}
QOL &= f(PH,SA,SO,ES,AC), \\
PH &= f(N,C,S,W), \\
SA &= f(F,ED,H,EC,L), \\
SO &= f(R,EN,PR,PP,PV), \\
ES &= f(CO,ACH,RE,AP,D), \text{ and} \\
AC &= f(CR,EQ,B,FF),
\end{aligned}
$$

where
QOL = Quality of Life,
PH = Physical Needs,
SA = Safety Needs,
SO = Social, Love and Belongingness Needs,
ES = Esteem Needs,
AC = Self-actualization Needs,
N = Food/Nutrition,
C = Clothing,
S = Shelter,
W = Water,
F = Family,
ED = Education,
H = Health,
EC = Economic concerns,
L = Law and Order,
R = Recreation,
EN = Environment,
PR = Participation in religious associations,
PP = Participation in political associations,
PV = Participation in voluntary associations,
CO = Confidence,
ACH = Personal Achievement,

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RE = Reputation/prestige,
AP = Appreciation by others,
 D = Dignity and respect of others,
CR = Creativity/self-expression,
EQ = Equality,
 B = Beauty/aesthetics, and
FF = Self-fulfillment.
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All of the components noted above are assumed to be positively related to the quality of life, such that

$$\frac{\partial QOL}{\partial SA} * \frac{\partial SA}{\partial L} \geq 0.$$

To use Maslow's hierarchy in the quality-of-life (QOL) theory, social indicators must be identified to measure the varying levels of human needs and their components. Once the indicators have been selected, they may be weighted and aggregated to form an index of quality of life. One way to view the aggregation of the indicators is to break the indicators at each level of the hierarchy into k dimensions as defined by the number of discrete variables used to represent the various aspects of personal and social development. Carley presented this concept which is shown in the Figure 2. Each horizontal line represents a cause-and-effect relationship between reality or the true phenomenon and the specified indicator. The vertical lines are different levels of dimensionality.

Level 1 consists of single indicators. These indicators come in the types as mentioned such as, objective, subjective, direct, indirect, descriptive, analytic, input, and output. Related specified indicators may be grouped to measure a broader concept. The broader perspective is level 2. Aggregation of the broader concepts measure the hierarchical
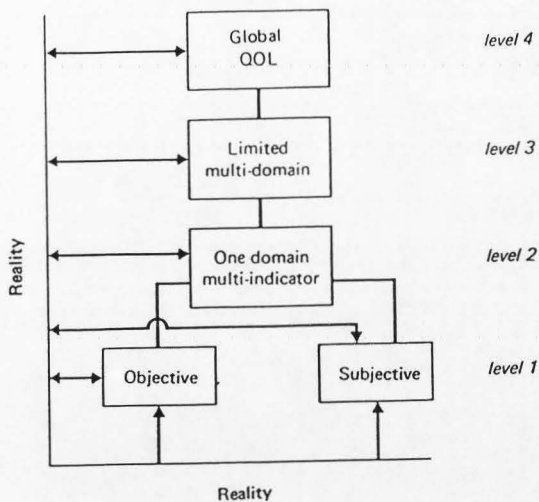
Figure 2. Conceptual framework of the levels in social indicator research (Adapted from Carley.)

level 2. Aggregation of the broader concepts measure the hierarchical need level of human development, or level 3. Finally, the hierarchical need levels are aggregated to develop the composite index of quality of life.

Figures 3-7 develop the various dimensions and their components for each level of Maslow's hierarchy of human development. The bolded components shown in these figures are the variables that were selected for this research. The use of the indicators to derive a quality-of-life index represents an indirect approach to measuring some dimension of the human development hierarchy. At the higher-order levels, it is increasingly difficult, if possible, to measure directly the need level satisfied. All of the data collected is objective and was gathered from secondary sources. Ideally, primary and subjective data would have been included to broaden and strengthen the study, but funding and time constraints prevented its collection.

Deriving a Quality-of-Life
Composite Index

Factor analysis will be used to analyze and develop a composite index of these indicators. In this type of model, it is assumed that many of the indicators are highly correlated. Factor analysis is the primary method for evaluating variables that do have high levels of multicollinearity. It also provides the only nonsubjective tool for weighting and aggregating a large number of variables in order to derive an overall composite index. Classical factor analysis is based upon the principle that the correlation between the variables is the result of a

```
                    ┌─────────────────┐
                    │  Physical Needs │
                    └─────────────────┘
           ┌─────────────────┐   ┌─────────────────────┐
           │    Nutrition    │   │   Protection from    │
           │                 │   │  Natural Environment │
           └─────────────────┘   └─────────────────────┘
  ┌────────┐   ┌────────┐   ┌────────┐   ┌──────────┐
  │  Food  │   │ Water  │   │ Shelter│   │ Clothing │
  └────────┘   └────────┘   └────────┘   └──────────┘
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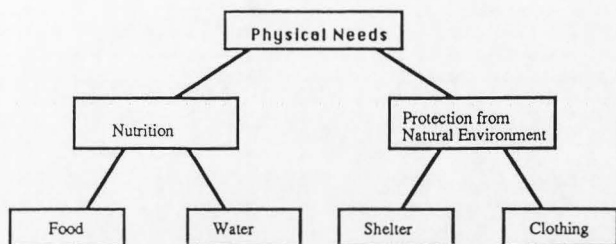
Figure 3. Conceptual framework of the physical need level
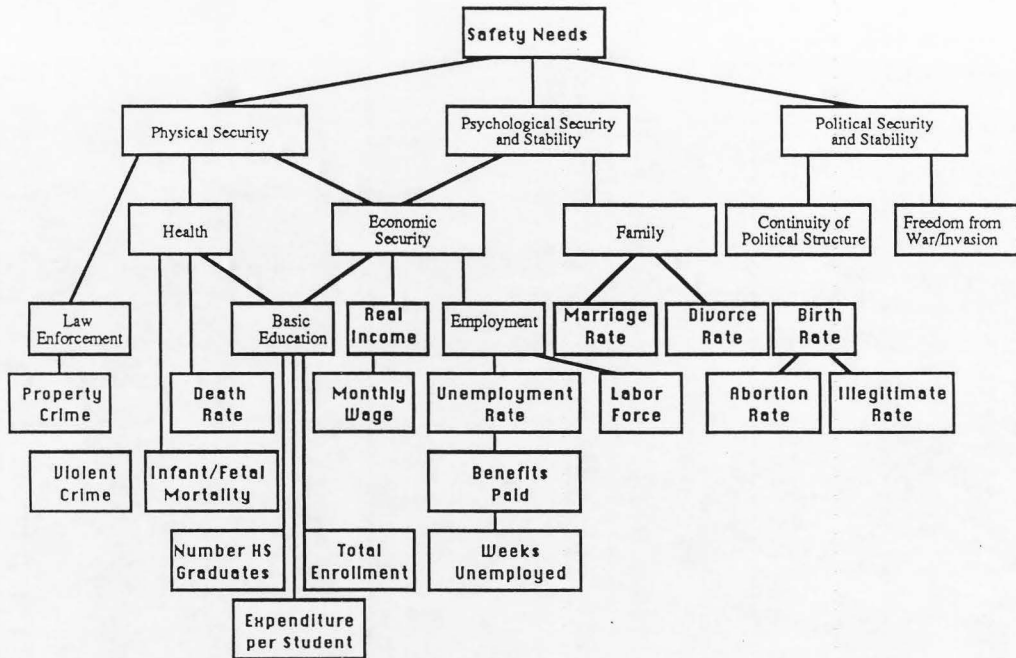
Figure 4.   Conceptual framework of the safety need level
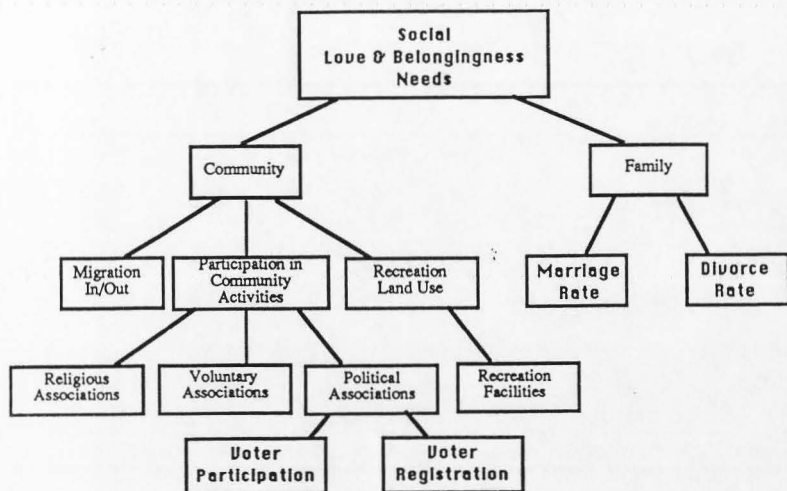
Figure 5. Conceptual framework of the social love and belongingness need level
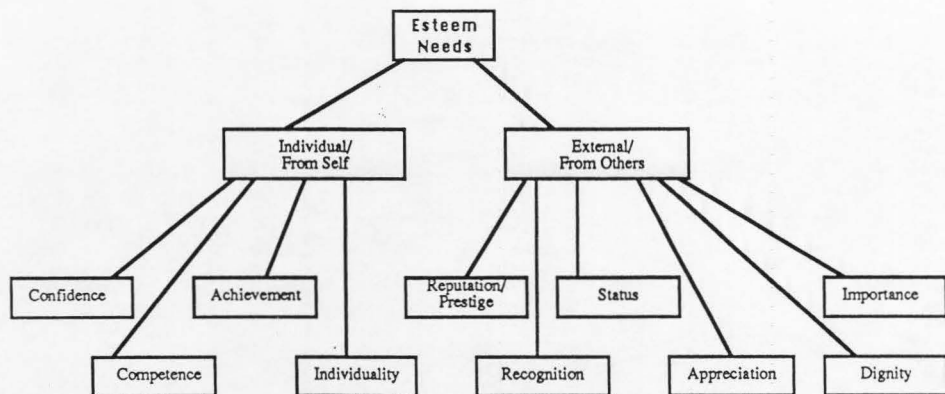
Figure 6.   Conceptual framework of the esteem need level
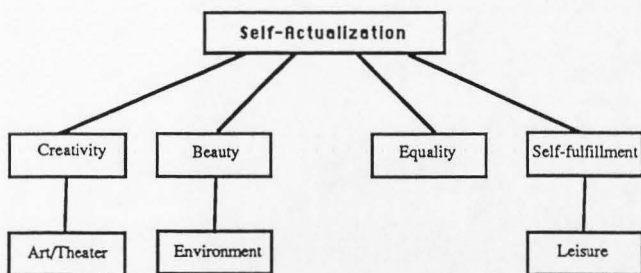
Figure 7. Conceptual framework of the self-actualization need level

common, underlying determinant and is not resultant from a direct causal relationship. These fundamental determinants are called source or factor variables. Those that influence more than one variable are called common factors, F, while those that influence a single observed variable are called unique factors, U. Two implicit assumptions are generally made when this tool or methodology is used. First, the common factors will account for all observed relations in the data and second, there are fewer common factors than variables.

The relationship between the factors and the variables may be formulated mathematically.

(4) $$X_i = \sum_{j=1}^{k} b_{ij}F_j + d_iU_i, \text{ and } \quad i=1,2, \ldots, n,$$

where X_i = variable i,

F_j = hypothetical common factors,

U_i = unique factor for variable i,

b_{ij} = standardized multiple regression coefficient of variable i on factor j (factor loading), and

d_i = standardized regression coefficient of variable i on unique factor i.

Three assumptions are made with respect to the distribution of these functions:

1. $F_j \sim N(0,1)$,

2. $U_i \sim N(0,1)$,

3. $E(F_a*F_t) = E(F_j*U_i) = 0$.

Therefore,

$X_i \sim N(0,1)$.

Given these assumptions,

$$\text{Var}(X_i) = E(X_i - \bar{X}_i)^2$$

(5) $$= E(X_{i \cdot o})^2,$$

by expressing X_i in terms of the factor variables (using equation 4 above),

(6) $\text{Var}(X_i) = E(b_{ij}F_j + d_iU_i)^2$

and through simple expansion yields,

(7) $\text{Var}(X_i) = E(b_{ij}F_j^2 + d_iU_i^2 + 2b_{ij}d_iF_jU_i),$

the constants may be factored out:

(8) $\text{Var}(X_i) = b_{ij}^2 E(F_i^2) + d_i^2 E(U_i^2) + 2b_{ij}d_i E(F_iU_i),$

when $E(F_i^2) = E(U_i^2) = 1,$ and $E(F_iU_i) = 0;$

then,

(9) $\text{Var}(X_i) = b_{ij}^2 + d_i^2.$

The variance in X_i can be explained completely by the source variables. The standardized regression coefficients, b_{ij} and d_i, are equivalent to correlations between the created and source variables. The proportion of the variance in X_i, which is determined by the common factors, can be calculated by the square of the correlation. The squared-value is called the coefficient of determination. It assesses how much each factor accounts for the variance in X_i.

There are two postulates which must be considered when applying factor analysis to examine the relationship between the factorial and covariance structure.

Postulate of Factorial Causation. Given relationships among variables, this postulate imposes a particular causal order on the data--that observed variables are linear combinations of some underlying causal variables.

The second indeterminancy (one covariance structure- varying number of factors) is resolved by adopting the postulate of parsimony. For example, given that both one common factor and two common factor models are consistent with observed data, we accept on faith the more parsimonious model. (Kim and Mueller, pp. 43-44)

Factor scores are calculated from the factor loadings of each factor. The factor scores can be treated as the value of an additional variable. In this manner, the common factors may be used in any desired analysis as an explicit variable. In the present study, the factor scores are employed to derive the composite index, quality of life, against which tourism dependency can be correlated.

Tourism Dependency Ratio

To estimate the level of tourism, a tourist industry and its various components need to be defined. However, tourism overlaps several economic sectors or classifications. This makes it very difficult to separate the values due to the tourism industry versus the other industries. Given the lack of adequate, reliable tourism data specifically measuring the tourist industry, it is necessary to derive an alternative measurement.

For example, John Hunt's research on tourism in Utah developed an indicator to measure the tourism impact factor. Through the use of questionnaires, he gathered primary tourism data from 1968 through the 1970s. With this data, he calculated a tourism impact factor.

Total Tourist Expenditures = Per Capita Tourist Expenditure
    Resident Population, and

Per Capita Tourist Expenditure * 100 = Tourism Impact Factor
    Per Capita Personal Income.

This data was not collected annually, nor has it been compiled since 1982. As a result, another measurement approach was necessary if tourism was to be analyzed by county on an annual basis.

Researchers in other states have gathered data on eating and drinking establishments' value of taxable sales, the value of the taxable room sales, and the total gross taxable sales and purchases to provide an alternative estimate of the level of tourism (Klar, Keegan, and Warnick; Allen, Long, Perdue, and Kieselbach). The proportion of taxable revenue that was earned by eating and drinking establishments and room sales to gross revenue was determined. The derived value is called the tourist dependency ratio and provides a measurement of the relative change in tourism activity levels. This approach does not directly show the level of tourist activity. Rather, it provides an indicator of the relative magnitude of economic activity in a sector heavily utilized by and dependent upon tourist activity. It is not a direct gauge of tourism, but it does represent a previously used measure of tourism dependency.

Synopsis

The specific selection of social indicators used for this study was limited and controlled by data availability on an annual and county basis. Many variables that would preferably have been chosen as more direct and reflective of the actual hierarchical component were not obtainable either due to lack of data or difficulty of measurement. In particular, as the need levels as defined by Maslow become higher, or increasingly esoteric, indicators that capture the essence of the need have not been defined or developed. Most of the selected variables are elements of level two, safety, or level three, love and belongingness.

In addition, the measurement for the level of tourism was modified due to the scarcity of data. The tourism dependency ratio which was calculated and used does not measure changes in the tourism activity level, rather it measures the proportion of regional taxable income in parts of the service sector that are heavily dependent upon tourism trade.

CHAPTER V

RESULTS

A number of variables amenable to measurement using available data sources and, as defined within the framework of Maslow's hierarchy, were selected as the socioeconomic indicators for this study. All of the data for the indicators and the tourism dependency ratio were obtained from various secondary sources (Utah Department of Health; Utah Department of Employment Security). Table 1 lists all the variables for which data were gathered and their source. Annual data for these variables were collected from 1978 through 1987 for eighteen counties in Utah. The year, 1978, was chosen as the first year because the variables used for the study were consistently reported by county and by year through to the present. Prior to 1978, some of the variables were measured differently or were not collected. The last year the data for all the variables were available and when this work was completed was 1987. By choosing this time frame, there were no missing data points.

The selection of the 18 counties was guided by the previous work of John Hunt on tourism in Utah and the tourism impact factor he developed. Based upon his earlier work, the counties were selected to represent a spectrum of tourist dependecy regions. Figure 8 presents a map of Utah with the selected counties underlined. Those counties for which data were not compiled are located in the northwestern and central sections of the state and, in most part, make up the great salt flats of Utah and do not have significant tourist activity.

Table 1. Selected Variables and the Secondary Source

VARIABLES	SOURCE

Socioeconomic Variables

Population	Statistical Abstract of Utah
Birth rate per 1,000 population	Utah Department of Health
Death rate per 1,00 population	Utah Department of Health
Civilian labor force participation rate	Utah Department of Employment Security
Unemployment rate	Utah Department of Employment Security
Per capita income	Statistical Abstract of Utah
Total school enrollment, 12th grade and under	Statistical Abstract of Utah
Number of high school graduates	Statistical Abstract of Utah
Expenditure per student	Statistical Abstract of Utah
Infant mortality rate per 1,000 live births	Utah Department of Health
Marriage rate per 1,000 population	Utah Department of Health
Divorce rate per 1,000 population	Utah Department of Health
Unemployment benefits paid	Statistical Abstract of Utah
Average annual duration of employment benefits	Statistical Abstract of Utah
Number employed in the service sector	Statistical Abstract of Utah
Average monthly wage in the service sector	Statistical Abstract of Utah
Average monthly total nonagricultural wage	Statistical Abstract of Utah
Number of aggregate violent or personal crimes	Department of Public Safety
Number of property crimes	Department of Public Safety
Number of voter registrations	Statistical Abstract of Utah
Voter participation rate	Statistical Abstract of Utah
Number of new dwellings constructed	Statistical Abstract of Utah
Out-of-wedlock births per 1,000 live births	Utah Department of Health
Abortion rate per 1,000 live births	Utah Department of Health

Tourism Variables

Gross taxable retail sales and purchases	Utah State Tax Commission
Gross taxable retail eating and drinking places sales and purchases	Utah State Tax Commission
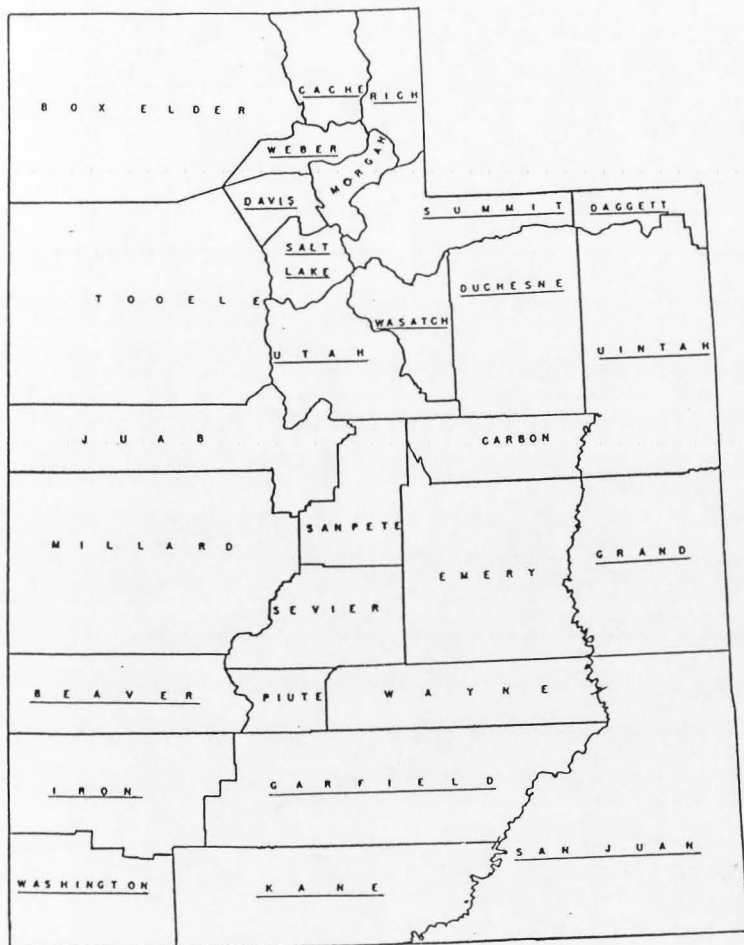
Figure 8. A map of Utah presenting the selected counties, underlined

Socioeconomic Indicators

Table 2 indicates which of the variables were used as the socioeconomic indicators to derive the quality-of-life index. Not all of the variables for which data were gathered were included in the quality-of-life index. Some of these variables were used to either standardize or compute another variable (e.g., the Consumer Price Index to devalue monetary values, or Population to derive values on a per capita basis). The data on the service sector were obtained to examine its relationship with the tourism dependency ratio, not as components of quality of life. The measurements that were employed are only some of the elements that could be incorporated in a quality-of-life index. However, the variables listed in Table 2 are the same as those which comprise the various dimensions of Maslow's hierarchy, as illustrated in Figures 3-7. All of the indicators are positioned in the level one dimension (see Figures 3-7) due to the difficulty of measuring the more abstruce components of the hierarchy. Thus, the indicators that were used provide a demographic overview of the counties. Well-being itself, or quality-of-life as presented by the theory of Maslow's hierarchy, could not be directly assessed.

The expected relationship between the selected indicators and the quality-of-life is also presented in Table 2. The variables that are shown to be positive are are hypothesized to contribute beneficially toward the well-being of the community. The ones that are shown to be negative identify those that are hypothesized to be a cost or cause a

Table 2. Selected Variables Used for the QOL Index and Their Expected
Relationship to QOL

SELECTED VARIABLES FOR QUALITY-OF-LIFE INDEX	EXPECTED RELATIONSHIP TO QOL
Birth rate per 1,000 population	Positive
Death rate per 1,000 population	Negative
Civilian labor force participation rate	Positive
Unemployment rate	Negative
Per capita income	Positive
Total school enrollment, 12th grade and under	Positive
Number of high school graduates	Positive
Expenditure per student	Positive
Infant mortality rate per 1,000 live births	Negative
Marriage rate per 1,000 population	Positive
Divorce rate per 1,000 population	Negative
Unemployment benefits paid	Positive/Negative
Average actual duration of payments	Positive/Negative
Average monthly total nonagricultural wage	Positive
Number of aggregate violent or personal crimes	Negative
Number of property crimes	Negative
Number of voter registrations	Positive
Voter participation rate	Positive
Number of new dwellings constructed	Positive
Out-of-wedlock births per 1,000 live births	Negative
Abortion rate per 1,000 live births	Negative

negative impact on the area's welfare. For example, it is stated that there is an expected negative relationship between the death rate and the quality of life. Following the same pattern of relationships as presented in Figure 4, an increase in the death rate indicates a decline in the level of health, thus a decrease in physical security, leading to a decline in the safety needs level, and therefore, a decline in the quality of life. Mathematically this concept may be shown as

$$\frac{\partial \text{Quality of Life}}{\partial \text{Safety Needs}} \quad \frac{\partial \text{Safety Needs}}{\partial \text{Physical Needs}} \quad \frac{\partial \text{Physical Needs}}{\partial \text{Health}} \quad \frac{\partial \text{Health}}{\partial \text{Death Rate}} \quad < \quad 0$$

In addition, two of the variables are hypothesized to be either positive or negative indicating they could affect the quality of life in either way. For example, the amount of unemployment benefits paid could be positive which would show that the unemployed are receiving their payments, or negative by implying a high level of unemployment. The reasoning for the duration of unemployment payments lies along similar lines since it may indicate that the unemployed are receiving sufficient payment, or it may signify a lack of possible employment opportunities.

Factor Analysis Results

A statistical method that has been used by other researchers to derive a quality-of-life index is factor analysis. Factor analysis permits the analysis of numerous variables at one time. It unravels the relationships among the variables that are correlated in highly complex ways by positing the existence of underlying factors. To develop the most parsimonious solution, the technique first calculates all possible

correlation coefficients among the variables and determines to what extent they covary. Factor analysis is then carried out on the correlation coefficients to show how some variables can be grouped together based on how they behave in similar ways. It proceeds to delineate new independent, underlying factors which may be responsible for these groupings (Cattell, 1966, 1973). It is the responsibility of the analyst to interpret what the factors are like, using the knowledge he has about the variables that went into the factor analysis and any other pertinent information. He attempts to develop a hypothesis concerning what the variables that delineate any single factor share in common (Comrey). For this research, the resultant interrelations of the selected variables and factors are examined in order to take an initial step in studying whether the derived factors are reflected in or consistent with the hypothesized theory of social ordering. It is a rudimentary analysis since the elements of the higher levels of Maslow's hierarchy are abstract and require esoteric methods of measurement. The study is thus limited to exploring the interrelations of only a few selected elements in the first two levels of the hierarchy and a couple of the elements in the third level.

Derived Factors and
Factor Scores

The first step in factor analysis after deriving the correlation matrix is the initial extraction of the factors in order to investigate the data-reduction possibilities. Classical or common factor analysis was applied to the socioeconomic indicators used for the QOL index after they were normalized by calculating their respective z-scores. The z-scores were estimated to standardize the unit of measurement for the purpose of

aggregation in the proposed QOL index. At this stage of the analysis, the technique does not necessarily provide meaningful measurements. It is simply a method of determining possible data reductions based upon the correlation of the variables. The second step is made to obtain an interpretable patterning of the variables and, therefore, rotation is desirable. VARIMAX, a method of orthogonal rotation (i.e., the correlation between factors is assumed to be zero) is the most widely used technique (Kim) and was selected for this study to derive the terminal factors. The SPSS$_x$ computer software package, Statistical Package for the Social Sciences, was used to analyze all of the data.

A correlation matrix was calculated for the variables listed on Table 2 (number of aggregate violent or personal crimes and number of property crimes were aggregated to form a single variable, crime) based upon cross-sectional data from the 18 counties and the ten year time-series data. Factor analysis was applied to this derived correlation matrix in order to calculate the weights to estimate the factors from the variables. The matrix which is produced is called the "rotated factor matrix." In this matrix, each variable is defined as a linear combination of the independent factors. The regression weights of the common factors are contained in the matrix. Thus, the composition of the variables in terms of the hypothetical factors is provided. Table 3 shows the rotated factor matrix for the present data. The values in the matrix are derived from the aggregated data across the eighteen counties over ten years.

The space breaks in Table 3 indicate how the variables combine to delimit the five factors. The first five factors explain 60 percent of the variation in the data. Additional factors contribute an incrementally

Table 3. VARIMAX Rotated Factor Matrix

VARIABLE	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	h^2
ZREALINC	.88214	.27277	-.01130	-.06505	.02795	.85772
ZLABRATE	.74375	-.18937	.38851	-157680	-.10216	.77527
ZABORT	.69390	.30258	-.05069	.13424	-.29412	.68016
ZDIVORCE	.59650	.28339	-.49119	.13101	.04461	.69655
ZCRIME	.57828	.39968	.44534	.27556	.03915	.76994
ZREALBEN	.19328	.83770	.02349	.10619	-.00920	.75101
ZDWELL	.22608	.78935	-.00491	.01732	.05506	.67754
ZFIMORT	.10064	.58628	-.17194	.01843	.40826	.55044
ZENROLLP	.01272	-.50487	-.31522	.45364	-.04981	.56268
ZMARRIAGE	.12177	-.02664	.82131	.01313	.06612	.69463
ZVOTERPC	.20455	-.29519	.66007	-.25614	-.35878	.75900
ZDEATHP	.07450	-.15751	-.37556	-.11699	.03989	.18668
ZHSGRADS	-.00841	-.01106	-.12730	-.74797	.02280	.57637
ZILLEGIT	.00747	.16467	-.37497	.64914	-.13036	.60615
ZPAYMENT	-.05386	-.08331	.24579	.40342	-.06263	.23692
ZVOTEPAR	-.21444	-.27359	.09477	-.37304	-.03636	.27030
ZBIRTHP	-.21264	.04563	.04401	-.12617	.80085	.70651
ZREALWAG	.37666	.22743	-.25421	.37312	.59182	.74769
ZREALEXP	.19292	.43830	.29123	.18862	-.51614	.61611
ZUNEMP	-.01645	-.20093	-.30780	.14854	-.36061	.28749

smaller percentage of explanation for variation in the data. Thus, given the ease of working with five factors and the fact that additional factors were providing little additional information, the variables were grouped into five factors. The coefficients in the matrix are both the regression weights and the correlation coefficients between the factors and the individual variables. Thus, the coefficients in any given row represent the regression coefficients of the factors with respect to a specific variable. For example, the first variable, *zrealinc* (real income), may be expressed as a linear combination of the five factors in the following way:

$$ZREALINC = .88214F1 + .27277F2 - .01130F3 - .06505F4 + .02795F5 + d_i U_i .$$

The importance of each factor to a variable can be calculated by the amount of variance in the variable accounted for by the individual factors. This value can be estimated by squaring the factor coefficient (e.g., $(.88214)^2 = .77817$). For example, factor 1 accounts for almost 78 percent of the variance in the real income level. The other factors have smaller explanatory power of the variance in the variable, real income.

The proportion of the variance in real income explained by all five factors may be calculated by squaring the factor weights and summing them across the row.

$$(.88214)^2 + (.27277)^2 + (-.01130)^2 + (-.06505)^2 + (.02795)^2 = .85772 .$$

Nearly 86 percent of the variance in real income is explained by the five hypothetical factors. The total variance of a variable that is explained by all the factors is referred to as the communality of the variable, h^2_i.

The complement of h^2_i, $1-h^2_i$, is the proportion of the unique variance of the variable which is not accounted for by the common factors or by any variable in the set. In the case of real income, slightly over 14 percent of its variance cannot be explained by the proposed factors.

The interpretation of the factor analytic results is dependent upon the researcher. The approach can be one of simply describing the putative nature of the common elements among the variables that define a factor and giving the factor a name or, it may be viewed as a long-range task that is concerned with developing the best possible set of factor constructs (Comrey). The factor results for this study are difficult to explain or interpret. Additional sociological theory could possibly rationalize and interpret some of the factors and their components, such as factors 3, 4, and 5, but factors 1 and 2 combine indicators that are hard to decipher. For example, it is possible to derive one explanation for the relationship between the components that comprise factor 3. The positive marriage rate and positive voter participation rate are both inversely related to death rate. This relationship potentially defines an area with a relatively stable family environment that is active and interested in the affairs of the community. There may be a stability also exhibited within the community population structure given the negative relationship of death rate to the factor. However, another researcher might offer a completely different explanation for this particular grouping. In general, the factors appear to be based upon demographic commonalities.

Ideally, the variables would have grouped as proposed in Figures 3-7 and, thus, would have empirically supported the social-ordering construct based upon Maslow's hierarchy of human development. However,

given the limited availability and capability of measuring most of the
components of the hierarchy; especially the ones of love and belonging,
esteem, and self-actualization, the findings are inconclusive with respect
to Maslow's hierarchy. Therefore, due to the difficulty of defining and
conclusively interpreting the factors and because they did not group in
a manner consistent with the proposed social ordering theory, this
functional aspect of factor analysis was not pursued any further.

Even though the resultant underlying factors are difficult to
explain, the values derived for the weights of the variables with respect
to the factors are not invalid or fallacious. The technique does provide
a nonsubjective method of ordering and weighing the variables into a
workable structure. Due to the nonsubjective nature of the factor
loadings, the calculated values are significant and are, therefore, useful
in the determination of the quality-of-life index.

It is from the rotated factor matrix that the factor scores, from
which the quality-of-life index is reckoned, are calculated. Multiplying
the rotated factor matrix by the correlation matrix formulates the factor
score coefficient matrix. This latter matrix consists of the regression
weights to be used in estimating the factors from the variables.

$$
\left| \begin{array}{l} \text{Factor Score} \\ \text{Coefficient} \\ \text{Matrix} \end{array} \right| = \left| \begin{array}{l} \text{Rotated} \\ \text{Factor} \\ \text{Matrix} \end{array} \right| * \left| \begin{array}{l} \text{Correlation} \\ \text{Matrix} \end{array} \right| .
$$

The components of this matrix are called the factor loadings. The factor
scores from which the quality-of-life index is calculated are derived from
the factor loadings.

$$\begin{vmatrix} \text{Factor Score} \\ \text{Matrix} \end{vmatrix} = \begin{vmatrix} \text{Factor Score} \\ \text{Coefficient} \\ \text{Matrix} \end{vmatrix} \ast \begin{vmatrix} \text{Z-Score} \\ \text{Matrix} \end{vmatrix} .$$

The factor scores can be used as independent variables each of which is actually a linear composite of the original social indicators.

A factor score for each factor is produced for every observation. Specifically, a value was derived for each of the five factors for every county for every year. The factor scores for Cache County from 1978-1987 are presented in Table 4. The column labeled "Total Factor" is calculated by summing the five factor scores. Total factor is the composite index consisting of all the social indicators weighed and aggregated. This total factor score becomes the quality-of-life index value used in this research. The average of the total factor score is estimated to produce a single index number for each county. The quality-of-life index value for Cache county over the ten year period of 1978-1987 using the prestated social indicators is -.5929. In this manner, a single quality-of-life value was determined for the 18 counties for the time period, 1978-1987. Table 5 shows the composite average value for the quality-of-life index for each county and whether the value was increasing, decreasing, or constant over the given time frame.

The use of factor analysis permits the aggregation of many highly correlated variables in a nonsubjective way to produce a composite index of well-being. This resultant composite index of welfare can be used to compare the relative levels of development. A single measurement of total

Table 4. Factor Scores for Cache County

| YEAR | FACTORS | | | | | |
	1	2	3	4	5	TOTAL
1978	- .06971	.09041	.04163	1.02915	-1.69151	- .6000
1979	- .02700	.06037	.09648	.94832	-1.81644	- .7383
1980	- .17854	- .08016	.44163	.63318	-1.84639	-1.0303
1981	- .03877	.12686	.30073	1.01437	-1.84617	- .4430
1982	.34623	- .53969	.45099	.74545	- .98595	.0170
1983	.24929	- .52382	.17625	.35361	- .62804	- .3727
1984	.15756	- .22414	.00065	.00227	- .71601	- .7797
1985	.26207	- .37953	- .04243	.03753	- .38010	- .5024
1986	.28123	- .07799	- .30157	- .42512	- .13661	- .6601
1987	.18346	- .17353	- .42648	- .36572	- .03736	- .8196
AVERAGE	.11658	- .17212	.07379	.39731	-1.00846	- .5929

Table 5. Average Quality-of-Life Composite Index by County, 1978-1987

COUNTY	AVERAGE COMPOSITE INDEX OF QOL (1978-1987)	PATTERN OF CHANGE IN THE QOL INDEX
*CACHE	- .5929	CONSTANT
*RICH	-2.0238	CONSTANT
WEBER	2.3510	INCREASING
DAVIS	.7523	DECREASING/INCREASING
SALT LAKE	4.3192	DECREASING
*SUMMIT	- .5586	VARIABLE
*WASATCH	-1.1261	VARIABLE
UTAH	.7271	DECREASING
DAGGETT	2.0124	INCREASING/DECREASING
DUCHESNE	.9503	INCREASING/DECREASING
UINTAH	2.8821	INCREASING/DECREASING
GRAND	1.4382	INCREASING/DECREASING
*SAN JUAN	-1.0117	CONSTANT
*BEAVER	-2.5396	CONSTANT
*IRON	- .8324	DECREASING
*GARFIELD	-3.2902	DECREASING
*WASHINGTON	- .4617	VARIABLE
*KANE	-2.9956	INCREASING

*Counties which have negative factor scores as an average over the time period 1978-1987.

welfare enables the researcher to compare, analyze, and rank varying levels of social well-being. This method contributes to the evolution of a more holistic approach to the issue of economic welfare and development.

Resultant Tourism
Dependency Ratio

Consistent data on the level of tourism by county is not yet garnered annually in Utah. Therefore, it was necessary to use a measurement developed and applied by other researchers which records relative changes in tourism activity levels. The indicator that was selected is determined by taking the proportion of taxable revenue that was earned by eating and drinking establishments and the value of the taxable room sales to the total gross taxable revenue from all sectors of the economy. This measurement does not directly show the level of tourist activity. Rather, it provides an indicator of the relative magnitude of economic activity to a sector heavily utilized by and dependent upon tourist activity. The indicator is, therefore, referred to as the tourism dependency ratio. It is not a direct gauge of tourism, but it does represent a previously used measure of tourism dependency. Tables 6 and 7 indicate the tourist dependency ratios. Table 6 shows the derived tourist dependency ratios for Cache, Salt Lake, Beaver, and Kane counties by year and averaged over the ten year time period of the study.

Table 7 lists the counties, the established average tourism dependency ratio, and the pattern of change from 1978-1987. The ten year average value for tourism dependency ranged from .03 to .23. This indicates that 3 to 23 percent of the selected counties' total gross

Table 6. Tourist Dependency Ratios for Cache, Salt Lake,
Beaver, and Kane Counties, 1978-1987

| | COUNTY | | | |
YEAR	CACHE	SALT LAKE	BEAVER	KANE
1978	.0594	.0571	.1288	.1874
1979	.0617	.0604	.1351	.1870
1980	.0595	.0634	.1094	.1865
1981	.0632	.0646	.1455	.1654
1982	.0610	.0652	.1405	.1866
1983	.0658	.0649	.1146	.2236
1984	.0596	.0652	.1091	.1836
1985	.0651	.0690	.1734	.1787
1986	.0688	.0713	.1616	.1957
1987	.0727	.0782	.1566	.2032
AVERAGE	.0637	.0782	.1375	.1898

Table 7. Average Tourist Dependency Ratios for 18 Counties

COUNTY	AVERAGE TOURIST DEPENDENCY RATIO (1978-1987)	PATTERN OF CHANGE IN THE DEPENDENCY RATIO
CACHE	.0637	CONSTANT
RICH	.1094	VARIABLE
WEBER	.0633	CONSTANT
DAVIS	.0480	CONSTANT
SALT LAKE	.0659	CONSTANT
SUMMIT	.1944	INCREASING
WASATCH	.1058	INCREASING
UTAH	.0535	INCREASING
DAGGETT	.0517	VARIABLE
DUCHESNE	.0390	CONSTANT
UINTAH	.0413	INCREASING
GRAND	.1109	INCREASING
SAN JUAN	.0642	INCREASING
BEAVER	.1375	VARIABLE
IRON	.1057	DECLINING
GARFIELD	.2341	INCREASING
WASHINGTON	.1048	CONSTANT
KANE	.1898	VARIABLE

taxable sales was derived from eating and drinking establishments value of taxable sales and room taxable sales.

Given this range in values, those counties whose tourism dependency ratio was .1 or more were considered to be relatively more tourist dependent than those whose value was less than .1. Most of the counties that have a tourist dependency ratio of .1 or greater have a state or national park recreational area within their borders.

Quality-of-Life Index and Tourism Dependency Ratio

By comparing the quality-of-life index presented in Table 5 and the tourist dependency ratio as reported in Table 7, it is apparent that those counties with an average negative QOL composite index value coincide with the counties that have the higher tourism dependency ratios. Cache, San Juan, and Grand counties are the exceptions. Table 8 provides an overview of this inverse relationship.

The value of the Pearson correlation coefficient between the tourism dependency ratio and the quality-of-life index is -.5114 (Daniel and Terrell). This value measures the strength of the relationship between the observations on the two variables. A correlation value of -.5114 suggests a strong inverse relationship between the tourism dependency ratio and the quality-of-life index. The coefficient of determination, $(-.5114)^2 = .2615$, indicates that over 25 percent of the variation in the quality-of-life index is explained by the linear relationship between the tourism dependency ratio and the quality-of-life index.

Table 8. The Selected Counties, the Tourist Dependency
Ratios, and the Average Quality-of-Life Index

COUNTY	AVERAGE TOURISM RATIO (1978-1987)	AVERAGE COMPOSITE INDEX OF QOL (1978-1987)
CACHE	.0637	- .5929
RICH	.1094	-2.0238
WEBER	.0633	2.3510
DAVIS	.0480	.7523
SALT LAKE	.0659	4.3192
SUMMIT	.1944	- .5586
WASATCH	.1058	-1.1261
UTAH	.0535	.7271
DAGGETT	.0517	2.0124
DUCHESNE	.0390	.9503
UINTAH	.0413	2.8821
GRAND	.1109	1.4382
SAN JUAN	.0642	-1.0117
BEAVER	.1375	-2.5396
IRON	.1057	- .8324
GARFIELD	.2341	-3.2902
WASHINGTON	.1048	- .4617
KANE	.1898	-2.9956

Resource Dependency and
Quality of Life

The tourist dependency ratio identifies the counties that are more reliant than others upon the tourism economic sector. The limited potential for economic diversity of many rural areas often creates communities whose economic activity revolves around the development of one major resource or economic sector such as agriculture, aquaculture, forestry, mining, or recreation/tourism (Krannich and Luloff). Such communities are generally constrained by the limited number of alternatives for economic development. Often the economic opportunities that do present themselves are intertwined and dependent upon regional, national, and even international activities. Both the resource dependency and the dependency on external markets influences the vitality and viability of many rural sectors in advanced industrial societies (Buttel and Newby). These dependencies cause an unstable economic base that commonly lead to problems associated with cyclical growth, stagnation, and decline.

The dependency of an area upon a single sector that is subject to external fluctuations in value or demand and the vagaries of the natural environment can cause the community to be especially susceptible to cycles of expansion and decline (Krannich and Luloff). During periods of expansion, the community attracts an influx of people and may exhibit improvement in some quality-of-life dimension. The periods of decline result in large numbers of people migrating out of the region. The ebb and flow of the community diminishes the ability and the will of the people to counter these cyclical fluctuations to enhance community stability.

The lack of initiative or inability to respond to the community's decline results from:

> Residents accustomed to cyclical expansion and decline may see little use in responding to changes, when past experience suggests that such changes are likely to be transitory. The periods of in-and-out migration which characterizes many resource dependent communities can contribute to the emergence of a more of less "rootless" population. The draining away of human capital during periods of outmigration can reduce the number of locals who are suitably prepared to address the problems of dependency. Another constraint on the response capabilities of such communities is the limited array of development alternatives which are likely to become available. (Krannich and Luloff, pp. 6-8)

The limited number of economic development opportunities in these communities can lead to a cycle of resource dependency substitution "whereby a previous or existing form of resource dependency is simply replaced by another." (Krannich and Luloff, p. 8) Park City (Summit County) and Moab (Grand County) are examples of this phenomenon. Park City and Moab were both at one time mining communities. There was a decrease in demand for the mined resources of the region and a subsequent fall in price. To revitalize the areas, recreation and tourism facilities were developed. Thus, the communities changed from mining resource dependency to a recreation resource dependency. In both of these cases, the transition from mining to recreation dependency would appear to be successful; but to fully understand the nature of the benefits as well as the costs, a comprehensive study of the communities is necessary.

As stated by Krannich and Luloff, "Conditions of resource dependency contribute to a potential for extreme economic, demographic, and social instability--threatening the viability and sustainability of many rural

communities" (p. 5). The possible community instability that resource (tourism) dependency can cause could account for the average negative values of well-being that were calculated for the more tourist dependent counties.

The t-test Statistic

The use of the factor scores permitted the analysis of an aggregated value of well-being. This composite QOL index reveals an inverse relationship between the tourist resource dependent areas and the quality-of-life indicator. To examine the individual components of the composite index and to determine which single indicator values differ significantly with respect to the tourist and nontourist dependent counties, t-test statistics were generated. The t-statistic tests the hypothesis that the means of the indicators for the tourist and nontourist counties (as defined by the tourism dependency ratio) are equal.

The population variance for this data set is unknown, so it is necessary to first perform an F-test which hypothesizes that the variance of the variables for the two county groups (tourist and nontourist dependenct) are equal. If we fail to reject the equality of the variances, then the two sample variances are pooled to obtain a single estimate of σ^2. The pooled estimate is obtained by computing the weighed average of the two sample variances, where the weights are the degrees of freedom. The pooled estimate takes advantage of the additional information provided by the larger sample size and the more easily defined distribution. If we reject the hypothesis that the variances are equal, then the separate variance estimates are used to calculate a t-value. In the latter case, a modified value is used for the degrees of freedom and a distribution is

defined that approximates the t-distribution (Daniel and Terrell).

The t-values were computed for all twenty-three socioeconomic variables as listed on Table 1 (property, violent and personal crimes were aggregated to form a single crime index). The t-statistics for seven of the variables are significant at α =.10, see Table 9. The variables that are considered beneficial to a viable community as related to quality of life, include birth rate (family stability), average monthly service sector wage, average monthly nonagricultural sector wage (income level), and the voter participation rate (participation in the community). The factors that are considered costs to the community with respect to quality of life, include the unemployment rate (employment level) and the infant/fetal mortality rate (health). Population may have either a positive or a negative impact on quality of life. It may be positive until it reaches a given capacity level of the community to provide for additional people, and then continued increases in population may cause a negative impact (Weber and Howell).

Among the seven significant variables, the means for all but one of the beneficial factors is significantly higher in the nontourist than in the tourist dependent counties. This finding implies that certain positive components of social well-being are higher in the nontourist dependent counties than in the tourist dependent ones. Voter participation rate is the one exception with the mean being significantly higher for the tourist dependent areas. Among the negative variables, the negative factor of

Table 9. The t-test Statistics for the Means of Individual Variables
Between Tourist and Nontourist Counties

VARIABLE	GROUP	MEAN	STANDARD DEVIATION	t- VALUE	2-TAIL PROBABILITY
Population					
	1	145205.6	207087.8	1.95[b]	.086
	2	10252.2	9235.0		
Birth Rate					
	1	26.9	2.9	2.00[a]	.058
	2	24.3	2.3		
Unemployment Rate					
	1	6.5	1.8	-2.00[a]	.056
	2	9.1	3.4		
Infant/Fetal Mortality					
	1	6.7	4.2	3.64[b]	.003
	2	1.0	2.2		
Wage Service Sector					
	1	922.3	152.8	3.00[a]	.005
	2	715.5	117.1		
Wage Non-agricultural Sector					
	1	1294.3	156.4	3.00[a]	.001
	2	1042.9	105.9		
Voter Participation Rate					
	1	68.9	3.0	-3.00[a]	.004
	2	74.6	4.2		

Note: Group 1= Nontourist dependent counties, i.e., the tourist
        dependency ratio is less than .1.

        Group 2= Tourist dependent counties, i.e., the tourist dependency
        ratio is equal to or greater than .1.

[a]The t-value was calculated using a pooled variance estimate.

[b]The t-value was calculated using a separate variance estimate.

unemployment is significantly higher for the tourist dependent counties, while the infant/fetal mortality rate is signifantly lower.

These results show that among all possible negative indicators (within the collected data), only two are significantly different in tourist dependent counties versus nontourist counties. Since one of the negative variables is significantly higher in one of the county groups and the other indicator is significantly higher in the opposing county group, the relationship between the tourism dependency ratio and the negative variables is indeterminate. However, three of the four beneficial factors are significantly lower in the tourist dependent counties, and two of the three are economic indicators. These findings indicate that the tourist dependent counties are not faring as well as their nontourist counterparts in the economic sector with lower average wage levels in both the service and nonagricultural sectors and higher levels of unemployment.

Rurality, Economic Diversity, and Tourism

In the counties of Utah that have larger populations and greater economic diversity, tourism is simply one more addition to the economic base. It can enhance the local economic structure through its interactions and dealings with the other economic sectors of the area causing a significant multiplier effect. Mutual benefits will be shared by the support structure of local businesses and the industries directly involved in the tourist trade. The increase in tourism will intensify the demand on the limited resources already employed in the other sectors. The growing demand can lead to higher prices for local resources, in

particular, labor and resultant increases in the wage and employment level.

In the rural counties of Utah which have limited potential economic diversification, tourism is frequently introduced as the only viable option for economic development. Due to the limited economic base, there is little local structural support and many of the interactions must be with sectors outside the region. This situation reduces the possible multiplier effect and creates an additional dependency on factors outside the area. Since there are few other development possibilities for the local resources, especially labor, there is a potential oversupply which would result in minimal increases in wage and employment levels.

There are some rural communities with limited resource bases that have been able to successfully specialize in the development of a single resource, thus evolving into a dynamic, viable community. Jackson, Wyoming is one example of this type of evolution and there is a possibility that Park City and Moab, Utah will be able to emulate the experience of Jackson. The process, however, is not a "quick fix" as it generally unfolds in an unpredictable and variable manner.

Many of the areas of Utah would be classified as rural and with limited economic diversification potential. Given the few possible alternatives for economic development, any resource development is positive for the community, whether it be tourism/recreation or mining. There is always the possibility that some of the communities will "take-off" by specializing in the sale of a single commodity. The majority, however, will probably experience some gains and benefits due to the resource development, but the gains may not meet the levels of benefits

as obtained in other more diversified communities. Therefore, the expectations as to the benefits from the resource development should be modulated carefully.

CHAPTER VI

CONCLUSIONS

The importance of tourism as a means of economic development is becoming more widely acknowledged than in former years. In 1987, the tourist industry was the nation's second largest employer, creating nearly 5 million jobs, and was one of the top three employers in 39 states (Myers). Tourism often presents a logical option, and frequently the only alternative, for economic development given the declines in manufacturing, agriculture, and mining in many areas. It is common for the expectations of the economic returns from tourism to be very high.

However, economic development resulting from increases in tourism may have certain negative, as well as positive, impacts upon the society. Frequently, the negative impacts are on nonmarket goods, thus, making them more difficult to define and value. Such goods can include increases in pollution (crowding, noise, waste disposal), decreases in community cohesion and family stability, and increases in community infrastructural needs (police, fire, transportation). Depending upon the values and priorities of the society, these negative impacts, or costs, may outweigh the benefits that are received from increased tourism. In addition, it is common that these external costs are incurred by the general public, while the positive returns are received by a limited number within the community. The problem then is to derive a comprehensive measurement of the impact of tourism on a given society that accounts both for the priorities and values of the society, as well as the equity issue of who pays for the external costs and who receives the benefits.

Traditional economic theory cannot empirically evaluate the alternative welfare positions with respect to the issue of equity or take into consideration the priorities and values of society. To produce a measurement of the impact of tourism on the total welfare of a community, it is necessary to employ an alternative methodology which incorporates sociological concepts. The theoretical approach applied in this study develops a social ordering function which is founded on Maslow's hierarchy of human development:

QOL=f(Physical Needs, Safety Needs, Social Needs,

Esteem Needs, Self-Actaulization).

This quality-of-life or welfare function provides a premise for the selection of specific socioeconomic indicators to be used as the components for the measurement of well-being and proposes a hierarchy of human needs upon which to judge whether given levels of well-being are higher or lower.

A statistical technique that is capable of testing the social ordering function is factor analysis. Factor analysis uses a mathematical construct to group highly correlated variables by assuming that the correlation between the variables is the result of a common, underlying determinant and is not resultant from a direct causal relationship. The grouping allows a broader and more comprehensive definition of the components of well-being. It also provides a nonsubjective method of weighing the individual indicators in order to aggregate the variables and produce an overall index of quality of life.

The results for this study from the applied factor analysis were inconclusive with respect to the social ordering model in that the

indicators did not group as hypothesized by the social ordering function. This indeterminacy indicates either the social ordering function needs to be further refined or, as is more likely, different indicators must be used. It does not appear that the selected indicators were able to capture accurately or reflect directly the changes of the various aspects of well-being. It is not that these indicators were inaccurate as much as they were incomplete and probably not the best measurements of certain components of well-being. Factor analysis is completely dependent upon the indicators selected as surrogates for the broader, more comprehensive aspects of welfare. Although the selection was guided by Maslow's hierarchy, the only data that could actually be used were those that had been collected annually by county in Utah for a specified time frame. This constraint restricted the accuracy of the surrogate variables to measure the wider concepts of well-being.

Nevertheless, a first-step in the development of an objective quality-of-life index based upon a theory of social ordering has been made in this research. Future research should emphasize the collection of data that would provide a better, more direct measurement of quality of life. The data should include subjective measurements of society's values and attitudes. The development of a social ordering model that corresponds to the needs and satisfaction levels of the people, as well as methods to measure the level of need would provide a comprehensive framework for studying and evaluating alternative levels of social welfare.

The measurement of the level of tourism also required the use of a surrogate variable. One of the obtainable measurements of tourism activity levels employed by other researchers is based upon tax data. A variable

labelled tourism dependency ratio is produced by taking the proportion of taxable revenue earned by eating and drinking establishments, plus the value of the taxable room sales to the total gross taxable revenue. This variable does not directly indicate the level of tourist activity; rather, it provides an indicator of the relative magnitude of economic activity in a sector heavily utilized by and dependent upon tourist activity.

The final results are to a great extent dependent upon the choice of indicators that measure both the quality of life and tourism. Since neither quality of life nor tourism could be directly assessed, it was more appropriate to test whether any correlation existed between the two surrogate variables and the strength of their relationship, rather than to try and define the form of the relationship between the two derived variables. The initial results suggest there is a potentially strong negative relationship between these particular qualifiers of tourism and well-being. It was apparent, however, that the two variables which could be defined by certain available indicators were not perfect measurements of the proposed variables, but aspects or components of the desired variables. They reflect certain attributes of the proposed variables, but not the total concept. Future research should involve the development of a more direct measurement of these two variables to be able to test with greater validity the form of the relationship between the two.

One possible explanation for the strong inverse relationship between the qualifiers of quality of life and tourism in this study may be each county's potential for economic diversification. Other studies (Krannich and Luloff) have shown that areas which are dependent upon a single resource may experience higher levels of economic, demographic, and social

instability as compared to those areas that have a more diverse economic base. These are factors which would lead to lower values for the quality of life.

Rural areas in particular are prone to dependency upon one major resource or economic sector and generally have fewer alternatives for economic development. Much of Utah falls into the rural classification and, thus, has limited potential for economic diversification. Given this limitation, the development of and support for increased tourism may offer a greater opportunity for economic development than what would be possible without it. Some rural areas that have limited economic diversity potential may be able to develop a single resource and create a stable, vibrant, viable economic base. These cases are a type of specialization in which the community has been able to evolve and develop such that any associated costs are outweighed by the benefits.

Generally, tourism is regarded as if it provides a universal development opportunity for all the regions of the state. Those regions with a higher tourism dependency ratio will experience the changes in tourism/recreation more than others. Some of the areas will be able to convert these changes into a positive force. Others, however, will not be as successful. The implication from the present study is that tourism cannot and should not be viewed as a panacea for all of Utah.

REFERENCES

Adams, David W. Speech to Tourism Conference, Salt Lake City, Utah, 1985.

Adelman, Irma, and Cynthia Taft Morris. Society, Politics, and Economic Development: A Quantitative Approach, 2nd Ed. Baltimore, MD: The John Hopkins Press, 1971.

Allen, Lawrence R., Patrick T. Long, Richard R. Perdue, and Scott Kieselbach. "The Impact of Tourism Development on Residents' Perceptions of Community Life." Journal of Travel Research 28(1988):16-21.

Andersen, J. C., and D. L. Snyder. "An Economic Overview of Utah Agriculture." Utah Science 46(1985):58-63.

Arrow, K. J. Social Choice and Individual Values, 2nd Ed. New York: John Wiley and Sons, Inc., 1963.

Bauer, Raymond A. Social Indicators. Cambridge, MA: The M.I.T. Press., 1966.

Baumol, William J. Economic Theory and Operations Analysis, 4th ed. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1977.

Bergson, Abram. "A Reformation of Certain Aspects of Welfare Economies." Quarterly Journal of Economics 52(1938):310-334.

Boissevain, Jeremy. "The Impact of Tourism on a Dependent Island: Gozo, Malta." Annals of Tourism Research 6(1976):76-90.

Britton, Robert A. "Making Tourism More Supportive of Small State Development: The Case of St. Vincent." Annals of Tourism Research 4(1977):268-278.

Buttel, Fred and Howard Newby. The Rural Sociology of the Advanced Societies: Critical Perspectives. Montclair, NJ: Allenhold Osman, 1980.

Campbell, Angus, and Phillip E. Converse. Human Meaning of Social Change. New York: Russell Sage Foundation, 1972.

Carley, Michael. Social Measurement and Social Indicators. Issues of Policy and Theory. London, England: George Allen and Urwin, Inc., 1981.

Cattell, Raymond Bernard. Handbook of Multivariate Experimental Psychology. Chicago, IL: Rand McNally, 1966.

Cattell, Raymond Bernard. Factor Analysis; an Introduction and Manual for the Psychologist and Social Scientist. West Port, CN: Greenwood Press, 1973.

Comrey, Andrew Lawrence. A First Course in Factor Analysis. New York: Academic Press, 1973.

Daniel, Wayne, S. and James C. Terrell. Business Statistics, Basic Concepts, and Methodology. Boston, MA: Mifflin Company, 1975.

Dann, Graham, Dennison Nash, and Philip Pearce. "Methodology in Tourism Research." Annals of Tourism Research 15(1988):1-28.

de Kadt, Emanuel. "Social Planning for Tourism in the Developing Countries." Annals of Tourism Research 6(1979):36-48.

Harrigan, N. "The Legacy of Caribbean History and Tourism." Annals of Tourism Research 2(1974):13-25.

Hicks, J. R. "Foundations of Welfare Economics." Economic Journal 49(1939):696-712.

Hunt, John D. Utah Regional Toruism/Recreation Impact and Development Potential. Institute for the Study of Outdoor Recreation and Tourism, Utah State University, Logan, Utah, 1975.

Jafari, Jafar. "On Domestic Tourism." Annals of Tourism Research 13(1986):491-196.

Jafari, Jafar, and Dean Aaser. "Tourism as the Subject of Doctoral Dissertations." Annals of Tourism Research 15(1988):

Jordan, James William. "The Summer People and the Natives: Some Effects of Tourism in a Vermont Vacation Village." Annals of Tourism Research 1(1980):34-55.

Just, Richard E., Darrel L. Hueth, and Andrew Schmitz. Applied Welfare Economics and Public Policy. Englewood Cliffs, NJ: Prentice-Hall, Inc., 1982.

Kaldor, N. "Welfare Propositions of Economics and Interpersonal Comparisons of Utility." Economic Journal 49(1939):549-552.

Kim, Jae-On. "Factor Analysis." Statistical Package for the Social Sciences (2nd ed.). Norman H. Hie, C. Hadlai Hull, Jean G. Jenkins, Karin Steinbrenner, Dale H. Bent, (Eds.). New York: McGraw-Hill Book Company, 1975.

Kim, Jae-On and Charles W. Mueller. Introduction to Factor Analysis. Senes: Quantitative Applications in the Social Sciences, No. 07-013. Beverly Hills, CA: Sage Publications, Inc. 1978.

Kjellstrom, Sven. "The Impact of Tourism on Economic Development in Morocco." Ph.D. dissertation, University of Michigan, 1974.

Klar, Lawrence R., Jr., William Keegan, and Rodney Warnick. Economic and Non-Economic Quality of Life Indicators in Rural Tourist and Non-Tourist Communities. Proceedings 1985 Outdoor Recreation Trend Symposium II, Volume 2. Department of Parks, Recreation, and Tourism Management, Clemson University, Clemson, SC, 1985, 292-298.

Krannich, Richard S., and Albert E. Luloff. "Problems of Resource Dependency in US Rural Communities." Paper Prepared for Presentation at the Annual Meeting of the Rural Sociological Society, Seattle, WA, August 1989.

LaFlamme, Alan G. "The Impact of Tourism: A Case from the Baham Islands." Annals of Tourism Research 6(1979):137-148.

Land, Kenneth C. "Theories, Models and Indicators of Social Change." International Social Science Journal 27(1975):7-37.

Liu, Ben-Cheh. Quality of Life Indicators in U.S. Metropolitan Areas, A Statistical Analysis. New York: Praeger Publishers, Inc. 1976.

Liu, Juanita C., and Turgut Var. "Resident Attitudes Toward Tourism Impacts in Hawaii." Annals of Tourism Research 13(1986):193-214.

Liu, Juanita C., Pauline J. Sheldon, and Turgut Var. "Resident Perception of the Environmental Impacts of Tourism." Annals of Tourism Research 14(1987):17-37.

Loukissas, Philippos. "The Impact of Tourism on Regional Development: A Comparative Analysis of the Greek Islands." Ph.D. dissertation, Cornell University: New York, (1977).

Maslow, Abraham H. Movitation and Personality, 2nd ed. New York: Harper and Row, Publishers, 1970.

Myers, Phyllis. "State Parks in the New Ear." Strategies for Tourism and Economic Development, Vol. 3. Washington, DC: The Conservation Foundation, 1989.

Ng, Yew-Kwang. Welfare Economics. London, England: The Macmillan Press, Ltd., 1980.

Ogburn, William F. Social Change with Respect to Culture and Original Nature. New York: B. W. Huebsch, 1922.

Owens, Wayne. Talk to Salt Lake Area Chamber of Commerce. Salt Lake City Tribune, September 13, 1984:20A.

Pigou, A. C. The Economics of Welfare. London, England: Macmillan and Co., Ltd., 1932.

Pizam, Abraham. "Evaluating Social Impacts of Tourism: Case of Cape Cod, Massachusetts." Tourism Recreation Research (December, 1980), 3-7.

Ram, Rati. "Composite Indices of Physical Quality of Life, Basic Needs Fulfillment, and Income." Journal of Development Economics 11(1982):227-247.

Rossi, Robert J., and Kevin J. Gilmartin. The Handbook of Social Indicators: Sources, Charactertisics, and Analysis. New York: Garland STPM Press, 1980.

Runyan, Dean, and Chung-Tong Wu. "Assessing Tourism's More Complex Consequences." Annals of Tourism Research 6(1979):448-463.

Scitovsky, Tibor. "A Note on Welfare Propositions in Economics." Review of Economic Studies (1941), 77-88.

Sen, Amartya K. Collective Choice and Social Welfare. San Francisco, CA: Holden-Day, Inc., 1970.

Sen, Amartya K. Choice, Welfare, and Measurement. Cambridge, MA: The MIT Press, 1982.

Sheldon, Eleanor Bernert, and Wilbert E. Moore, eds. Indicators of Social Change. New York: Russell Sage Foundation, 1968.

Silverberg, Eugene. The Structure of Economics: A Mathematical Analysis. New York: McGraw-Hill, Inc., 1978.

Sirgy, M. Joseph. "A Quality of Life Theory Derived from Maslow's Development Perspective: Quality is Related to Progressive Satisfaction of a Hierarchy of Needs, Lower Order and Higher." American Journal of Economics and Sociology 45(1986):329-342.

Utah Department of Employment Security. Statistical Abstract of Utah, 1978-1989. Salt Lake City, UT: State of Utah, Labor Market Information Services, 1989.

Utah Department of Health. Statistical Abstract of Utah, 1978-1989. Salt Lake City, UT: State of Utah, Bureau of Health Statistics, 1989.

Utah State Planning Office. Economic Development Plan for Utah, Executive Summary. Draft 4, 1985.

Wahlquist, Wayne. (Ed.) Atlas of Utah. Provo, UT: Brigham Young University Press, 1981.

Wall, Geoffrey, and Maccum Ali. "The Impact of Tourism in Trinidad and Tobago." Annals of Tourism Research 4(1977):43-49.

Watson, Alan E., and Joseph W. Roggenbuck. "Approximating Recreation Site Choice: The Predictive Capability of a Lexicographic Semi-Order Model." Proceedings-Symposium on Recreation Choice Behavior. Intermoutain Research Station, Missoula, MT, 1984.

Weber, Bruce and Robert Howell (Eds.). Coping with Growth in Rural Communities. Boulder, CO: Westview Press, 1982.

White, Stephen W. "Public Policy and Private Interest." National Forum. Vol. 69. No. 1. 1979.

Wilkinsen, Kenneth P. "Social Well-Being and Community." Journal of the Community Development Society 10(1979):5-15.

Zinam, Oleg. "Quality of Life, Quality of the Individual, Technology, and Economic Development." American Journal of Economics and Sociology 48(1989):54-68.

Zolotas, Xenophon. Economic Growth and Declining Social Welfare. New York: New York University Press, 1981.

APPENDIX

List of Variables and Codes

VARIABLES	CODES
YEAR	YR
POPULATION	POP
BIRTHS RATE PER 1,000 POPULATION	BIRTHP
DEATH RATE PER 1,000 POPULATION	DEATHP
CIVILIAN LABOR FORCE PARTICIPATION RATE	LABOR
UNEMPLOYMENT RATE	UNEMP
PER CAPITA INCOME	INCOME
TOTAL SCHOOL ENROLLMENT: 12TH GRADE AND UNDER	ENROLL
NUMBER OF HIGH SCHOOL GRADUATES	HSGRAD
EXPENDITURE PER STUDENT	EXPENDPS
INFANT MORTALITY RATE PER 1,000 LIVE BIRTHS	FIMORT
MARRIAGE RATE PER 1,000 POPULATION	MARRIAGE
DIVORCE RATE PER 1,000 POPULATION	DIVORCE
UNEMPLOYMENT BENEFITS PAID	BENEFITS
AVERAGE ACTUAL DURATION OF PAYMENTS	PAYMENT
NUMBER EMPLOYED IN THE SERVICE SECTOR	SERVICE
AVERAGE MONTHLY WAGE IN THE SERVICE SECTOR	WAGESER
AVERAGE MONTHLY NONAGRICULTURAL WAGE	TOTWAGE
NUMBER OF AGGREGATE VIOLENT OR PERSONAL CRIMES	VIOLENT
NUMBER OF AGGREGATE PROPERTY CRIMES	PROPERTY
NUMBER OF VOTER REGISTRATIONS	VOTEREG
VOTER PARICIPATION RATE	VOTEPAR
NUMBER OF NEW DWELLINGS CONSTRUCTED	DWELL
OUT-OF-WEDLOCK BIRTH RATE PER 1,000 LIVE BIRTHS	ILLEGIT
ABORTION RATE PER 1,000 LIVE BIRTHS	ABORT
GROSS TAXABLE RETAIL SALES AND PURCHASES	TOTTAX
GROSS TAXABLE RETAIL EATING AND DRINKING PLACES SALES AND PURCHASES	FOODTAX
GROSS TAXABLE ROOM RENTS	ROOMTAX
CONSUMER PRICE INDEX	CPI
COUNTY CODE	COUNTY

COMPUTED VARIABLES

LABOR/POP	LABRATE
ENROLL/POP	ENROLLP
HSGRAD/ENROLL	HSGRADS
(VIOLENT+PROPERTY)/POP	CRIME
VOTEREG/POP	VOTERPC
(INCOME*100)/CPI	REALINC
(EXPENDP*100)/CPI	REALEXP
(BENEFIT*100)/CPI	REALBEN
(TOTWAGE*100)/CPI	REALWAG
TOTTAX+ROOMTAX	GROSSTA
(FOODTAX+ROOMTAX)/GROSSTA	TOURISM

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Instructor, Irrigation Engineering Department, Utah State
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REFERENCES:

Will be furnished upon request.