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Well-Being in Forest-Dependent Communities, Part II: A Social Assessment Focus

ABSTRACT

This chapter assesses the current state of community well-being throughout the Sierra Nevada through the analysis of a combination of socioeconomic and community capacity measures. Aggregations of census block groups were used as the primary analysis unit. One hundred and eighty "community" aggregations were identified across the study area, delineated within six regions. Information on community capacity was derived through a series of nineteen local expert workshops. A case study of community capacity was conducted in Plumas County to examine the congruence of expert capacity assessment with community self-assessments. Socioeconomic data were developed from the 1990 *Census of Population and Housing*. A socioeconomic scale was developed from a diverse set of census measures to characterize the socioeconomic status of aggregations and to highlight similarities and variation across the Sierra Nevada. Aggregations were also characterized geographically by their spatial relationships to population centers, transportation corridors, and areas dominated by public lands, and a scale of relative isolation was developed from these spatial variables.

The relationships among socioeconomic factors, community capacity, and aggregation location and proximity to other geographic features are explored. Community capacity and socioeconomic status are found to be relatively independent, suggesting that they represent different dimensions of well-being that are not strongly related to each other. They are examined together in the discussion of well-being of the 180 aggregations.

INTRODUCTION

A credible, science-based assessment of the Sierra Nevada ecosystem must include a human dimensions component that includes a focus on current socioeconomic and social dynamics that influence ecosystem use, demands, and conditions. The objectives of the Sierra Nevada Ecosystem Project (SNEP) social assessment are to assess the current state of well-being of communities throughout the Sierra through an analysis of both socioeconomic measures and community capacity. This assessment contributed to the development of SNEP policy scenarios and can prove useful in the evaluation of the consequences of policy scenarios and ecosystem management more generally.

This chapter is divided into four sections. The first section briefly describes the geographic area included in this assessment. The second section discusses the methods employed in the study and is divided into five subsections: (1) data sources and unit of analysis, (2) community socioeconomic factors, (3) community capacity, (4) spatial analysis, and (5) community self-assessment.

The third section describes and discusses the results of the assessments. Capacity assessment ratings and socioeconomic scale scores are reviewed by region, and the factors contributing to each are analyzed. The relationship of spatial variables to capacity and socioeconomic factors is discussed, as is the relationship between community self-assessment and expert capacity assessment. A summary of what is learned from

Sierra Nevada Ecosystem Project: Final report to Congress, vol. II, Assessments and scientific basis for management options. Davis: University of California, Centers for Water and Wildland Resources, 1996.

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this integrated assessment constitutes the final section of the chapter.

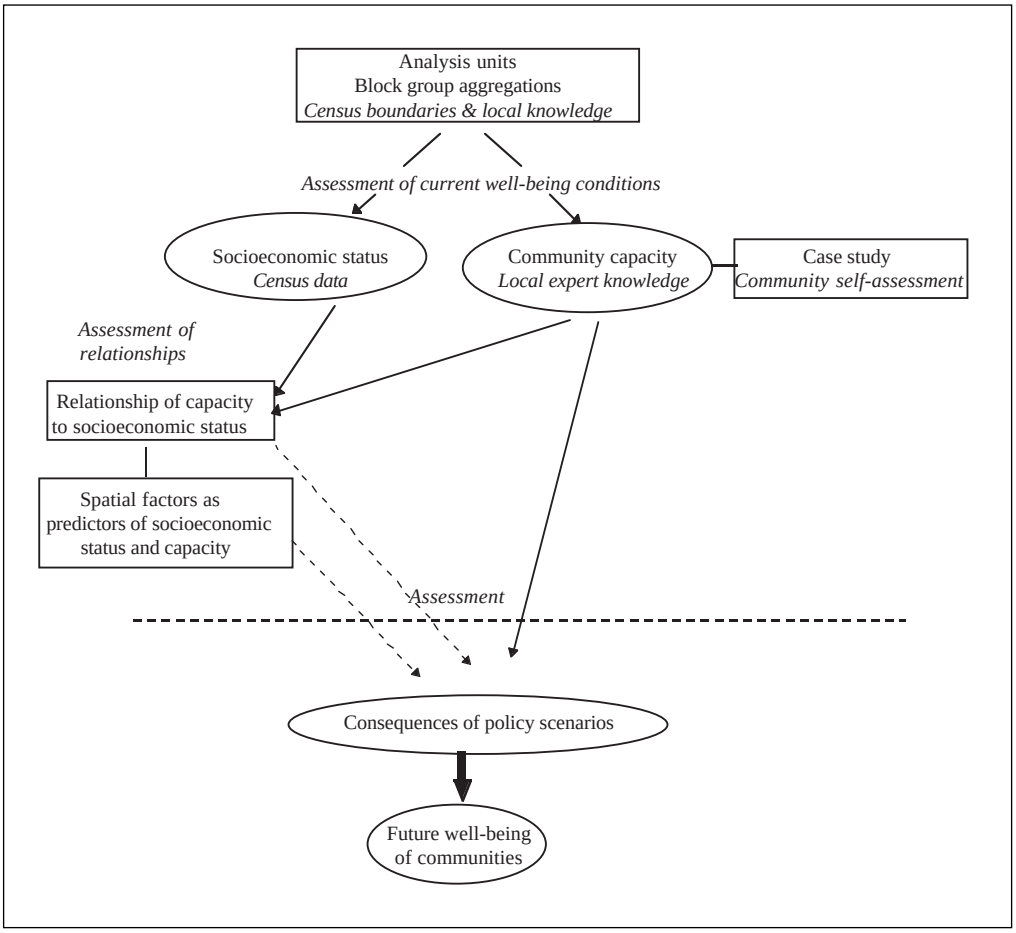
The diagram in figure 13.1 demonstrates the methodological flow of the integrated SNEP social assessment and its relationship to supplementary SNEP work. The "Methods" section first describes the development of the primary data sources and the "community aggregation" analysis unit, which is based on Bureau of the Census block groups. It then discusses the methodological development of the socioeconomic scale and measurement of capacity. The socioeconomic scale is based exclusively on a diverse set of census measures. This scale includes critical components of well-being but is not in itself exhaustive of all measures of well-being. Community capacity reflects a dynamic and multidimensional component of human well-being. It was assessed through workshops held with local experts. The subsection on spatial analysis describes how "community" point data were determined and how they were used to explore the relationships among socioeconomic factors, community capacity, and aggregation location and proximity to other geographic features. The final subsection discusses the workshops devoted to a pilot community self-assessment.

STUDY LOCATION

The social assessment focuses principally on the SNEP core region, an area primarily delineated by watershed boundaries and modified by elevation and administrative boundaries. The geographic area included in the social assessment deviates slightly from the SNEP core boundary to accommodate complete Bureau of the Census block groups, units for which socioeconomic data are summarized. The social assessment study area (hereafter referred to as the "Sierra") extends from central Lassen County and Eagle Lake in the north, southward to the middle of Kern County. The eastern boundary follows the Nevada-California border to the Lake Tahoe Basin—where it includes the populated portion of Nevada in the basin—and continues south to Inyo County. The Death Valley region in Inyo County is excluded from the assessment area. The western boundary includes the foothill region of Kern, Tulare, Fresno, and Madera Counties, bisecting those counties, and follows the western boundaries of Mariposa, Tuolumne, Calaveras, Amador, and El Dorado Counties. The western boundary excludes the westernmost portion of Placer County, includes all of Nevada County, and draws in the foothill and mountain regions of Yuba and Butte Counties.

FIGURE 13.1

Social assessment methodology.



METHODS

Data Sources and Unit of Analysis

The first step in the social assessment identifies a socially relevant unit of analysis and a consistent source of data that are available for that unit and that provide information on social conditions across the Sierra. The 1990 Census of Population and Housing (U.S. Bureau of the Census 1990a) was selected as the principal source of secondary data. Census data include an extensive amount of socioeconomic information that is consistent throughout the Sierra, and it is accessible at several different geographic levels. Other social and economic data either are available only at a county level or are inconsistent in format. For example, statistics on crime, health, and enrollment in public support programs, measures that would be valuable to include in a well-being assessment, are available only at the level of the county or incorporated city. See Machlis et al. 1995 and Interorganizational Committee on Guidelines and Principles 1994 for listings of additional measures. Most are not included here, however, because they are not collected at a level equivalent to census block groups.

The selection of an analysis unit focuses on finding a socially recognizable unit of analysis that captures the variation in social conditions across the Sierra. The Bureau of the Census reports population and housing summary statistics in several different geographic units, including counties, tracts, places, block groups, and blocks.

The county, the most frequently used unit of analysis (see Kusel 1996), was avoided for this study because it is too gross a level and does not adequately represent social communities. County-level analyses tend to ignore within-county variation that can be observed only by focusing on smaller analysis units. Moreover, in several cases only portions of individual counties are included in the SNEP study area. It would be inappropriate, for example, to include the relatively large valley populations of Fresno and Yuba Counties in an analysis of social well-being in the Sierra Nevada. Census tracts are smaller than counties, but they are still large enough to suffer from the same deficiencies, though to a slightly lesser degree.

Places, as defined by the Bureau of the Census, include incorporated areas and census-designated places (CDPs). CDPs are the statistical counterparts of incorporated places and comprise densely settled areas that are identifiable by name but are not legally incorporated. The boundaries of both incorporated places and CDPs often omit people who may identify with the community defined by the CDP or incorporated area. Moreover, because populations in the Sierra Nevada are often dispersed, places provide only partial coverage, leaving the majority of the population in the region unaccounted for. Places were thus found to be unsuitable for the study.

Blocks and block groups are the two smallest units used by the Bureau of the Census. Blocks, the smallest unit, could not be used in this study because only limited census data are published at this level. Block groups are the smallest inclusive units for which all summary statistics are reported, including the more detailed sample data. Block group delineations, however, often do not reflect existing community lines. Blocks and block groups are delineated along major roads and other physical features and often do not coincide with communities or other meaningful social units. Many small towns and communities are split into two or more block groups.

Recognizing that many of the limitations of block groups could be overcome by combining similar adjacent areas into larger and more socially meaningful units, we selected aggregations of block groups as the primary analysis unit for the social assessment. Existing block groups were aggregated to form meaningful social units that more closely represented locally defined communities. While block groups do not cross county lines, no attempt was made to restrict aggregations to within individual counties, and in some cases aggregations do include populations in more than one county.

Block group aggregation units and names were developed through an iterative process involving extensive input from county planners and other local experts. First, discussions took place with planners in each county in the Sierra familiar with local communities and also generally familiar with census data and county demographics. These discussions led to the development of preliminary "community" block group aggregations, using the criteria just outlined. Draft county-level maps of these aggregations were then sent to each planner for review, along with a request to circulate the map to others knowledgeable about local communities. Both written and oral comments were received. Additional conversations with planners in each county clarified their suggestions regarding changes to the preliminary aggregations, and the preliminary aggregations were revised. Finally, during individual community capacity workshops, groups of local experts reviewed the revised aggregations and provided suggestions for the final aggregations.

A total of 182 aggregations were developed from 720 block groups within the core study area, although only 180 were used in the analysis. Two aggregations (Tehachapi Prison and the Correctional Center in Susanville) were excluded from all analysis since more than 99% of their populations are prisoners in correctional institutions. Two other aggregations with large prison populations, Ione and Keystone/Lake Don Pedro, were included in the analysis because the incarcerated represent a smaller percentage of the overall aggregation population. Moreover, prisoners are excluded from all but one of the socioeconomic scale measures. This is discussed further in a later section.

The following criteria were used to guide the development of aggregations.

- Aggregations are formed from one or more block groups that are spatially adjacent or linked to one another.

- Aggregations are formed from block groups in which the majority of the population is associated with a single community.
- Each aggregation should contain a minimum total population of 500. With few exceptions, all aggregations—including solitary block groups—conform to this rule. In a few areas, smaller block groups were not aggregated with others when they represented distinct communities or to preserve the heterogeneity represented by extreme social differences between adjacent areas.
- Where it is necessary to include more than one community in a single aggregation, block groups may be placed into aggregations in which populations share common service centers, common community service districts, or common school systems.
- Block groups with small, dispersed populations that conform to no single community are aggregated together when they share similar demographic characteristics, as determined by local knowledge (e.g., low-density housing, commuting patterns, or ethnicity).
- Where adjacent block group populations differ and do not fall under the previous criteria, they are kept as separate units to ensure that this diversity is captured in the analysis.
- With numerous small communities or areas with no clearly identifiable communities, aggregation determination is also based on geographic features.

Block group aggregation names are intended to be both inclusive of existing communities and descriptive of general population patterns within the aggregation. In general, aggregation names include major community names as commonly recognized by residents (e.g., Arnold / Avery / Dorrington, or Kernville / Wofford Heights). Where no definable communities exist, names are based on general geographic characteristics (e.g., Lake Oroville Area, or South County) or on relationships to nearby towns or community centers.

Socioeconomic Scale

A scale depicting variation in selected socioeconomic factors for the community aggregation units was developed from 1990 Census of Population and Housing data. The socioeconomic scale incorporates five primary categories: housing tenure, poverty, education, employment, and children in homes with public assistance income. These individual categories are combined into a single scale to take advantage of each individual measure while ensuring that no single one dominates. Each category is weighted equally within the scale, although the poverty category has two components. The primary assumption of the scale is that higher levels of home ownership, education, and employment indicate higher levels of socioeconomic well-being, and higher levels of poverty and a higher percentage of children in homes receiving public assistance income indicate lower levels of socioeconomic well-being.

Components of the Socioeconomic Scale

The housing tenure score of the scale is the percentage of all occupied housing units that are owner occupied. Since the universe is occupied housing units, this variable includes only permanent residences that are the usual place of residence of the occupants. It excludes group quarters (e.g., military quarters, college dormitories, or prisons). The inverse of this variable is equal to the percentage of occupied housing units that are renter occupied. The housing tenure score, then, reflects the relative level of owner-occupied housing versus renter-occupied housing across the Sierra. The housing tenure component is suggestive of the relative wealth and permanence of the residents in an area and offers insight into the degree of local control of a vitally important resource.

The poverty score includes two equally weighted components: the percentage of all persons in poverty and a measure of poverty level and intensity. Poverty status is determined at a national level by the Bureau of the Census as a function of family income and family size. The number of persons below the poverty level is the sum of the number of persons in families with incomes below the poverty level and the number of unrelated individuals with incomes below the poverty level. Poverty status is not determined for institutionalized persons, persons in military group quarters and in college dorms, and unrelated individuals under fifteen years of age.

The first component in the poverty score, the percentage of all persons with income below the poverty level, is the ratio of persons with incomes above the poverty level to those with incomes below the poverty level. The second component of the poverty score indicates the relative intensity of poverty of those individuals with incomes below the poverty level. Three variables are combined to capture the intensity of poverty within a given area, using the following formula:

$$S = \Sigma\,[(1 * X), (3 * Y), (9 * Z)]$$

where: S = poverty intensity
X = percentage of persons with incomes between 75% and 99% of the poverty level
Y = percentage of persons with incomes between 50% and 74% of the poverty level
Z = percentage of persons with incomes less than 50% of the poverty level

The multiplication factors of 1, 3, and 9 are used to emphasize the intensity of poverty by placing greater weight on the highest poverty levels. These factors help to stretch out the range of numbers and create a greater distance between incomes that are just below the poverty level and those that are far below the poverty level. More linear factors of 1, 2, and 3

do not place enough emphasis on the higher levels of poverty to provide a score reflective of poverty intensity.

Education is reflected by a cumulative educational attainment score weighted toward higher levels of educational attainment. Education is assessed in the census data for all persons twenty-five years of age and older. This is the only component of the socioeconomic scale that includes the large incarcerated populations of Ione and Keystone/Lake Don Pedro. Unlike other components of the scale, the census-defined universe for educational attainment is all persons, including prisoners, and is reported in a way that does not allow for isolation of incarcerated populations. The education score is calculated by multiplying the percentage of persons in each of the seven census data education categories by a factor that increases by 1 at each higher level and then summing the products.

$$S = \Sigma\,[A, (B * 2), (C * 3), (D * 4), (E * 5), (F * 6), (G * 7)]$$

where: S = educational attainment score
- A = percentage of persons with less than a ninth grade education
- B = percentage of persons with a ninth to twelfth grade education, no diploma
- C = percentage of persons who are high school graduates or the equivalent
- D = percentage of persons with some college, no degree
- E = percentage of persons with an associate degree
- F = percentage of persons with a bachelor's degree
- G = percentage of persons with a graduate or professional degree

The employment score is the percentage of the civilian labor force that is employed and is the inverse of the percentage of persons who are unemployed. All civilians sixteen years old and older are classified by the Bureau of the Census as unemployed if they (1) were neither "at work" nor "with a job but not at work" during the week of enumeration, and (2) were looking for work during the four weeks preceding enumeration, and (3) were available to accept a job. Also included as unemployed are civilians who did not work at all during the reference week and were waiting to be called back to a job from which they had been laid off. As used here, the universe for employment excludes those not "in the labor force" and those in the armed forces.

As measured by the Bureau of the Census, unemployment provides a well-defined but somewhat narrow view of the status of the labor force. Since it is limited to individuals who are actively seeking work, the measure is often inaccurate in areas of chronic unemployment where frustrated workers have dropped out of the labor force. Such workers cannot be identified using only census data. These data report employment and labor force participation for those between the ages of 16 and 64, as well as for those over 64 years of age, but the percentage of persons within these groups who are not in the labor force is not restricted to frustrated workers who have dropped out, but may include early retirees and others who are not part of the labor force by choice.

Children in households with public assistance income reflects the percentage of all children under fifteen years of age living in households that receive public assistance income. Public assistance income includes (1) supplementary security income payments by federal or state welfare agencies to low-income persons who are sixty-five years old or older, blind, or disabled; (2) aid to families with dependent children (AFDC); and (3) general assistance. It excludes payments for hospital or medical care. The percentage of children in households with public assistance income provides an indicator of families in need. Yet it is important to point out that not all families in need receive public assistance. This is true particularly in cases where cultural values limit the acceptability of public assistance.

Development of the Socioeconomic Scale

Standardized scores were calculated for each component score before they were combined into a single scale. Standardized scores, often referred to as "Z" scores, indicate the number of standard deviations above or below the mean that a particular observation falls. They are calculated by dividing the difference between a particular observation and the mean by the standard deviation. Standardization facilitates the comparison of scores from distributions. To ensure that outliers do not have undue influence on the distribution range of any score, each standardized score is then normalized to a base of 100 using two standard deviations as reference points. The individual component scores are combined into a single socioeconomic scale, which is also normalized to a base of 100.

$$X = \frac{\Sigma_S^{1-6}\,[((S\ /\ Z) - A) * (100/(B - A))]}{5}$$

where: X = socioeconomic scale
- S = standardized scores of each of five scale components
- Z = 2 if S is persons in poverty or poverty intensity; otherwise, Z = 1
- A = –2 (two standard deviations below the mean)
- B = 2 (two standard deviations above the mean)

The socioeconomic scores are reported on a seven-point categorical scale, with 1 being the lowest socioeconomic score and 7 being the highest. The ordinal scale is derived from the continuous scores, divided into categories based on the number of standard deviations from the mean of the scale. A rating of 1 is a very low socioeconomic score and includes those scores at least two or more standard deviations below the mean (i.e., standard deviation $\leq$–2); 2 is a low score (stan-

dard deviation > –2 and ≤ –1); 3 is a medium-low score (standard deviation > –1 and ≤ –0.5); 4 is a medium score (standard deviation > –0.5 and < 0.5); 5 is a medium-high score (standard deviation ≥ 0.5 and < 1); 6 is a high score (standard deviation ≥ 1 and < 2); and 7 is a very high score (standard deviation ≥ 2).

While income is a commonly used indicator of socioeconomic status and well-being, it is not included in the socioeconomic scale for two reasons: (1) most of the variables in the scale are closely correlated with income, and (2) income measures available from the census data are problematic. The Bureau of the Census reports income in a variety of tables and formats. Comparisons of census-reported aggregate income with other income sources indicate that census-reported income is considerably underestimated, particularly for interest and dividend and public assistance income (Stewart 1996). Adjustments can be made to compensate for these discrepancies, but they can be applied only to aggregate income, making many of the census income tables, which report income within finite categories, unusable. Due to the level of variation in interest and dividend and public assistance income among block group aggregations, these correction factors have a significant effect on the ordering of relative income among aggregations. As an additional complication, analysis of aggregate income indicates that pockets of households with extraordinarily high income throughout the Sierra can significantly distort the real distribution of income within aggregations, making average income measures—whether household, family, or per capita—inappropriate as relative indicators of the socioeconomic status of individuals within a particular area. Average income measures are best suited only as a means for expressing total income in an area in relative terms.

Since aggregate income, or average income derived from aggregate data, is the only measure that can be effectively adjusted for discrepancies involving interest and dividend income and public assistance income, and since average income appears to severely distort the relative ranks of aggregation by actual income, direct income measures were not included in the socioeconomic scale.

Community Capacity

Community capacity (described fully in Kusel 1996) is the collective ability of residents in a community to respond to external and internal stresses; to create and take advantage of opportunities; and to meet the needs of residents, diversely defined. It consists of three broad categories: physical capital, human capital, and social capital (see appendix 13.1).

Community capacity was assessed for the community aggregations, based on local expert knowledge. A series of local workshops was held in nineteen different locations across the Sierra. All of the workshops but one focused on aggregations falling primarily within a single county. That workshop covered aggregations in the Greater Lake Tahoe Basin, which included aggregations in six separate counties.

The number of participants in each workshop ranged from three to eighteen, depending on the area and the number of aggregations to be addressed. To ensure diverse perspectives in workshop discussions, SNEP workshop organizers selected participants from a variety of backgrounds. Included were those individuals who—by nature of their profession, local involvement, or history of residence—are knowledgeable about the physical, human, and social capital of most of the communities within each workshop's area of focus. Participants included but were not limited to planners and planning commissioners, community development professionals, current and former county supervisors, education administrators, businesspeople, health and human service providers, and long-term residents with diverse backgrounds and experiences.

To ensure consistency in the information gathered, each workshop used the following process.

1. The creation, composition, and general charge of SNEP were introduced to the group.
2. The role of the social assessment component within the SNEP process was discussed and the entire social assessment methodology reviewed, including a brief introduction to the analysis units and the concepts of well-being and community capacity.
3. The process for determining the capacity of community aggregations within the workshop's area of interest was outlined.
4. The community aggregations for the area of interest were reviewed by the group for appropriateness. In some cases, alterations were made to the aggregations.
5. The concept of community capacity was reintroduced and defined in more detail.
6. Participants were asked to indicate the various community aggregations with which they were most knowledgeable and most familiar. Based on the responses, assignments were made to individual participants to ensure that each aggregation was assessed by two different people (although limited expert knowledge and limited number of experts occasionally led to one assessment). Participants were asked to complete a separate community capacity worksheet (see appendix 13.2) for each aggregation, including a narrative assessment of capacity and a rating of capacity on a seven-point scale ranging from very low to very high. In assessing capacity, participants were asked to consider the level of physical, human, and social capital in the communities within each aggregation.
7. The individual capacity rankings for each aggregation were summarized and anonymously presented to the group for their review. During a facilitated group discus-

sion, the capacity ratings for each aggregation were discussed, there was further elaboration of issues relating to capacity for each aggregation, and a final capacity ranking was determined by the group for each aggregation.

Information gathered from each workshop includes individual community aggregation narratives and capacity rankings, final group capacity rankings, and notes from the facilitated discussion of all aggregations.

The results of each workshop were reviewed to ensure that the capacity rankings and related discussions were consistent with those of other workshops. If a group did not adequately grasp the concept of capacity or if numerical ratings generated by the experts appeared significantly different from those of other groups, a second panel was convened. Two additional panels were convened for these reasons. In these instances, the narratives of both groups were incorporated into the assessment, but the capacity ratings were selected from the group that appeared to have the best understanding of capacity and that assigned ratings consistent with those employed in other workshops.

In most workshops experts proved reluctant to apply the highest and lowest capacity ratings on the seven-point capacity scale, and very few aggregations actually received either a 1 or a 7. To ensure greater consistency in the analysis across the study, the scale was collapsed to a five-point range, with scores of 1 and 2 combined to form the lowest capacity score and scores of 6 and 7 combined to form the highest.

Spatial Analysis

A geographic point coverage was generated to represent the approximate location of the population-weighted centers of each community aggregation. The point coverage was developed to provide a population-based depiction of the aggregations and to facilitate analysis of the relationships among socioeconomic factors, community capacity, and aggregation location and proximity to other geographic features. Polygon representations of the block group aggregations do not adequately reflect the location and distribution of populations within each aggregation. (A polygon is a closed-plane figure used to represent the geographic extent of a feature on a map. Block groups are delineated by the Bureau of the Census as a series of adjacent polygons inclusive of all populated and unpopulated land and water areas in the United States.) Many aggregations include large tracts of public land and other unpopulated areas, and the physical extent of the aggregation polygons often distorts the extent of the actual populations within them.

Point representations of each aggregation were created by averaging the coordinates of the internal points of each block group within the aggregation, weighted by the population of the block group relative to the population of the entire aggregation. The internal point coordinates (latitude and longitude) of a block group, calculated by the Bureau of the Census, represent the approximate geographic center of the block group. If, due to the shape of the block group, the geographic center falls outside of the block group, the internal point is relocated within the boundaries. Likewise, if the center falls within a body of water, the internal point is relocated to a land area within the block group (U.S. Bureau of the Census 1990b). Figure 13.2 shows the point representation of the 180 block group aggregations used in the social assessment. Point locations for the aggregations could be more accurately located from block (rather than block group) center coordinates and populations; however, these data were not readily available within the time frame of the analysis.

To further characterize each aggregation by geographic location relative to infrastructure, services, public land, and other factors, we enhanced the aggregation point coverage with some basic spatial data, including

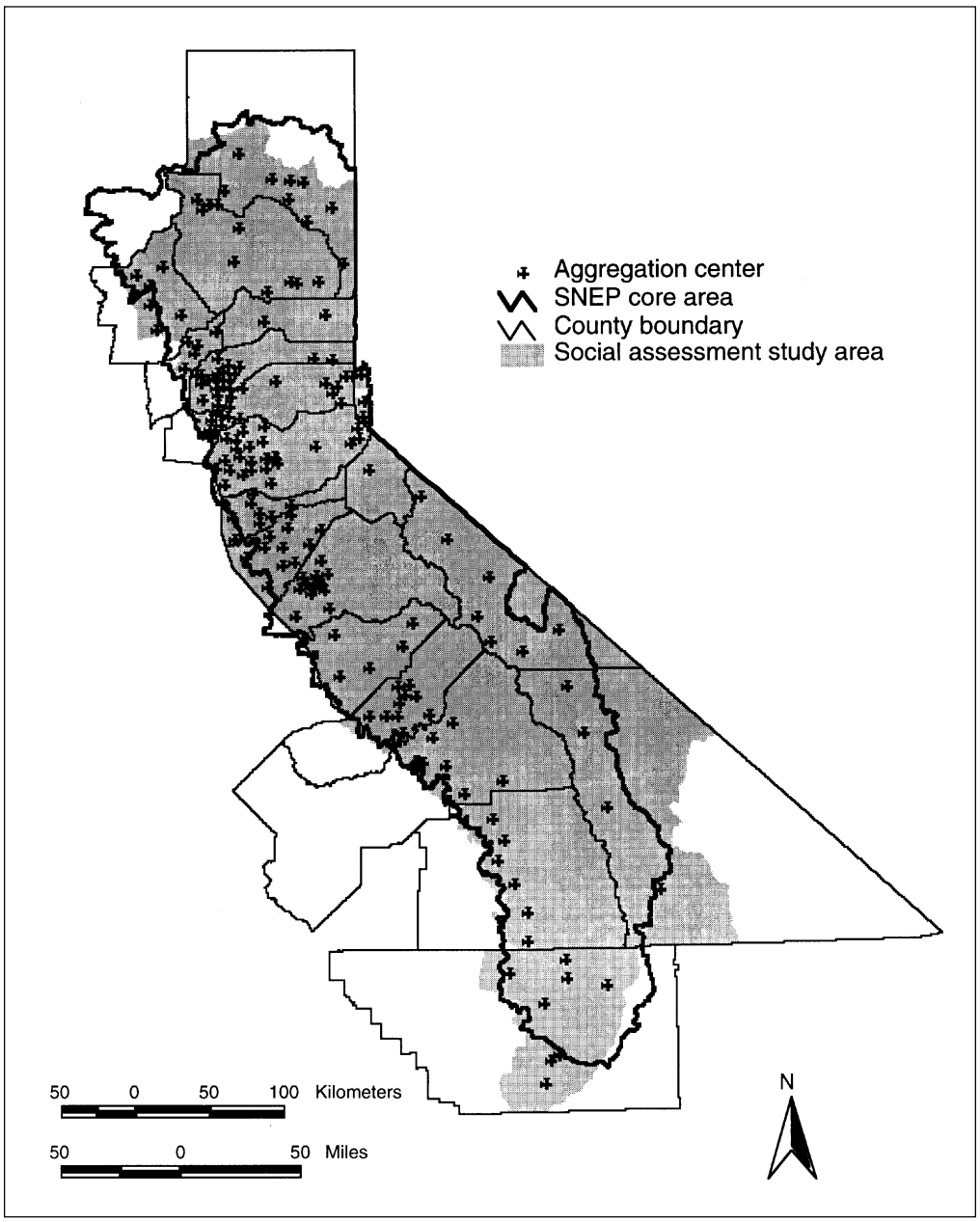
- average elevation of an area defined by a 0.5 km (0.3 mi) radius around the point
- aerial distance to the nearest federal highway or interstate
- aerial distance to the nearest state highway on major road coverage
- aerial distance to the closest major city with a population of 25,000 or greater
- aerial distance to the nearest county seat
- percentage of public land within an 8 km [5 mi] radius
- population density by aggregation area

While actual road miles or travel time may provide more explicit measures than aerial distances, time and resource limitations prohibited this type of detailed analysis. Moreover, since the aggregation center points are only representations of dispersed populations, the less precise aerial distances should suffice for this analysis. The creation of these variables permits the evaluation of spatial characterizations in developing typologies of aggregations as well as the examination of spatial relationships associated with socioeconomic factors and community capacity. These variables were selected in part due to a previous assessment of communities in the Pacific Northwest (Forest Ecosystem Management Assessment Team [FEMAT] 1993) in which a rudimentary analysis of spatial factors indicated that access to transportation corridors, density of federal land ownership, and general isolation may be related to community capacity.

The four distance measures and the percentage of public land measure were combined into a simple scale as a general proxy of isolation of each community aggregation. Standardized scores were calculated for each component of the scale and normalized to a base of two standard deviations. The normalized component variables were then combined with equal weight into a single scale. The isolation scale was created using the following formula.

FIGURE 13.2

Point locations of aggregations.



$$S = [\Sigma(A, B, C, D, E)]/5$$

where: S = isolation scale
- A = standardized distance to the nearest federal highway or interstate
- B = standardized distance to the nearest state highway
- C = standardized distance to the closest major city with a population of 25,000 or greater
- D = standardized distance to the nearest county seat
- E = standardized percentage of public land within an 8 km radius

Case Study of Capacity Assessments in Plumas County

A case study of community capacity was conducted to examine the congruence of expert capacity assessment with community self-assessments. The study of individual communities also allowed in-depth exploration of local issues. Plumas County was chosen as the case study because of the varying types of forest dependence (e.g., commodity production, a service industry associated with recreation, and a growing number of retirement communities and other communities in which the forest was important as a backdrop) and because it is the home of the Plumas Children's Network. The Plumas Children's Network, working with a grant from the Sierra

Health Foundation, was conducting community assessments to develop strategies to improve the health and well-being of children and families in Plumas County. Its staff agreed to work with the SNEP researchers because of an interest in community capacity assessment. Working with the Plumas Children's Network provided SNEP social assessment researchers access to local networks and individuals who were able to help organize community workshops and ensure higher local participation. In addition, the Plumas Children's Network was able to use SNEP research immediately for its community assessment and to help secure additional funding for a second phase of the grant. As a result, local communities benefited not only by learning about themselves but also from the advancement of the Plumas Children's Network projects.

Involving local residents in assessing community capacity required the development of a community self-assessment workshop, one quite different from the process used for the expert assessment of capacity for the aggregations. Evening workshops, which averaged two hours in length, were conducted in the towns of Chester, Graeagle, Greenville, Portola, Quincy, and Sierra Valley. The workshops followed this format:

1. Participants were introduced to researchers, to SNEP, and to the Plumas Children's Network. This was followed by a brief description of the workshop objectives and a discussion of the workshop ground rules. The workshop objectives were to identify key issues that affect local capacity and to numerically rate community capacity on a seven-point scale (1, very low; 2, low; 3, medium-low; 4, medium; 5, medium-high; 6, high; 7, very high).
2. SNEP researchers described the concept of capacity and its application to communities.
3. SNEP researchers discussed issues that define and determine community capacity.
4. Working individually, participants were asked to write on cards the most important items/issues that affect their community's capacity and to numerically rate their community's capacity.
5. Participants were individually asked to identify the three most important issues that determine capacity.
6. Working in small groups, participants shared and discussed their lists of most important items/issues with one another and determined the five or six of most importance to the small group.
7. The five or six most important items/issues from each group were posted in front of the full group.
8. Items/issues were organized into categories.
9. The large group reexamined the list, discussed it, and added any important items/issues that were missing.
10. In several workshops participants voted on the most important issues and were allotted five votes to distribute among issues they felt were most important.
11. Individually, participants rated the capacity of the community a second time.
12. A SNEP researcher and the Plumas Children's Network coordinator briefly recapped the meeting, reviewed group determinations, and thanked participants.

RESULTS AND DISCUSSION

This section is presented in four parts. The first part introduces the social assessment regions and describes the distribution of population within them. In the second part the socioeconomic status and capacity scores among the regions and individual aggregations are discussed in detail. An overview of the regions and the aggregations within them is provided, highlighting some of the variation in community capacity, socioeconomic scale scores, and other ancillary socioeconomic data. Some of the unique findings regarding individual aggregations are also discussed based on observations from the workshops and analysis of socioeconomic data. This section closes with a discussion of the concentration of populations with low socioeconomic status.

The third part focuses on relationships between diverse socioeconomic variables, including the socioeconomic status score and capacity. The discussion addresses the internal association of socioeconomic scale items; the association between capacity and socioeconomic status; the occurrence, frequency, and type of single-parent households; and the association of income to the socioeconomic scale. The relationship of capacity to socioeconomic status is described as an important determinant of overall aggregation well-being. Patterns of age distribution are described and related to socioeconomic status and capacity, along with the spatial characteristics of aggregations. The final part of this section presents the findings from the Plumas County case study.

Throughout these summaries, all discussions of socioeconomic scores and statistics related to socioeconomic variables refer to information derived from the 1990 Census of Population and Housing (U.S. Bureau of the Census 1990a). Community capacity scores discussed in the summaries reflect a five-point capacity scale—collapsed from the seven-point scale used in the workshops—where 1 indicates low and very low capacity, 2 indicates medium-low capacity, 3 indicates medium capacity, 4 indicates medium-high capacity, and 5 indicates high and very high capacity. Descriptions of individual aggregations are based largely on discussions in the local capacity workshops.

The Social Assessment Regions

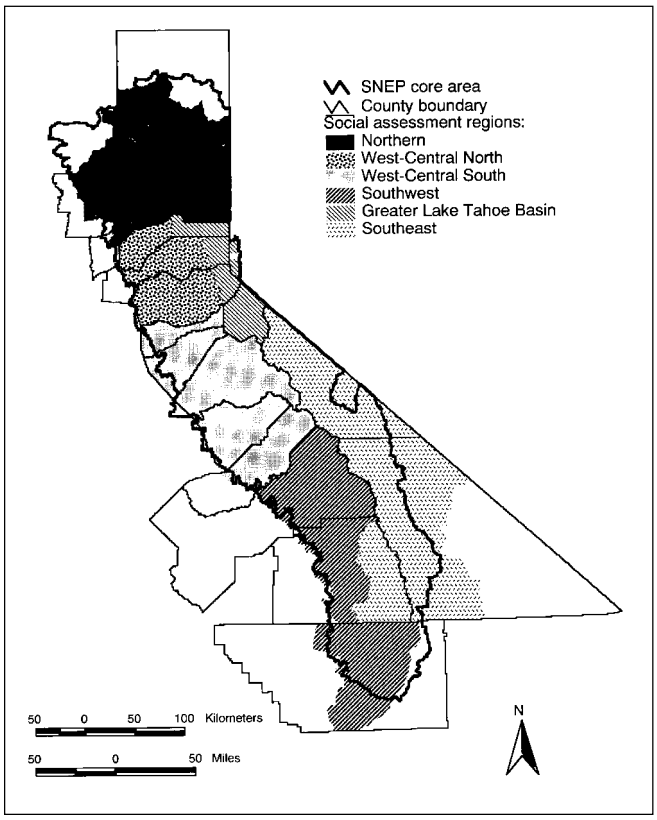
Region Descriptions

Six distinct regions, somewhat different from the hydrologic and other geographic regions presented elsewhere in this volume, were identified in the social assessment. They are based on transportation corridors, commute patterns, economies, community identification, and other information collected in local workshops. These regions, while similar in some respects, are recognized as relatively distinct social and economic areas. Delineation of regions permits identification of regional patterns and trends and provides a valuable (though certainly not the only) perspective for this analysis. Figure 13.3 identifies these regions relative to the SNEP core area.

The Northern Sierra region includes the southern half of Lassen County, all of Plumas and Sierra Counties, and foothill areas on the east side of Yuba and Butte Counties. Many communities in this region are linked to the timber industry, some historically, with little or no modern-day timber-related employment, and others currently, with a significant proportion of employment in the timber industry. The area also has a growing recreation and service economy. The region is largely beyond the Sacramento and Interstate 80 commuting corridor that characterizes the area to the south.

FIGURE 13.3

Social assessment regions.



The West-Central North region includes the western portions of Nevada and El Dorado Counties and the central portion of Placer County. Each of these three counties lies along major east-west transportation routes that provide easy access to the Sacramento area and allow year-round traffic over the divide and into the Lake Tahoe Basin. This area has seen considerable growth in the last twenty years.

The West-Central South region includes Amador, Calaveras, Tuolumne, and Mariposa Counties and the eastern portion of Madera County. These five counties are linked by Highway 49, which traverses the Sierra foothills and terminates in Oakhurst in Madera County. The southern three counties are also linked by their economic reliance on Yosemite National Park.

The Southwest region includes the eastern portion of Fresno and Tulare Counties, and the north-central portion of Kern County. The Central Valley portions of these counties are outside of the SNEP core study area and are not included in this analysis. The large Central Valley cities of Fresno, Visalia, and Bakersfield, however, have a considerable and growing impact on settlement within the Southwest Sierra Nevada region.

The Greater Lake Tahoe Basin (GLTB) region consists of the easternmost portions of Nevada, Placer, and El Dorado Counties; all of Alpine County; and the southwestern portion of Washoe County and northwestern portion of Douglas County in Nevada. Alpine County and the Donner Summit and Truckee aggregations to the north are not part of the Lake Tahoe hydrologic basin, but the economies and social organization of these areas, primarily based on tourism and recreation, are similar to others in the basin and therefore are grouped for this analysis. Although a portion of Carson City extends to the shore of Lake Tahoe, this area was not included in the social assessment, because the vast majority of the population within the block group resides in the Carson Valley, a clearly separate geographic region and economy.

The Southeast region includes the east-side Sierra counties of Mono and Inyo, excluding the southeastern portion of Inyo that includes Death Valley. The small, sparsely inhabited southeastern portion of Tulare County, which drops eastward from the Sierra Divide to the Inyo County border, is included in this region. Due to the small, dispersed population across the region, some of the census block groups are extremely large and unwieldy. This led to the creation of several community aggregations encompassing small communities not closely linked to one another (e.g., Big Pine/Independence and Olancha/Cartego/Kennedy Meadows). This region is also characterized by a land ownership pattern dominated by public agencies, primarily the Los Angeles Department of Water and Power (LADWP), the U.S. Forest Service, and the U.S. Bureau of Land Management.

Population Distribution

The total population of the Sierra Nevada area considered in the social assessment is 646,769. This total excludes 5,533 per-

sons in the Tehachapi Prison aggregation and 4,099 in the Susanville Correctional Center aggregation, and is based on 1990 data. Figure 13.4 illustrates the distribution of population in the six regions. More than one-third of the Sierra population lies in the West-Central North region, and more than one-half resides in the West-Central North and West-Central South regions combined. The two most populated aggregations in the study, however, are in the Northern region. The west-side aggregations of Oroville and Paradise/Magalia have population totals of 33,706 and 32,507, respectively, and together they make up more than half of the population in the Northern region. The Northern region has the second lowest median aggregation population of the Sierra, at 1,345.

The South Lake Tahoe aggregation, with a population of 23,319, is the third most populated in the Sierra, including more than one-third of the residents in the Greater Lake Tahoe Basin region. Another 15% of the GLTB region lies in the Truckee aggregation, with a population of 9,386, and a further 12% is in the Incline/Crystal Bay/Brockway aggregation, with 7,856. The region has a median aggregation size of 2,395.

The Auburn and Shingle Springs/Cameron Park aggregations are the fourth and fifth largest populations in the Sierra, with 23,202 and 22,270 persons, respectively. These two areas each make up approximately 10% of the total population in the West-Central North region, which has a median aggregation size of 2,888, the highest of the six regions.

The largest aggregation in the West-Central South region is Ione, with a population of 9,537. Forty-five percent of the Ione aggregation's population, however, lives in group quarters, presumably in prison. The second and third largest aggregations are Mariposa and Sonora, with populations of 8,746 and 7,418, respectively. These three largest aggregations constitute just under 18% of the region's population. The Keystone/Lake Don Pedro aggregation also has a large prison population, with 80% of the 4,812-person aggregation living in group quarters. Several aggregations have significant proportions of Native Americans; these include North Fork, O'Neals, Tuolumne, and Westpoint/Wilseyville, where Native Americans account for between 8% and 11% of the total population. The median aggregation size of the West-Central South region is 2,418.

With a population of 16,884, the Tehachapi aggregation is the largest in the Southwest region, with 28% of the population. The Lake Isabella Complex aggregation is the second largest, with a population of 8,382, and Auberry/Tollhouse/Prather/Meadow Lake/Burrough Valley, with a population of 6,940, is the third largest. Together, these three aggregations include more than 50% of the region's population. The median population size for the region's aggregations is 1,707.

The Southeast region has the smallest population of the Sierra and has the lowest median aggregation population, with 1,094. More than 70% of this region's population lies in the aggregations of Bishop (12,355), Mammoth Lakes (4,785), and Big Pine, Independence (2,531). Bishop alone contains

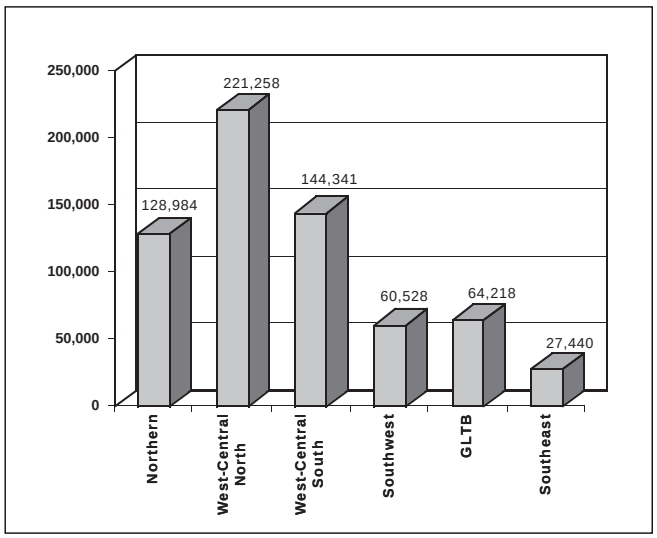


FIGURE 13.4

Population by region.

45% of the region's residents. The proportions of Native Americans and those of Hispanic origin are relatively high in the Southeast region compared to other Sierra regions. Almost 8% of the population is Native American, and 10% is of Hispanic origin.

Variation in Socioeconomic Status and Community Capacity by Region and by Aggregation

Socioeconomic conditions and community capacity vary considerably among the six social assessment regions. A summary of the regional averages of capacity scores, socioeconomic scores, and individual socioeconomic scale components is presented in table 13.1. Average regional scores are calculated from aggregation scores weighted by population.

The socioeconomic status and capacity of aggregations also vary considerably across the Sierra and within each of the regions. Table 13.2 lists each aggregation by region along with the socioeconomic score, capacity rating, and population. Low socioeconomic scores highlight a range of societal needs within aggregations. Low capacity scores indicate a reduced ability of local communities to effectively address those needs and to self-develop. The following discussion focuses primarily on individual aggregations with low socioeconomic status and low capacity by region and highlights other aggregations with unique characteristics.

Northern Region

With an average score of 2.5, the Northern Sierra region has the lowest average socioeconomic status of any region. The Northern region also has the lowest average capacity score of

2.5. This region has the largest proportion of people in poverty and the highest level of poverty intensity, the lowest average education level, the highest level of unemployment by a considerable margin, and the highest rate of children in families receiving public assistance, also by a considerable margin. Seventy-five percent of all community aggregations in the Sierra with very low socioeconomic status are located in the Northern Sierra region. Those rated 1 on the socioeconomic scale include Sterling City/Upper Concow, Westwood/Clear Creek, Oroville, Lake Oroville Area, Doyle, and Brownsville/Challenge/Woodleaf/Rackerby. Sterling City/Upper Concow, Oroville, and Lake Oroville Area are in Butte County. With the exception of Westwood/Clear Creek, none of these aggregations received a capacity rating of more than 2.

Sterling City/Upper Concow has one of the highest levels of people below the poverty line and children in families receiving public assistance of any community in the Sierra. Residents are likely to have lower incomes and to spend a greater percentage of that income on housing costs than in all other areas in the Sierra. This area has been in decline since the departure of the lumber company that built Sterling City decades ago. The threat of a very serious wildfire disaster is exacerbated by the existence of a single, limited access road.

The Oroville aggregation has many low-income residents: more than 50% earn less than 80% of the Butte County median income (a substantial portion of the county is outside the social assessment area); the community has one of the highest proportions of people in poverty and has the highest proportion of children in families receiving public assistance of any in the Sierra. The business community and town residents have recently begun to work together to improve the town.

The Lake Oroville aggregation is a large area with a dispersed and relatively poor population and no real community center. This area also includes recreation cabins and developing resorts. It has one of the highest levels of children in families receiving public assistance in the Sierra. The Brownsville/Challenge/Woodleaf/Rackerby aggregation has a high level of unemployment and a high percentage of children in families receiving public assistance. It is an extremely isolated area with few services. Doyle has one of the highest levels of children in families receiving public assistance in the Sierra and has the lowest average education level in the region. It is an insular area that recently lost its fire department and ambulance.

A large proportion of the workforce in the community of Westwood/Clear Creek is employed in the timber industry or related support services. The town has one of the lowest average educational levels and one of the highest percentages of children in families receiving public assistance. Westwood, however, has a relatively high capacity rating of 4.

Herlong/Sierra Army Depot is ranked in the middle of the regional socioeconomic scale and the capacity scale but is facing considerable uncertainty due to the proposed base closure.

Lake Almanor West is the highest rated aggregation in the region on the socioeconomic scale and one of the highest in the Sierra. It is a very small community with many high-value second homes and a well-to-do retirement community. Graeagle, with a score of 6 on the socioeconomic scale, is rated similarly to Lake Almanor West and, along with Lake Almanor Peninsula, is the second highest rated community in the region. In general, these areas have limited dependence on anything local except county road crews, emergency services, and local hospitals. Graeagle and Lake Almanor West both have capacity scores of 4, the highest level in the region.

In west-side communities in this region, such as Browns Valley and Forest Ranch/Cohasset/Butte Creek, the short commuting distance to business centers is associated with higher education and income levels. Less accessible areas, such as Sterling City/Upper Concow and Camptonville/Strawberry Valley/LaPorte, tend to have lower socioeconomic scores and lower capacity scores.

West-Central North Region

With an average socioeconomic score of 4.8, the West-Central North region has the highest overall score of the six regions in the Sierra. The average capacity score of 3.4 is second highest, next to the GLTB region. Aggregations in the West-Central North region are characterized by bedroom communities with relatively homogeneous populations of out-of-county commuters and retirees. Nonetheless, there are blue-collar and resource-extraction-dependent communities and areas in which agriculture is locally important. Despite the generally high wealth that exists in the region, there are also pockets of extreme poverty within aggregations, some of which are masked in the scale by large populations of high wealth and high education.

Aggregations with medium-low and low community capacity in this region tend to include two different types of areas: those with a correspondingly low level of socioeconomic status and those that have relatively high socioeconomic levels but that lack any community identity or structure. In the first category are the American River Canyon and Placer East, two expansive aggregations in the higher elevations of El Dorado County and Placer County, respectively. The populations in these higher-elevation areas are quite scattered and tend not to be associated with any particular communities. These areas are also characterized by generally low overall socioeconomic status and have the highest and most intense poverty rates in the region. Volcanoville/Quintette is another area with low capacity and low socioeconomic status in El Dorado County. This is a low income, rural, resource-dependent community with the highest unemployment rate and the highest incidence of children in homes receiving public assistance income in the region. In the second category are a number of aggregations, such as McCourtney/South County (Nevada), Deer Creek, Colfax/

TABLE 13.1

Regional averages of socioeconomic and capacity scores and socioeconomic scale components[a] weighted by population.[b]

Region	Total 1990 Resident Population[c]	Average Community Capacity[d]	Score on Seven–Point Socioeconomic Scale[e]	Score on Continuous Socioeconomic Scale[f]	Tenure[g]	Poverty Intensity[h]	Poverty[i]	Education[j]	Employment[k]	Families with Children Receiving Public Assistance[l]
Northern	128,984	2.5	2.5	33.87	–.21	.48	.83	–.63	–.93	1.23
West–Central North	221,258	3.4	4.8	64.75	.27	–.41	–.44	.40	.35	–.33
West–Central South	144,341	3.1	3.7	51.89	.00	–.13	–.07	–.36	.00	.23
Southwest	60,528	2.8	3.8	49.36	.02	.21	.31	–.54	–.10	.06
Greater Lake Tahoe Basin	64,218	3.9	3.5	51.52	–1.85	.07	.07	.69	.24	–.43
Southeast	27,440	3.1	3.8	46.66	–1.02	.36	.20	–.13	.10	.08
Total Sierra Nevada	646,769	3.1	3.8	52.20	–.17	–.03	.04	–.06	–.05	.15

[a]Scale components (tenure, poverty intensity, poverty, education, employment, and families with children receiving public assistance) are expressed as average standardized scores equal to the average number of deviations from the mean.
[b]Averages are weighted by the population of each aggregation relative to the total population of the region or study area.
[c]Source: U.S. Bureau of the Census 1990a. Population numbers are exclusive of 9,632 persons incarcerated in the Tehachapi Prison and Susanville Correctional Center.
[d]Average of five-point community capacity scale (1=lowest; 5=highest) determined by experts in local workshops (averages are from integer values chosen at the aggregation level).
[e]Average of seven-point socioeconomic scale developed from continuous socioeconomic scale (1=lowest; 7=highest).
[f]Average of continuous socioeconomic scale developed from 1990 census data, normalized to base of 100.
[g]Average of standardized tenure score: higher values indicate higher levels of home ownership.
[h]Average of standardized poverty intensity score: higher numbers indicate greater intensity of poverty among residents with incomes below the poverty level.
[i]Average of standardized poverty score: higher numbers indicate a higher percentage of the population with incomes below the poverty level.
[j]Average of standardized education score: higher values indicate higher overall levels of education.
[k]Average of standardized employment score: higher values indicate higher levels of employment in civilian population.
[l]Average of standardized score for families with children receiving public assistance income: higher values indicate higher percentages of families receiving public assistance income.

TABLE 13.2

Socioeconomic and capacity scores by aggregation and region.

Aggregation	Population	Socioeconomic Score (1 to 7)	Capacity Score (1 to 5)
Northern Region			
Browns Valley	1,204	4	3
Brownsville/Challenge/ Woodleaf/Rackerby	1,094	1	2
Camptonville/Strawberry Valley/La Porte	969	3	2
Central Butte	4,221	4	4
Chester	2,115	2	4
Dobbins/Challenge/ Brownsville	1,072	4	2
Downieville/North Yuba	1,289	3	2
Doyle	953	1	1
Eagle Lake	660	4	2
East Shore/Hamilton Branch	782	3	3
Forest Ranch/Cohasset/ Butte Creek Canyon	3,140	5	2
Graeagle	1,010	6	4
Greenville/Indian Valley	2,907	3	2
Herlong/Sierra Army Depot	1,534	3	3
Janesville	2,569	4	3
Lake Almanor Peninsula	997	6	4
Lake Almanor West	240	7	4
Lake Oroville Area	3,671	1	1
Milford	413	4	4
Mohawk Valley	994	2	3
Oregon House/Dobbins	1,345	4	1
Oroville	33,706	1	2
Paradise/Magalia	32,507	3	2
Portola	2,873	3	2
Quincy	6,857	3	4
Sierra Valley	879	4	4
Sierra Valley/Verdi	2,029	4	2
Standish/Litchfield	1,173	2	1
Sterling City/Upper Concow	1,547	1	1
Susanville	11,983	3	4
Westwood/Clear Creek	2,251	1	4
Total / Average	128,984	2.5	2.5
West-Central North Region			
Alta Sierra	6,389	6	3
Alta/Dutch Flat/Gold Run	1,701	5	4
American River Canyon	220	2	1
Applegate	1,497	5	3
Auburn	23,202	4	3
Auburn rural	7,001	6	3
Banner Mountain	3,744	6	4
Bowman	1,043	4	2
Camino	2,908	4	4
Cedar Grove	1,440	5	3
Cement Hill/Lake Vera	2,474	6	3
Chicago Park	3,001	5	2
Colfax	904	4	3
Colfax/Weimer	5,045	4	1
Coloma/Lotus	2,535	6	4
Cool/Pilot Hill	3,434	6	4
Deer Creek	1,395	6	2
Diamond Springs	7,179	4	3
El Dorado Hills	8,837	7	4
El Dorado/Nashville	5,273	5	2
Foresthill Divide	4,231	4	3
Garden Valley/Greenwood	878	4	5
Georgetown	2,608	4	3
Gold Hill	2,059	5	3
Grass Valley	13,573	2	4
Higgins Corner	4,699	5	4
Kelsey	1,323	3	4
Lake of the Pines	3,696	6	3

TABLE 13.2 (continued)

Aggregation	Population	Socioeconomic Score (1 to 7)	Capacity Score (1 to 5)
Lake Wildwood	5,028	6	4
Latrobe	1,323	6	4
McCourtney/South County	1,779	5	1
Meadow Vista	4,087	6	5
Mosquito	896	4	3
Nevada City	3,645	4	5
Newcastle	3,897	5	5
Newtown/Sly Park	3,721	6	3
North San Juan/French Corral/Washington	3,204	4	5
Old Auburn Road	4,503	4	2
Ophir	2,016	6	4
Penn Valley	2,208	4	4
Placer East	1,236	2	1
Placerville	14,165	4	4
Pleasant Valley (El Dorado County)	2,869	5	2
Pleasant Valley (Nevada County)	972	5	1
Pollock Pines	4,908	4	3
Rattlesnake	1,687	5	1
Red Dog/You Bet	2,666	5	3
Rescue	2,973	6	4
Rough and Ready	2,424	4	2
Scotts Flat	960	6	3
Shingle Springs/ Cameron Park	22,270	6	5
South County (El Dorado County)	3,931	4	2
Squirrel Creek	1,043	4	2
Volcanoville/Quintette	558	2	2
Total / Average	221,258	4.8	3.4
West-Central South Region			
Ahwahnee	2,921	4	4
Arnold/Avery	5,372	4	3
Bass Lake	1,393	6	4
Big Hill/Cedar Ridge	2,903	5	2
Big Oak Flat/Groveland	3,515	4	3
Camanche	847	4	1
Catheys Valley	1,472	2	4
Coarsegold	2,311	4	3
Columbia	3,403	3	2
Copperopolis/Copper Cove	2,247	4	4
Coulterville	2,250	3	2
Dorrington/Tamarack	640	6	2
East Sonora	2,479	4	4
Greater Angels Camp	2,787	3	5
Indian Lakes/ Quartz Mountain	1,424	2	3
Ione	9,537	4	4
Jackson	4,901	4	2
Jamestown Area	5,383	4	3
Jupiter	112	3	1
Keystone/Lake Don Pedro	4,812	4	2
Mariposa	8,746	3	2
Mokelumne Hill	1,349	3	4
Mono Vista/Crystal Falls	2,874	4	3
Mountain Ranch/ Sheep Ranch/Calaveritas	2,108	4	3
Murphys/Douglas Flat	3,229	4	5
North Fork	1,648	4	4
Oakhurst	4,058	4	5
O'Neals	727	4	2
Phoenix Lake	1,755	5	3
Pine Grove	3,116	4	3
Pioneer/Buckhorn	4,960	4	2
Plymouth/Fiddletown	2,868	4	3
Rail Road Flat/Glencoe	1,726	3	1
Raymond	1,499	4	3
River Pines	486	3	3
San Andreas	2,439	3	2

TABLE 13.2 (continued)

Aggregation	Population	Socioeconomic Score (1 to 7)	Capacity Score (1 to 5)
Sonora	7,418	2	5
Soulsbyville	1,382	4	2
Sutter Creek/Amador City/ Volcano	3,324	4	4
Tuolumne	3,230	2	4
Twain Harte/Strawberry	6,969	4	3
Valley Springs/ Rancho Calaveras	7,832	4	3
Wawona	302	4	4
Westpoint/Wilseyville	2,269	3	1
Yosemite Forks/ Cedar Valley	1,169	5	3
Yosemite Junction/ Wards Ferry	2,188	4	2
Yosemite Lakes	2,396	6	2
Yosemite National Park/ El Portal	1,565	4	3
Total / Average	144,341	3.7	3.1
Southwest Region			
Auberry/Tollhouse/Prather/ Meadow Lake/ Burrough Valley	6,940	4	2
Badger/other rural	2,287	2	1
Breckenridge Mountain	683	4	1
California Hot Springs	729	4	4
Cane Brake Area	1,661	2	1
Glennville	553	4	1
Hart Flat/Keene	1,904	6	2
Kernville/Wofford Heights	4,354	4	2
Lake Isabella Complex	8,382	3	3
Lemoncove	996	4	2
Lower Foothills/ Millerton Lake	1,543	6	4
Pinehurst/Miramonte/ Hume Lake	195	5	1
Shaver Lake/ Huntington Lake	855	4	3
Springville/Yokohl Valley/ Camp Nelson	2,475	4	5
Tehachapi	16,884	4	4
Tejon Ranch	1,581	5	1
Three Rivers/ National Park rural	1,752	6	5
Tule River Indian Reservation	1,812	2	1
Watts Valley Road/Foothills	739	1	4
Wonder Valley/Tivy Valley/ Squaw Valley/Dunlap	4,203	3	1
Total / Average	60,528	3.8	2.8
Greater Lake Tahoe Basin Region			
Alpine Meadows/ Ward Canyon	788	4	2
Donner Summit	733	4	3
Echo/Upper Truckee	2,425	6	3
Glenbrook	393	7	4
Incline/Crystal Bay/ Brockway	7,856	4	5
Kings Beach	2,365	1	2
Markleeville/Woodfords/ Bear Valley	1,113	2	3
Montgomery Estates/ Tahoe Paradise/Meyers	3,079	5	3
North Tahoe	2,630	5	3
South Lake Tahoe	23,319	2	4
Squaw Valley/ Olympic Valley	845	6	3
Stateline/Kingsbury	3,153	4	4
Tahoe City	2,587	4	3
Truckee	9,386	5	5
West Shore	1,462	4	3
Zephyr Cove/Skyland	2,084	6	2
Total / Average	64,218	3.5	3.9
Southeast Region			
Antelope Valley (Walker, Coleville, Topaz)	1,412	2	4
Big Pine, Independence	2,531	4	2
Bishop	12,355	4	4
Bridgeport/Twin Lakes/ Swauger	742	4	4
Greater Lone Pine	1,916	2	3
June Lake	607	4	2
Lee Vining/Mono Basin	415	5	4
Long Valley/ Wheeler Crest/Paradise	1,094	6	2
Mammoth Lakes	4,785	4	2
Olancha/Cartego/ Kennedy Meadows	682	2	1
Tri-Valley/Oasis	901	3	2
Total / Average	27,440	3.8	3.1

Weimer, and Newtown/Sly Park, which are characterized by somewhat dispersed populations with no real community center or identity. While community capacity is quite low, socioeconomic status ranges from medium to high.

Some of the incorporated cities of the region, including Grass Valley, Nevada City, and Placerville, have high community capacities despite relatively low socioeconomic status. Poverty levels are relatively high in these three cities. The level of home ownership in Grass Valley is the lowest in the region and in Nevada City is third lowest. The high capacity of these towns appears to be largely influenced by the strength of the business communities within them. The other cities of the region, Auburn and Colfax, have both medium capacity ratings and medium socioeconomic status, although poverty levels are also relatively high. The level of home ownership in Auburn is the second lowest in the region.

The North San Juan/French Corral/Washington aggregation is unique in the region. This high-capacity area was described in the workshops as an area "that has done more with nothing than anyone else," indicating a high level of both human and social capital. This is also an area of only moderate socioeconomic status, with high poverty levels and the third most intense poverty in the region. Workshop participants indicated, however, that the actual extent of poverty in this area may be overstated in the census data. Low reported income may be offset by unreported transfer payments as well as an active informal local economy.

West-Central South Region

The average socioeconomic score of 3.7 and the average capacity score of 3.1 for the West-Central South region closely parallel the average weighted scores for the entire Sierra (3.8

and 3.1, respectively). The aggregations in this region are diverse and range from established resource-extraction-dependent communities with long family histories to bedroom communities of commuters and retirees.

Four aggregations have a capacity of 1 in this region: Jupiter, Rail Road Flat/Glencoe, Westpoint/Wilseyville, and Camanche. All but Camanche have medium-low socioeconomic scores. Rail Road Flat/Glencoe and Westpoint/Wilseyville are both rural, isolated areas in Calaveras County. The communities in both areas appear to have a difficult time coming together to address even common issues such as fire protection. They are resource-dependent communities suffering from a lack of jobs. The Westpoint/Wilseyville aggregation used to be an economically stable area with a timber and agricultural base. Now, unemployment and poverty levels are high, and the aggregation has one of the lowest education levels in the region. Rail Road Flat/Glencoe has an even higher incidence and intensity of poverty, along with some substandard housing. This area also has some disparities in income levels, with some wealthy residents who are not assimilated into the rest of the community. The Camanche aggregation is a partially failed subdivision in Western Amador County. Residents are primarily retirees or commuters and have consistently voted down sewer and water projects that are needed to allow other lot owners to build and move into the community. The low socioeconomic status in the aggregation appears to be related to relatively high unemployment and low education levels. There is also a severe disparity in income between residents who own their own homes and those who rent.

Thirteen aggregations have a community capacity of 2. Socioeconomic scores in these areas range from medium-low to very high. Low-capacity aggregations with lower socioeconomic scores include Mariposa, Columbia, San Andreas, and Coulterville. Mariposa and Coulterville are tourism- and resource-based aggregations in Mariposa County. Coulterville is historically a mining and livestock grazing area but is focusing more on tourism with the current decline of resource-related employment. Both areas suffer the loss of their young people as they move away for work or education, and both aggregations have high proportions of retirees who demand services but in general, as was reported in workshops, contribute little to overall community capacity. The Columbia aggregation in Tuolumne County includes a community college and is an area with a mixed population and no real community center or focus. It has the highest percentage of households with children receiving public assistance income in the region. San Andreas is the county seat of Calaveras County but has little focus or sense of community. It has the fourth lowest rate of home ownership among the resident population of the region.

Aggregations with medium socioeconomic scores include Jackson (the county seat of Amador), Yosemite Junction/Wards Ferry, O'Neals, Soulsbyville, Keystone/Lake Don Pedro, and Pioneer/Buckhorn. The O'Neals aggregation has a mixture of ranchers, commuters, and retirees and a relatively large population of Native Americans. Keystone/Lake Don Pedro is a large agricultural area with little community focus and a small retiree population. It has the lowest education level of the region, although this is quite likely due to a high prison population.

Four aggregations in the region have capacity ratings of 5. Socioeconomic scores for these areas range from medium-low to medium-high. Oakhurst and Murphys/Douglas Flat have medium socioeconomic scores. Greater Angels Camp and Sonora have socioeconomic scores of medium-low and low, respectively. The Sonora aggregation has the third lowest rate of resident home ownership in the region and the fourth highest rate of families with children receiving public assistance income.

An aggregation with one of the lowest socioeconomic scores in the region, Catheys Valley, has a community capacity rating of 4. Catheys Valley, in rural Mariposa County, was historically a mining and grazing area. The current population is largely ranchers, with some commuters and a few retirees. The residents of this aggregation were described by participants in the capacity workshop as having less wants and needs than those of other areas. While unemployment in Catheys Valley is relatively low, poverty levels are the highest in the region. The intensity of poverty here is second highest in the region.

The aggregations of Yosemite National Park/El Portal and Wawona are unique in that the ability of these communities to meet their needs is strongly influenced by the National Park Service and the single concessionaire to the park. The Yosemite aggregation has a capacity rating of 3, and Wawona has a rating of 4. These areas both have medium-low socioeconomic status. These aggregations share the lowest home ownership rates, the highest education levels (Wawona has the fourth highest education level in the Sierra), and the lowest unemployment rates in the region. The Wawona aggregation, however, has the fourth highest percentage of residents with incomes below the poverty line and the highest intensity of poverty in the region (third highest in the Sierra). At the same time, there are no families with children receiving public assistance income.

Resource-dependent communities in the region typically have relatively low socioeconomic scores, but their community capacity ratings vary greatly. Low-capacity resource-dependent communities such as Rail Road Flat/Glencoe and Westpoint/Wilseyville lack much of the history and the sense of community of higher-capacity communities such as Tuolumne and North Fork. The main sawmill in North Fork closed in 1994—and hence some of the socioeconomic indicators may be understated—but the community is working hard to develop alternative economic opportunities for its residents.

Southwest Region

The Southwest region has the second lowest average capacity score, 2.8, and a socioeconomic score of 3.8. The region

has the second highest rate of poverty and the second lowest education and employment scores.

Watts Valley Road/Foothills, with a 1 on the socioeconomic scale, is the lowest scoring aggregation in the region and one of the lowest on the socioeconomic scale in the Sierra. The aggregation has one of the highest poverty levels and has the highest intensity of poverty in the Sierra. The mean education score is also low. Almost 16% of the population is of Hispanic origin and 19% is Native American. There is, however, a considerable disparity between home owners and renters in the aggregation. Census data indicate that, in general, home owners have very high incomes and renters very low incomes.

The Tule River Indian Reservation is the second lowest rated aggregation in the region on the socioeconomic scale, with low socioeconomic status. The aggregation has high poverty and high poverty intensity. It also has the third highest rate of resident home ownership in the region. Unlike Watts Valley Road/Foothills, however, it has a capacity score of 1. Management of the reservation is limited, as the County of Tulare provides law enforcement and other services, despite the tribe's sovereign nation status. Economic development activities may unite the reservation, but planning is done off the reservation. People of Hispanic origin total 9%, and 42% are Native American in the aggregation.

The Cane Brake Area, Badger/other rural, and Lake Isabella Complex aggregations all have low socioeconomic status scores. Cane Brake Area and Badger/other rural had moderately high poverty and high intensity of poverty. Cane Brake Area was identified as having a pocket of high, multigenerational poverty. Cane Brake Area and Lake Isabella Complex have very low average education levels. Both Badger/other rural and Cane Brake Area are extremely isolated, with very limited public services and a limited amount of social capital, and consequently both have low capacity. The moderately large Lake Isabella Complex aggregation received a medium capacity rating, largely because a portion of the population is responsive to community issues. This aggregation has the lowest education score in the region. High ethnic or minority group representation was found only in Badger/other rural, with 23% of the population of Hispanic origin.

The two high-capacity aggregations are Springville/Yokohl Valley/Camp Nelson and Three Rivers/National Park rural. Springville/Yokohl Valley/Camp Nelson is primarily a rural area with some ranching and a dispersed population with low income. The more "urban" center of Springville is a cohesive community. The aggregation has a moderately low socioeconomic score. Three Rivers/National Park rural has a mix of newcomers and retirees who are able to pull together despite their differences. Despite the small size of the area, there is a local newspaper and a full spectrum of community services. The aggregation has low unemployment and poverty and rates high on the socioeconomic scale.

Hart Flat/Keene and Lower Foothills/Millerton Lake are the other highly rated aggregations in the region on the socioeconomic scale. Both of these areas have very high proportions of owners to renters and very low poverty. Both aggregations have growing commuter populations: Hart Flat/Keene residents commute to Bakersfield, and Lower Foothills/Millerton Lake residents commute to Fresno and Clovis. The Hart Flat portion of Hart Flat/Keene has very expensive homes and high incomes. Many of these residents are commuters. The moderately low capacity rating is primarily because the area is a bedroom community and because Keene, though small, is relatively poor. Keene is the headquarters of the United Farmworkers of America, suggesting that Hispanic capacity may be considerably different from the predominantly Anglo capacity of the aggregation as a whole. Ten percent of Hart Flat/Keene residents are of Hispanic origin. Lower Foothills/Millerton Lake has a medium-high capacity rating because residents are reportedly willing to work on community issues.

Many of the areas in the Southwest Sierra region were at one time economically dependent on the timber industry. Pinehurst/Miramonte/Hume Lake and Auberry/Tollhouse/Prather/Meadow Lake/Burrough Valley are examples, the latter of which saw the local mill close in early 1994. Economies are shifting and increasingly catering to tourism, recreation, and retirement living; an example is the Kernville/Wofford Heights area on the Kern River. A growing number of commuters to Central Valley cities are settling in Lower Foothills/Millerton Lake, Tejon Ranch, and Lemoncove, among others. These new resident commuters challenge longstanding ranching and agricultural lifestyles, though conflicts are not necessarily inevitable or intractable.

Greater Lake Tahoe Basin Region

The GLTB region has an average socioeconomic score of 3.5, the second lowest in the Sierra. The region has the highest average capacity score, 3.9. Socioeconomic status in this region, however, is actually bimodal. More than 40% of the population resides in aggregations with socioeconomic scores of 2 or less, while 47% lives in aggregations with socioeconomic scores of 5 or greater. The region has the highest level of education, the second lowest unemployment level, and the lowest proportion of children in families receiving public assistance. Yet while the GLTB region tops the Sierra in a number of scale categories, there are pockets of poverty that reflect the unequal distribution of wealth in this tourist and recreation economy. Typical of a recreation and tourist area, the GLTB has the lowest rate of home ownership among residents of any area in the Sierra by a considerable margin.

Limited affordable housing near jobs in the basin leads to increased commuter traffic and shifts the burden of housing and other service provision for workers elsewhere. For example, casinos and service employers in Incline/Crystal Bay/Brockway draw employees from Kings Beach and from Reno. Similarly, approximately one-third of South Lake Tahoe workers commute to Stateline/Kingsbury to work.

The Kings Beach community, with a score of 1, has the lowest socioeconomic scale score in the region and one of the low-

est in the Sierra. With a capacity score of 2, it shares with two other aggregations the lowest capacity score in the GLTB. Reasons for low capacity in Kings Beach include little internal leadership and poor access to capital. Service workers for casinos, restaurants, and ski areas reside in Kings Beach. It has proportionally more renters than any other aggregation in the Sierra, and there is a considerable amount of substandard housing. The Kings Beach aggregation is the youngest in the Sierra, with more than two-thirds of the population under the age of thirty-five. Fifty-seven percent of the population is male, the fifth highest male population in the Sierra. Only 50% of the households in Kings Beach are family households, one of the lowest totals in the study, yet the area has the second highest percentage of families with children headed by single parents. Twenty-nine percent of the families with children are single-parent, female-headed households. Kings Beach has a very high poverty level, and poverty intensity is one of the highest in the Sierra. Unlike many other aggregations with high poverty, however, Kings Beach has relatively few children in families receiving public assistance. The aggregation also has the lowest education score for the region. A total of 37% of Kings Beach residents are of Hispanic origin, twice the next highest total for aggregations in the region, and it was reported in the capacity workshop that more than half of the elementary school population is Hispanic.

Markleeville/Woodfords/Bear Valley, which constitutes the entire populated area of Alpine County, is another aggregation in the region that ranks low on the socioeconomic scale, with a score of 2. It has a higher capacity score of 3. The Forest Service and the Bureau of Land Management control 98% of the land. This area is dependent on the ski economy for jobs and transit occupancy taxes, and on the federal forests for forest reserve funds. Most residents with full-year jobs work for the county or the schools. The area has the highest number of children in families receiving public assistance in the region. The Washoe Indian community makes up more than one-third of the aggregation population and approximately 50% of the school population.

South Lake Tahoe, with a score of 2, is another aggregation in the region with relatively low socioeconomic conditions. Like Kings Beach, this aggregation has proportionally more renters than other aggregations in the Sierra and has a relatively high percentage of residents of Hispanic origin: 17.2%. The housing stock is substandard, and many renters work in the casinos, ski areas, and related services. A large number of out-of-area residents control housing in South Lake Tahoe and do not participate in the community. Many renters also do not participate. Unlike Kings Beach, the capacity score of South Lake Tahoe is 4. South Lake Tahoe is an incorporated city and is considered to have an effective government.

Squaw Valley/Olympic Valley, with a socioeconomic score of 6 and a capacity score of 3, is an aggregation of contrasts. It has one of the highest poverty levels in the Sierra, yet there are no families with children receiving public assistance. Only 23% of the households in this aggregation are family households, by far the lowest in the Sierra. The aggregation also has one of the highest education levels in the Sierra. Nearly 60% of the population consists of young adults between the ages of eighteen and forty-four. Poverty in this area is not family poverty; it may reflect a high number of seasonal workers and may also reflect low pay. The extremely high education levels also suggest that the resident population has more choice, though local opportunities may be limited. Residents of the valley are described as very independent and extremely different from other groups in the region. The lower capacity score reflects the fact that, beyond their operations, the powerful resort companies take very limited responsibility for local issues.

Truckee and Incline/Crystal Bay/Brockway both have capacity scores of 5, the only two aggregations with this score in the basin. The Truckee aggregation includes an incorporated city with an effective government and, as a regional service center, has one of the most diversified economies. The community appears to share a common vision for the area. Incline/Crystal Bay/Brockway was rated high due to the presence of wealth, strong local representation, and a politically savvy populace.

Zephyr Cove/Skyland and Glenbrook have socioeconomic scores of 6 and 7, respectively, rating near the top of the scale for all aggregations in the Sierra. Both have very high education levels (Glenbrook has the highest in the Sierra) and no children in families receiving public assistance. The capacity of Zephyr Cove/Skyland was rated a 2; it is a bedroom community with no central core and little cohesiveness. The capacity of Glenbrook was rated a 4, primarily because of its financial and political strength.

Southeast Region

The Southeast region has an average socioeconomic scale score of 3.8, tied with the Southwest region for second highest in the Sierra. The average capacity score of 3.1 is equal to that of the Sierra as a whole. The economies of this region are based primarily on recreation and tourism, and the region has a high proportion of workers in the government and service sectors. Control of land in the Southeast region is a hotly debated issue and is frequently characterized as a double-edged sword. The Los Angeles Department of Water and Power (LADWP), U.S. Forest Service, and Bureau of Land Management control the vast majority of land. Control of the land by owners and managers who are, for the most part, outside the region leaves major landholding decisions beyond the reach of locals. Although little private land is available for local development, present management includes the retention of considerable open space and a natural landscape that is widely valued and upon which the region's tourist and recreation economy is established.

The three lowest rated aggregations on the socioeconomic scale are Antelope Valley (Walker, Coleville, Topaz), Greater Lone Pine, and Olancha/Cartego/Kennedy Meadows. These

three aggregations are in the bottom 10% of the socioeconomic scale of all Sierra Nevada aggregations. Olancha/Cartego/Kennedy Meadows is the only aggregation in the region with a community capacity rating of 1. The capacity of Greater Lone Pine is 3, and that of Antelope Valley (Walker, Coleville, Topaz) is 4. Less than half of all aggregations in the region have a capacity rating of 3 or higher, and only four received a 4. Five aggregations received a 2 for community capacity, four of which were in Mono County.

The small community aggregation of Olancha/Cartego/Kennedy Meadows, rated low on both the socioeconomic and capacity scales, has one of the lowest education levels and highest levels of unemployment in the Sierra. A total of 14% of the population is of Hispanic origin.

Antelope Valley (Walker, Coleville, Topaz) has one of the highest percentages of people in poverty in the Sierra and a high poverty intensity score. Poverty and poverty intensity in this aggregation are the highest in the region. Almost 12% of the population is of Hispanic origin, and 10% of those over sixteen are Native American. The aggregation is one of the highest rated in capacity because, among other things, residents are quick to pool resources and pull together in times of need. In Greater Lone Pine, socioeconomic scale component scores are uniformly low. A total of 9% of the residents over sixteen are Native American, and 13% are of Hispanic origin.

The highest rated aggregation in the region on the socioeconomic score is Long Valley/Wheeler Crest/Paradise. The capacity score is 2, due primarily to a dispersed population and limited civic action.

The second highest rated aggregation in the socioeconomic scale is Lee Vining/Mono Basin. There are no children in families receiving public assistance in this aggregation. Census data indicate that both owners and renters have high incomes, with home owners being some of the wealthiest in the Sierra. Community capacity is 4, the highest capacity rating in the region. Social capital has increased as a result of a recognition of the importance of the landscape and place and consequent efforts devoted to protecting it. The area depends almost exclusively on recreation and tourism but has little control over the flow of tourists traveling over Tioga Pass and through Yosemite National Park. The National Park Service limits tourist bus volume and controls snow removal activities on the Tioga Pass road, which determine when the pass opens in the summer. The pass was described as an economic lifeline for the community.

The destination resort town of Mammoth Lakes is the center for a great many tourist-related activities associated with Mammoth Mountain. Typical of other destination resorts, Mammoth Lakes has one of the lowest proportions of home owners to renters in the entire Sierra and has one of the two highest educated populations in the Southeast region (the other is June Lake). Mammoth Lakes ranks in the middle of the socioeconomic scale for the region, rated a 4, and has a low capacity of 2. Good physical infrastructure and human capital do not offset the divisiveness between prodevelopment community members and those opposed to development. This conflict has made it difficult for people to work together. A high turnover rate due to many seasonal workers further reduces capacity.

Concentrations of Populations with Low Socioeconomic Status

While there is considerable variation in the socioeconomic status of aggregations across the Sierra, the majority of the populace at the lower end of the socioeconomic scale resides in a relatively small number of aggregations. Fifty percent of all persons in poverty in the Sierra are in 11% of the aggregations. Fifty percent of the unemployed labor force is in 12% of the aggregations, and 50% of all children in households receiving public assistance income are in only 8% of the aggregations. Included in all three of these categories are the aggregations of Oroville, Paradise/Magalia, South Lake Tahoe, Susanville, Auburn, Grass Valley, Mariposa, Placerville, Tehachapi, Bishop, Sonora, Quincy, and Lake Isabella Complex. All but three of these thirteen aggregations include incorporated cities, and all are relatively large. The Lake Isabella Complex aggregation, with 8,382 residents, and Quincy, with a population of 6,857, are the smallest; the populations of all the other aggregations exceed 13,500. These same aggregations with low socioeconomic status are also part of the nineteen aggregations that include 50% of all single-parent families within the Sierra Nevada.

Relationships

Internal Associations of Socioeconomic Scale Components

Table 13.3 shows the correlation coefficients of associations within the various scale components, Sierra-wide. With the exception of the two poverty scores, which are developed from some of the same source data, most of the components are relatively independent of one another.

Table 13.4 shows the Pearson correlation coefficients resulting from an analysis of the relationships between the socioeconomic scale and the individual components of the scale for the entire Sierra and for each of the six regions. As would be expected, since the scale is based on these components, there is a relatively strong association between each component variable and the socioeconomic scale. The poverty and poverty intensity scores have some of the highest correlation coefficients, on average. Although these two scores are closely related by nature, they each account for only one-tenth of the total scale.

Socioeconomic Status and Capacity

Socioeconomic status and capacity are both important components of well-being, but they measure different aspects of it. Correlation analysis between the two measures for the study region reveals a positive but weak relationship between

socioeconomic status and community capacity (Spearman rank order coefficient 0.2371, n=180, sig=0.001). This relationship is even weaker at the regional level, except for the Northern and West-Central North regions. Social capital proved to be the most important component of capacity and is a primary reason that capacity and socioeconomic status are weakly related. A number of aggregations with medium to high socioeconomic status were rated lower in capacity because residents did not work together well. While human capital is partially reflected in the socioeconomic scale through educational attainment and income-related components, social and physical capital are not. Increasing commuter settlement appears to increase socioeconomic scale scores through higher incomes "coming to" an area, but there is no certainty that their arrival will lead to higher community capacity. New residents may add to the human capital of communities, but social capital may be negatively affected by their inability or unwillingness to contribute to community activities. Hence, not only are socioeconomic status and capacity weakly related, but it appears that the two measures assess different dimensions of well-being.

Table 13.5 shows the juxtaposition of capacity and socioeconomic status scores for the 180 aggregations. Aggregations with medium-low to very low capacity (1–2) and a very low to medium-low socioeconomic status scale score (1–3) are those considered to have the lowest level of well-being. A total of 28 aggregations, or 16% of all aggregations, fall into this group, which constitutes 18.5% of the total study population.

Aggregations with high and very high socioeconomic status (6–7) are viewed as having the highest level of well-being. Thirty-one aggregations, or 17% of all aggregations, constituting 15.5% of the study population, fall into this group. Low capacity associated with high socioeconomic status is not, in general, likely to reduce well-being as much as low capacity associated with lower levels of socioeconomic status. This is because the residents of aggregations with high socioeconomic status can and in fact do "buy" their way out of difficulties that others must work internally to overcome. For example, some of the aggregations having high socioeconomic status and a high proportion of retirees buy services such as fire protection, security, and recreation programs, whereas other communities might rely on volunteer activities, the county, or the state for provision of such services. Nonetheless, even among the aggregations with high socioeconomic status, high capacity leads to higher levels of well-being, since capacity itself is a component of well-being.

The remaining aggregations, with moderate to moderately high well-being, can be further divided into three groups. Aggregations with medium to high capacity (3–5) and very low to medium-low socioeconomic status (1–3) have a moderate level of well-being. A total of 12% of all aggregations fall into this group. Similarly, the 20% of aggregations with low to medium-low capacity (1–2) and medium to medium-high socioeconomic score (4–5) have a moderate level of well-being. While the former group has a lower socioeconomic score, the higher capacity suggests a greater ability to take

TABLE 13.3

Coefficients of correlation between components of socioeconomic scale.

	Education	Families with Children Receiving Public Assistance	Tenure	Poverty	Poverty Intensity	Employment
Education	1.0000	–.4347	.0204	–.3981	–.3547	.4316
Number of cases[a]	180	180	180	180	180	180
Significance[b]		.000	.786	.000	.000	.000
Families with Children Receiving Public Assistance	–.4347	1.0000	–.0876	.5071	.3270	–.5045
Number of cases	180	180	180	180	180	180
Significance	.000		.242	.000	.000	.000
Tenure	.0204	–.0876	1.0000	–.2709	–.3129	.0017
Number of cases	180	180	180	180	180	180
Significance	.786	.242		.000	.000	.982
Poverty	–.3981	.5071	–.2709	1.0000	.8554	–.2470
Number of cases	180	180	180	180	180	180
Significance	.000	.000	.000		.000	.001
Poverty Intensity	–.3547	.3270	–.3129	.8554	1.0000	–.1652
Number of cases	180	180	180	180	180	180
Significance	.000	.000	.000	.000		.027
Employment	.4316	–.5045	.0017	–.2470	–.1652	1.0000
Number of cases	180	180	180	180	180	180
Significance	.000	.000	.982	.001	.027	

[a]Number of cases evaluated. [b]Level of two-tailed significance.

TABLE 13.4

Coefficients of correlation between socioeconomic scale and scale components for Sierra and by region.

	Entire Sierra	Region					
		Northern	West-Central North	West-Central South	Southwest	Greater Lake Tahoe Basin	Southeast
Socioeconomic Scale	1	1	1	1	1	1	1
Number of cases[a]	180	31	54	48	20	16	11
Significance[b]							
Education	0.6993	0.8034	0.7566	0.5141	0.6922	0.8079	0.8576
Number of cases	180	31	54	48	20	16	11
Significance	.000	.000	.000	.000	0.001	0.003	0.001
Families with Children Receiving Public Assistance	–.7552	–.8187	–.6702	–.6129	–.7888	–.7926	–.7207
Number of cases	180	31	54	48	20	16	11
Significance	.000	.000	.000	.000	.000	.000	0.005
Tenure	0.4331	0.5685	0.6192	0.3204	0.1232	0.8198	0.0557
Number of cases	180	31	54	48	20	16	11
Significance	.000	.000	.000	0.026	0.605	.000	0.871
Poverty	–.7265	–.8000	–.7293	–.6801	–.8653	–.4776	–.7491
Number of cases	180	31	54	48	20	16	11
Significance	.000	.000	.000	.000	.000	0.061	0.008
Poverty Intensity	–.6451	–.7691	–.6602	–.4273	–.8620	–.7735	–.7111
Number of cases	180	31	54	48	20	16	11
Significance	.000	.000	.000	0.002	.000	.000	0.014
Employment	0.6625	0.8141	0.5476	0.6070	0.5713	0.5179	0.6617
Number of cases	180	31	54	48	20	16	11
Significance	.000	.000	0.001	.000	0.009	0.040	0.027

[a]Number of cases evaluated. [b]Level of two-tailed significance.

advantage of opportunities than the latter group of aggregations, which have a higher socioeconomic score. The group of aggregations with medium to high capacity (3–5) and medium to medium-high socioeconomic status (4–5) has a moderately high level of well-being. This group makes up 35% of all aggregations.

It is important to point out that the combination of a high capacity rating and a high socioeconomic status score does not mean that all residents of an aggregation enjoy a high level of well-being (though they are more likely to than if the aggregation had a low capacity and very low socioeconomic status score). Just as some families may enjoy a considerably higher level of well-being than others in the same aggregation, some groups—ethnic, occupational, or other—may collectively have considerably lower well-being. Some of these distributional effects were identified in the capacity workshops, yet some remain beyond the resolution of this analysis.

Single-Parent Households

Twenty-four percent of family households with children in the study are headed by single parents. This is low compared to a statewide figure of 35%. With the exception of Lake Almanor West, all aggregations have some single-parent households, with the percentage ranging from 9% to 45%. On the average, 69% of single-parent households are headed by a female, although this rate ranges from as low as 41% to as high as 95% of all single-parent households. The Northern region has the highest percentage of both single-parent households (28%) and female single-parent households (21%).

Thirty-nine percent of female-headed single-parent households and 21% of male-headed single-parent households in the Sierra have incomes below the poverty level. For the entire Sierra region, male-headed single-parent households are

TABLE 13.5

Number of aggregations by capacity and socioeconomic score.

Socio-economic Score	Capacity 1	2	3	4	5	Total	%
1	3	3	0	2	0	8	4.4
2	7	1	4	6	1	19	10.6
3	4	10	4	4	1	23	12.8
4	5	21	25	18	7	76	42.2
5	5	5	8	3	2	23	12.8
6	0	6	8	11	3	28	15.6
7	0	0	0	3	0	3	1.7
Total	24	46	49	47	14	180	
%	13.3	25.6	27.2	26.1	7.8	100	

more than three times as likely to have household incomes below the poverty level as two-parent family households. Female-headed single-parent households are more than six times as likely to have incomes below the poverty level as two-parent family households. Figure 13.5 shows average regional poverty levels of female-headed family households, male-headed family households, and family households headed by married couples.

Correlation analysis indicates an inverse relationship between socioeconomic status and single-parent households (Pearson coefficient 0.6172, n=180, p=0.000), female-headed households (Pearson coefficient 0.5931, n=178, p=0.000), and, to a lesser degree, male-headed households (Pearson coefficient 0.3636, n=180, p=0.000). This trend holds at the regional level as well. Correlations are highest in the GLTB region between socioeconomic status and single-parent households as a whole and female-headed households.

Income

The socioeconomic scale is positively correlated to proxies for median household income and median family income. Median income is reported by the Bureau of the Census at the block group level, but since the raw survey data are not available, median income cannot be calculated for the aggregation units used in the social assessment. Instead, an approximation of "average" median income was calculated from census tables reporting percentages of both families and households falling within twenty-five family and household income groups. While it is not possible to correct for documented discrepancies in income figures, as was discussed earlier, these figures do provide a general indication of the relationship between the socioeconomic scale and income.

Correlation analysis indicates that these proxies for median household and family income are closely associated with the socioeconomic scale at the Sierra level, with Pearson correlation coefficients of 0.7574 (n=180, p=0.000) and 0.7741 (n=180, p=0.000), respectively. These relatively high positive associations also persist at regional levels.

Patterns of Age Distribution

The aggregations can also be characterized by different age distribution patterns within the populations. For a number of aggregations, these patterns are associated with socioeconomic scores and capacity in revealing ways.

Cluster analysis was used as a tool to identify five types of aggregations, based on different age distribution patterns. The percentages of total population within forty-eight census-defined age group categories were used as source variables for the cluster analysis. Aggregations with populations of less than 500 were excluded from the cluster analysis, as were the Ione and Keystone/Lake Don Pedro aggregations, which have exceptionally high prison populations. Figure 13.6 shows the average age distribution of aggregations within five-year age groups for the resulting clusters (A through E).

The age patterns include three unique types that are distinguished from the general age distribution pattern in the Sierras. These can be characterized as retirement, young adult, and young family. Retirement-oriented aggregations include those with a relatively high percentage of the population in older age groups and a low percentage of young adults and youth. Young adult areas are characterized by a high percentage of the population in young adult groups, with relatively few children or older adults. Young family aggregations are those with a higher concentration of young and middle-aged adults and young children and relatively few older adults.

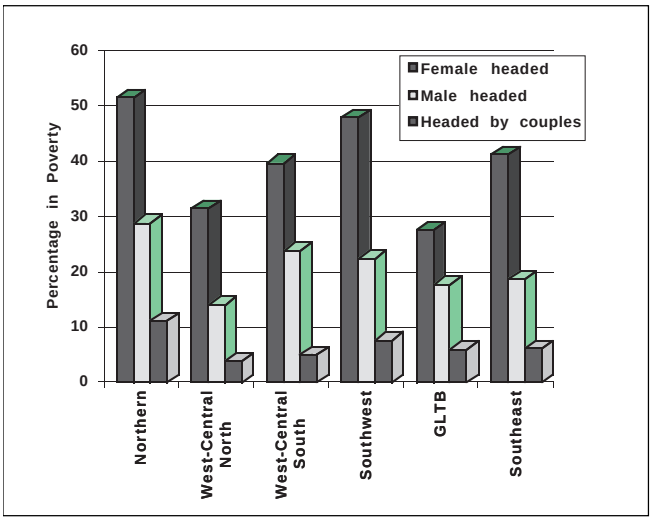
Retirement aggregations are typified by cluster E in figure 13.6. An average of 50% of the population of aggregations in this group is more than fifty years old. This cluster includes aggregations in four regions:

- Paradise/Magalia, Eagle Lake, Lake Almanor Peninsula, and Graeagle in the Northern region
- Lake of the Pines, Lake Wildwood, and Old Auburn Road in the West-Central North region
- Pioneer/Buckhorn, Bass Lake, and Big Oak Flat/Groveland in the West-Central South region
- Lake Isabella Complex, Cane Brake Area, and Kernville/Wofford Heights in the Southwest region

The age distribution pattern of cluster A in figure 13.6 is indicative of young adult–dominated populations. The cluster has the youngest average population, with more than one-third of the population between the ages of fifteen and thirty-five. More than 65% of the populations in these aggregations are under forty years of age, and they have consider-

FIGURE 13.5

Regional poverty rates of family households with children, by family type.



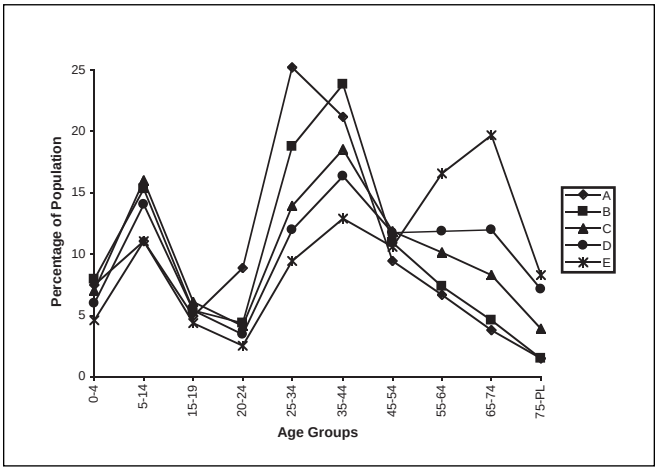


FIGURE 13.6

Age distribution by cluster.

ably fewer individuals over the age of fifty-four than the rest of the Sierra. These aggregations are typical of the young, service-oriented populations of areas with a high level of recreation use and include

- Yosemite National Park/El Portal in the West-Central South region
- South Lake Tahoe, Stateline/Kingsbury, Donner Summit, Squaw Valley/Olympic Valley, Alpine Meadows/Ward Canyon, and Kings Beach in the Greater Lake Tahoe Basin region
- Mammoth Lakes in the Southeast region

Cluster B has an age distribution pattern similar to that of cluster A with two significant differences. The aggregations in cluster B have a slightly older average adult population and considerably more children under the age of fifteen than cluster A. An average of 23% of the population is in this youth age group, higher than any other cluster or the Sierra as a whole. Like cluster A, however, this cluster has lower numbers of individuals over the age of fifty-four than the rest of the Sierra. These aggregations appear to be dominated by young families. While most are in the recreation-service-oriented Greater Lake Tahoe Basin, three aggregations are commuter communities in Western El Dorado County. The aggregations in this cluster include

- El Dorado Hills, Rescue, and Latrobe in the West-Central North region
- Echo/Upper Truckee, Montgomery Estates/Tahoe Paradise/Meyers, Truckee, Tahoe City, North Tahoe, and West Shore in the Greater Lake Tahoe Basin region
- June Lake and Long Valley/Wheeler Crest/Paradise in the Southeast region

The three age typologies just detailed are instructive in identifying unique population patterns and are suggestive of associations between these clusters and both capacity and socioeconomic status scores. The population-weighted average capacity score for the retiree cluster is 2.4, compared to 3.5 and 3.8 for the young adult and young family clusters, respectively. The weighted average socioeconomic score for the young adult group is lowest, at 2.6, reflecting the generally poorer service workers associated with these aggregations. The average socioeconomic status score of the retirement cluster is 3.7, and that of the young family cluster is 5.6. The high socioeconomic status of the young family aggregation is due to the inclusion of aggregations with highly educated, wealthy commuter populations in the West-Central North region and of some aggregations in the GLTB region having a number of professionals. Collectively, the aggregations in the three clusters represent only 23% of the total Sierra population. The majority of the aggregations fall within cluster C or cluster D, both of which have age distributions that closely mimic the average for the Sierra.

Spatial Characterization and Relationships

Based on the isolation scale, the aggregations of the West-Central North region are, on the average, the least isolated. Sixty percent of the aggregations in this region fall in the lowest (least isolated) 20% of the scale. Nearly 90% are in the lowest 40% of the scale. Only three aggregations in this region are in the highest 40% of the scale: Volcanoville/Quintette, Placer East, and American River Canyon. All three have low socioeconomic scale scores and median to very low capacity scores. The aggregations of the Southeast region are the most isolated. All but one of the eleven aggregations in this region fall within the highest 20% of the isolation scale scores. This is due in part to the high percentage of public land throughout much of this region.

The West-Central South region is the only other region with any aggregations in the lowest 20% of the isolation scale: Plymouth/Fiddletown, Ione, River Pines, and Jackson. These aggregations have medium socioeconomic scores and low to high capacity scores. More than 50% of this region lies in the highest 40% of the isolation scale. Forty-five percent of the aggregations in the Southwest region fall within the highest 20% of the isolation scale scores. Seventy-five percent are in the highest 40% of the isolation scale.

Nearly 70% of the aggregations in the Greater Lake Tahoe Basin region fall between the lowest 20% and 60% of the isolation scale. Markleeville/Woodfords/Bear Valley and Glenbrook are the only aggregations in the highest 20% of the isolation scale. They have low and very high scores on the socioeconomic scale, respectively.

The isolation scale, individual components of the scale, and other spatial variables have some associations with the socio-

economic status and capacity, at both the Sierra and regional levels. The twenty most isolated aggregations have an average socioeconomic scale score that is 0.83 standard deviations lower than the average score for the twenty least isolated. Correlation analysis indicates a weak inverse relationship between isolation and the socioeconomic scale (Pearson coefficient –0.2418, n=180, p=0.001). The direction and strength of this relationship is echoed in the relationships between the socioeconomic scale and the component parts of the isolation scale. Influenced in large part by different settlement patterns, these associations are considerably stronger in some individual regions but inverse or nearly absent in others.

The socioeconomic scale has a relatively strong inverse relationship to the isolation scale in the West-Central North region (Pearson coefficient –0.6028, n=54, p=0.000), where commuter-oriented populations predominate. Similarly, socioeconomic status is inversely related to elevation (Pearson coefficient –0.5675, n=54, p=0.000) and distance to the nearest city with a population of 25,000 (Pearson coefficient –0.4799, n=54, p=0.000) in this region. Socioeconomic status is positively, although weakly, associated with isolation, however, in regions with pockets of wealthy, isolated retirement communities such as the West-Central South region (Pearson coefficient 0.2740, n=48, p=0.059), the Northern region (Pearson coefficient 0.2257, n=31, p=0.222), and the Southeast region (Pearson coefficient 0.3250, n=11, p=0.329). Elevation is also positively related to socioeconomic status in these regions.

Findings of Plumas County Case Study

The community self-assessment case study in Plumas County provided an opportunity, albeit a somewhat limited one, to compare the results of community capacity self-assessments with expert assessments. Although it was not possible to compare numerical capacity ratings, the real value of the case study was that it offered the opportunity to identify important local issues in more detail than was possible in expert workshops. Numerical capacity ratings could not be compared, because (1) there was a small variation in community capacity scores rated by the Plumas County experts, and (2) there was very little variation in the average capacity scores for the case study communities. Expert capacity ratings for the six communities ranged from 2 (medium-low capacity) to 4 (medium-high capacity) on a five-point scale, with four of the communities rated 4 and two communities rated 2. The self-assessed communities all have mean capacity ratings that are in the middle of the capacity scale. The mean final capacity ratings in community self-assessment workshops ranged from 3.9 to 4.2 on a seven-point scale (with 1 being very low, 4 being medium, and 7 being very high capacity). The standard deviation for the means of all communities is close to 1, except for Chester, the community with the highest self-assessed score and the fewest respondents (n=11), which has a standard deviation of 1.9.

The small variation in capacity scores suggests that local workshop participants were reasonably consistent in their views of capacity and also that there may be a tendency among local residents to view their communities in the middle of the capacity scale. The small number of communities in the case study and their low degree of variation limit conclusions that can be drawn about numerical ratings.

The self-assessment workshops focused on identification of issues and items that were determinative of local capacity. The number of workshop participants in the six community self-assessment workshops ranged from a low of eleven to almost forty residents in the Greenville/Indian Valley area. The difference in number of participants reflects both the general interest and willingness of local residents to participate in the workshops as well as the organizational effectiveness of local networks of the Plumas Children's Network. In four of the six communities, priority listings of determinative issues and items of local capacity were obtained.

In Chester, participants identified the natural setting and environment, community services, and the economy as the three most important general areas determinative of local capacity. The community's beautiful natural setting and easy access to recreation resources were two subcomponents that contributed to a capacity in the natural setting and environment category. Limited county resources were identified as detracting from community services, while church groups and other local volunteer organizations and the local lumber company, which has a history of public service, led to a higher community capacity. Limited work opportunities and a weak job base detracted from local capacity in the economy category.

In Graeagle, community responsiveness and organizations, family health, and employment and economic development were the three categories identified as most important. Subcomponents of community responsiveness and organizations contributing to local capacity included a high level of community involvement and strong moral fabric, and detracting from it was the lack of a recreational center or park. A high degree of parental involvement was identified as a subcomponent of family health contributing to local capacity, and the large number of needy families was identified as detracting from it. Concerning the category of employment/economic development, limited job opportunities, particularly for teens, detracted from capacity.

In Greenville, participants identified economics, natural resources, and community as the three most important determinants of capacity. From the economics category, lack of jobs and limited economic activities were identified as detracting from overall capacity. The beauty of the valley and surrounding physical environment were identified as contributing to capacity, as were community spirit and the community in general.

At the workshop in Quincy, employment and economics, teen issues, and recreation were identified as the three most important categories. Lack of employment opportunities, with

a corresponding high level of unemployment; a declining economy; declining federal, state, and county financing for jobs and services; and a school financial crisis were all identified as detracting from capacity in the first category. Teen pregnancy and drug use and a lack of prevention programs for teens and other programs for families in need detracted from capacity in the teen issues category. Subcategories of recreation included the availability of a wide spectrum of activities, which contributed to capacity, and a shortage of programs and activities, which detracted from it. A fourth category, rated just below recreation, included individual and family resources. Contributing to capacity in this category were responsiveness and willingness of community residents, recognition of the need for communication, and teamwork. Detracting from capacity was the small population base, which led to a core group being overburdened with community responsibilities.

CONCLUSIONS

The five-factor socioeconomic scale offers a useful though static perspective of socioeconomic status, while the measure of capacity provides a current and important complementary perspective to overall well-being. Low socioeconomic scores are found in areas where higher percentages of individuals and families within aggregations may lack sufficient socioeconomic resources to maintain a reasonable standard of living and, hence, experience lower well-being.

Capacity is a dynamic and multidimensional measure that provides an indication of the ability of local communities to foster an environment in which local residents can identify and address their needs and goals. Low capacity scores indicate areas that have a reduced ability to effectively address the needs of local residents and take advantage of local development opportunities that might benefit them. Low capacity, then, reflects not only lower well-being but also a reduced ability, and likelihood, of residents of aggregations to improve local well-being, including socioeconomic status.

Socioeconomic status and community capacity in the Sierra Nevada aggregations are relatively independent components of well-being, and they measure different dimensions of it. Capacity scores are positively associated with the socioeconomic scale, but this correlation is weak. The independence of these two measures appears to be due in part to the critical role of social capital, which proved to be a primary determinant of community capacity.

Capacity and socioeconomic status were combined to assess overall well-being. Aggregations with lower socioeconomic status and low capacity have the lowest level of well-being, and aggregations with high capacity and high socioeconomic status the highest. Low capacity associated with high socioeconomic status affects well-being less than low capacity associated with low socioeconomic status. This is because communities in aggregations with high socioeconomic status are considered to have fewer needs and are able to purchase or acquire services that other communities cannot afford or must work collectively to acquire. Nonetheless, aggregations with higher capacity and high socioeconomic status have higher well-being than aggregations with lower capacities and equally high socioeconomic status.

Community capacity varies widely across the Sierra Nevada. The three components of community capacity (physical, human, and social capital) sometimes appear to be in conflict with one another. That is, where human capital is perceived as being high or increasing, social capital may be low or in decline. This is particularly true where well-educated retirees or professionals fail to work cooperatively on community issues with one another or with longer-term residents. Community history is an important contributor to the human and social components of community capacity. There are a number of aggregations, particularly in the southern Sierra, in which medium-high and high capacity was linked to a long history and the continued presence of multiple old families.

Local volunteer fire departments and local schools are a common denominator in many rural communities. In areas where there is community-based support for nothing else, there is generally support for a fire department. The ability of communities to sustain such volunteer efforts is often negatively affected by increasing populations of commuters and retirees. Although residents often unify around local schools, in many aggregations school issues highlight differences in values and priorities between families and retirees or other residents without children. The needs of youth were identified as neglected in many bedroom communities where growing commuter populations lead to increasingly unsupervised youths.

Community capacity can be negatively affected by divergent values of differently aged populations. Conflicts between retirees and younger families with children were noted in a number of aggregations. Retirees often demand services but resist changes that may be necessary to provide them, and retirees are often reluctant to pay for schools and other services that seem only to benefit families with children. These clashes appear to be strongest in some of the affluent gated communities, where community capacity is negatively affected by internal strife and lack of cooperation between these two groups. In a few communities, however, the knowledge, experience, and willingness of retirees to help the community was particularly noted as a positive addition to capacity. Other volunteerism-based community services are negatively affected by populations that are aging in place, particularly in areas where youth leave communities and in bedroom communities with a large percentage of commuters.

While most of the communities in the Sierra Nevada are fairly amorphous in terms of the age distribution within the population, several communities are dominated by unique

populations that can be characterized as retirement, young adult, and young family. The young adult populations are associated with service-oriented areas characterized by outdoor recreation, tourism, and gambling industries. Populations dominated by retirees are typified by high levels of natural resource amenities. Many of these areas are isolated and exclusive communities, often specifically designed to attract retirement populations. Communities dominated by young families include both bedroom commuter-oriented areas in the West-Central foothills and many of the relatively wealthy communities in the Lake Tahoe Basin.

Communities that are more isolated—in terms of distance from major cities and transportation corridors and density of nearby public land—tend to have a lower socioeconomic status, on average, than less isolated communities. This trend, however, is strongly moderated in the Sierra by certain population groups that are attracted to relatively isolated areas. Typically, residents of those isolated aggregations with higher socioeconomic status have sources of income that are more independent of location than the income sources of those with lower socioeconomic status. Several relatively isolated aggregations include affluent retirement communities whose residents are attracted in large part by the high amenity values afforded by these isolated areas.

The use of aggregations as a unit of analysis represents a significant advance in well-being assessment. Well-being is often discussed at the level of a community, but no ecosystem management study to date has actually gathered extensive and comparable community-level data for a large area. (The Columbia Basin Ecosystem Management Project, incomplete as of this writing, reported in a September 30, 1995, newsletter that it had collected economic data for numerous communities in the study area [Interior Columbia Basin 1995].) Community aggregations, based on census block groups, proved useful because in most cases they approximate meaningful social units for which comprehensive and similar data are available.

Community aggregations, however, are not without problems. In a number of instances, census block boundaries parallel main roads that are central to communities. Aggregating adjacent block groups to unify one community sometimes led to the inclusion of unrelated and unconnected communities. In some instances, single block groups cover extremely large areas that also include separate and unrelated communities. Many workshop participants who had previously worked with census data also expressed frustration with the limitations of this data. As a result, a consensus emerged from the workshops that the value of census data would be greatly improved if the Bureau of the Census would work more closely with knowledgeable local residents, such as county planners, to demarcate census geography in more consistent and socially meaningful ways. This study shows the value of the aggregate units and demonstrates how they can be identified.

Finally, the strength of this study of well-being in the Sierra Nevada region is its assessment of both socioeconomic status and community capacity for community aggregations in the Sierra. The measures of socioeconomic status and community capacity provide a comprehensive perspective of the current state of well-being of communities throughout the Sierra. The capacity workshops conducted throughout the Sierra region not only provide important information about local capacity but also offer valuable insights into the socioeconomic status of the aggregates. The measures of socioeconomic status and capacity, particularly when coupled with additional socioeconomic data pertaining to employment, can be used to evaluate the effects that various policy choices and management actions have on the residents and communities of the Sierra.

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APPENDIX 13.1

Definition of Capacity Presented to Local Expert Workshop Participants

COMMUNITY CAPACITY DEFINED

Community capacity in its most simple form is the ability of a community to adapt to circumstances of all sorts and to meet the needs of its residents. SNEP is interested in learning about the components of communities that affect capacity, and about the strengths and weaknesses of communities framed by the idea of capacity.

Further definition: Capacity is the ability of a community to meet local needs and expectations; to respond to internal and external stresses; and to take advantage of opportunities of all kinds. It includes the ability to adapt and to respond to changing conditions.

Community capacity can be divided into three broad areas:

Physical infrastructure includes the physical elements (e.g., sewer systems, business parks, land available for development, open space, etc.) of a community, and includes financial capital;

Human capital includes the skills, education, experiences and general abilities of residents; and

Social capital includes the ability and willingness of residents to work together for community goals (more formally defined as including networks, norms and trust that facilitate coordination and cooperation for mutual benefit).

Capacity Worksheet Used by Local Expert Workshop Participants

Sierra Nevada Ecosystem Project
Community Capacity Assessment

Worksheet

Community capacity is the ability of a community (or communities within a single aggregation) to adapt to circumstances of all sorts and to meet the needs of its residents. SNEP is interested in learning about the items/issues that affect community capacity, and about the strengths and weaknesses of communities in the context of capacity.

COMMUNITY AGGREGATION NAME _____

If this aggregation contains more than one distinct community, please list them.

CAPACITY NARRATIVE
Please identify the critical components of capacity (both positive and negative) for this community aggregation and describe how they are important (please refer to individual communities as appropriate)

(Please use the reverse side if you need additional space)

NUMERICAL RATING OF CAPACITY FOR THIS COMMUNITY AGGREGATE *(Please circle one number)*

1	2	3	4	5	6	7
very low	low	medium low	medium (neither low or high)	medium high	high	very high

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