

RESPONSE TO THE ECONOMIC ANALYSIS OF CRITICAL HABITAT DESIGNATION FOR THE NORTHERN SPOTTED OWL BY INDUSTRIAL ECONOMICS

AUGUST
2012



*In Relation to the 2012 Critical Habitat
Designation of the Spotted Owl*

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ECONOMICS**

In Response to the 2012 Critical Habitat Designation of the Spotted Owl

*Sierra Institute for Community and Environment
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August 2012

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This response provides a thorough explanation of relevant data, but time limitations precluded the pursuit of some lines of analysis. It is my hope that the information provided here will be of use to all stakeholders, and that new conversations and conclusions will arise from this work. If there are mistakes that remain in this report, and we hope they are few, we take responsibility for them.

Jonathan Kusel
Taylorsville, California
August 2012.

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EXECUTIVE SUMMARY

The purpose of this report is to review and provide comments on the May 29, 2012 draft report by Industrial Economics, “Critical Habitat Designation for the Northern Spotted Owl,” prepared for the U.S. Fish and Wildlife Service.

Industrial Economics’ assessment is insufficient in its documentation of cumulative socioeconomic impacts and current socioeconomic conditions. Their interpretation of the charge of “determining whether the benefits of excluding particular areas from the designation outweigh the benefits of including those areas in the designation” is overly narrow. As an assessment, the report does not comport with sound socioeconomic assessment science and lacks a sufficiently comprehensive evaluation of potential impacts.

While acknowledging a loss of over 30,000 jobs in the timber industry from 1990 to 2010, Industrial Economics argues that these losses were offset by regional population gains of 15% and an 18% employment increase in the decade of the 1990s. Industrial Economics errs by assuming: 1) job gains in the 1990s offset job losses in the 2000s, 2) regional population and job increases directly offset timber industry job declines, and 3) employment gains (and losses) are equally distributed across the region. They report regional job increases of only 3% in the 2000s, and do so without analyzing impacts associated with the Great Recession, which hit hard many of counties where critical habitat areas are designated.

In discussing timber harvest impacts, Industrial Economics bases its incremental change analysis on a period in which there is a severe downturn in the economy and wood products industry. This results in an undercount of likely impacts. Estimates of harvest totals are generalized and not linked to subunit timber harvest totals, resulting in estimates that, as they acknowledge, “could vary materially from future actual timber harvest...”

Because of the shortcomings of Industrial Economics’ report as a socioeconomic assessment, the Sierra Institute for Community and Environment provides additional analysis and review of socioeconomic conditions. This is done also to improve understanding of socioeconomic changes that have taken place since 1990 and the potential impacts of northern spotted owl critical habitat area designation of almost 14 million acres across the California-Oregon-Washington northern spotted owl region. Designation of this amount of land as critical habitat area requires deeper and more comprehensive analysis.

* * *

Across all three states in the northern spotted owl study counties there has been a dramatic loss of mills and wood products industry employment from 1990 to 2011. Losses were greatest shortly after some of the first forest restrictions were established to protect species including the northern spotted owl around 1990. The first northern spotted owl critical habitat was established in 1992. From 1990 to 2010, a total of 316 mills closed across the study area. Of these closures, over one-third (109) occurred from 1990 to 1992. The pattern across the three states is consistent, with most closures taking place in the early 1990s.

Across the region just under 33,000 jobs were terminated as a result of mill closures alone. The 1990s saw the greatest number of workers displaced as mills employing almost 18,000 workers closed over this period. From 2000 to 2009, close to 14,000 employees lost their mill jobs. Another 979 mill workers were laid off between 2010 and 2012.

Operating mills in the California study counties provided 27% of the mill jobs available in 1990. Since 1990, 54 mill closures resulted in 5,645 mill jobs lost in California study counties. Mill closings in Humboldt, Mendocino, and Shasta Counties alone make up 70% of all mill closures in the northern spotted owl region in the state.

In Oregon, 170 mills have closed since 1990. The majority of these took place in the early 1990s. While most mill closures occurred prior to the end of 1995, at least two mills closed every year from 1990 to 2009. Clackamas County lost the greatest percentage of mill infrastructure of any Oregon county since 1990. Clackamas' decline includes seven mill closures between 1990 and 1995 alone; another five closed between 1999 and 2009. The down-sizing of Clackamas County's mill infrastructure not only left many workers in search of new employment, but also resulted in seven communities losing all mill infrastructure.

Fifty-three mills in Washington study counties closed in the 1990s. Forty-three ceased operation between 1990 and 1995 alone; ten closed in the last half of the decade. Another 39 mills closed between 2000 and 2012. A total of 9,125 workers were laid off in Washington as a result of mill closures. The impacts of mill closures have been disproportionately distributed across Washington State. Grays Harbor, one of the most timber industry-reliant counties in the state, had the most mills close. Sixteen have closed since 1990. In addition to a high number of closures, the number of communities in Grays Harbor County with mills has fallen by over 50%, from seven to three.

* * *

A dominant trend in the three-state region is a shift away from goods production, or basic jobs, which have historically anchored many communities, to service jobs. In 2001, both Oregon and Washington's private sector had roughly 75% service-providing and 25% goods-producing jobs. In 2010, these percentages shifted to roughly 80% and 20%. In 2001, the mix in California was 23% and 77%, and is now 18% and 82%.

Mill closures and manufacturing job loss impacts were uneven across the region as some areas—and particularly some communities—were more highly dependent on mills for employment. In California in the manufacturing sector, all counties, except Napa and Colusa, saw a decrease in jobs from 1990 to 2011. Del Norte County lost 78% of its manufacturing jobs, the highest percentage of any study county in the state. The highest number of manufacturing jobs lost were in Humboldt County, which lost 3,700 manufacturing jobs, a total that accounted for 65% of the sector. Other California study area counties that lost over 50% of their manufacturing sector include Shasta and Glenn Counties.

Across all Oregon study counties there was a decline in manufacturing jobs related to the timber industry as seen in the lumber and wood products sector and wood product manufacturing. Nearly 12,000 jobs of these jobs were lost over the 20-year period. This

decline is especially critical to five Oregon counties where the timber industry accounts for over 10% of total employment: Clatsop, Douglas, Jefferson, Klamath, and Tillamook.

In Washington, many of the counties in the study area historically relied heavily on the timber industry. Over a 20-year period, private forestry and logging jobs declined 58%, from 7,738 in 1990, to 3,321 in 2010.

Communities and counties in the region have been reliant on the timber industry for much of their recent history, and many continue to be in 2012, despite reduced employment opportunities. In some rural counties in the study area, the timber industry accounts for more than 10% of total employment. Many of these communities and counties are struggling economically in 2012.

* * *

For 2000 and 2010, counties ranked in the top five for lowest median family income also had the highest percent of families, individuals, and families with children under 18 living under the poverty line. For all counties in the study area, the percentage of families living below the poverty line and percentage of families with children under 18 living below the poverty line is 11% and 18%, respectively. The percentage of owner-occupied homes has declined across the study region. Between 1990 and 2010, California and Oregon experienced a reduction of owner-occupied housing units by 92% and 85%, respectively.

The percent of students enrolled in Free and Reduced Priced Meal (FRPM) Program increased in all three states. In California, the increase across all study counties is 12.5%, in Oregon 12.2%, and in Washington 6.8%. While student enrollment in FRPM increased many districts and counties experienced a decline in the number of students attending, underscoring the loss of younger families in many areas, and continued and worsening impoverishment of families remaining.

One of the most notable demographic changes in California, Oregon, and Washington study area counties is the 15%, 16%, and 17% decline, respectively, in the percentage of the population under five years old. This underscores the loss of young families in NSO counties.

There are several common health patterns in the California, Oregon, and Washington study area revealed in county health rankings. Rural areas tend to have poor health rankings in general, and are more prone to negative health outcomes and health factors than urban areas. Rural counties exhibit a higher prevalence of lifestyle choices that negatively influence health, such as smoking, alcohol use, and poor diet and exercise (although this is less distinct in Washington). In addition to having lower health behavior rankings, rural counties also rank poorly in clinical care and social and economic factors. Access to care is a challenge to rural counties, and a number of rural counties frequently have poor rankings for this indicator. This is true for quality of care as well. Closely related to access to care and quality of care is the percentage of uninsured adults. Urban areas tend to fare poorly on this ranking, but do not surpass rural counties in any significant way.

* * *

Case studies, two in California and three each in Oregon and Washington, were conducted to better understand socioeconomic changes and current socioeconomic conditions “on the ground.” Some key findings from these cases include in California:

- Siskiyou County lost all its saw mills, has seen its population age, and has lost eight schools, challenging the county to provide for the remaining students and reverse the loss of young families.
- In Humboldt County there are powerfully suggestive relationships between mill closures and student impoverishment as reflected in Free and Reduced Price Meal (FRPM) enrollment rates. This county has suffered dramatic declines in its goods-producing sector, with the manufacturing subsector losing 65% of its 1990 jobs by 2011.

In Oregon:

- Tillamook County has 24% of its children living in poverty, and 39% living in single-parent households, almost double the national average.
- Douglas County has 31% of its children living in poverty - twice the national average - and 34% living in single-parent households.
- In both of these counties, but especially in Douglas County, there are significant declines in manufacturing jobs, particularly since 2008. Free and Reduced Priced Meal participation rates increased over the last four years as well, some schools by almost 20 percent.
- Over the last several decades, Josephine County saw forestry and logging jobs decline by 80%. Wages have stagnated and are two-thirds of the Oregon average. The county now ranks near the bottom of Oregon counties in health indicators and FRPM participation rate for the county is 70%.

In Washington:

- Grays Harbor County Natural Resources and Mining jobs declined by over 50% and Forestry and logging jobs by just under 70% from 1990 to 2010. The county is near the bottom of the health rankings for counties in the state. FRPM participation rates for the county exceed 60%, with one school district at 92% in 2011 and another at 88%; the lowest rate is 41%, reflecting the considerable differences across the county.
- Skamania County has 90% of its land in federal ownership, and 59% of the land in the county is designated as critical habitat area. Natural resource and manufacturing jobs have declined by over 50% over the last 20 years, though service industry jobs have increased dramatically during this period.

* * *

Timber receipts and, more recently, the Secure Rural School and Community Self-Determination Act (SRS) payments to replace lost timber receipts to counties and schools have been historically important. In California, on average, Humboldt County Schools received just under 5% of their funding through SRS; Siskiyou received on average just under 7%; and Trinity County received 15%. In Oregon, U.S. Forest Service SRS funding has provided on average 23% of county road budgets, with six counties receiving over 40%

of their total road budget. Though dramatically lower in 2011, SRS payments comprised 40% or more of Skamania County general fund throughout the 2000s. In Oregon O&C counties, the Bureau of Land Management contribution to county budgets has been significant. In 2009 it comprised 17% of Douglas County's total revenues and it makes up 7% of Jackson County's total county revenues.

Eighteen counties received SRS O&C funding that goes directly to county general funds. SRS is scheduled to expire in 2013. Loss of these funds will challenge already financially cash-strapped counties and school districts.

The time has long since past that we “reconcile” what Industrial Economics’ terms in its report as “competing economic and conservation goals.” Newer approaches address forestry as a “triple-bottom-line” endeavor—one in which economy, environmental, and community (or equity) benefits are all a part and integrated. This approach is not about trading off harvests at the expense of the environment, or environmental outcomes with community and economic interests, but integrating them in ways that advance them collectively. The tenets of what Industrial Economics calls “ecological forestry” discussed in the report are suggestive, but remain too narrow as presented.

Regardless of whether one calls it ecological forestry, restoration forestry, or something else, active forest management is needed to address socioeconomic and habitat issues of the northern spotted owl, and the point is that they can be successfully integrated new and potent ways. A new comprehensive vision and approach is needed for the forests, for the counties and communities dependent on them, as well as for the northern spotted owl.

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Chapter I. Introduction

The purpose of this document is to provide comment on the May 29, 2012 draft report by Industrial Economics, Incorporated, “Critical Habitat Designation for the Northern Spotted Owl,” prepared for the U.S. Fish and Wildlife Service. The Sierra Institute for Community and Environment reviewed this report for its comprehensiveness with respect to analysis of socioeconomic condition and impacts of critical habitat designation on rural communities and counties in California, Oregon, and Washington.

The work of the Sierra Institute for Community and Environment was supported by the National Forest Counties and Schools Coalition.

Direct comments on Industrial Economics’ report focus on report consistency and comprehensiveness with respect to identification and review of factors that could influence Northern Spotted Owl (NSO) recovery and socioeconomic impacts. Comments are offered also in light of President Obama’s February 28, 2012 Memorandum for the Secretary of the Interior, which calls for “a full evaluation of all key criteria: the relevant science, economic considerations, the impact on national security, and a balancing of other factors.” Direct comments on the report are in Chapter II of this document.

In the spirit of President Obama’s February 28, 2012 Memorandum and to demonstrate a more comprehensive and appropriate analysis, the Sierra Institute for Community and Environment has compiled a variety of socioeconomic descriptive statistics, and initiated a preliminary analysis of these data as part of its comments. This information may be found in Chapters III-VI.

The 38 days from the release of the Industrial Economics’ report to the close of the comment period limited the work that could be completed. Nonetheless, a comprehensive compilation of diverse data and preliminary analysis are provided in this scientific review and assessment. Some of the research questions that guided this work follow.

Research Questions

Research questions guiding Chapters III-VI are divided into broad “Condition Assessments” that includes 1) Capacity, 2) Economic Vitality, 3) Income and impoverishment, 4) Social Structure, and 5) Health and Impoverishment presented in Table 1. Within each of the broad conditions, specific condition indicators and corresponding questions are analyzed. Condition Assessment was limited in some cases due to inadequate time to collect needed data and to analyze information that was collected.

Table 1.1. Research Questions Assessed for the Study Area

Condition Assessed	Condition Indicators	Question	Measures
Capacity	Financial Capital	Is there a change in inflation adjusted county budgets in the study area between 1990, 2000, and 2010?	Inflation adjusted county budgets
Capacity	Physical capital	Is there a difference in the total acreage and percentage public and private lands within CHA's in the study area between 1990, 2000, and 2012?	Acreage and percentage of acreage of public and private lands in CHA
Economic vitality	Business diversity	Is there a difference in the total number and percentage of people employed by NAICS Code (sector) in the study area between 1990, 2000, and 2010?	Number and percent of people employed by NAICS code
Economic vitality	Business diversity	Is there a difference in the total and percentage of household income by NAICS Code (sector) in the study area between 1990, 2000, and 2010?	Median household income by NAICS code
Economic vitality	Business diversity	Is there a difference in total economic output of NAICS sectors in the study area between 1990, 2000, and 2010?	Economic output of NAICS sectors; total employment by sector
Income and Impoverishment	Impoverishment	Is there a difference in percentage of households living below the federal poverty level in the study area between 1990, 2000, and 2010?	Percentage and count of households living under federal poverty level
Income and Impoverishment	Impoverishment	Is there a difference in percentage of households receiving public assistance in the study area between 1990, 2000, and 2010?	Percentage and count of households receiving public assistance
Income and Impoverishment	Impoverishment	Is there a difference in percentage of female-headed households receiving public assistance in the study area between 1990, 2000, and 2010?	Percentage and count of female headed households receiving public assistance
Income and Impoverishment	Impoverishment	Is there a difference in percentage of Title 1 payments to school budgets the study area between 2000- 2011?	Percentage of school budget that is from Title I— SRS payments
Income and Impoverishment	Impoverishment	Is there a difference in median salary in the study area between 1990, 2000, and 2010?	Median salary, by groups
Income and Impoverishment	Impoverishment	Is there a difference in median household income in the study area between 1990, 2000, and 2010?	Median household income

Condition Assessed	Condition Indicators	Question	Measures
Income and Impoverishment	Impoverishment	Is there a difference in the unemployment rate in the study area between 1990, 2000, and 2010?	Unemployment rate
Income and Impoverishment	Impoverishment & Hunger	Is there a difference in the total number of students and the total number of students enrolled in free and subsidized school meals program in the study area between 1990, 2000, and 2010?	Total number, percentage, and rate of students and total enrolled in free and subsidized school meal program
Income and Impoverishment	Impoverishment	Number of schools closed	Schools closed by district over time-
Social Structure	Demographics	Is there a difference in the age demographics in the study area between 1990, 2000, and 2010?	Number and % of people by "standard" census age classes
Social Structure	Demographics	Is there a difference in the ethnicity of people in the study area between 1990, 2000, and 2010? If there are differences, can they be attributed to migration and/or immigration?	Number and % of people by ethnicity with focus on persons of Hispanic, Latino, or Native American ethnicity
Health and impoverishment	Disease rates and access to medical services	Rates of diseases specifically linked to suspected pollutants (e.g., asthma, methaemoglobinaemia, or cryptosporidiosis)	County Health status from 2010 University report; compare areas within state by county

In addition to this research, cases from California, Oregon, and Washington are developed to draw together diverse data "in place." These cases are all too short, and time did not allow the necessary on-the-ground research, but they nonetheless highlight issues unique to the counties included. Three cases each from Washington and Oregon, and two from California comprise the case studies found in Chapter VI. The review concludes with a brief conclusion that comprises Chapter VII.

Chapter II. Review Of Industrial Economics Analysis of Critical Habitat Designation

The purpose of this chapter is to review and provide specific comments on the May 29, 2012 draft report by Industrial Economics, “Critical Habitat Designation for the Northern Spotted Owl,” prepared for the U.S. Fish and Wildlife Service.¹ The report was produced “to identify and analyze the potential economic impacts of designation of critical habitat for the northern spotted owl...” (ES-1).² The goal of the analysis “is intended to assist the Secretary in determining whether the benefits of excluding particular areas from the designation outweigh the benefits of including those areas in the designation” (Point 1, ES-1).

The Sierra Institute for Community and Environment is reviewing this report for its comprehensiveness with respect to analysis of socioeconomic condition and impacts of critical habitat designation on rural communities and counties. Additionally, the Sierra Institute offers comments regarding report consistency and appropriateness with respect to some other factors that could influence Northern Spotted Owl recovery and socioeconomic impacts. Finally, the Sierra Institute is reviewing the report for its consistency with President Obama’s February 28, 2012 Memorandum for the Secretary of the Interior, which calls for “a full evaluation of all key criteria: the relevant science, economic considerations, the impact on national security, and a balancing of other factors,”³ and Entrix, Incorporated, May 14, 2008 “Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl,” also prepared for the U.S. Fish and Wildlife Service.

Industrial Economic states that the report “was prepared with attention to the memorandum issued by the President on February 28, 2012 (Point 4, ES-1), and, citing the Entrix Report, the “...analysis relies on relevant information and data from the economic analysis prepared in support of the 2008 proposed critical habitat rule” (2-15, 103).

Comments are offered sequentially to the Industrial Economics’ report followed by a brief summary at the end.

ES-5-6 (11-13) Industrial Economics states: “The Service identifies a series of economic activities potentially affecting the NSO and its habitat” and mentions key topics. Industrial Economics states: “We focus our efforts on analyzing potential impacts to timber management... Finally, we consider the potential distributional effects of the rule, including regional employment and governmental revenue impacts. ”

¹ Industrial Economics, Inc. 2012. Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl.

² Letters and numbers in parenthesis designate the chapter, page, and paragraph numbers from which quotes or ideas are drawn, or to which ideas are offered.

³ The White House, Office of the Press Secretary, February 28 2012 Memorandum for the Secretary of the Interior on the subject of “Proposed Revised Habitat for the Spotted Owl: Minimizing Regulatory Burdens.”

It is important to analyze potential timber impacts. The finding that timber harvest volume has decreased 51 percent over the last 20 years where revised critical habitat is proposed coupled with a 52 percent decline in timber industry employment is important, but incomplete. Overall impacts to communities, school districts and counties warrant attention, especially in light of the fact that habitat restrictions have cumulatively increased beginning in the early 1990s, and impacts go beyond timber impacts.

ES-6 (14) Industrial Economics reports that industry jobs in the 1990s declined by 30,000, and suggest that these jobs, many of which were family wage jobs, were offset by the 15 percent growth in population and 18 percent employment growth regionally. *This is a problem of “ecological fallacy,” in which regional numbers are assumed to apply to smaller units. Impacts are not equally distributed across the region, across states, nor across individual counties. High employment gains in one geographic area or several populous areas can easily mask losses in smaller, rural areas, particularly, in this case, in those areas dependent on forest industries. The 18 percent employment growth and 3.8 million jobs gained were not equally distributed.*

Report authors recognize the disparity by stating (15) “employment in the timber industry ranges from zero to 24 percent of total county employment” *but do not analyze the impacts of nor sufficiently discuss the disparity.*

Comparing timber industry employment for 1990 and 2000 within “regional market conditions” and suggesting an increase in population by 15 percent and employment by 18 percent offset timber industry impacts again ignores not only that industry jobs losses are not evenly dispersed, but that added jobs are not evenly dispersed across the region. One job lost is not being replaced by another job in the same location. For example, jobs in the Seattle-Tacoma area were growing while jobs in rural areas were declining. Moreover, in addition to locational disparities, all jobs created did not equal jobs lost in terms of pay and benefits.

ES-7 (17 and 19) Following OMB Circular A-4, September 17, 2003, the assessment baseline is defined as “the best assessment of the way the world would look absent the proposed action” or “the existing state of regulation, prior to the designation of critical habitat.”

Industrial Economics reviewed how the courts have weighed in on what constitutes an appropriate “baseline,” and it is nonetheless important to point out that the 2012 critical habitat designation is not a discrete 2012 action, but rather a continuation of NSO and landscape management and increasing forest management restrictions first launched over 20 years ago. This action has and will continue to affect not only timber harvests but will influence the presence and continued investment by the timber industry in Northwest forest management. And these decisions will influence investment in rural areas generally, including whether the industry continues its migration to the Southeastern United States.

When the U.S. Fish and Wildlife Service issued notice of review of NSO in 2003 they initiated a five-year review and this information was compared to work done previously. Socioeconomic conditions and industry jobs have changed both because of NSO restrictions, as well as from other factors. It is important to understand cumulative socioeconomic conditions, including factors that can contribute to changes—positive and negative—under these conditions and restrictions. Understanding socioeconomic context today is important, but so too is understanding socioeconomic trends and past condition that contribute to current socioeconomic realities.

Industrial Economics does include 20 years of industry employment in the report, but these data are not linked to CHA analysis, or to cumulative effects of land use decisions. Their failure to link job declines to socioeconomic conditions is a deficiency in the analysis. The President in his February 2012 memo made clear the need for this

information to be a part of the analysis. When asked about how much this memo played into their analysis (personal communication 6-20-12), however, a Principal from Industrial Economics said it had “little effect.”

The limited scope and timeframe of Industrial Economics’ analysis raises the following questions: 1) is the analysis sufficiently comprehensive in light of critical habitat area establishment? And 2) is a more full or complete NEPA analysis needed? Because the answer to the first question is “no” the answer to the second question is “yes.”

ES-8 (24) Unintended consequences of the regulation include incentivizing altered management practices by private landowners. *In some cases this involves doing nothing because of the cost of compliance outweighing the value obtained, and selling land and moving operations elsewhere. Doing nothing is a management strategy that may on its face appear to have no cost, but more often than not has real social and environmental costs, such as reducing job availability and revenues, and increasing the risk of catastrophic fire.*

* * *

1-7 (54) *Establishment of critical habitat represents a single strategy response to a multi-dimensional problem. The report states, “barred owl in the NSO habitat is considered one of the most significant threats currently facing the NSO.” This issue is likely to challenge any strategy for NSO conservation.*

* * *

2-1 (57-58) ESA requires Fish and Wildlife Service to “consider the economic impacts, impacts to national security, and other relevant impacts of designating any particular area as critical habitat.”

Also 2-2 (60) the report states that “the baseline includes the existing regulatory and socioeconomic burden imposed on landowners, managers...”

*The economic assessment is insufficient in terms of adequately documenting current socioeconomic condition and characterizing cumulative socioeconomic impacts. The interpretation of the charge of “determining whether the benefits of excluding particular areas from the designation outweigh the benefits of including those areas in the designation” appears overly narrow. Economic impacts defined as those “with designation” versus “without” are incomplete. Designation of the owl as threatened, previous habitat designation, and management restrictions have had a cumulative effect. This is not to say only NSO designation has led to current socioeconomic conditions, but it is to say that current socioeconomic conditions and cumulative socioeconomic change (trend) need to be included to adequately assess economic impacts. The “without” condition is not a *tabula rasa*, it is function of multiple land use decisions, restrictions, and management actions, along with multiple local and regional economic decisions and activities, and these need to be discussed in more detail to adequately review socioeconomic condition. Additionally, it is important to evaluate and discuss current condition, not just regionally but also locally to determine local capacity to respond to designation.*

The Industrial Economics report purports to include an economic analysis. The analysis is, for the most part, so overly narrow as to be meaningless with respect to sound science and socioeconomic assessment. It also fails to address the President’s directive of February 2012.

In their 2008 analysis, Entrix, Inc. states: “The analysis looks retrospectively at baseline impacts incurred since the species was listed, and forecasts both baseline and incremental impacts likely to occur after the proposed critical habitat is finalized.” Like Industrial Economics, Entrix, Inc., identified case law and U.S. Fish and

Wildlife Service direction regarding what to include and what not to. The two consulting groups ended up in inconsistent places with respect to baseline and included incremental impacts.

2-4 (66) The Industrial Economics' analysis does not do as it states: "consider both the economic efficiency and distributional effects." *It is unclear, for example, why Industrial Economics included 20 years of timber industry employment data, but beyond mention of the dramatic decline in employment in this sector, it plays no role in the overall assessment of the "impacts." Industrial Economics stated (personal communication 6-20-12) that they had discretion to include this information, but the fact that it plays no role in the overall analysis reflecting the condition of communities and counties to absorb even potential impacts is problematic. It also means this analysis will not adequately address important distributional impacts, as it purports to do.*

2-5 (68-69) Industrial Economics states that their approach uses compliance costs as a proxy to measure changes in economic efficiency, and to comply with Executive Order 12866 "Regulatory Planning and Review." *The language of the economist can itself be challenging, obfuscating what is and is not done. With direction to evaluate "without critical habitat" and "with critical habitat" and inclusion of 20 years of employment and production data, it is not clear why the timber and production data play little role in the analysis.*

2-5, 6 (72) Industrial Economics states, "Measurements of changes in economic efficiency focus on the net impact of conservation efforts, without consideration of how certain economic sectors or groups of people are affected [emphasis added]. Thus, a discussion of efficiency effects alone may miss important distributional considerations [emphasis added]." *Industrial Economics attempts to remedy this deficiency and follow OMB direction to consider distributional effects by focusing on impacts on small entities and regional economic impacts.*

It is unclear why Industrial Economics adopted an approach that did not consider how economic sectors or groups of people are affected. Entrix, Inc., states their analysis "analyzes whether a particular group or economic sector in [sic] expected to bear an undue proportion of the impacts" (page ES-8).

2-6 (73-74) Industrial Economics uses an input/output model to assess these impacts. *While they use language of (73) "small entities, including small business, and organizations, and governments..." and (74) "local economy," Industrial Economics' analysis has nothing whatsoever to do with local, and beyond general reporting of the data, it is clear that this information has little role within the overall assessment and analysis of impacts.*

2-6 (75) Industrial Economics criticizes the "static view" of input/output models, and states "...they do not consider re-employment of these individuals over time or other adaptive responses by impacted businesses." *It is important to note that a static view also does not take into account continued struggles by communities, school districts, and counties in light of changes associated with the timber industry, federal funding streams, and other changes. Indeed, Sierra Institute through its studies documented longer-term community decline and loss of capacity that has had a profound affect on long-term recovery and community prosperity. In one such study, laid off forest workers, not only did not take jobs in other sectors, most retired or took jobs in the timber industry, and felt they could not move elsewhere because they could not sell their home for anything close to the price of a home elsewhere.⁴*

⁴ Kusel, J., et al. 2000. "Effects of Displacement and Outsourcing on Woods Workers and Their Families," Society and Natural Resources 13(2): 115-134.

2-6 (76) “Despite these and other limitations, in certain circumstances regional economic impact analysis may provide useful information about the scale and scope of localized impacts.” *This analysis does not address localized impacts, because of the focus of the analysis and because of the scale and methods that do not address community-level impacts.*

2-9 (84) “The two categories of direct, incremental impacts of critical habitat designation are: 1) the administrative costs of conducting section 7 consultation; and 2) implementation of any conservation efforts required by the Service through section 7 consultation to avoid potential destruction or adverse modification of critical habitat.”

2-11 (92) “Indirect impacts are those unintended changes in economic behavior that may occur outside of the Act, through other Federal State, or local actions, and that are caused by the designation of critical habitat.”

This approach is incomplete with respect to impacts associated with NSO restrictions from species designation, Northwest Forest Plan and related management restrictions, and designation of critical habitat over the years.

2-14 (98) Industrial Economics states “Executive Order 12866, directs Federal agencies to provide an assessment of both social costs and benefits of proposed regulatory actions.” They point out that “OMB’s Circular A-4 distinguishes two types of economic benefits: direct benefits and ancillary benefits.”

2-14 (100) Regarding ancillary benefits, Industrial Economics states “...management actions undertaken to conserve a species or habitat may have coincident, positive social welfare implications, such as increased recreational opportunities in a region.” *This justification is used to highlight regional employment impacts that “may offset the direct, negative impacts to a region’s economy...” The point made above bears repeating: It should not and cannot be concluded that localized impacts are offset by regional economic gains, especially with inadequate assessment of localized impacts.*

2-14 (101) Regarding geographic scope: “The analysis focuses on activities within or affecting these areas, and presents impacts at the lowest level of resolution feasible, given available data.” *This statement highlights either the overly limited scope under which Industrial Economics was operating in conducting their analysis, the inappropriateness of the data they utilized for assessing impacts, or lack of sensitivity to the scale of data needed to conduct the necessary analysis.*

2-14, 15 (102) Regarding analytic timeframe: “Ideally, the time frame of this analysis would be based on the expected time period over which the critical habitat regulation is expected to be in place.” *Industrial Economics wrestles with how far into the future to extend their economic analysis, and settles on 20 years. This same conversation is needed regarding the timeframe included to understand current condition. Understanding current condition requires an understanding of what has transpired in recent years and trend, which are, for the most part, not factors in the analysis. It is clear that this is partially addressed when discussing “baseline,” but it is mentioned again here because of its inadequate treatment and the need to more fully understand current conditions to effectively evaluate the “foreseeable future,” regardless of the timeframe ultimately settled upon.*

2-15 (104) “Sources of information” are inadequate with respect to impacts on “counties and municipalities.” *Two names are mentioned with respect to these categories as “consulted during outreach and data collection.” Beyond discussion of Secure Rural Schools and the Community Self Determination Act and PILT payments,*

there was no substantive exchange about the conditions of counties or municipalities or anything else on the one phone call that involved communication with the two individuals mentioned. This is reflective of how counties and municipalities (and schools) are given short shrift in this analysis.

2-15 (104) Industrial Economics reports: “This analysis relies on relevant information and data from the economic analysis prepared in support of the 2008 proposed critical habitat rule.” *It is unclear how Industrial Economics relies on the 2008 report. And in light of the Great Recession and deep financial challenges that so many rural areas and counties have been facing from 2008 to 2012, a 2008 report will not capture the necessary social and economic conditions.*

* * *

3-1 (106) “It is important to view changes in timber industry employment in the Pacific Northwest within the greater context of regional market conditions. Between 1990 and 2000, timber industry employment in the NWFP area declined significantly, by approximately 30,000 jobs. Meanwhile, there were substantial increases in both population and total employment in the tri-state area of California, Oregon, and Washington; population increased by 15 percent and employment grew by 18 percent, representing a total of 3.8 million jobs gained. During the following decade, however, population in the tri-state area continued to grow while job growth slowed, with total employment increasing only three percent between 2000-2010.”

1. It is important to view “changes in timber industry employment ... within the greater context of regional market conditions” but the context is selective: it is as if the decline of industry employment is relatively insignificant relative to the job growth that took place regionally. Overall, regional job growth may have very little impact on those areas where timber industry jobs were lost, and this needed analysis is lacking.

2. Industrial Economics does show job loss by county and percent of labor force later in the report but fails to mention it here and, more significantly, does not discuss how those areas with higher employment in the industry are affected.

3. Industrial Economics states that employment increased only three percent between 2000-2010, but fail to cite a source for this statement. This is important, because reliance on Bureau of the Census will undercount 2000-2010 because of averaging done with American Community Surveys beginning in 2006.

4. If this statement is based on exhibits 3.6 and 3.7, Bureau of Labor Statistics were also used through 2009, which may also lead to an undercount of current conditions.

5. The Sierra Institute for Community and Environment was unable to replicate the numbers in the tables because the methodology describing how they were derived is inadequately specified.

3-2, 3 (109-110) *Discussion of harvest trends is important and offers a window to impacts by county. Industrial Economics points out that “These trends are particularly important given that private timberland are approximately nine percent of the total acreage of proposed critical habitat.” This point begs a couple of questions: 1) Why aren’t these data raised and discussed in response to the impact of critical habitat designation? 2) If this analysis is to address issues at a “local level” as it purports to do, why, for example, aren’t impacts to a state and county that have the most private land designated as critical habitat discussed in more detail? Humboldt County, California, which produced 29 percent of the state’s 2010 study area timber total, has the highest amount of private land designated as critical habitat with just under a half million acres. This total comprises 54 percent of the total land designated as critical habitat in the county.*

3-8,9 (112-114) Useful detail is provided on employment impacts, including mention of (3-15 (115)) counties in which timber industry jobs constitute more than 10 percent of total employment, but no connection to critical habitat designation is made.

Industrial Economics' report assumes that a focus on impacts to timber management is a suitable proxy for communities and a regional economy. Timber management is but one component of the industry. Manufacturing and other forest management activities are important.

3-15 (116-119) Important review of timber industry dependence by county, along with highlighting greater dependence of nonmetropolitan counties (roughly ten percent) compared to metropolitan counties (one percent). Again, the question is begged, given this information, why isn't there more of a review of the potential impact of critical habitat designation?

3-15 (120) The fact that "unemployment rates have risen nationwide due to the economic downturn" should compel additional review about effects across metro and non-metro counties, and those places more reliant on the timber industry. Industry decisions, including those focused on improving efficiencies, have led to the departure of wood products manufacturing from rural areas and the region as a whole, but to what degree does the uncertainty associated with increased forest restrictions influence these decisions? It is important to examine this issue to understand the impact of critical habitat area designation. These issues are raised in 3-16 (121) but there is neither analysis nor critical review of the relative importance of the factors mentioned.

3-22-24 (130-133) Industrial Economics points out that the main goal in ecological forestry "is to achieve ecological goals while simultaneously providing economic and social benefits." Management practices mentioned in the proposed rule by Industrial Economics, however, focus on older growth, vegetation management, and landscape-level planning and vegetation management that promotes historical ecological processes, with no mention of socioeconomic benefits. For Industrial Economics the social benefit is simply the possibility of more timber harvested, because as they state: "ecological forestry would... increase the overall amount of timber harvested from Federal lands while simultaneously improving habitat for the NSO and other listed species."

There is considerable opportunity with implementing forestry practices that simultaneously address ecological and socioeconomic concerns, but the fact remains that ESA-related forestry work focuses on habitat or ecological concerns and does not address socioeconomic issues. Historically, to the extent they have been addressed, socioeconomic concerns have been addressed through timber production. While it is important, there has not been an explicit objective to produce jobs through harvests. In light of NSO habitat needs, barred owl habitat conflicts, and climate change, among other factors, there is opportunity for ecological and socioeconomic concerns to be addressed in new and potent ways. A new and comprehensive vision and approach is needed.

* * *

4-3 (141) Citing the National Park Service (NPS), Industrial Economics states, "there is currently no logging and no active forest management practices on NPS lands." This may be true for most of the designated area, but the Sierra Institute is aware of active forest management on NPS lands in Shasta County.

4-4, 5 (145-6) "The Service's 2011 Revised Recovery Plan recommends that structurally complex stands and occupied NSO sites in all land allocations be retained to provide for NSO reproduction and to ease competition with barred owls until barred owl numbers can be reduced." *How will retention of structurally complex stands and non-structurally complex NSO habitat ease competition?*

Additionally, “According to the Revised Recovery Plan, unoccupied and non-structurally complex NSO habitat in the matrix is still expected to be managed for timber production.” *First, managing land that is non-structurally complex and not inhabited by NSO is by definition not NSO “habitat.” Biology Online defines the word “habitat” as a “Place where an organism or a biological population normally lives or occurs” and “The place being occupied by an organism, population, or community.”*⁵ *Calling such land “habitat” warrants further discussion/examination. Second, unoccupied lands within the matrix are more likely to experience changes in timber harvest as a result of designation. There needs to be a discussion of the implications of the definition, along with discussion of the implications of designation. To refer to areas of younger forests as “essential to NSO conservation,” because it may offer “additional suitable habitat in the future,” (4-10; 158) is full of questionable assumptions. And since this analysis focuses on incremental impacts that as defined affect federal managers, it inappropriately ignores private land impacts (4-11; 161).*

4.8 (153) Industrial Economics discusses filtering to remove acreage from assessment of incremental effects. A second step in this analysis is to filter “where the objectives of the allocation are consistent with proposed critical habitat objectives.”

In the preceding section there is discussion of land that will be managed using new ecological forestry principles that will lead not only to improved forest management and habitat, but also to the possibility of increased timber production and employment. Rather than assuming that the “more conservative” prescriptions of 20 years ago—that were based on the scientific understanding of 20 years ago—are appropriate, why hasn’t Fish and Wildlife Service included a review of the older prescriptions in light of new understanding and approaches to forest management? An incremental effects analysis misses this point. Conceivably, ecological forestry offers the opportunity to improve NSO habitat and simultaneously improve forest work opportunities and forest employment. This begs the question of how much land management can contribute to improved NSO conditions and reduce the threat of catastrophic wildfire that would destroy NSO habitat beyond the 20-year focus of this analysis.

4-17 (167) *Key assumptions in this paragraph are faulty. Industrial Economics relies on the five years (2006 to 2010) of harvest data to base future timber harvests. This period is inappropriate as a base period because it includes the Great Recession and a severe downturn in the timber industry that dramatically reduced wood products demand and harvests (for example, see the price data in Exhibit 4-11). Additionally, because they lacked detailed geospatial information on timber management, Industrial Economics assumed harvests were evenly distributed. Not only is this inappropriate, but it means important locational differences and local impacts are ignored as well.*

4-30 [191] *Lack of locational variation is further exacerbated by the failure of Industrial Economics to draw a distinction between dry and wet forests and a single classification of younger forest stands that does not differentiate between commercially viable stands and those that are not.*

4-20, 22 (174-5) *Hence, the analytic goal of creating “a baseline timber harvest projection that could serve as a reasonable basis for considering potential incremental changes related to critical habitat” isn’t reasonable. This undercuts the value of Exhibit 4.8 and, more importantly, basing an incremental change analysis on these harvest totals.*

4-29 [190] *Industrial Economics discusses ecological forestry, one purpose of which is “to better reconcile competing economic and conservation goals.” The time has long since past that we “reconcile” what they term*

⁵ <http://www.biology-online.org/dictionary/Habitat>

“competing economic and conservation goals.” Newer approaches address forestry as a “triple-bottom-line” endeavor—one in which economy, environmental, and community (or equity) benefits are evaluated and integrated. It is not about trading off harvests at the expense of the environment, or environmental outcomes with community and economic interests, but integrating them in ways that advance them collectively. The tenets of ecological forestry are suggestive, but it is unclear because Industrial Economics appears to paint the picture narrowly. If Industrial Economics did not paint it overly narrow, there is need to recognize that regardless of whether one calls it ecological forestry, restoration forestry, or something else, management is needed to address socioeconomic and broad environmental needs, especially important in light of increasing risks of catastrophic wildfire.

In sum, with respect to timber harvest impacts, the harvest totals on which incremental change analysis rests, is based on a period that reflects a severe downturn in the economy and wood products market, and, while explicit with respect to subunit production, the data on which the subunit totals are based are not linked to the subunits and according to the authors, “could vary materially from future actual timber harvest in these areas” (174).

4-30 [193] *The third harvest scenario envisions a 20 percent harvest reduction relative to the baseline. Because the “baseline” is depressed as a result of using an artificially low harvest period, this scenario represents a greater than 20 percent decrease.*

* * *

5-3, 4 [207] *Industrial Economics recognizes that “Incremental effects of designation may also manifest themselves indirectly.” These impacts are played down in the analysis because they are indirect and difficult to quantify. The report does mention that “designation of one’s property may result in concern or uncertainty about potential future regulation, altering the decisions made about productive uses of that land, or stigmatizing the property...” but lacks analysis of this issue.*

5-11 [230] *Based on personal communication with a Washington Department of Natural Resources employee, Industrial Economics reported that because of the time and cost of developing an EIS, landowners will likely “not pursue” harvest where this was required.*

5-29 [279] *Industrial Economics also learned that there is a possibility of a change in Washington State regulations, which could result in the loss of land value. Because it is speculative, they state: “probabilistic estimates of lost land values are not possible at this time.” There may not be adequate estimates of the probability or the total number of acres that could be included, but probabilistic models coupled with a sensitivity analysis could offer insight into the impact and are possible to develop.*

5-18 [257-8] *Industrial Economics also points out that indirect incremental effects impact private California land as well, and that designation may result in regulatory uncertainty that can affect the market value of the land.*

5-18-19 [259] *Again, regulatory uncertainty may be difficult to quantify, but the impacts—while (legally) termed indirect—may be significant: harvesting trees as early as economically feasible to avoid the impact of future regulatory limits; maintaining shorter rotations to avoid the creation of NSO habitat; and discontinuing the use of private property for timber production altogether that may lead to development of the land or increased threat of destruction due to catastrophic wildfire. These factors are important, and they warrant further analysis, but the scope of Industrial Economics’ study and the difficulty of quantifying or analyzing these potential impacts preclude analysis beyond mention of the “possible” indirect incremental impacts on 117,628 acres in Washington and 189,241 acres in California. As mentioned above, cumulative impacts suggest that more land*

should be included in the total area in which there are possible indirect incremental impacts. The shift of the timber industry to the Southeastern U.S. is highly suggestive of the impact of CHA establishment and related regulatory impacts.

5-31 [Exhibit 5-12] *Lack of spatial explicitness limits the value of the assumptions and effects shown in this table.*

* * *

6-6, 6-8 [293, 299] *It appears Industrial Economics does not fully understand the relationship between SRS and USFS and BLM O&C receipt payment funds. It is important to understand the impact of these funds given their role in local school and county budgets. They state, "...it is difficult to quantify the effects that future changes in timber harvests from Federal lands resulting from critical habitat designation would have on counties if SRS and PILT payment programs ended and the counties were forced to rely on revenue sharing payments only." This IS NOT difficult to quantify and is important for many of the counties in the region. SRS comprises a significant portion of county school and road budgets for many counties, as does the BLM O&C payments to county budgets in Oregon. They do not make clear that the 25 and 50 percent revenue sharing on federal land continues only if SRS is not re-authorized after 2013. The impacts of a loss in SRS and PILT payments would be profound, as many of the counties are already struggling with the effects of deindustrialization associated with the loss of the timber industry and other manufacturing, and a decline in state and county budgets.*

It is in the spirit of the White House Memo and its call for on page 2, (1) "...a full analysis of the economic impacts of the proposed rule..." and from the first paragraph on page 3 reducing "Uncertainty on the part of public... by simultaneous presentation of the best scientific data available and the analysis of economic and other impacts" that we offer additional information and analysis of socioeconomic condition that should be considered in the analysis. This is the subject of the remainder of Sierra Institute for Community and Environments' comments and this report.

Chapter III. Overview of the Northern Spotted Owl Region

A. NATURAL AND PHYSICAL CAPITAL

1. Critical Habitat Designated Areas

The 2012 designation of NSO critical habitat area represents the third iteration of federal action to provide an opportunity for recovery of the species through the preservation of habitat. The first designation of NSO critical habitat area occurred in 1992 with the designation of roughly 6.9 million acres. This was followed by a revision that designated 5.3 million acres in 2008. In 2012, the U.S. Fish and Wildlife Service proposed a revision that would designate approximately 14 million acres. Ownership of proposed CHA varies across the three-state range of the Northern Spotted Owl. The 2012 designation includes significant portions of private lands in California, as well as lesser amounts in Washington and Oregon. These totals are shown by state in Table 3.1. The cumulative nature of critical habitat area designation calls for a cumulative analysis of habitat that extends to the first designation in 1992

Table 3.1. CHA Land Managers/Owners in California, Oregon, and Washington

California		
	Acres	Percent of Total
US Forest Service	2,367,905	59%
National Park Service	129,367	3%
Bureau of Land Management	183,094	5%
Other Federal	151	< 1%
State	193,599	5%
Local Government	7	< 1%
Private	1,123,514	28%
Total Critical Habitat Area	3,997,637	100%

Oregon		
	Acres	Percent of Total
US Forest Service	3,546,846	69%
National Park Service	35,216	1%
Bureau of Land Management	1,289,622	25%
Other Federal	1,736	< 1%
State	228,114	4%
Local Government	100	< 1%
Private	15,896	< 1%
Total Critical Habitat Area	5,117,530	100%

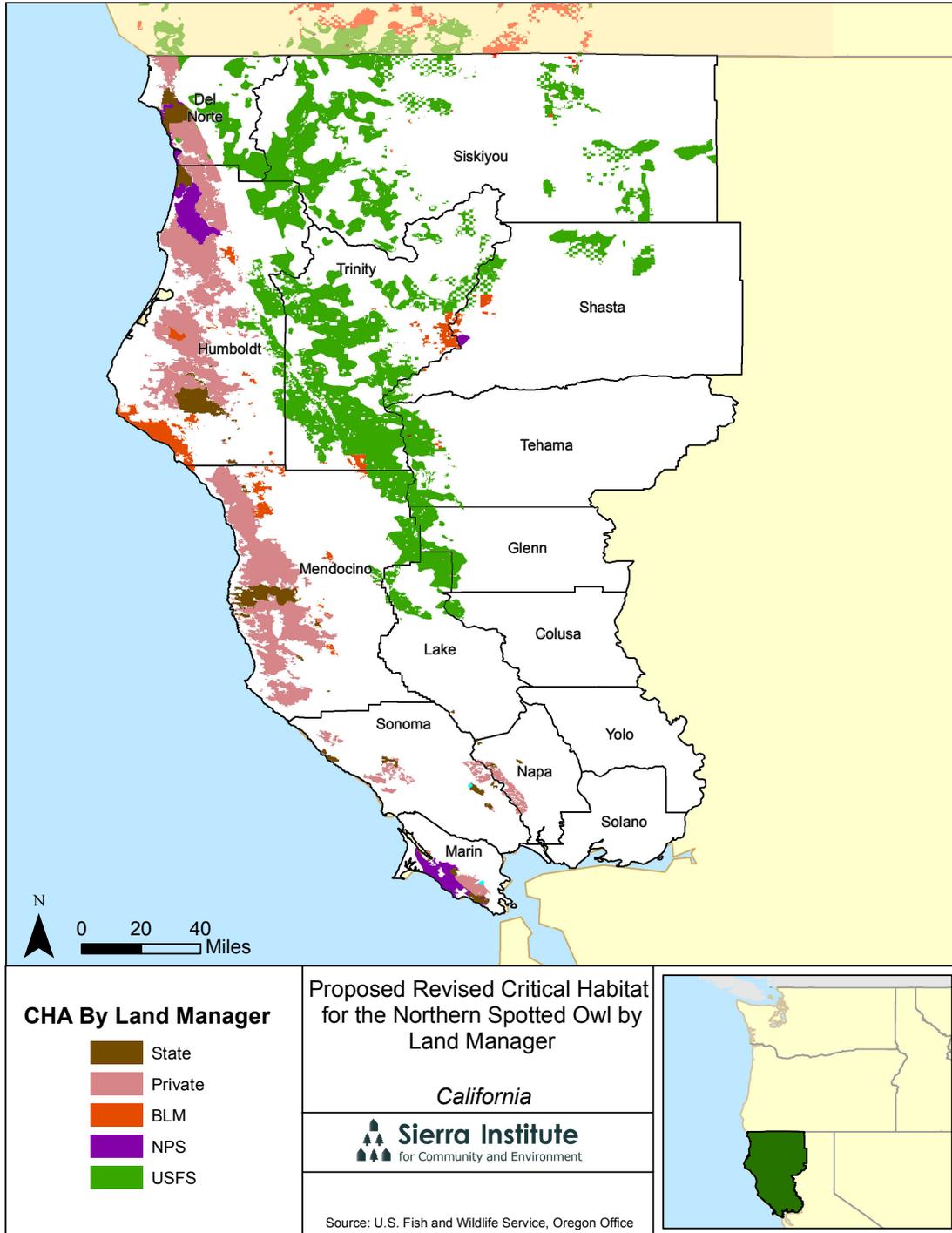
Washington		
	Acres	Percent of Total

	Acres	Percent of Total
US Forest Service	3,597,856	74%
National Park Service	831,913	17%
Bureau of Land Management	176	< 1%
Other Federal	15,275	< 1%
State	226,049	5%
Local Government	2	< 1%
Private	179,086	4%
Total Critical Habitat Area	4,850,357	100%

California

Land proposed as CHA in California is managed primarily by the U.S. Forest Service (59%) and private landowners (28%). The remaining proposed critical habitat lands are managed by Bureau of Land Management (5%), state agencies (5%), and the National Park Service (3%). Another 158 acres, totaling less than 1% of the proposed critical habitat in the state, are managed by a combination of the Bureau of Reclamation, local government, and Department of Defense. For California, the acreage and percent of total critical habitat area by land managers is shown on Map 3-1. The overall acreage by county, percent of county designated as proposed critical habitat, and ownership is quite variable in California. Habitat acreage by county ranged from a high of 927,712 acres in Humboldt County to just 12,729-acres in Sonoma County. As a percentage, Del Norte County has the highest percent of county as proposed critical habitat area at 42%, followed by Humboldt and Trinity, both 40%. Ownership varied from 90% private in Napa County to nearly 100% public in Colusa and Glenn (just 6 and 12 private acres, respectively). California has the most private land designated of the three states, at over one million acres.

Map 3-1



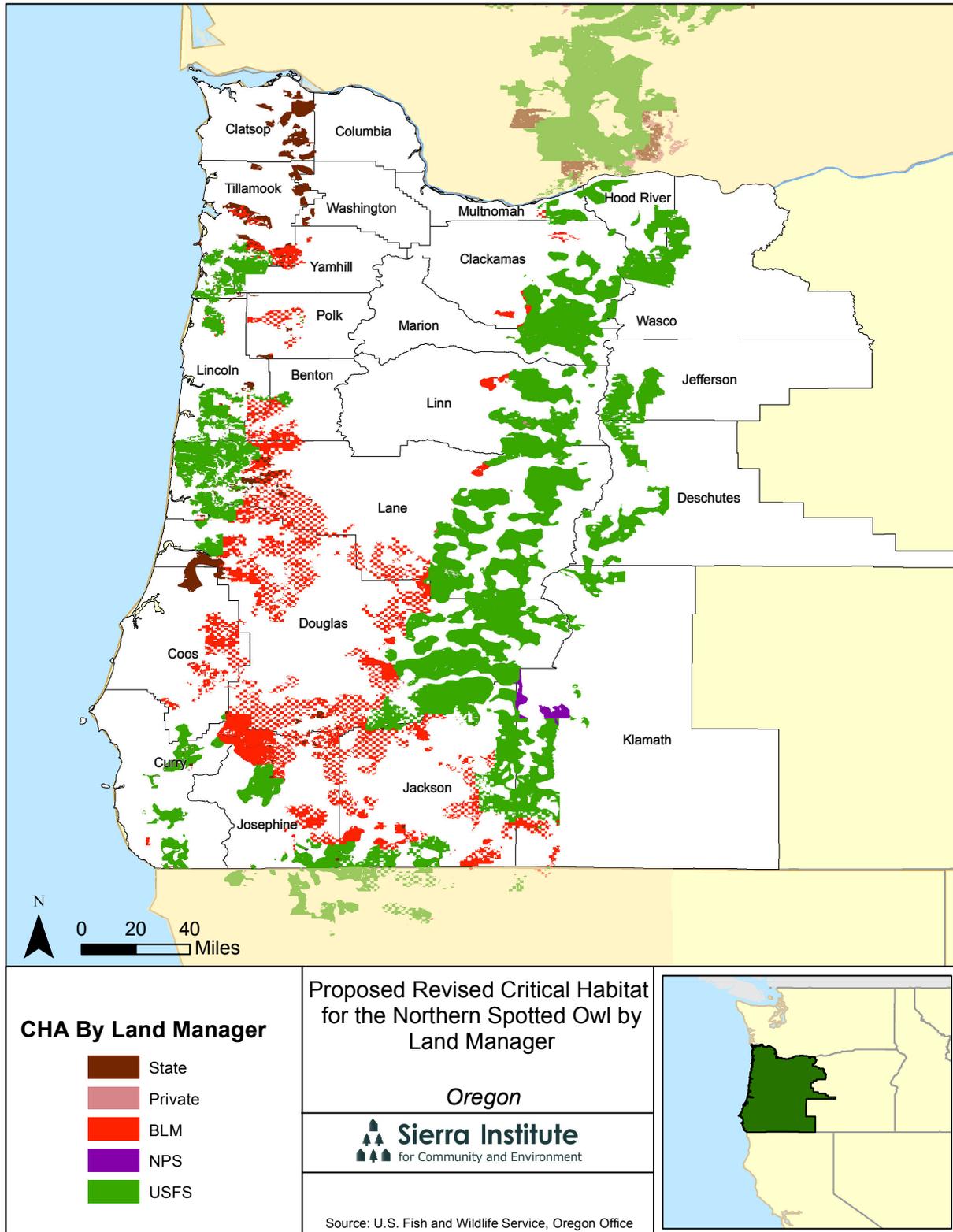
Oregon

More than 5-million acres are proposed as CHA in Oregon. The U.S. Forest Service manages over 69% of this land. The Bureau of Land Management, managing 25% of the total, is the next largest land manager. State agencies and the National Park Service manage most of the remaining proposed critical habitat area, 4% and 1%, respectively. Private landowners, local governments, and other federal entities (Bureau of Indian Affairs, U.S. Army Corps of Engineers, and U.S. Fish and Wildlife Service) manage the remaining lands, each less than 1% of the total proposed critical habitat area in Oregon. A breakdown of the land managers and owners for CHA is shown on Map 3-2. At the county level, the percentage of county as proposed critical habitat area ranges from a high of 34% of Douglas County (1,099,000 ac) to less than 1% of Columbia County (769 ac).

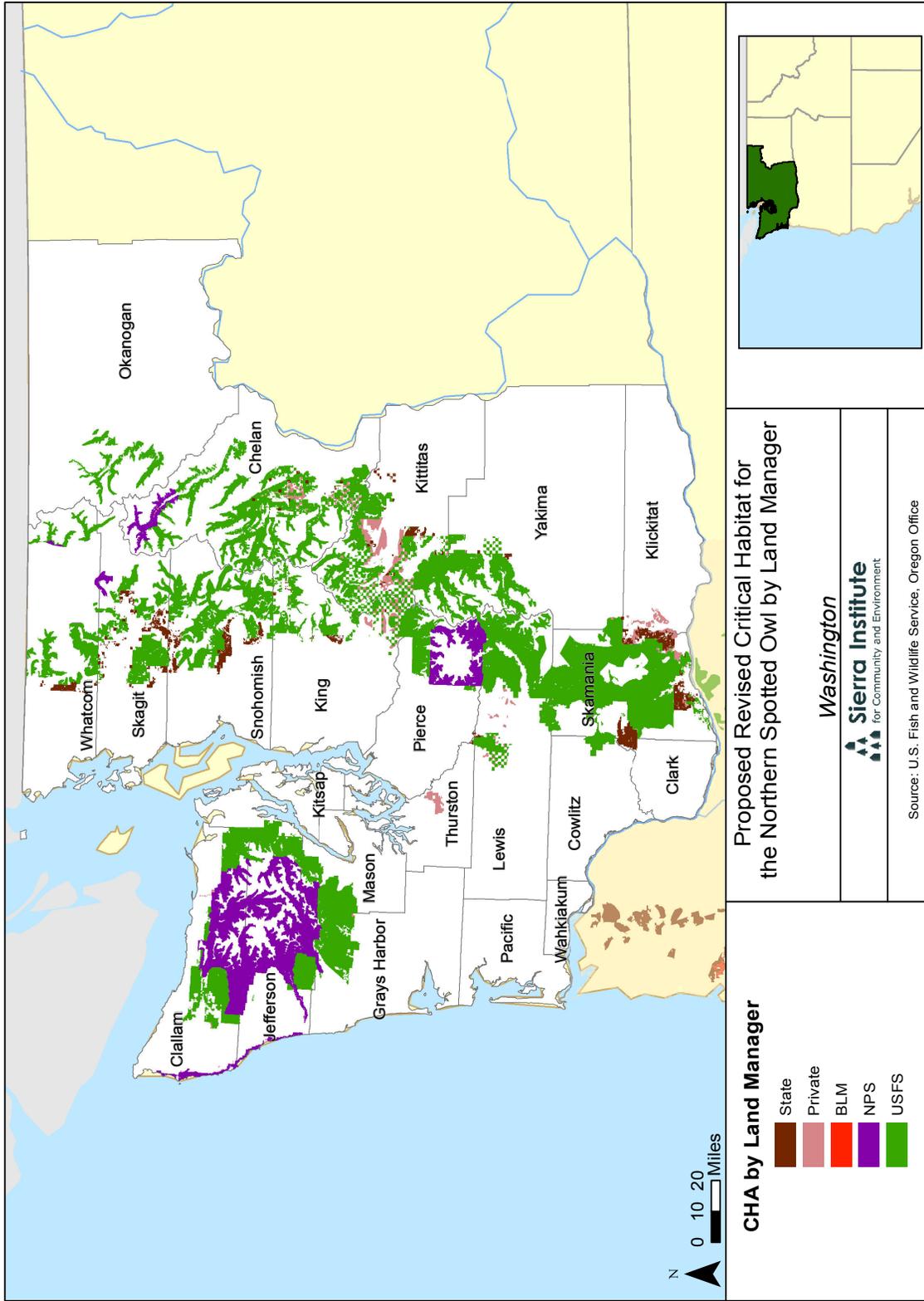
Washington

In Washington, the federal government manages over 90% of the proposed CHA: the U.S. Forest Service manages 74% and the National Park Service manages 17%. Of the remaining CHA land, state agencies manage 5% and 4% is privately owned. Less than 1% of Washington CHA is managed by the Bureau of Land Management, local governments, and other federal entities (Bureau of Indian Affairs, U.S. Fish and Wildlife Service, and Department of Defense). At 59% and 44% respectively, Skamania County and Jefferson County have the highest percent of county proposed as CHA. Skamania also contains the most acres of proposed CHA of any county in Washington (637,978 ac), followed by Chelan (588,913 ac, 31% of county) and Jefferson (508,983 ac). At the county level, the counties with the greatest private land as proposed CHA by percentage are Klickitat, 36% (23,482 ac), and Thurston, 91% (14,525 ac); all other counties are 18% private or less. Kittitas has the most private acres proposed as CHA at 69,447-acres (18% of the county's proposed critical habitat area). A breakdown of the land managers for in Washington is provided in Table 3.1 and shown on Map 3-3.

Map 3-2



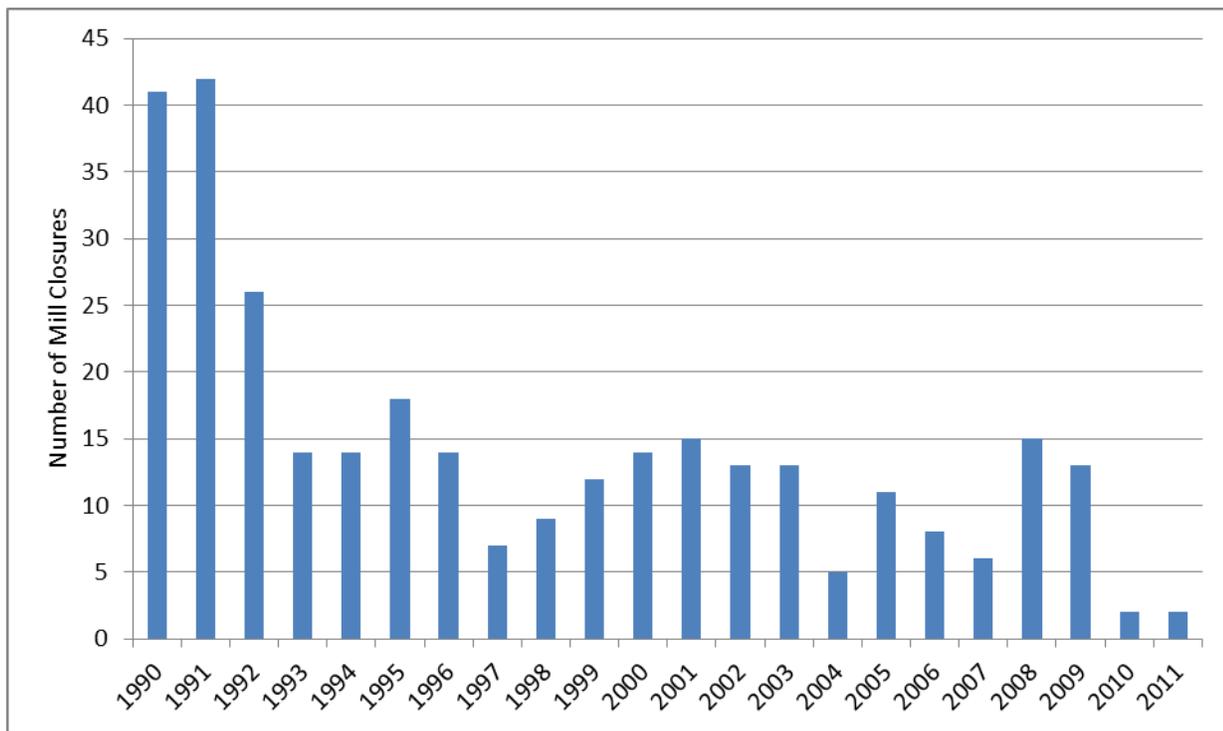
Map 3-3



2. Timber and Wood Product-Based Mills (1990 to present)

In some rural counties within the study area, the timber industry accounts for over 10% of total employment. However, many counties have lost significant infrastructure and mill employment is declining. From 1990 to 2010, a total of 316 mills closed across the study area. Of these closures, more than one-third (109) occurred between 1990 to 1992. Mill closures are shown in in Figure 3.1. The pattern across the three states is consistent, with most closures taking place in the early 1990s at a time when the first NSO restrictions were being put in place and critical habitat was designated. Across the region, 32,924 jobs were terminated as a result of mill closures alone. By decade, the 1990s saw the greatest number of workers displaced as mills employing 17,976 workers closed over this period. From 2000 to 2009, another 13,951 employees were forced out of their mill jobs. Another 979 workers were terminated between 2010 and 2012. Mill closures and impacts were uneven across the region as some areas—and particularly some communities—were more highly dependent on mills for employment.

Figure 3.1. Total Mill Closings Across California, Oregon and Washington: 1990 to 2012



Source: Paul F. Ehinger & Associates

California

Fifty-four mills have closed in California's study counties. Mill infrastructure, both operating and closed, from 1990 to present is unevenly distributed across the study counties. These are shown in Figure 3.2 and Map 3-4. Seven counties within the study area do not contain any mills: Glenn, Colusa, Lake, Yolo, Napa, Solano, and Marin. Yolo and Solano have no lands designated as NSO critical habitat area in 2012, therefore these counties are excluded from further analysis. Among the eight California study counties with mill infrastructure, there is significant variability ranging from two to 23 total mills in a given county. As a whole, operating mills in the California study counties

provide 27% of the jobs that were available in mills in 1990.⁶ Since 1990, 54 mill closures have resulted in 5,645 mill jobs lost in the California study counties. Tehama County has retained the least of its mill infrastructure – no mills currently operate and five have closed since 1990. Mill closings in Humboldt, Mendocino, and Shasta alone make up 70% of all mill closures in the region.

⁶ We assume mills operating today were in operation in 1990.

Map 3-4

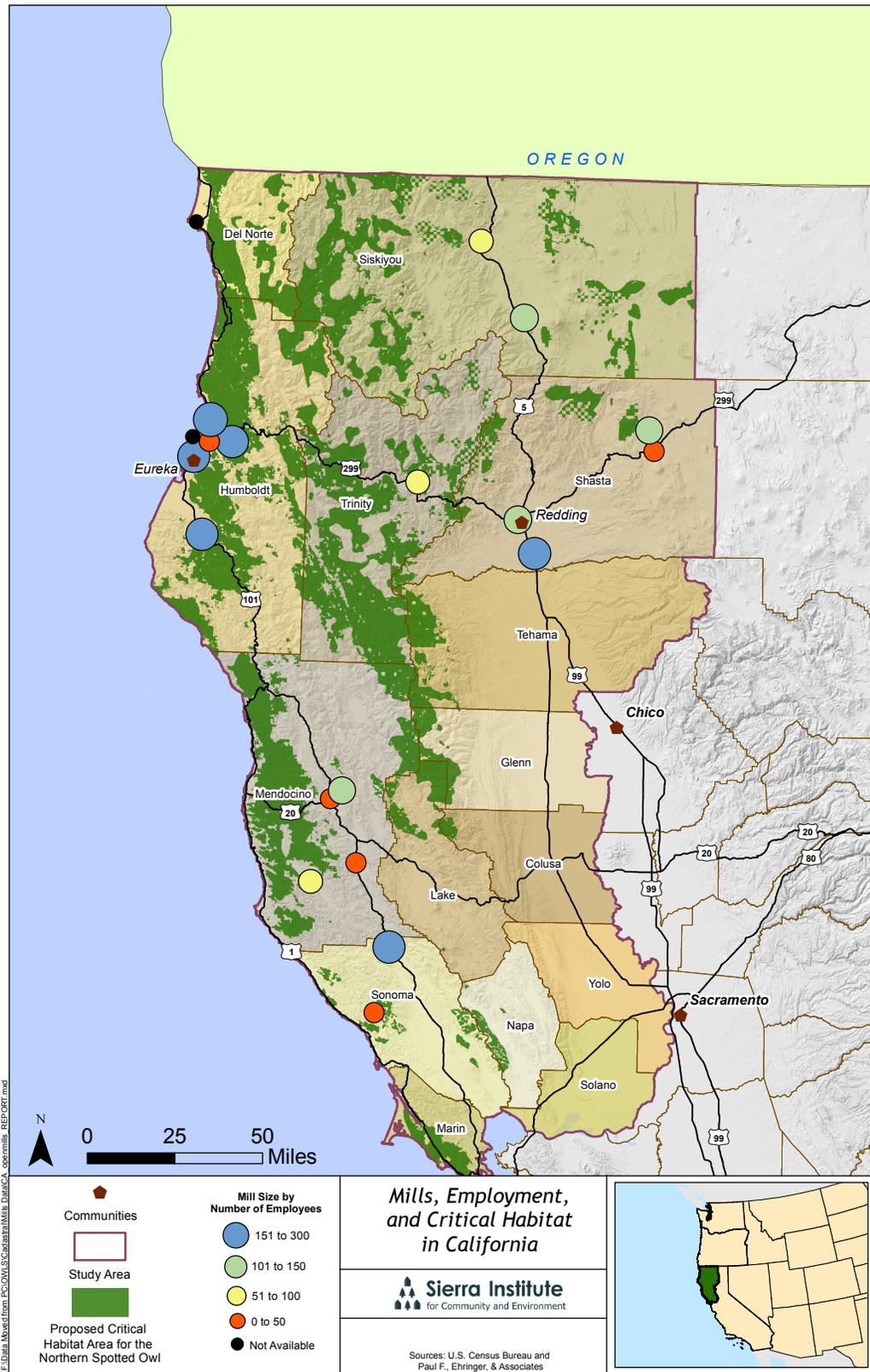
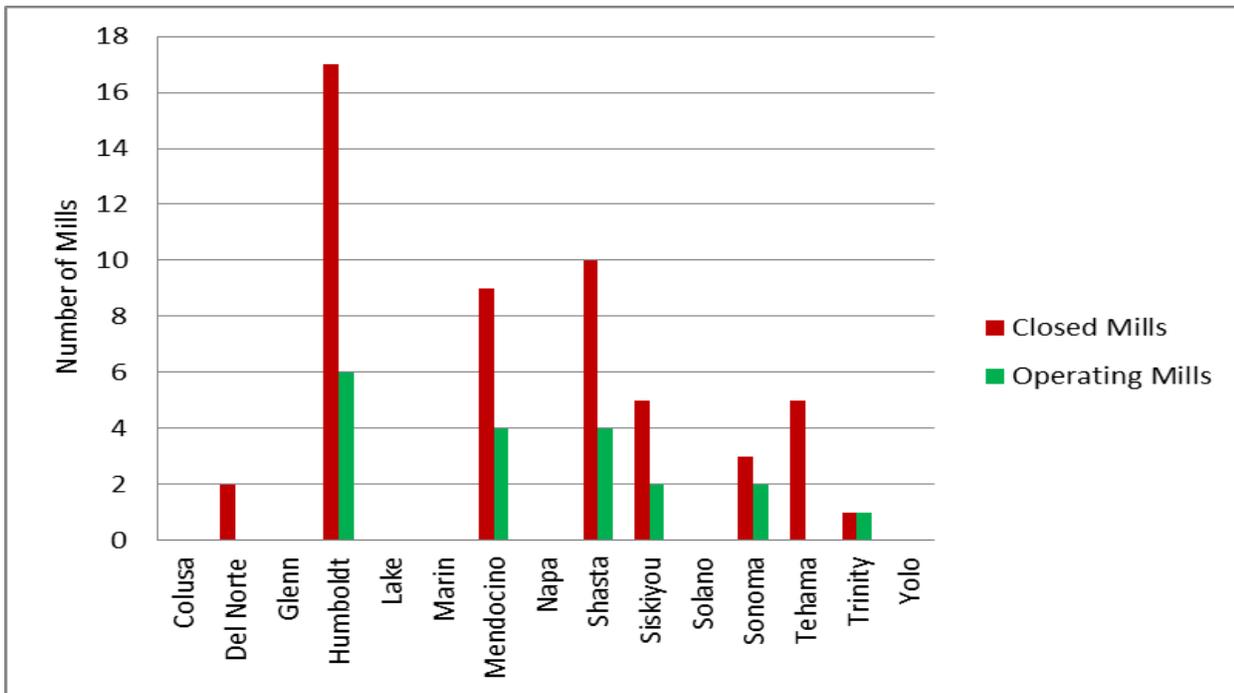


Figure 3.2. California Mills Shown by County, Including Closed Mills Since 1990



In Humboldt County, 17 mills have closed since 1990. These include two large pulp mills that closed in 1993 and 2008, leaving 462 workers out of a job. The remaining shuttered mills were sawmills, and one board mill that closed in 2011. The fourteen closed sawmills and lone board mill employed 1,547 workers. Of the eleven communities that experienced mill closures, eight currently have no operating mills. Current mill employment in Humboldt County is 847. Three hundred forty-seven of these jobs are located in the greater Eureka-Arcata area. The remaining 500 are split between Korbel and Scotia. Geographically, there have been substantive changes in the extent of mill operations. The North County (north of Arcata-Eureka and Hwy 299) no longer has any operating mills in the south-central interior; an area that had one mill for each of its five communities now only has a single mill in Scotia.

With four operating mills and ten closed mills, Shasta County has the second-highest total of closed mills and third highest number of operating mills in the California study area. The high number of closed and open mills in Shasta County is likely the result of its geographic location, well positioned to receive timber from both the Coast Ranges, Southern Cascades, and the Northern Sierra –as well as access to the I-5 corridor. A closer examination of the county’s mill infrastructure shows that nine out of 10 mills that have closed since 1990 were located in the I-5 corridor. Like many counties, the overwhelming majority of the closures, in this case 7 of 10, occurred between 1990 and 1995. As a result of mill closings, 1,239 mill workers were laid off. Currently, two mills in Anderson and Redding employ 305 workers and two mills in Burney provide 225 jobs.

Nine mills closed in Mendocino County since 1990 – three in 1990-1991, one in 1996, three from 2001-2003, and two from 2008-2010. The closures reduced the number of communities with mills in the county from six to three. Branscomb, Covelo, and Fort Bragg lost all of their mill jobs.

Fort Bragg lost 210 mill jobs with the 2002 closing of the Georgia-Pacific sawmill employing 150 workers and the 2003 closing of the Mendocino Redwood Company sawmill employing 60 workers. The closing of the Harwood Products sawmill in 2008 meant 240 workers were laid off in Branscomb. Covelo lost 100 mill jobs when Louisiana-Pacific closed its sawmill there. In total, 1,014 workers in the county lost their jobs due to mill closings. Two hundred seventy-eight workers are employed at the four remaining operating mills in the county. Ukiah currently has two operating mills, and there is one in Willits and another in Philo. The Mendocino County portion of California's coast no longer has any operating mills, nor does the northern interior.

Oregon

Across the study counties in Oregon, 170 mills have closed since 1990. Consistent with the region-wide trend, the majority of these took place in the early 1990's. Twenty-five mills closed in 1990 and another 20 in 1991. Between 1990 and 1995, 89 mills closed, representing over 50% of all closures from 1990 to the present day. While most mill closures occurred prior to the end of 1995, at least two mills closed every year from 1990 to 2009. No mill closings have been reported in Oregon's study counties since 2009. Mill closures resulted in the loss of 18,154 mill jobs since 1990. The role of the timber industry in local economies varies across the state. Those counties that lost a high number of mills and have few remaining, and with fewer other work opportunities, suffered the greatest impacts. In other counties large numbers of mill closures may be counter-balanced by a large number of remaining mills such as Douglas and Lane, where, respectively, 18 and 26 mills closed and 15 and 21 remain in operation. Overall socioeconomic impacts depend on the original percentage of employment provided by the timber industry and the availability of alternative employment opportunities. Assuming all currently operating mills were operating in 1990⁷, Oregon study counties with over 15 mills in 1990 that have experienced the most dramatic reduction in mill operations are Clackamas, Jackson, and Linn, all of which have lost more than two-thirds of their mill infrastructure. Oregon mills are shown on Map 3-5 and the number of closed mills and the percent of 1990 mills operating in 2012 are shown in Figure 3.3. Both the percentage of operating mills and the number of closed mills are represented in Figure 3.3 in order to illustrate the importance of existing and closed infrastructure in each county.

It should be noted that some counties with fewer mills have lost a greater percentage of infrastructure, such as Polk, where seven mills closed and none currently operate.

⁷ Due to data limitations, opening dates for operating mills were unavailable.

Map 3-5

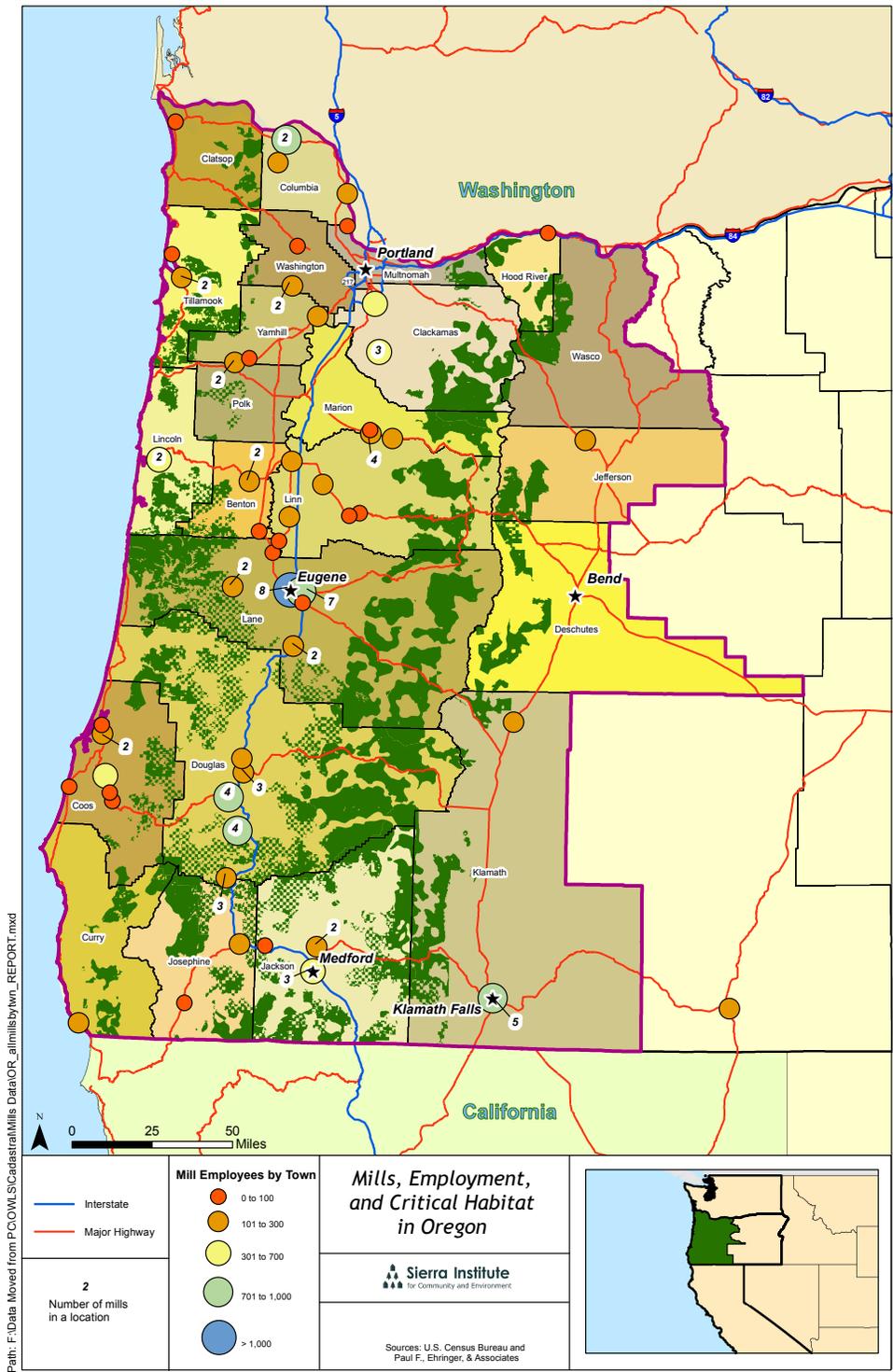
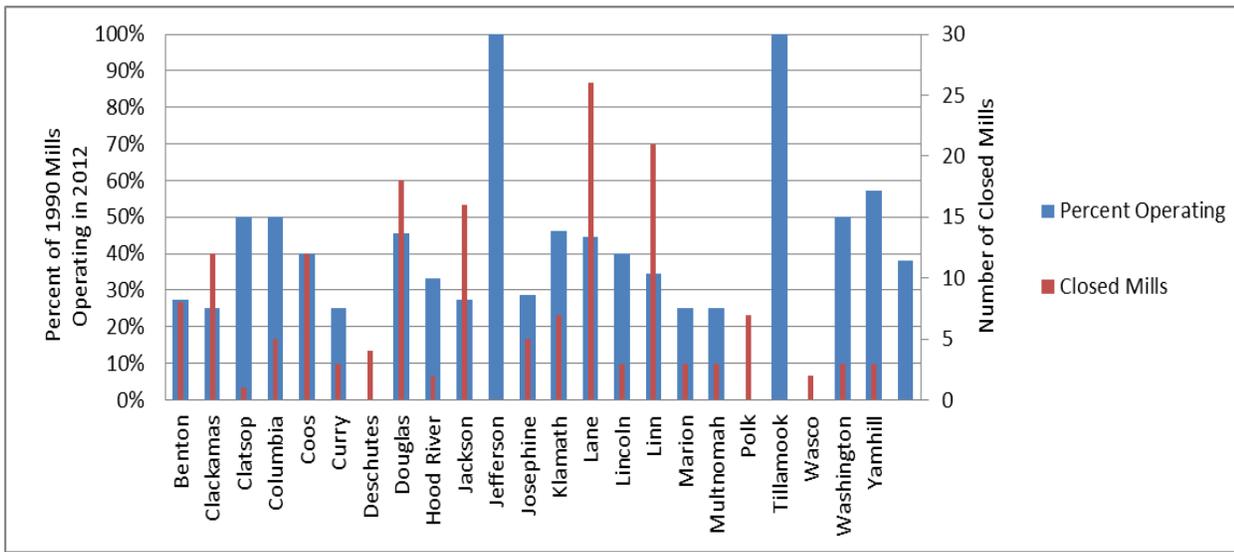


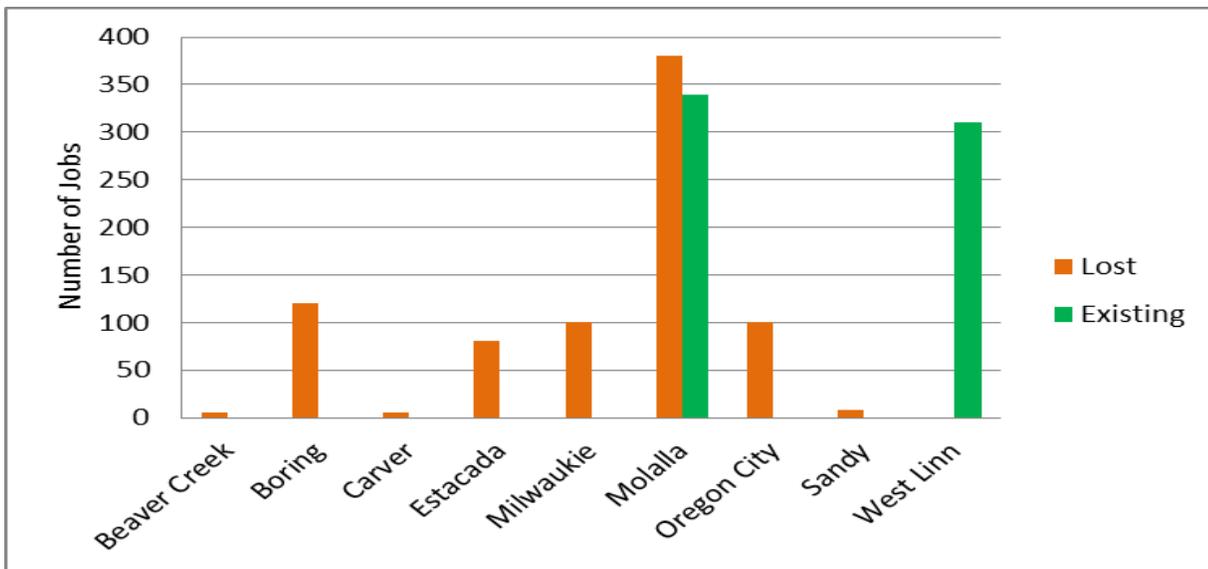
Figure 3.3. Oregon Mill Infrastructure Remaining in 2012 from 1990



Clackamas County lost the greatest percentage of mill infrastructure of any Oregon county since 1990. This decline includes seven mill closures between 1990 and 1995 alone, along with another five that closed between 1999 and 2009.

Like many other counties, the downsizing of Clackamas County’s mill infrastructure not only left many workers in search of new employment, but also resulted in seven communities losing all mill infrastructure. See Figure 3.4. The majority of communities where mills closed are small communities of less than 10,000. Overall, 798 workers were laid off as a result of mill closures in Clackamas County from 1990 to 2009. Six hundred and fifty workers are employed at mills today in Clackamas County. Three mills in Mollala employ 340 workers and 310 employees work at the Linn-West Paper Company in West Linn, a suburb of Portland. In general, mill infrastructure in

Figure 3.4. Mill Employment in Clackamas County, by Community



Mill closures in Jackson County since 1990 resulted in 1,807 layoffs. Mill closings include six plywood mills, four veneer mills, and eight sawmills. Today there remain two plywood mills, two board mills, and two veneer mills operating in the county. The sawlog industry is notably absent from the county today. In contrast to Clackamas County, more mills (11) closed after 1995 than between 1990 and 1995 (7). Mill infrastructure in Jackson County has maintained a consistent geographic extent, clustered in the I-5 corridor in the south-central part of the county.

Linn County has the second most mill closures of any Oregon study county since 1990, losing 66% of its mills since 1990.⁸ Twenty-one mill closures have resulted in the termination of 2,228 mill jobs over this period. While a relatively even number of mills closed from 1990 to 1995 and from 1996 to 2009, the closure rate was much higher before 1995. At least one mill closed every year from 1990 to 1994, with four closing in 1990. Two communities in the county, Brownsville and Cascadia, lost mills and now have no operating mills. In Linn County, 1,050 workers are employed in mills today. Of Oregon study counties, Linn County has the third highest number of operating mills behind Lane and Douglas.

Washington

A total of 53 mills in the state of Washington closed in the 1990s. Forty-three ceased operation between 1990 and 1995 alone; ten closed in the last half of the decade. Another 39 mills closed between 2000 and 2012. In total, 9,125 workers were displaced as a result of mill closures since 1990. Despite these closures, 76 mills remain in operation in Washington. The impacts of mill closures have been disproportionately distributed across the state. Map 3-6 and Figure 3.5 show the distribution of open and closed mills. At the county level, Grays Harbor, one of the most timber industry-reliant counties in the state, had the most mills close. Sixteen have closed since 1990. In addition to a high number of closures, the number of communities in Grays Harbor with mills has fallen by over 50%, from seven to three. The distribution of mills across the county has diminished as well. Once ranging from Amanda Park in the far north of the county to Oakville in the county's southeastern corner, the remaining mills are restricted to a 25 mile corridor along highway 12 in the south-central part of the county. The consolidation and decline of mill operations in Grays Harbor have resulted in the loss of 1,138 jobs over 20 years, and contributed to a consistently high unemployment rate. Despite the mill closures and job losses, Grays Harbor County remains heavily reliant on the timber industry, which employs over 10% of the work force. Today 376 people are employed at mills.

⁸ Assuming mills in operation in 2012 were operating in 1990

Map 3-6

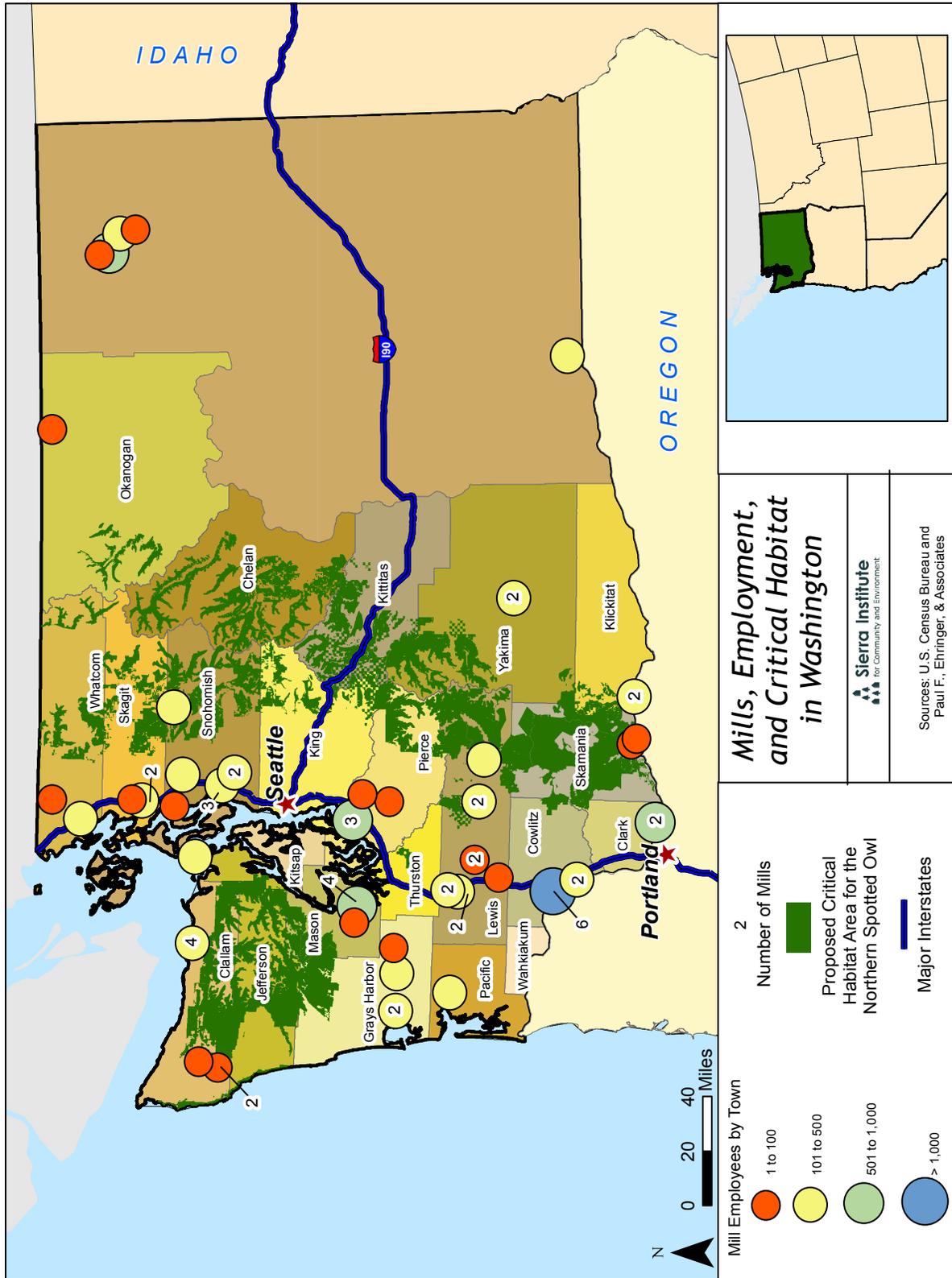
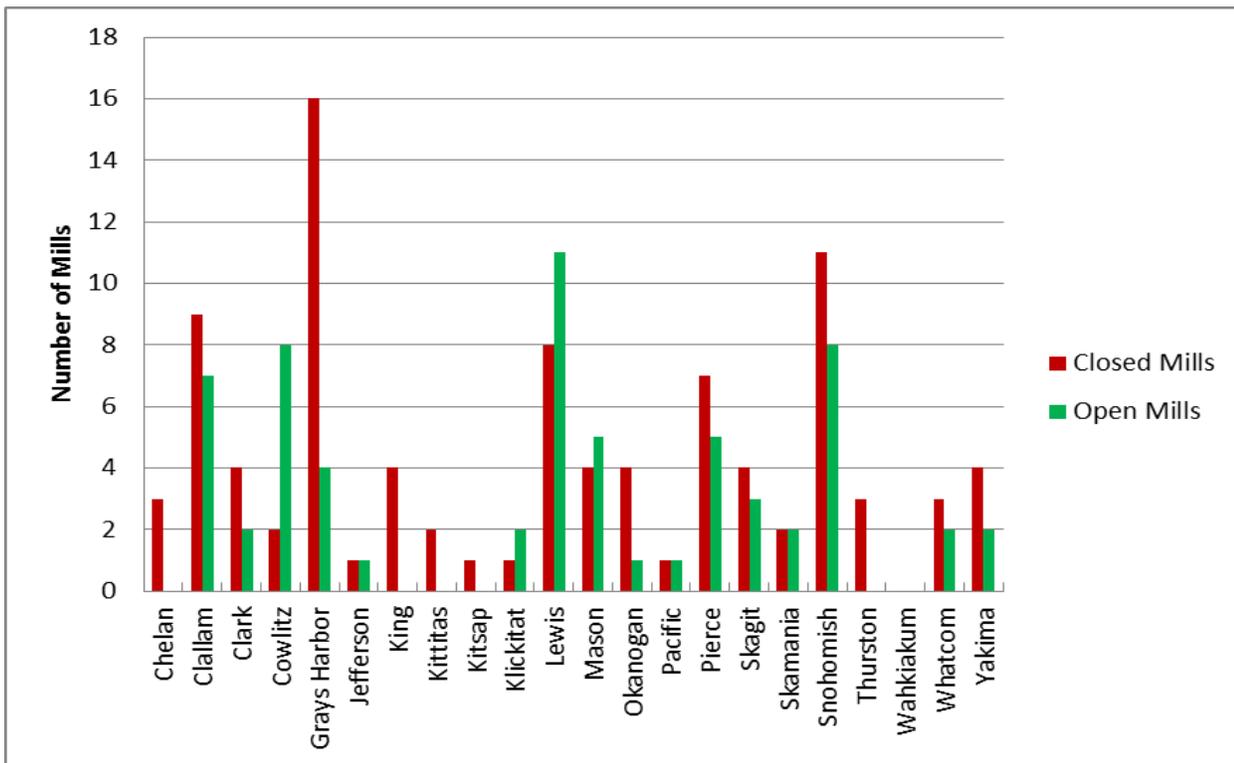


Figure 3.5. Washington: Closed and Open Mills: 1990 to 2012



Snohomish County experienced the second highest number of mill closures at 11. These closures resulted in the loss of 1,645 jobs in Snohomish County. There are now 657 workers employed at mills in the county. The impact of these mill closures, while no doubt significant for the families who lost jobs and in those communities where jobs were lost, on a county level were likely less acute in Snohomish than in Grays Harbor County. This is because, first, Snohomish County has a much more diversified economy. Second, the county has had an overall increase in the manufacturing sector despite wood product manufacturing job loss. Third, eight mills remain in operation in Snohomish County today compared to three in Grays Harbor County. Fourth, and finally, the majority of the jobs lost due to mill closures in Snohomish County occurred in the more populated western portion of the county where opportunities for alternative employment are likely more plentiful.

Nine mills closed in Clallam County since 1990, the third highest mill loss in a Washington county. Eight of the closures were medium to small mills, employing fewer than 40 workers. These mills had relatively low production capacities – the highest produced 18 million board feet a year. Clallam County saw 465 mill jobs lost since 1990. The majority of these occurred in a single mill closing: the Rayonier pulp mill in Port Angeles forced 360 workers out of work when it closed in 1997. Of the four communities in the county that experienced mill closures in the 1990s, operating mills still exist in three communities. The exception is the town of Sequim, which lost its lone mill employing five workers. Clallam County lost no mills in the 2000s.

All-State Summary

Across all three states in the northern spotted owl study counties there has been a dramatic loss of mills and wood products industry employment from 1990 to 2011. These losses were greatest shortly after some of the first forest restrictions were established to protect species including the northern spotted owl, and the first NSO critical habitat was established in the early 1990s.

Investment decisions were made by private industry that led to mill closures and movement of the industry out of the region as a result of reduced access to federal timber resources, increased private land restrictions, and, generally, more restrictive land designations due to endangered species protection and NSO critical habitat designation. Other reasons for mill closure also include, but are not limited to, industry closing older, less efficient mills, closure of mills that handled only larger trees coupled with less old-growth timber available, and shipping raw logs and cants out of the region for processing elsewhere. Additional study is needed.

What this study does show is that many communities and counties in the NSO study area have been reliant on the timber industry for much of their recent history, and many continue to be in 2012, despite reduced employment opportunities. And many of these communities and counties are struggling economically today. This is described further in the next chapter.

Understanding the impact of land restrictions needs to take into account the relationship of recent and current socioeconomic conditions in counties and communities, which includes the decline of manufacturing, including timber industry jobs. Regardless of the reasons for mill closures and job losses, the impacts on workers and communities are profound and need to be recognized, especially in light of decisions regarding species protection and the need to maintain options (and workers) to assure long-term effective forest management.

B. FINANCIAL CAPITAL AND ECONOMIC DIVERSITY

1. *Employment Patterns*

Tracking trends in employment and industries that provide jobs across, at minimum, major sectors is critical to understanding current condition and impacts of land management decisions. Multiple databases were used to identify major sectors across different scales over the 1990 to 2011 period.

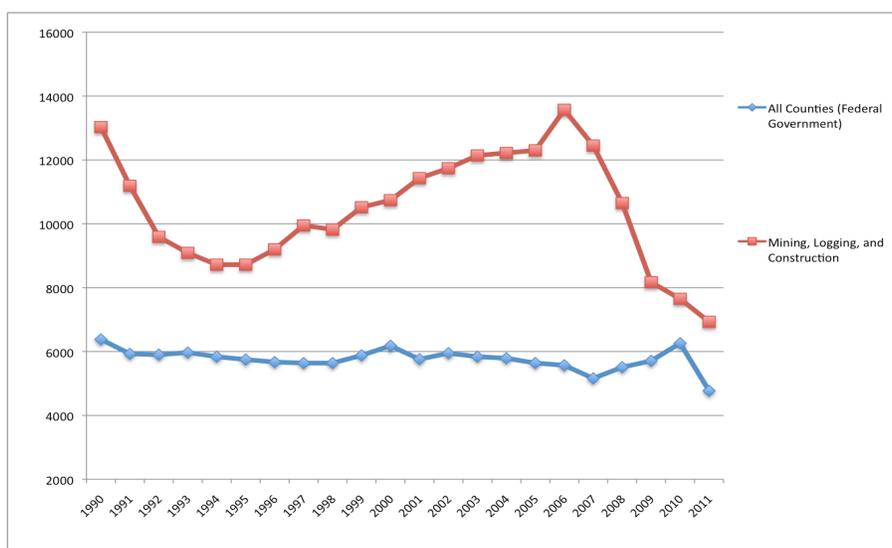
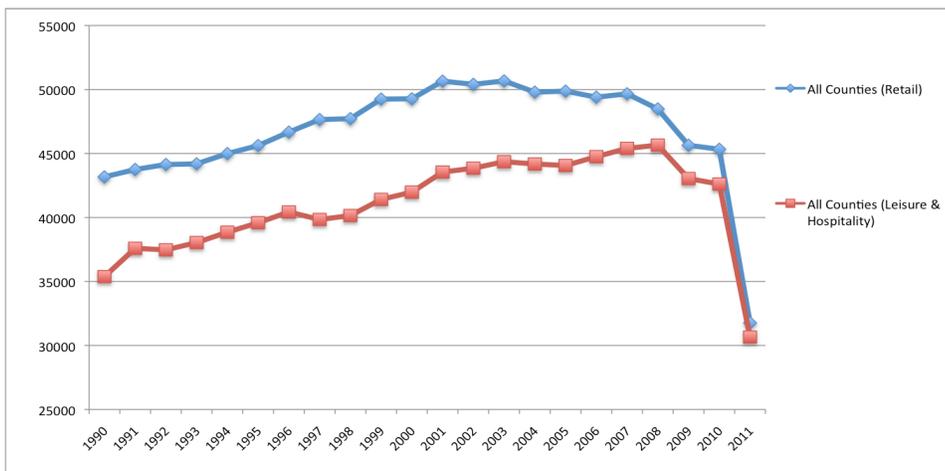
A dominant trend in the region is a shift away from goods producing jobs that have historically anchored many communities, to service sector jobs. In 2001, both Oregon and Washington's private sector had roughly 75% service-providing and 25% goods-producing jobs. In 2010, these percentages shifted to roughly 80% and 20%, respectively in both states. Service-providing jobs in California provided for 77% and goods-producing jobs were 23% in 2001. These numbers are now 82% and 18%, respectively. Although the proportions are slightly different, over the last decade, all three states have experienced a similar change in the makeup of their private industries.

All three states' percentage of natural resource and mining jobs as a proportion of the private sector jobs is about the same, at approximately 3.5%.

California

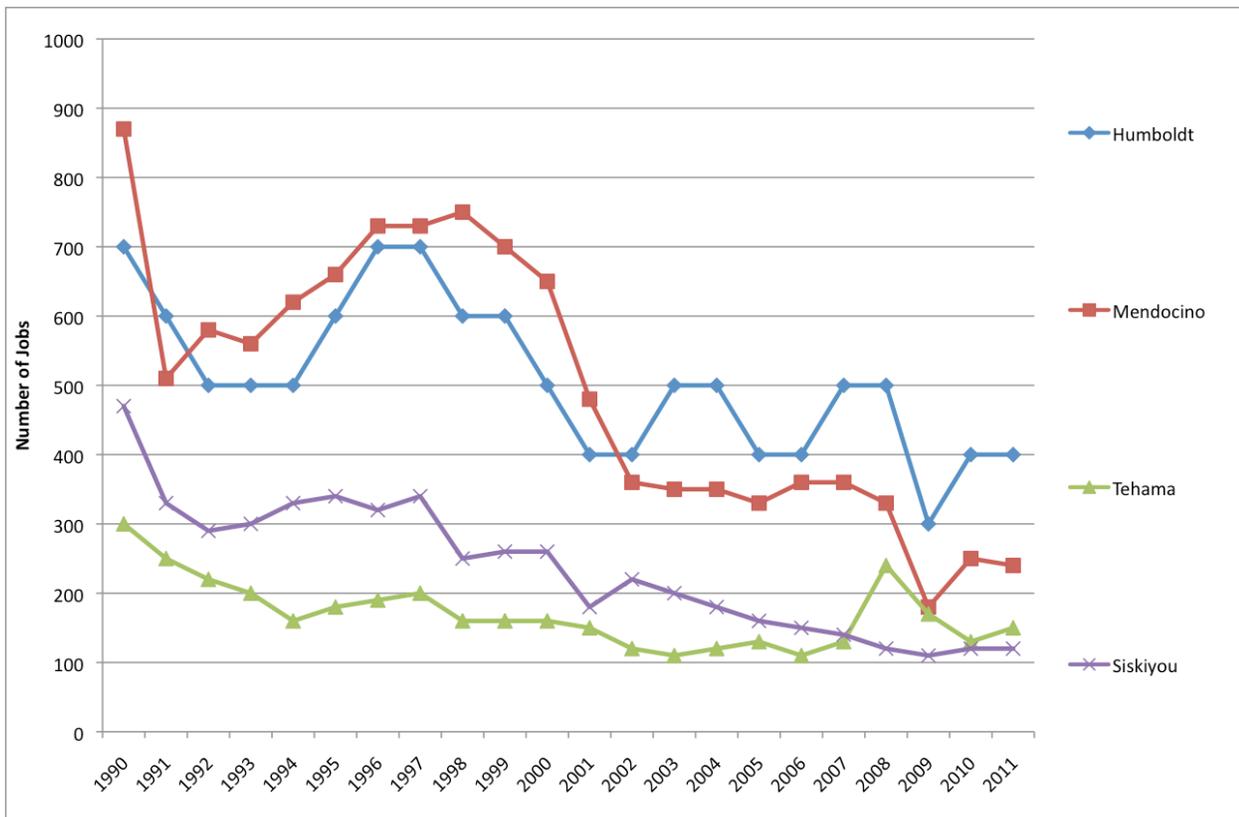
Employment data in California shows significant effects from the Great Recession, with all sectors showing a sharp decline in employment numbers shown in Figure 3.6a-d. Overall employment numbers for the mining, logging, and construction; retail; leisure and hospitality; and federal government sectors hit 20-year lows in 2011, as the impacts from the Great Recession played out. Employment in Retail and Leisure and Hospitality sectors showed a gradual gain in the number of jobs beginning in 1990 and lasting until around 2007. Federal government and mining, logging, and construction, which are often the anchor jobs in many rural areas, show different trends. Federal government employment has been trending downward since 1990, with only a few minor gains along the way. Job change in the mining, logging, and construction sector has been more erratic. During the early to mid-1990s, this sector experienced dramatic job losses that were likely driven by the decrease in the scale of extractive natural resources industries – particularly the timber industry. Beginning in the late 1990s, the sector began to recover many of these lost jobs. Employment in mining, logging, and construction reached a high of 13,430 in 2006, due mostly the construction boom. In 2011, less than 6,000 jobs existed across the California study area in this sector.

Figure 3.6a-b. Employment by Sector for California Study Area: 1990 to 2011



Employment figures for the mining and logging sector are shown in Figure 3.7 for Humboldt, Mendocino, Tehama, and Siskiyou Counties. A combined total of 1,430 jobs were lost in this sector since 1990. Interestingly, in both Humboldt and Mendocino, there was a striking gain in the mid-1990s that followed an early 1990s downturn. The 2011 job total for Mendocino is less than one-third of its 1990 high water mark. Humboldt is not much better off; 2011 jobs are roughly 55 percent of its 1990s high.

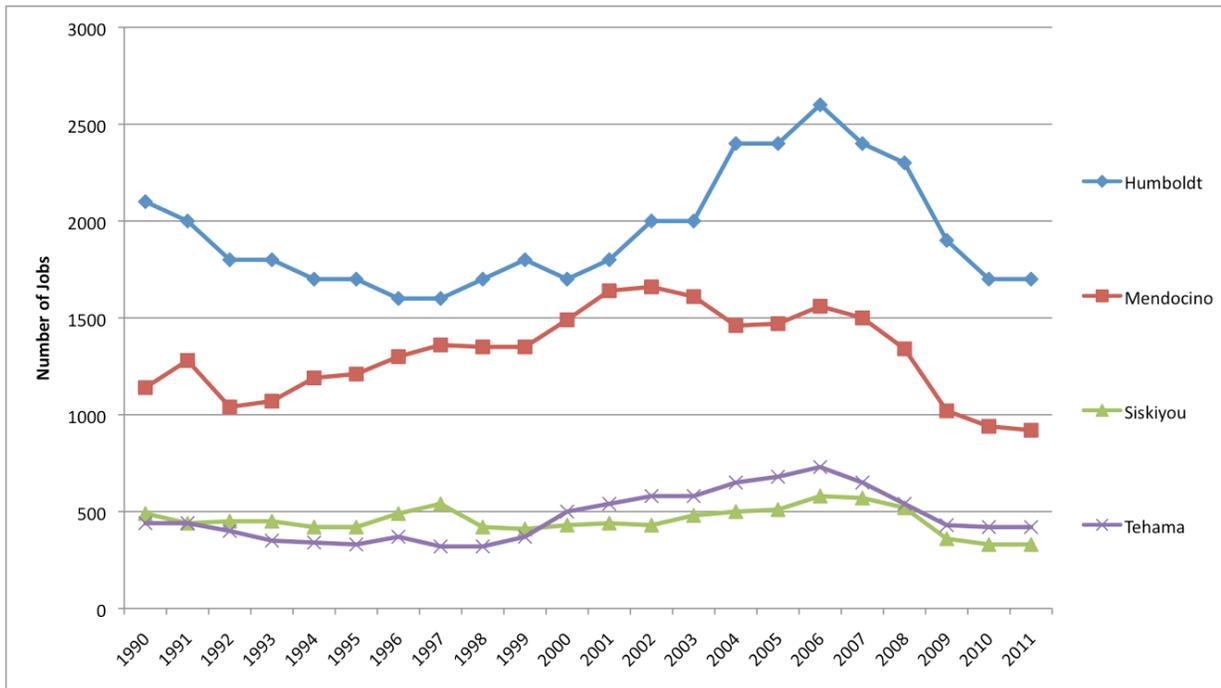
Figure 3.7. Jobs in the Mining and Logging Sector for Humboldt, Mendocino, Tehama, and Siskiyou Counties: 1990 to 2011



For comparison, Siskiyou County lost 350 jobs, roughly 70% of its 1990s high, and Tehama lost 150 jobs, or 50%.

Among these four counties, employment in the construction sector does not show the same impacts from the construction boom as the study area as a whole. These are shown in Figure 3.8.

Figure 3.8. Jobs in the Construction Sector for Humboldt, Mendocino, Tehama, and Siskiyou Counties: 1990 to 2011



Some counties grouped construction jobs with mining and logging jobs. This limits comparison and obscures timber-related employment. Fluctuations in the larger construction sector outweigh the influence of the smaller natural resource employment.

Growth occurred sporadically across the study area counties in both leisure and hospitality employment and in retail trade employment. See Figures 3.9 and 3.10. Napa, Shasta, and Mendocino Counties all experienced growth in both the retail, and leisure and hospitality sectors. In contrast, Siskiyou and Trinity Counties experienced decreased employment in both of these sectors between 1990 and 2011.

Figure 3.9. Change in Employment in the Leisure and Hospitality Sector, California Study Counties: 1990 to 2011

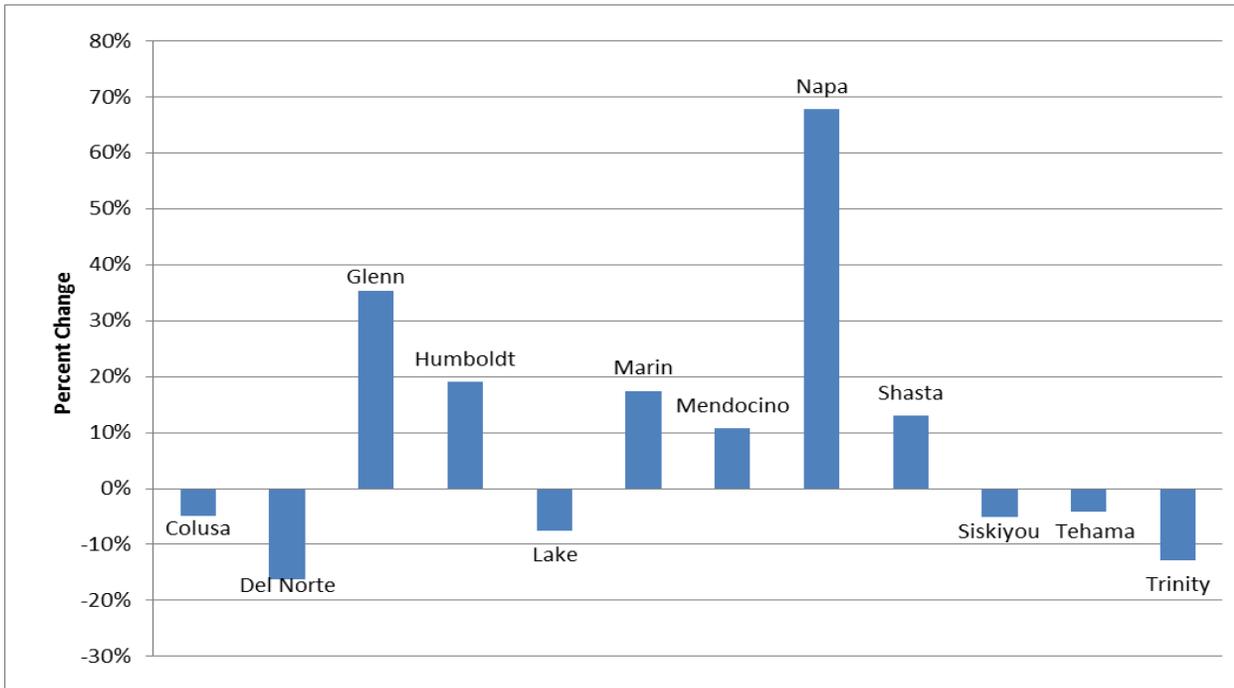
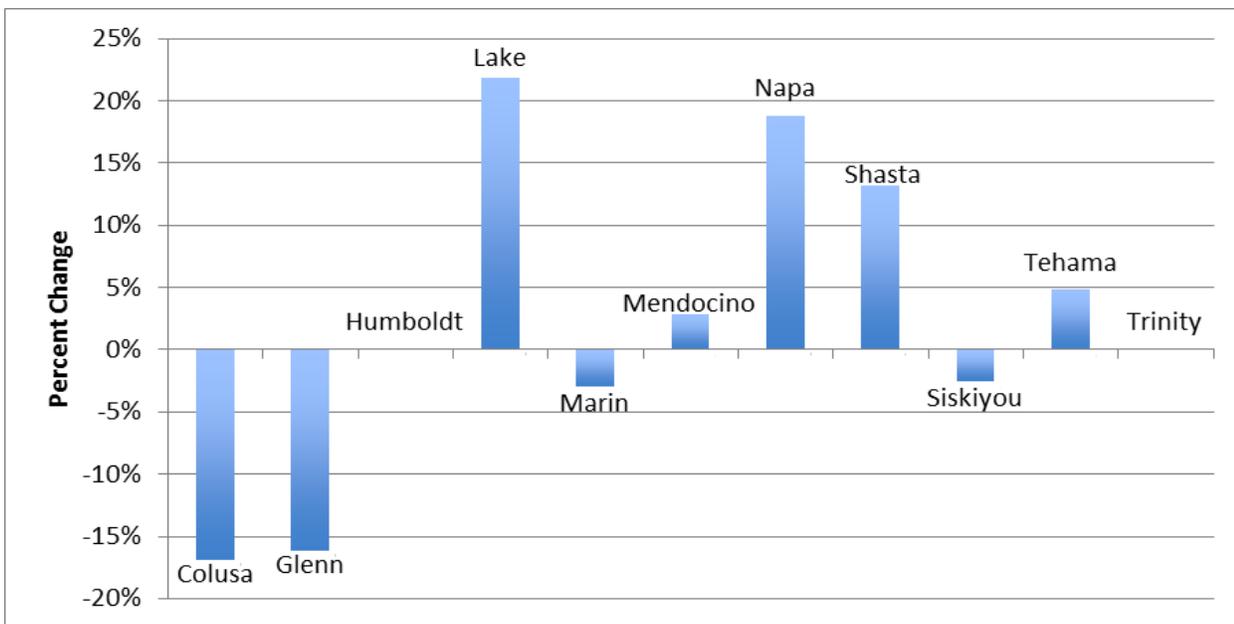


Figure 3.10. Change in Employment in the Retail Sector, California Study Counties: 1990 to 2011



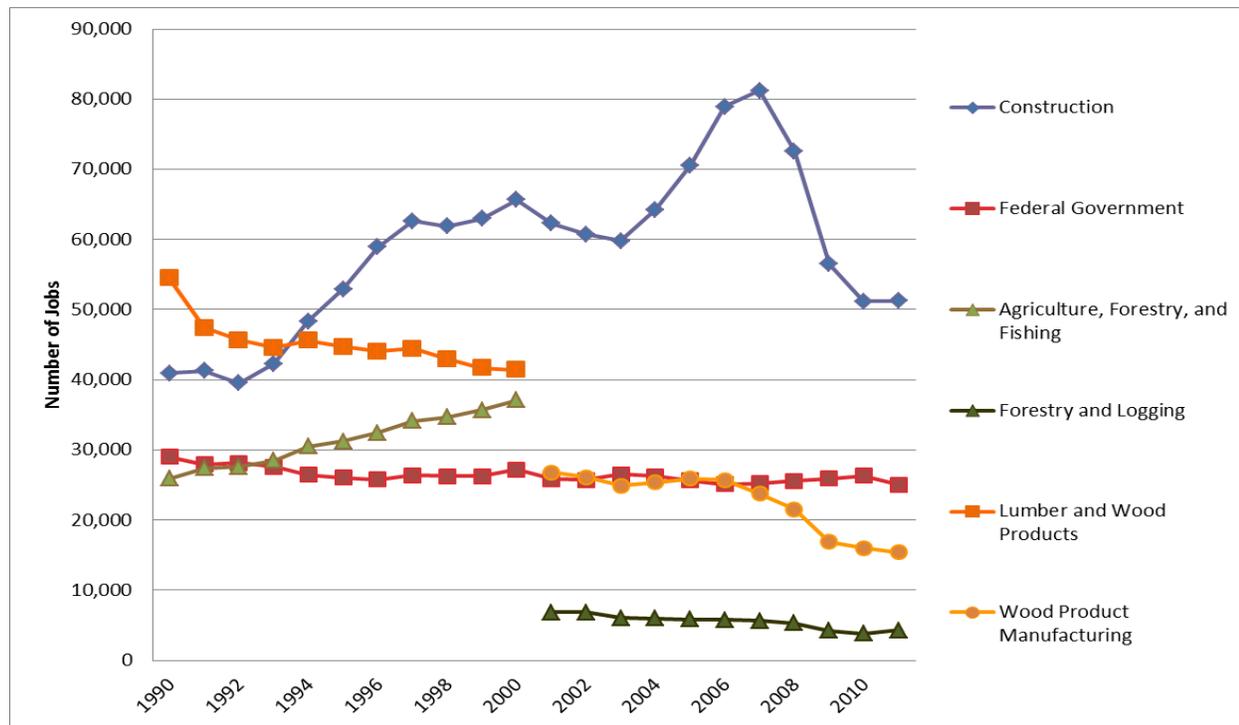
In the manufacturing sector, all but Napa and Colusa Counties, saw a decrease in jobs from 1990 to 2011. Manufacturing in Napa County grew by 4,500 jobs over this period, an increase of 73%. Colusa County experienced an increase of 41% (250 jobs). The proportional decline in the manufacturing sector was greatest Del Norte County, which declined 78%. Humboldt County lost the most manufacturing jobs at 3,700 jobs, which accounted for 65% of the county’s sector. Other California study area counties that lost over 50% of their manufacturing sector (and the number of

jobs lost) include Shasta County (2,200), Glenn County (710), and Del Norte County (400). The manufacturing sector, including wood product manufacturing, has historically been recognized as providing family wage jobs, particularly in rural areas, though in addition to declining jobs, the pay for those that remain has not always kept up with inflation.

Oregon

At the state level, like California, employment in Oregon has seen a shift towards more service-providing jobs. Across all counties there has been a decline in manufacturing jobs related to the timber industry as shown in the lumber and wood products sector and the wood product manufacturing in Figure 3.11.⁹ This decline is especially critical to five Oregon counties where the timber industry accounts for over 10% of total employment: Clatsop, Douglas, Jefferson, Klamath, and Tillamook. Construction employment in Oregon followed a common national trend of gradually increasing until 2007, followed by a sharp decline as a result of the housing market crash and the Great Recession. Statewide, federal government employment experienced a slight decrease from 1990 to 2010 of roughly 4,000 jobs.

Figure 3.11. Number of Jobs by Sector, Oregon Study Counties: 1990 to 2011



From 1990 to 2000, every county except for Jefferson and Tillamook lost jobs in the lumber and wood products sector. In total, 11,829 jobs in this sector were lost over the ten-year period across Oregon study counties. During this time, many counties saw growth in employment in other industries. For example, all Oregon study counties saw an increase in employment in the retail trade, health services, and local government sectors and all counties except Clatsop and Lincoln Counties saw increases in the agriculture, forestry, and fishing sector.

⁹ Due to changes in how employment data was collected in 2001, these sectors represent slightly different jobs, though each provides a picture of timber-related manufacturing jobs.

From 2001 to 2011, 1,573 jobs were lost in the forestry and logging sector across all counties. Polk and Tillamook were the only two counties to gain forestry and logging jobs over this period, gaining a combined total of 51 jobs. In contrast, the three counties that experienced the greatest number of jobs lost were Jackson (404), Lane (304), and Douglas (261). In the wood products manufacturing sector, every study county lost jobs from 2001 to 2011. Total job loss in the wood products manufacturing sector in the Oregon study area was 10,224 from 2001 to 2011. Wood products manufacturing job loss by county ranged from 32 jobs lost in Wasco County to 1,817 jobs lost in Lane County.

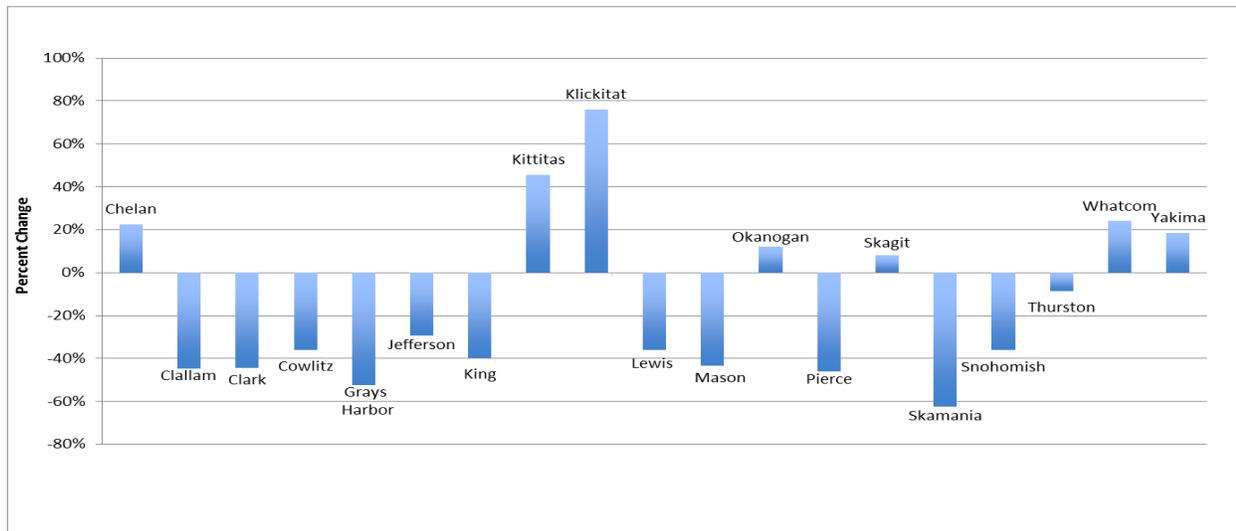
As counties continue to recognize the need to diversify their economies in light of a declining timber industry, the region saw a growth in the leisure and hospitality sector of just over 10,000 jobs. These employment gains were distributed unevenly across the state – almost half of the leisure and hospitality jobs gained from 2001 to 2011 occurred in Multnomah County. Some rural counties were also successful in attaining job growth in this sector. Deschutes County, for example, gained 1,797 jobs in this sector since 2001.

Washington

Like Oregon and California, Washington has been shifting jobs from goods-producing employment to service-providing industries. Between 2001 and 2011, the proportion of total private employment comprised of the production of goods dropped from 25% to 20%, while the service-providing sector increased from 75% to 80%.

Since 1990, employment in the natural resources and mining sector has remained steady at around 4% of total private industry employment. Figure 3.12 shows the variation of the sector by county.

Figure 3.12. Percent Change of Washington Natural Resources and Mining Jobs by County: 1990 to 2010



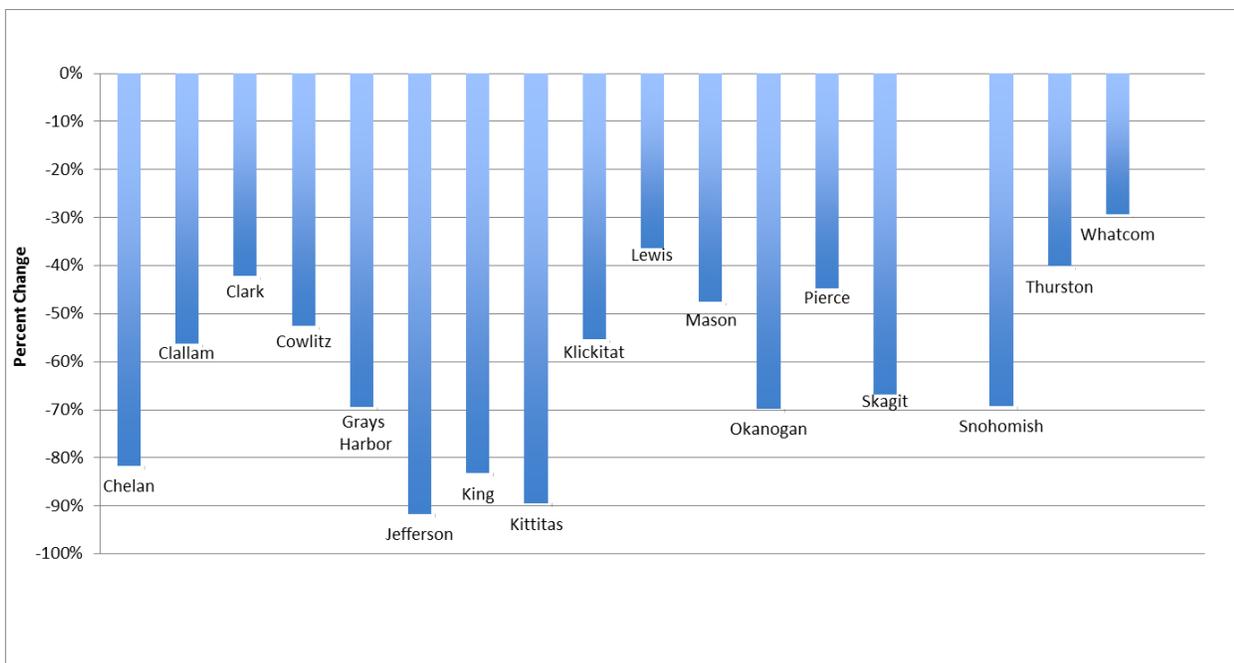
Since 1990, seven of the study counties experienced increases in natural resources and mining employment, with the greatest increase (76%) occurring in Klickitat County, which gained 618 jobs. Other counties that increased were Chelan, Kittitas, Okanogan, Skagit, Whatcom, and Yakima. Each of these counties has a substantial agricultural economic base influencing the overall category

total. The natural resources and mining includes employment in sectors such as agriculture, forestry, mining and crop production (for a complete list, see Appendix A).

The counties with the greatest decline in natural resources and mining jobs include Skamania, Grays Harbor, Clallam, Clark, Pierce, and Mason, all of which lost more than 40% of total jobs in this sector since 1990.

Many of the counties in the study area have historically relied heavily on the timber industry. In 1990, forestry and logging jobs totaled 7,738, but by 2010 that number fell to 3,321, a decrease of 58%. Figure 3.13 shows the percentage of forestry and logging jobs lost by county over that time period. Every county in the study area lost at least 25% of their forestry and logging jobs from 1990 to 2010.

Figure 3.13. Percent Change of Washington Forestry and Logging Jobs by County: 1990 to 2010*



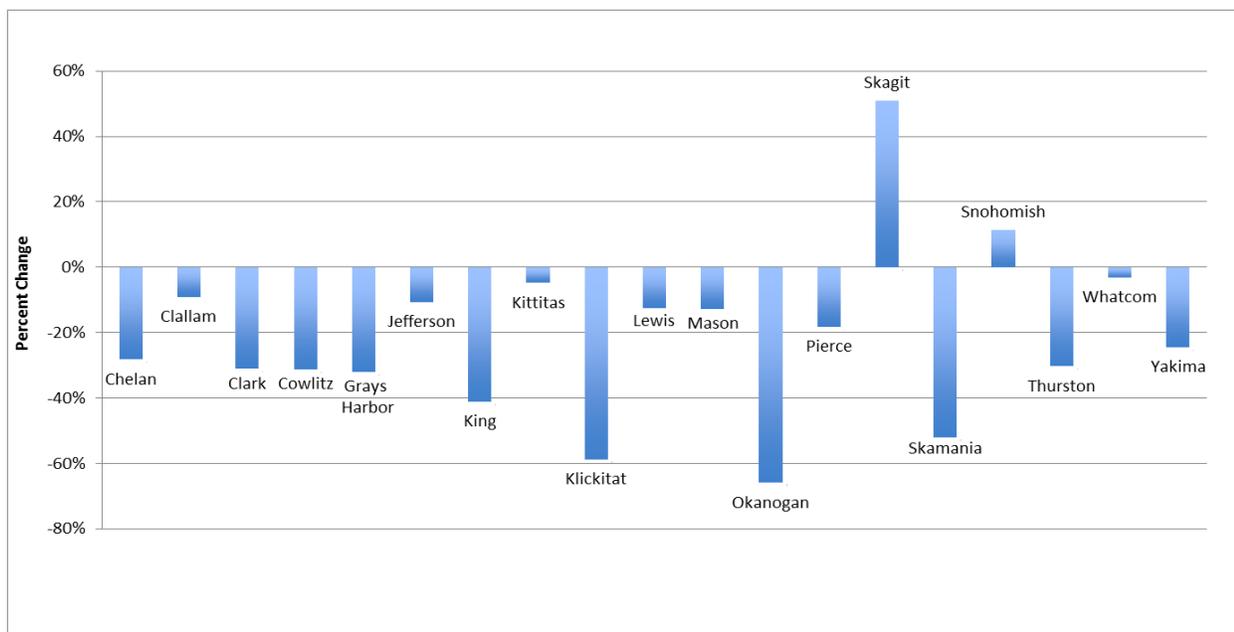
*No data available for Skamania and Yakima.

While Jefferson County lost over 90% of its forestry and logging jobs, Grays Harbor County lost the most jobs (751). King County lost 721 jobs, second most, but likely experienced less dramatic impacts due to the proximity of urban areas and more diverse employment opportunities. Other counties which lost more than 300 jobs, include Clallam (423), Cowlitz (632), and Snohomish (340).

Manufacturing has also played a critical role in Washington’s economy over the last 20 years. The number of jobs available in this sector, however, has declined in every county across the study area, except two, as shown in Figure 3.14.

Skagit County saw a 51% increase in manufacturing employment and Snohomish County experienced an 11% increase. The average change in manufacturing employment at the county level is a 21% decline. Okanogan, Klickitat, and Skamania lost more than half of their manufacturing jobs.

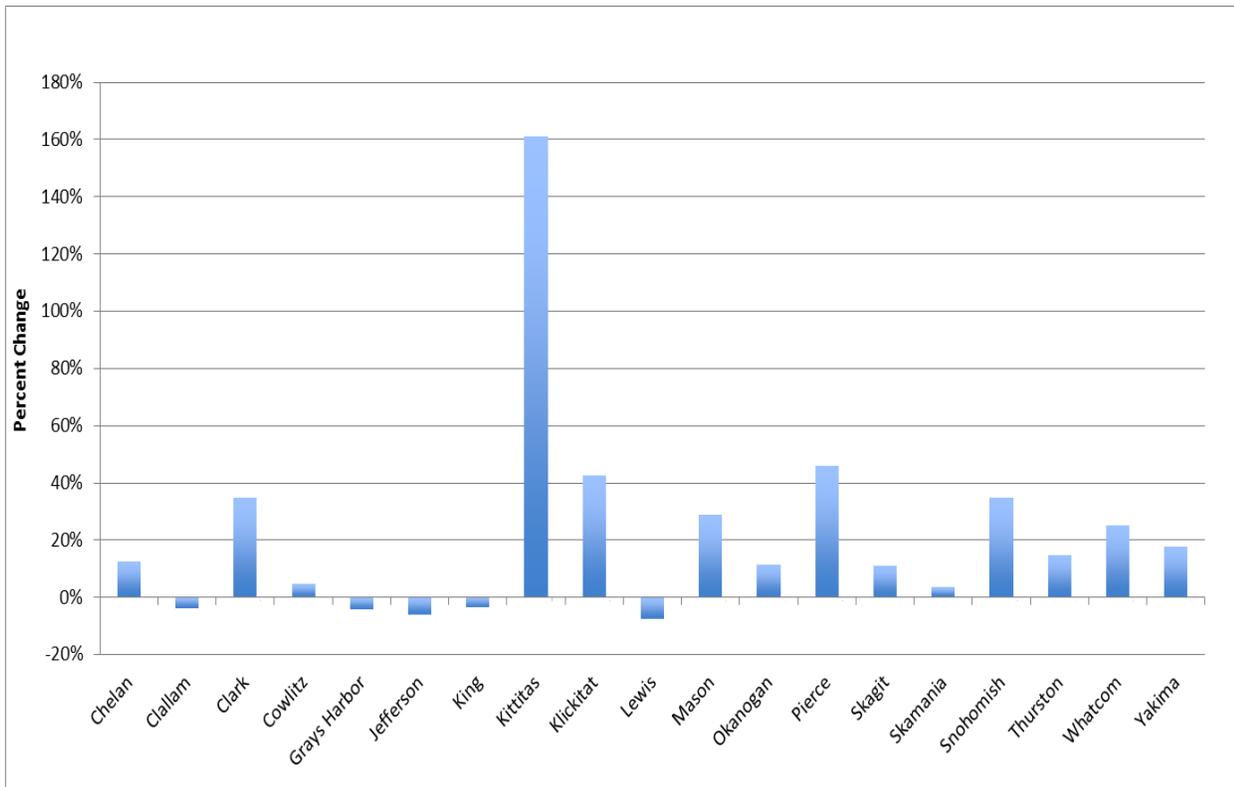
Figure 3.14. Percent Change of Washington Manufacturing Jobs by County: 1990 to 2010



Just as forestry and logging is a subsector of the natural resources and mining industry, wood product manufacturing measures mill employment and it is a subsector of manufacturing. Examination of the wood product-manufacturing sector provides a greater understanding of current conditions in study counties where the timber industry has been important. Over 9,000 jobs in wood product manufacturing have been lost since 1990 in the Washington study area counties. The most dramatic percentage loss of these jobs occurred in Okanogan and Thurston counties. By 2010 they lost 90% and 84%, respectively, of their 1990 wood product-manufacturing jobs.

Finally, construction accounts for 5-8% of total private industry jobs and often reflects economic conditions, as shown in Figure 3.15. Although Kittitas appears to have gained a large number of construction jobs, this increase is a percentage of growth over 20 years. The number of construction jobs in Kittitas County peaked in 2007 at 1,225 jobs, but by 2010 it had decreased to 561 – an obvious effect of the Great Recession.

Figure 3.15. Percent Change of Washington Construction Jobs by County: 1990 to 2010



2. Financial Implications: How Land Management Decisions Impact County Finances

Analysis of the socioeconomic condition of rural counties in the northern spotted owl range would be incomplete without considering the impact of large tracts of public land on the operation of county governments and the effects management changes may have on these relationships. For this reason, the following section is included to provide a brief review of the financial connection between activities on federal lands and county governments. This section highlights a few key areas where this financial relationship is paramount to the ability of counties to address important local needs.

County governments have a wide range of important fiscal obligations to ensure the health and well-being of local residents, including road maintenance, public health and mental health services, education, criminal prosecution, community corrections, airports, libraries, air-pollution control, land-use planning, civil defense and senior services. As budgets decline, counties are being forced to reduce services. This can affect the socioeconomic conditions and health of residents, to mention just a couple of critical areas.

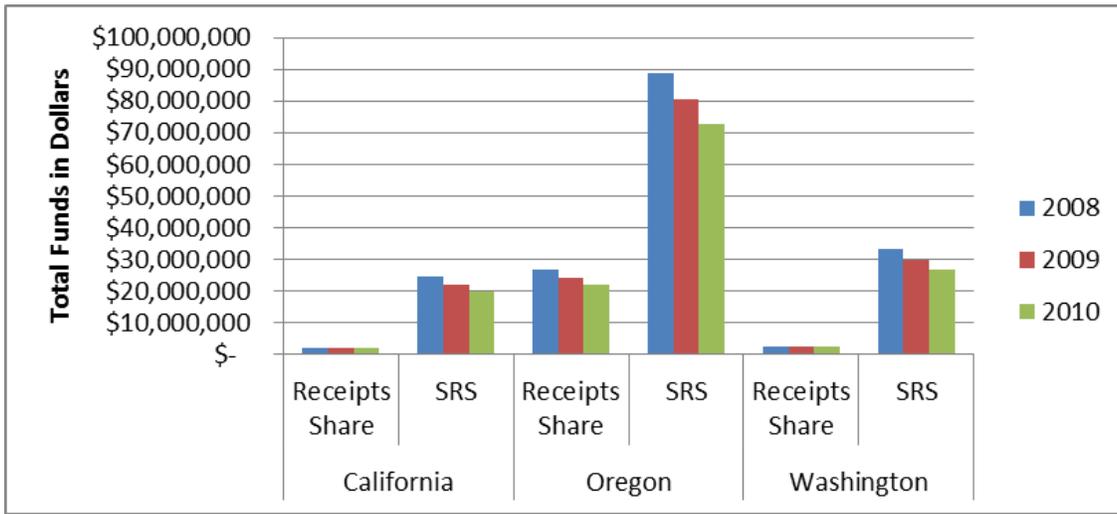
Many of the rural counties across the study area are financially challenged, due in part to a long-term reliance on public land resource revenue sharing, such as USFS and BLM receipt sharing and now federal payments, based on historic revenue sharing associated with these lands. Skamania County, for example, was dependent on federal payments to meet on average 48% of their annual expenses from 2001 to 2011.

The federal government has shared a portion of revenues generated on public lands with local governments since 1908, with the largest revenue producer being timber harvests. Historically, counties were the recipients of 25% of the total revenue generated from USFS lands within the county. Additionally, in Oregon, the O&C Lands Act of 1937 transferred management authority of the Oregon and California Railroad Company lands to the BLM and mandated that 50% of revenues be returned to the counties with revested lands. Revenue is divided according to the percent of the assessed value of the land in 1915. Eighteen counties in Oregon contain revested O&C lands or Coos Bay Wagon Road lands, which were also covered under the O&C Lands Act of 1937.

As timber revenues declined sharply in the early 1990s, federal “safety net payments” were instated as part of the Omnibus Budget Reconciliation Act of 1993 to cushion the impact of the loss of timber receipts across 72 counties in California, Oregon and Washington. As the federal government’s first attempt to replace lost revenues for counties following the timber decline, these payments were focused on counties where the decline coincided with the initial protection of the northern spotted owl. The Secure Rural Schools and Community Self-Determination Act of 2000 (SRS) replaced these payments after they expired. SRS Title I funds that come from the U.S. Forest Service must be used to fund county roads and schools. In contrast, SRS Title I funds from the O&C lands, Bureau of Land Management, go directly to a county’s general fund, to be used at the county’s discretion. SRS Title II funds provide funding for special projects, which benefit federal resources and mandate a collaborative decision-making process through the creation of Resource Advisory Committees. Finally, Title III provides funds for carrying out activities under the Firewise Communities program that protect people and property from wildfire, develop or update community wildfire protection plans, and reimburse counties for search and rescue on federal lands. The use of Title III funds is determined solely by the receiving county.

Under the Secure Rural Schools and Community Self-Determination Act, counties are eligible to receive annual payments from both the BLM and the USFS. The amount each county receives is calculated using multiple factors including the amount of federal land in the county, the county’s share of the state’s highest three-year average of 25% (50% in the case of O&C lands) receipt sharing from 1986 through 1999, and an income adjustment based on the county’s per capita personal income. Figure 3.16 shows the differences in funds that would be received if counties were receiving a share of receipts from federal lands as opposed to SRS payments.

Figure 3.16. Funds received by Counties from SRS Payments and Funds That Would Have Been Received Under the Previous Receipt Sharing Agreements



The sections that follow provide a glimpse of certain areas where SRS payments, in place of revenue sharing, are critical for maintaining livable counties for rural residents. For clarity in analyzing specific relationships between funds received and the programs they were used for, O&C contributions were excluded from the analysis below because these funds go into the county general fund and are used at the discretion of a county. To evaluate the role of USFS Title I funds in supporting county services, in California the influence of these payments on school district budgets is examined, and in Oregon, on county road program budgets. Oregon counties equalize the distribution of the portion of SRS Title I funds for school budgets across all counties. As a result the direct impact of these dollars in a given county is minimized. For this reason, these data are not included in this review. An overview of how the overall SRS payments relate to total combined county government and schools budgets in counties across the entire study area is provided at the end of this section.

California

To examine the dependence of study counties in California on federal payments, and historically, primarily on timber receipts, budget information was collected for school districts across three case study counties: Humboldt, Siskiyou, and Trinity. Although the information that could be collected was limited by time constraints, the school district budget numbers presented here highlight the reliance of rural, forested counties in Northern California on forest revenues, and subsequently on payments to mitigate the decline in revenues from timberlands. Data show the importance of the Secure Rural Schools and Community Self-Determination Act. Although the Act was passed in 2000, payments did not affect budgets until 2002. Therefore, data is analyzed from 2002-2012.

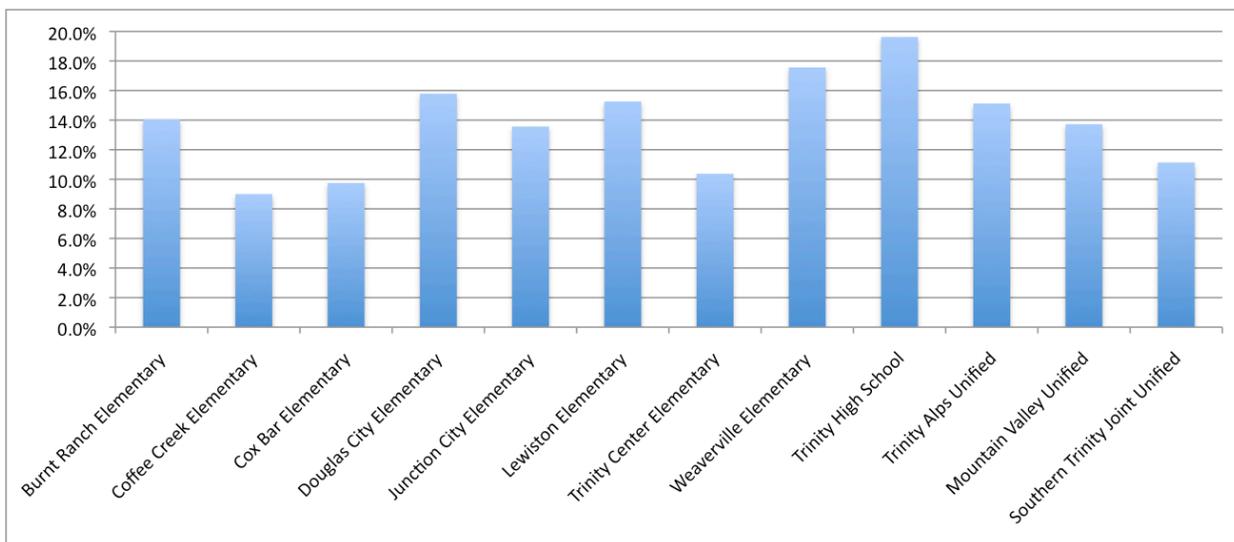
In Humboldt County, the school district reliance on SRS payments ranges from less than 1% to 24% of the annual budget. Four school districts in Humboldt County receive between 0% and 1% of their annual budget from SRS payments. Klamath-Trinity Joint Unified School District and Bridgeville School District depend on SRS payments for an average of 2.6% and 5.5% respectively. Maple Creek School District, whose lone elementary school experienced Free and Reduced Price Meal Program enrollment increase from 0% in 1990 to 80% in 2010, received on average 11.3% of its

budget from SRS payments, the greatest proportion of all Humboldt County school districts. On average, Humboldt County school districts count on SRS payments for 4.7% of their annual budget.

The average percent of the annual budget that school districts in Siskiyou County received as SRS payments between 2002 and 2012 was 6.7%, and the reliance of individual school districts on federal payments in a given year ranged from a low of 1.3% to a high of 11.7% of their total budget. Every school district in Siskiyou County showed a decrease in both total school district budget and the amount of SRS funds received for the budget. Nine of Siskiyou County’s twenty school districts showed an increased reliance on SRS payments in 2012 when compared to 2002.

In Trinity County, school districts on average received 15% of their annual budgets from SRS payments. From 2002 to 2012, SRS payments as a percent of school district budgets range from 4.6% in the Cox Bar Elementary District to a high of 22.6% in the Trinity High School District. The two districts in Trinity County with the highest portion on average of the annual budget coming from SRS payments were Weaverville Elementary School District and Trinity High School District. These school districts combined in 2009 and the new district’s portion of the annual budget from SRS payments fell by over one-third to 12.4% in 2012. The average percentage of school district budgets received as SRS payments are shown in Figure 3.17.

Figure 3.17. Average Percentage of School District Budget Received from SRS Payments



Oregon

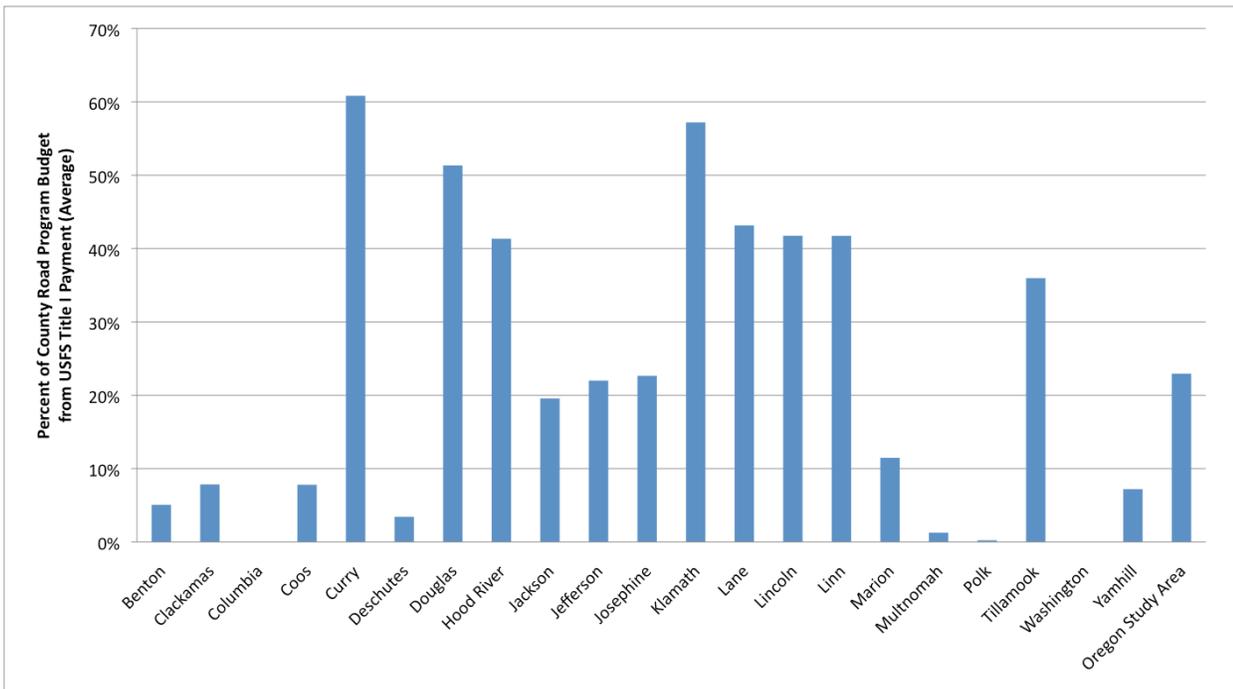
USFS Title I funding is used to support county road program budgets. To evaluate the role USFS Title I contributions play in enabling counties in the Oregon study area to provide local services, county road program budget information was collected for the 21 study area counties in Oregon that receive USFS Title I payments.

From these 21 counties, it is apparent that Title I funds are critical to the maintenance of county road infrastructure. Of the Oregon study counties receiving USFS Title I payments, the average proportion from 2001 to 2011 of the road budgets provided by Title I funding is 23%. This suggests that USFS Title I payments play an even larger role in county road program funding than in funding

school districts in California. In 2001, Klamath County received 91% of its road budget from USFS Title 1 payments, the greatest proportion of any Oregon study county between 2001 and 2012.

Six counties (Curry, Douglas, Klamath, Lane, Lincoln, and Linn) received over 40% of their annual road program budget, on average, from USFS Title I payments. The county receiving the greatest proportion of its road program budget from federal payments on average since 2001 is Curry, with an average of 61%. Three counties received between 20% and 40% of their road budget from USFS Title I payments: Jefferson, Josephine, and Tillamook. The average portion of county road program budgets across the Oregon study area accounted for by USFS Title I payments is shown in Figure 3.18.

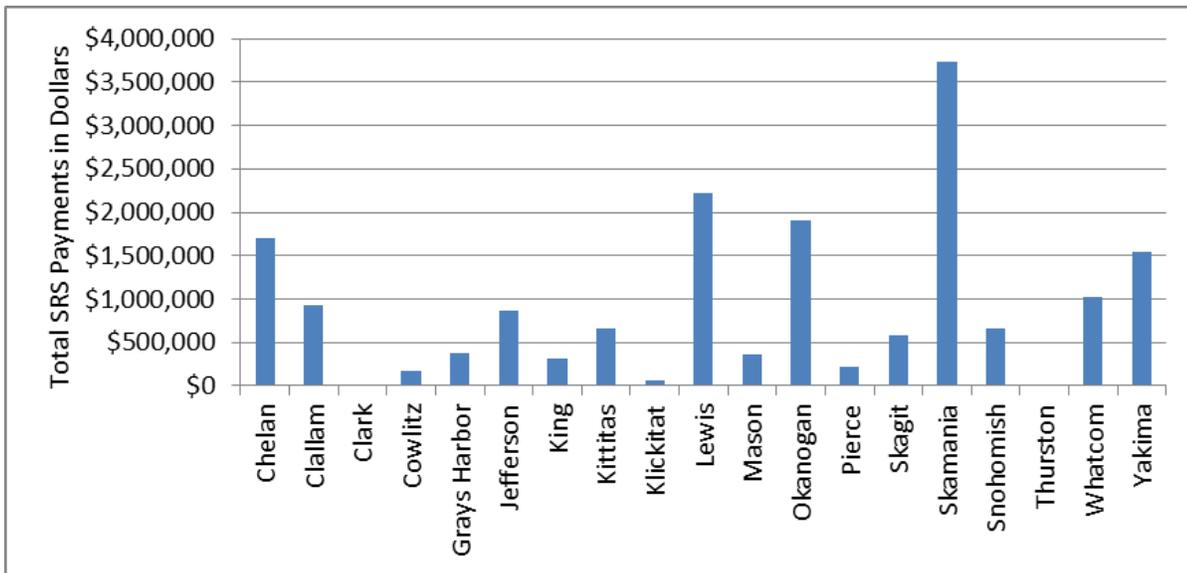
Figure 3.18. Percent of County Road Program Budget from USFS Title I Payments



Washington

Due to time constraints, budget data was limited for the Washington counties. Total SRS dollars that were received by county is shown in Figure 3.19. In 2011, the four counties that received the highest SRS payments were Skamania, Lewis, Okanogan, and Chelan. Each of these counties received over \$1.5 million, with Skamania receiving far more than any other county at \$3.7 million. Clark County and Thurston County received the least amount, totaling \$5,500 and \$1,246 respectively in 2011.

Figure 3.19. 2011 SRS Payments to Washington Study Area Counties



All-State Summary

Across the study area, the importance of federal payments as a result of the Secure Rural Schools and Community Self-Determination Act should not be underestimated. In California, SRS payments contribute significantly to both roads and schools budgets in many of the study area counties. For example, in Trinity County, on average, SRS payments accounted for 15% of school district budgets and nearly 57% of the county road budget between 2002 and 2012. The specific impacts of Secure Rural Schools vary slightly in Oregon as a result of two factors: the presence of O&C lands and a decision by the State of Oregon to equalize the distribution of USFS Title I funds for schools. In Oregon, SRS payments play a substantial role in both county general funds in O&C counties and in road budgets in counties across the study area. For example, Douglas County received 17% of its total county government revenues from O&C funds. The contribution of USFS Title I payments to county road program budgets is highlighted by Klamath County; the county received 91% of its 2001 road budget from USFS Title I payments. The impacts of SRS in Washington are similar to California, SRS payments are important to both roads and schools budgets in the Washington study area. If the Secure Rural Schools and Community Self-Determination Act is not re-authorized in the future, rural counties, many already facing severe budget crises, will be further challenged to maintain roads and keep schools open in their communities.

Chapter IV. Community Well-Being: Socioeconomics, Demographics, and Health Conditions

A. INCOME and IMPOVERISHMENT

California

In 2000, the four California counties with the lowest median family income were Trinity, Lake, Del Norte, and Siskiyou. These four counties also had the highest percentages of families, individuals, and families with children under 18 living under the federal poverty line, shown in Table 4.1. It is important to note the both Napa and Sonoma counties are influenced by their proximity to the San Francisco Bay Area. Due to missing data in the 2010 American Community Survey for many counties, it is not possible to make reasonable comparisons between 2000 and 2010 data, but available 2010 data is displayed.

Table 4.1. California Median Family Income of Families and Families with Children below the Poverty Line: 2000 and 2010

County	Average Median Family Income		Average Percentage of Families Below the Poverty Level		Average Percentage of Families with Children Below the Poverty Level	
	2000	2010	2000	2010	2000	2010
Colusa	\$40,138	-	13%	-	18%	-
Del Norte	\$36,056	-	16%	-	24%	-
Glenn	\$37,023	-	13%	-	19%	-
Humboldt	\$39,370	\$51,167	13%	10%	21%	13%
Lake	\$35,818	\$46,260	13%	14%	22%	31%
Mendocino	\$42,168	\$46,995	11%	13%	18%	20%
Napa	\$61,410	\$75,814	6%	10%	9%	15%
Shasta	\$40,491	\$51,173	11%	14%	18%	25%
Siskiyou	\$36,890	-	14%	-	24%	-
Sonoma	\$61,921	\$70,450	5%	8%	7%	13%
Tehama	\$37,277	-	13%	-	21%	-
Trinity	\$34,343	-	14%	-	26%	-
California	\$41,909	\$56,977	12%	11%	19%	19%
All Study Area Counties	\$44,923	\$58,677	10%	11%	15%	18%

-No Data Available

In 2010, female-headed households with children made up between 5% and 9% of all households within California study areas, shown in Table 4.2. The percentage of female-headed households typically does not vary a great deal but some county changes are notable. Five counties experienced an increase, and two declined over the last decade. From 2000 to 2010 Colusa County and Tehama

County totals increased from 6% to 9%, and 7% to 9%, respectively. Trinity County dropped 2% during this same period. The counties with the greatest increases in female headed households with children included Colusa and Tehama Counties.

Table 4.2. Percentage of California Female-Headed Households with Children: 1990 to 2010

County	1990	2000	2010
Colusa	7%	6%	8%
Del Norte	8%	9%	9%
Glenn	7%	7%	8%
Humboldt	8%	8%	7%
Lake	7%	7%	8%
Marin	5%	5%	5%
Mendocino	8%	8%	8%
Napa	6%	6%	6%
Shasta	8%	8%	8%
Siskiyou	7%	7%	7%
Sonoma	7%	6%	7%
Tehama	7%	7%	9%
Trinity	7%	7%	5%
California	7%	7%	7%
All California Study Area Counties	7%	6%	7%

Between 1990 and 2010, all counties, with the exception of Trinity County, had declines in the percentage of owner occupied housing units. These data are displayed in Table 4.3. This decline was most pronounced in Tehama, Mendocino, and Siskiyou Counties where owner occupied units decreased by 9%-10%. Between 1990 and 2010, all counties experienced an increase in renter occupied housing units, though the counties with the greatest increases in renter occupied units were not the same as those with the greatest owner occupied declines. Lake, Del Norte, and Humboldt Counties experienced the greatest increase (10%-23%) in renter occupied housing units between 1990 and 2010. More in-depth research is needed to determine the basis for these changes.

Table 4.3. Percentage of California Owner and Renter Occupied Housing Units: 1990 to 2010

County	Percent of Owner Occupied Housing Units				Percent of Renter Occupied Housing Units			
	1990	2000	2010	% Change: 1990 - 2010	1990	2000	2010	% Change: 1990 - 2010
Colusa	57%	57%	55%	-3%	33%	33%	35%	7%
Del Norte	57%	56%	55%	-5%	30%	32%	34%	11%
Glenn	58%	59%	57%	-3%	36%	33%	34%	-5%
Humboldt	53%	53%	50%	-6%	37%	39%	41%	10%
Lake	51%	52%	49%	-4%	21%	22%	26%	23%
Mendocino	56%	55%	51%	-9%	34%	35%	36%	4%
Napa	60%	61%	56%	-7%	33%	33%	33%	1%

County	Percent of Owner Occupied Housing Units				Percent of Renter Occupied Housing Units			
Shasta	60%	61%	59%	-2%	33%	31%	32%	-1%
Siskiyou	58%	57%	53%	-9%	28%	28%	29%	2%
Sonoma	58%	60%	55%	-6%	34%	34%	36%	5%
Tehama	63%	60%	57%	-10%	29%	29%	31%	8%
Trinity	48%	50%	49%	4%	21%	20%	21%	0%
All California Counties	57%	57%	54%	-5%	31%	31%	32%	5%

Oregon

In 2000, the five Oregon counties with the lowest median family income were, Curry, Lake, Josephine, Coos, and Klamath. These five counties were also among the highest in terms of percentages of families, individuals, and families with children under 18 living under the federal poverty line. These data are shown in Table 4.4. Klamath and Josephine Counties both remained the lowest among median household income for those counties for which 2010 data were available. Due to missing data in the 2010 American Community Survey for many counties, it is not possible to make additional comparisons between years for many counties, but available 2010 data is displayed.

Table 4.4. Oregon Median Family Income of Families and Families with Children below the Poverty Line: 2000 and 2010

County	Average Median family income		Average Percentage of Families Below the Poverty Level		Average Percentage of Families with Children Below the Poverty Level	
	2000	2010	2000	2010	2000	2010
Benton	\$56,319	\$76,019	7%	9%	10%	13%
Clackamas	\$60,791	\$71,225	5%	7%	7%	12%
Clatsop	\$44,575	-	9%	-	15%	-
Coos	\$38,040	-	11%	-	18%	-
Curry	\$35,627	-	10%	-	14%	-
Deschutes	\$48,403	\$56,132	6%	11%	9%	20%
Douglas	\$39,364	\$43,013	10%	14%	16%	23%
Hood River	\$41,422	-	10%	-	14%	-
Jackson	\$43,675	\$49,072	9%	12%	15%	18%
Jefferson	\$39,151	-	10%	-	17%	-
Josephine	\$36,894	\$48,664	11%	11%	20%	22%
Klamath	\$38,171	\$48,063	12%	10%	20%	19%
Lake	\$36,182	-	13%	-	20%	-
Lane	\$45,111	\$52,488	9%	12%	15%	21%
Lincoln	\$39,403		10%		18%	
Linn	\$44,188	\$52,381	9%	14%	14%	24%
Marion	\$46,202	\$50,938	10%	13%	15%	22%
Multnomah	\$51,118	\$58,770	8%	14%	13%	22%
Polk	\$50,483	\$54,983	6%	13%	11%	22%

County	Average Median family income		Average Percentage of Families Below the Poverty Level		Average Percentage of Families with Children Below the Poverty Level	
Tillamook	\$40,197	-	8%	-	14%	-
Wasco	\$42,412	-	10%	-	16%	-
Yamhill	\$50,336	\$56,250	6%	10%	9%	16%
Oregon	\$44,003	\$55,231	9%	12%	14%	19%
All Study Area Counties	\$44,923	\$58,677	10%	11%	15%	18%

-No Data Available

In 2010, female-headed households with children made up between 5% and 9% of all households within study area counties within Oregon (Table 4.5). Between 1990 and 2010, the percentage of female-headed households with children increased in 12 counties. Ten stayed the same, and only one, Coos County, dropped. Both Jefferson and Marion counties were the only counties that had 9% of the households female-headed and with children in 2010. Yamhill County at 8% is the only other county above 7% in 2010.

Table 4.5. Percentage of Oregon Female-Headed Households with Children: 1990 to 2010

County	1990	2000	2010
Benton	5%	5%	5%
Clackamas	5%	6%	6%
Clatsop	6%	6%	6%
Coos	7%	6%	6%
Curry	4%	5%	5%
Deschutes	6%	6%	7%
Douglas	6%	6%	7%
Hood River	5%	6%	6%
Jackson	7%	7%	7%
Jefferson	8%	7%	9%
Josephine	7%	6%	7%
Klamath	6%	7%	7%
Lane	7%	7%	7%
Lincoln	6%	7%	6%
Linn	6%	6%	7%
Marion	7%	7%	9%
Multnomah	7%	6%	7%
Polk	6%	6%	7%
Tillamook	5%	5%	5%
Wasco	7%	6%	7%
Yamhill	7%	7%	8%
Oregon	6%	6%	7%
All Study Area Counties	7%	6%	7%

Income and Impoverishment-Percentage of Owner or Renter Occupied Housing Units

Between 1990 and 2010, all counties, with the exceptions of Hood River, Jefferson, and Wasco Counties, had declines in the percentage of owner occupied housing units (Table 4.6). This decline was most pronounced in Tillamook, Lincoln, Jefferson, and Deschutes Counties where owner occupied units decreased by 9%-13%. Deschutes, Curry, and Josephine Counties experienced the greatest increase (10%-16%) in renter occupied housing units between 1990 and 2010.

Table 4.6. Percentage of Oregon Owner and Renter Occupied Housing Units: 1990 to 2010

County	Percent of Owner Occupied Housing Units				Percent of Renter Occupied Housing Units			
	1990	2000	2010	% Change: 1990 - 2010	1990	2000	2010	% Change: 1990 - 2010
Benton	53%	54%	53%	-1%	43%	40%	42%	-4%
Clackamas	68%	67%	64%	-5%	27%	27%	29%	6%
Clatsop	49%	48%	45%	-8%	28%	27%	28%	-1%
Coos	60%	61%	58%	-3%	30%	29%	31%	1%
Curry	61%	61%	57%	-6%	23%	23%	25%	10%
Deschutes	58%	60%	53%	-9%	24%	23%	27%	16%
Douglas	65%	66%	62%	-3%	29%	26%	29%	-1%
Hood River	53%	60%	55%	5%	32%	33%	33%	2%
Jackson	63%	63%	57%	-9%	32%	32%	34%	7%
Jefferson	49%	58%	54%	12%	26%	23%	25%	-5%
Josephine	66%	65%	61%	-7%	28%	28%	30%	10%
Klamath	56%	59%	55%	-2%	30%	28%	28%	-6%
Lane	58%	58%	56%	-3%	37%	35%	38%	1%
Lincoln	49%	47%	43%	-11%	25%	25%	24%	-5%
Linn	62%	63%	60%	-3%	33%	30%	32%	-1%
Marion	60%	59%	57%	-6%	36%	35%	36%	2%
Multnomah	52%	54%	51%	-2%	42%	41%	43%	1%
Polk	64%	65%	62%	-3%	32%	30%	32%	-2%
Tillamook	47%	46%	41%	-13%	19%	18%	18%	-5%
Wasco	53%	60%	56%	5%	29%	28%	31%	9%
Yamhill	65%	66%	63%	-3%	31%	29%	30%	-4%
Oregon	58%	59%	55%	-4%	30%	29%	31%	1%

Washington

In 2000, the five counties with the lowest median family income were, Okanogan, Grays Harbor, Yakima, Klickitat and Lewis. These four counties were also among the highest in terms of percentages of families, individuals, and families with children under 18 living under the federal poverty line. These data are shown in Table 4.7. Grays Harbor, Yakima, and Lewis Counties both remained the lowest among median household income where 2010 data were available. Due to missing data in the 2010 American Community Survey for many counties, it is not possible to make comparisons between years for many counties. Available 2010 data is displayed.

Table 4.7. Washington Median Family Income of Families and Families with Children below the Poverty Line: 2000 and 2010

County	Average Median family income		Average Percentage of Families Below the Poverty Level		Average Percentage of Families with Children Below the Poverty Level	
	2000	2010	2000	2010	2000	2010
Chelan	\$46,293	\$57,908	9%	9%	13%	17%
Clallam	\$44,381	\$53,327	9%	7%	16%	17%
Clark	\$54,016	\$62,670	7%	9%	10%	14%
Cowlitz	\$46,532	\$50,279	10%	17%	17%	31%
Grays Harbor	\$39,709	\$51,049	12%	10%	19%	21%
Jefferson	\$45,415	-	7%	-	15%	-
King	\$66,035	\$84,401	5%	8%	8%	13%
Kittitas	\$46,057	-	11%	-	16%	-
Klickitat	\$40,414	-	13%	-	19%	-
Lewis	\$41,105	\$51,368	10%	13%	17%	21%
Lincoln	\$41,269	-	8%	-	14%	-
Mason	\$44,246	-	9%	-	15%	-
Okanogan	\$35,012	-	16%	-	24%	-
Pierce	\$52,098	\$66,081	8%	8%	11%	13%
Skagit	\$48,347	\$63,835	8%	8%	12%	13%
Skamania	\$44,586	-	10%	-	17%	-
Snohomish	\$60,726	\$76,451	5%	7%	7%	12%
Thurston	\$55,027	\$72,764	6%	6%	9%	10%
Whatcom	\$49,325	\$65,661	8%	9%	12%	15%
Yakima	\$39,746	\$46,711	15%	20%	22%	31%
Washington	\$47,194	\$62,271	9%	10%	15%	17%
All Study Area Counties	\$44,808	\$58,535	10%	11%	15%	18%

-No Data Available

In 2010, Female headed households with children made up between 5%-11% of all households within study area counties in Washington, shown in Table 4.8. Between 1990-2010, Female Headed Households with Children decreased in 29% of Washington study counties. The counties with the greatest increases in female headed households with children included Yakima and Pierce Counties.

Table 4.8. Percentage of Washington Female-Headed Households with Children: 1990 to 2010

County	1990	2000	2010
Chelan	6%	6%	7%
Clallam	6%	6%	6%
Clark	7%	7%	8%
Cowlitz	7%	7%	8%
Grays Harbor	8%	7%	8%
Jefferson	6%	6%	5%

County	1990	2000	2010
King	6%	5%	6%
Kittitas	5%	5%	5%
Klickitat	7%	6%	5%
Lewis	7%	6%	7%
Mason	6%	6%	6%
Okanogan	7%	8%	7%
Pierce	8%	8%	9%
Skagit	6%	6%	7%
Skamania	6%	5%	6%
Snohomish	6%	7%	7%
Thurston	7%	7%	8%
Whatcom	6%	6%	6%
Yakima	9%	9%	11%
<i>Washington</i>	7%	6%	7%
All Study Area Counties	7%	6%	7%

Income and Impoverishment-Percentage of Owner or Renter Occupied Housing Units

Between 1990 and 2010, 45% of study area counties in Washington had declines in the percentage of owner occupied housing units. This is shown in Table 4.9. Even in the county with the greatest decline in percentage of owner occupied units, the decline was 5%. Between 1990 and 2010, 25% of counties experienced an increase in renter occupied housing units. Mason, Whatcom, and Skagit Counties experienced the greatest increase (3%-8%) in renter occupied housing units between 1990 and 2010.

Table 4.9. Percentage of Washington Owner and Renter Occupied Housing Units: 1990 to 2010

County	Percent of Owner Occupied Housing Units				Percent of Renter Occupied Housing Units			
	1990	2000	2010	% Change: 1990 - 2010	1990	2000	2010	% Change: 1990 - 2010
Chelan	51%	53%	50%	-2%	31%	29%	29%	-9%
Clallam	64%	64%	63%	-1%	27%	24%	25%	-7%
Clark	61%	64%	62%	1%	34%	31%	32%	-5%
Cowlitz	62%	63%	61%	-2%	33%	30%	32%	-4%
Grays Harbor	57%	57%	55%	-3%	28%	26%	26%	-7%
Jefferson	58%	63%	59%	1%	20%	20%	20%	0%
King	56%	57%	55%	-2%	39%	38%	38%	-3%
Kittitas	45%	47%	44%	-3%	34%	34%	32%	-6%
Klickitat	57%	60%	60%	6%	29%	27%	25%	-14%
Lewis	62%	63%	61%	-1%	26%	25%	26%	-1%
Mason	50%	59%	57%	13%	15%	16%	16%	8%
Okanogan	51%	54%	51%	0%	25%	25%	23%	-7%
Pierce	57%	60%	58%	3%	37%	34%	34%	-9%
Skagit	64%	63%	60%	-5%	27%	28%	28%	3%
Skamania	57%	61%	60%	4%	21%	21%	21%	1%

Snohomish	62%	65%	63%	1%	31%	31%	31%	-2%
Thurston	61%	63%	62%	2%	33%	31%	31%	-6%
Whatcom	56%	55%	55%	-2%	31%	32%	34%	8%
Yakima	59%	60%	60%	1%	34%	33%	35%	1%
Washington	57%	60%	58%	1%	29%	28%	28%	-4%
All Study Area Counties	57%	59%	56%	-2%	30%	29%	30%	0%

In 2010, with the exception of Oregon, counties ranked in the top three for lowest median Household income also had the highest percent of families, individuals, and families with children under 18 living under the poverty line. In Washington and Oregon, there was inadequate time to ascertain if mill closures were linked to county ranking in median household income.

All-State Summary

Income and Impoverishment-Median Family Income and Percentage of Families and Families with Children Under 18 Living Below the Federal Poverty Line

For 2000 and 2010, counties ranked in the top five for lowest median family income also had the highest percent of families, individuals, and families with children under 18 living under the poverty line. This relationship held between 2000 and 2010. For all study area counties, the 2010 average percentage of families below the poverty line and families with children under 18 living below the federal poverty line was 11% and 18%, respectively.

Income and Impoverishment-Percentage of Owner or Renter Occupied Housing Units

Between 1990 and 2010, study area counties in California and Oregon experienced the greatest reduction in the percentage of owner occupied housing units, 92% and 85%, respectively. This is in comparison to study area counties in Washington where the decline in owner occupied housing was 45% during the same period. Increases in renter occupied housing were not necessarily in the same counties that had declines in owner occupied housing.

B. RANKING COMMUNITY HEALTH

This portion of the report is based on work by the University of Wisconsin Population Health Institute, which is a model of population health that focuses on factors that contribute to community health. The County Health “Rankings and Roadmap” project provides information about county-level health and well-being. It offers a unique perspective on health outcomes and health factors that determine overall county health. Health outcomes are based on rates of mortality and morbidity. Mortality is the incidence of premature death, or how long people live in general. Morbidity explains how healthy people feel, with many of the measures self-reported.

Health factors involve individual behaviors and conditions that are known to affect health, along with the clinical care available to residents of a county. Individual health measures include alcohol use, tobacco use, sexual activity, and diet and exercise. Conditions affecting to health include

measures of social and economic factors—such as measures of education, community safety, employment, family and social support, and income—along with characteristics of the physical environment. Measures of clinical care focus on accessibility of care and quality of that care.

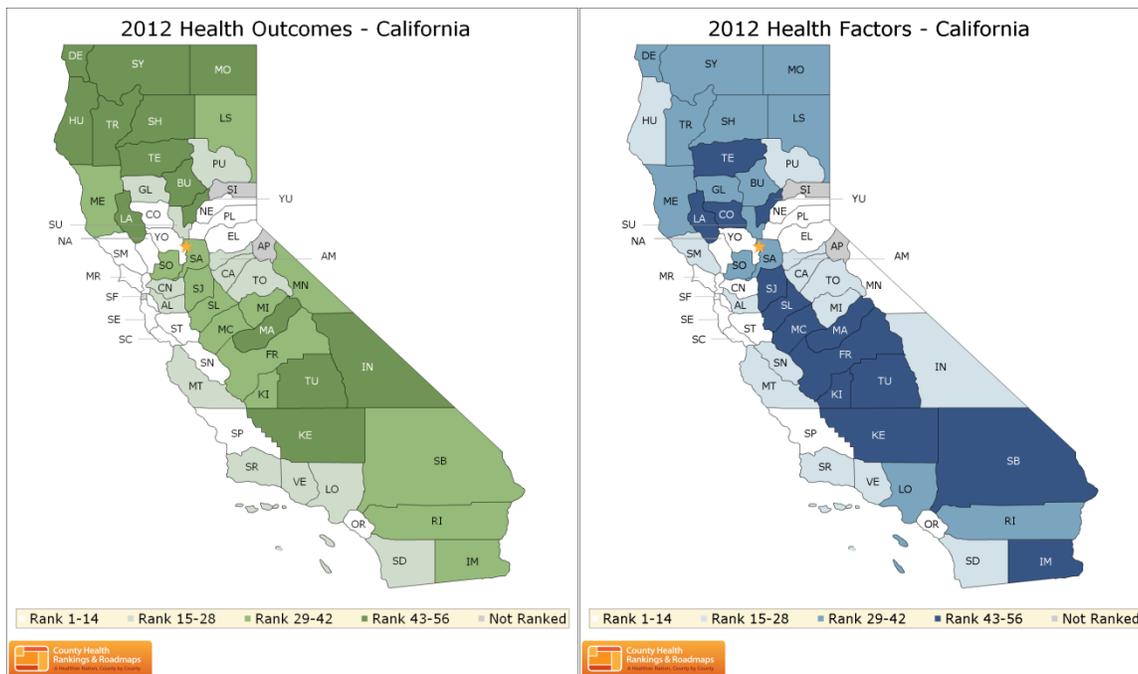
This information is useful for assessing and comparing county health. While no single measure sufficiently captures multiple dimensions of human health and no mix of measures is perfect, the comprehensive scale established by health experts captures critical dimensions of health and facilitates comparison of overall county health.

Each county is listed by state, with the lowest numerical number reflecting the highest ranking on a particular measure or scale. Lower numbers mean better health factors and outcomes. Higher numbers on the multi-item scale reflects those counties that have fallen behind. Examination of the individual measures helps explain why. Comparison of patterns by state can explain regional trends, but because there are variations in how states collect data, some measures and the overall scale scores are not comparable from state to state. Hence, counties are compared within the states only. State findings are summarized to discuss regional trends and potential linkages to Critical Habitat Area (CHA) designation.

California

California includes 58 counties, and all but two have been ranked by the County Health Rankings & Roadmaps project. The disparity of health outcomes and health factors between counties is apparent in the County Health Ranking maps shown in Map 4-1. Many of the more rural and low population-density counties are have higher rankings. A higher rank indicates that health was lower compared to counties ranked at the lower end of the scale. Urbanized, higher density counties in general experienced better health than their rural counterparts. It is interesting to note most Central Valley counties fared worse than all other counties on the health factors and they are in the bottom quartile. Largely rural northern forested counties fared poorly on health outcomes, with most falling into the bottom quartile.

Map 4 -1. Health Outcomes & Health Factors for the State of California: 2012.¹⁰



Closer examination of California counties is presented through the description of counties with proposed CHA land designation in an amount greater than 2% of the total county land area. These counties include: Colusa, Del Norte, Glenn, Humboldt, Lake, Mendocino, Shasta, Siskiyou, Tehama, and Trinity counties. Counties that contain CHA lands and have greater non-rural populations are excluded. This eliminates Marin, Napa, and Sonoma counties. Los Angeles County is included to facilitate comparison of the rural areas with a highly urbanized area.

Table 4.10. Ranked California Health Factors and Outcomes, Mortality and Morbidity: 2012

	Health Factors	Health Outcomes	Mortality	Morbidity
Colusa	44	11	24	1
Del Norte	35	55	55	43
Glenn	37	27	41	4
Humboldt	27	48	52	32
Lake	43	52	54	38
Los Angeles	36	28	22	48
Mendocino	32	39	45	25
Shasta	40	43	49	23
Siskiyou	33	54	50	53
Tehama	45	53	48	54
Trinity	41	56	56	50

Table 4.10 above shows that the majority of the counties with greater than 2% of the land based designated as CHA have some of the poorest health in California. With the exception of Colusa and

¹⁰ Retrieved 6/29/2012; <http://www.countyhealthrankings.org/>

Glenn counties, which are predominantly Central Valley counties, rural counties in which 2% or more of the land base is CHA are ranked in the lowest half of the state on the health scale. These counties exhibit some of the worst levels of mortality (premature death), and poor morbidity numbers. Colusa and Glenn Counties are the only counties that ranked lower than Los Angeles County for Health Outcomes. This is not to suggest that CHA designation leads to poor health, but health in these counties is comparatively compromised. Residents in these predominantly rural forested counties are worse off than counties elsewhere in the state, including Los Angeles. This suggests that although it is often assumed that urban health is in the aggregate lower, it is, in fact, the more rural counties in which health of residents is more compromised.

Table 4.11 shows health factors and their indicators. Lifestyle choices involving health behaviors and social and economic factors have the most significant effect on the overall health factors ranking. Health behaviors such as tobacco and alcohol use, as well as diet and exercise, play a major role in the higher rankings of the rural CHA counties in California.

Table 4.11. Ranked California Health Behaviors, Clinical Care, Social & Economic Factors, and Physical Environment: 2012

	Health Behaviors	Clinical Care	Social & Economic Factors	Physical Environment
Colusa	26	53	47	39
Del Norte	31	32	43	30
Glenn	34	55	30	18
Humboldt	47	25	20	11
Lake	48	38	46	21
Los Angeles	21	48	36	45
Mendocino	42	26	40	5
Shasta	55	17	32	41
Siskiyou	43	22	35	16
Tehama	41	42	48	33
Trinity	30	47	42	38

Not a single county is ranked better than Los Angeles County for health behaviors. In fact, the average health behaviors rank for all included CHA counties is 39.7, considerably above 28, which is the mid-point of the rankings (those higher ranked fared worse than those ranked below). If Colusa and Glenn are excluded the average rank is 42.1 for health behaviors. The average clinical care ranking for included CHA counties is 35.7, an improvement over health behaviors rank, but still above the mid-point. Not surprisingly, the average physical environment score of 25.2 is considerably below the mid-point, though it ranges from a best rank of 5 to 41.

Table 4.12 displays the rankings for individual measures that are components of health behaviors. All counties, except Glenn, ranked higher than Los Angeles on the tobacco use indicator, with an average rank of 41.9. The group fared somewhat better on the diet and exercise indicator, with an average rank of 33.8, but worse on alcohol use indicator with an average of 43.1.

Table 4.12. Ranked California Tobacco Use, Diet and Exercise, and Alcohol Use: 2012

	Tobacco Use	Diet and Exercise	Alcohol Use
Colusa	28	26	42
Del Norte	28	41	13
Glenn	24	40	43
Humboldt	52	37	46
Lake	50	36	51
Los Angeles	25	17	4
Mendocino	51	18	53
Shasta	56	45	48
Siskiyou	53	34	41
Tehama	49	29	40
Trinity	28	32	54

Access to healthcare services is a challenge for residents of many rural communities (Table 4.13). Although the CHA counties in California in general occupy the middle ranks in terms of access to health care, some are the highest ranked counties in the state. Glenn County is the highest ranked county in the state (56); Colusa, ranked 54th, is close behind followed by Tehama (48th). The average rank on this indicator is 37.4. Large portions of all three of these counties lie in the central valley where access to care by agricultural workers likely contributes to their high ranking. With an average ranking of 25.1, the included CHA counties ranked just below the middle in the percentage of uninsured adults, and slight higher on the quality of healthcare indicator with an average ranking of 32.0. There was considerably more variability among the county rankings for this latter score. For example, Trinity County ranked third worst on this measure in the state.

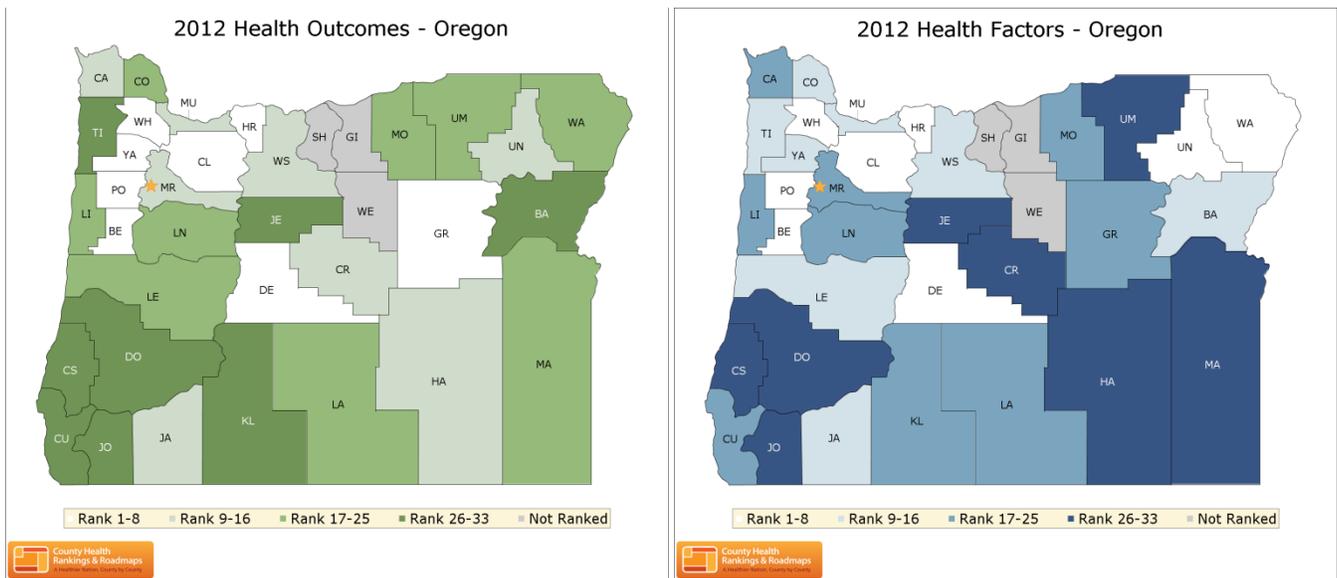
Table 4.13. Ranked California Percent of Uninsured Adults, Access to Care, and Quality of Care: 2012

	% Uninsured Adults	Access to Care	Quality of Care
Colusa	30	54	49
Del Norte	28	43	21
Glenn	30	56	43
Humboldt	24	29	18
Lake	23	39	34
Los Angeles	30	45	46
Mendocino	26	27	22
Shasta	21	18	19
Siskiyou	22	25	20
Tehama	25	48	39
Trinity	22	35	55

Oregon

There are 36 counties in Oregon, and all but three of them have been ranked by County Health Rankings. Twenty-one of these counties contain CHA lands. They include: Benton, Clackamas, Clatsop, Coos, Curry, Deschutes, Douglas, Hood River, Jackson, Jefferson, Josephine, Klamath, Lane, Lincoln, Linn, Marion, Multnomah, Polk, Tillamook, Wasco, and Yamhill Counties. Multnomah County contains the City of Portland, and facilitates comparison of the majority of rural counties to a highly urbanized area. A large number of the included counties have significant urbanized areas of high population, to a higher degree than in California.

Map 4-2. Health Outcomes & Health Factors for the State of Oregon, 2012¹¹



As in California, it appears that counties with large urban areas fare better in health rankings than their more rural counterparts. Examples in Oregon include Benton County, which contains the city of Corvallis and Oregon State University, Clackamas and Yamhill Counties, which contain many outlying regions of the City of Portland, and Hood River County. Although Multnomah County, which contains the City of Portland, is ranked as having slightly worse health than many of these adjacent urbanized counties, it is still in the healthiest half of the ratings for the state. Map 4-2 above shows the relationship between county health outcomes, and health factors. The darker the colors in the maps, the worse, or higher, the ranking.

¹¹ Retrieved 6/29/2012; <http://www.countyhealthrankings.org/>

Table 4.14. Ranked Oregon Health Factors and Outcomes, Mortality, and Morbidity: 2012

	Health Factors	Health Outcomes	Mortality	Morbidity
Benton	1	1	1	3
Clackamas	4	4	3	5
Clatsop	17	11	14	11
Coos	30	26	26	24
Curry	19	28	33	8
Deschutes	5	5	4	9
Douglas	31	32	29	32
Hood River	2	3	5	2
Jackson	13	15	16	14
Jefferson	33	33	32	21
Josephine	26	29	31	22
Klamath	21	31	28	33
Lane	15	17	13	20
Lincoln	25	23	23	16
Linn	23	24	21	26
Marion	24	10	15	10
Multnomah	10	14	11	18
Polk	7	8	7	17
Tillamook	11	27	20	31
Wasco	12	13	22	4
Yamhill	9	6	6	13

As listed in Table 4.14 above, the county with the healthiest overall rankings in health factors and health outcomes is Benton County. Benton County is ranked number one above the average score of 16.1 for health factors, and 17.1 for health outcomes. Its positive ranking is partially explained by the presence of a university in the county. High education levels, and the fourth highest median household income also contribute to Benton County’s relatively good health. Deschutes and Hood River counties have healthy scores for health factors (5 and 2 respectively). Both of these counties have relatively high median income, which contributes to a healthier ranking. Multnomah County ranks as having worse health factors and health outcomes than its smaller urban counterparts. However, it is still in the healthiest half of all CHA counties, with a health factor ranking of 10 (above the 16.1 average), and health outcome ranking of 14 (above the 17.1 average).

Oregon’s rural counties are consistently ranked as unhealthy in state rankings. Of the ten counties ranked worse than the county average of 16.1 for health factors, all of them are rural. Of the nine counties ranked below the state average of 17.1 for health outcomes, all were rural. Jefferson County, for example, is ranked as the worst county in Oregon for both health factors and outcomes. Jefferson County has a low population density, and a relatively high Native American population. The Native American population of Jefferson County is 17.9%, which is significantly higher than the Oregon state average of 1.8%. Native American communities typically experience higher levels of poverty and associated negative health outcomes. Although Jefferson County ranks worst in

health outcomes and factors, it is clear from other data that lifestyle choices place other communities at lower levels for certain indicators.

Coos, Lincoln, and Josephine Counties rank as some of the most problematic in the state in terms of tobacco use, diet and exercise, and alcohol use. All CHA county rankings for these indicators are listed in Table 4.15 below. Of the nine counties to rank below the 16.3 average for tobacco use, all are rural. The same is true of the 10 counties below the average ranking of 17 for diet and exercise, and the 10 counties below the average 17 ranking for alcohol use. Again, the urbanized and more socioeconomically stable Benton, Deschutes and Hood River counties rank well in terms of healthy lifestyles in these three categories.

Table 4.15. Ranked Oregon Tobacco Use, Diet and Exercise, and Alcohol Use: 2012

	Tobacco Use	Diet and Exercise	Alcohol Use
Benton	2	2	8
Clackamas	9	8	11
Clatsop	24	9	10
Coos	32	29	28
Curry	10	30	25
Deschutes	3	1	19
Douglas	31	31	21
Hood River	1	4	20
Jackson	19	3	13
Jefferson	16	25	33
Josephine	30	12	24
Klamath	29	18	15
Lane	14	11	14
Lincoln	33	20	27
Linn	22	27	23
Marion	8	28	3
Multnomah	12	6	18
Polk	6	26	1
Tillamook	20	16	29
Wasco	7	32	2
Yamhill	15	19	12

The Oregon data shows poor rankings for the physical environment factor (which indicate unhealthy air/water quality, and poor access to healthy food and recreation) for both urban and rural counties. Curry County ranks as having the healthiest physical environment ranking in the state, as shown in Table 4.16 below. However, when referring back to Table 4.14 above, Curry County is ranked as the 28th (of 33) in overall health outcomes. Lane County is ranked as the worst in the state for physical environment indicators, but is ranked as average for overall health outcomes. Rankings for health behavior, amount of clinical care, and socioeconomic factors may be more reliable indicators. Benton County for example is ranked 26 in physical environment, well below the state average of 17.9. However, Benton County is listed as the healthiest county in the state in regard to health behavior, clinical care, and socioeconomic factors. Also, as listed above in

Table 4.14, Benton County is ranked as healthiest in the state for health factors and health outcomes. This data suggests that the general assumption that rural counties are healthier due to their environmental quality may be too simplistic.

Table 4.16. Ranked Oregon Health Behavior, Clinical Care, Social & Economic Factors, and Physical Environment: 2012

	Health Behavior	Clinical Care	Social & Economic Factors	Physical Environment
Benton	1	1	1	26
Clackamas	6	6	3	20
Clatsop	16	29	13	4
Coos	32	22	26	15
Curry	15	26	23	1
Deschutes	2	5	16	11
Douglas	31	18	28	22
Hood River	3	2	4	2
Jackson	7	10	19	27
Jefferson	30	25	32	23
Josephine	26	13	30	6
Klamath	27	9	24	18
Lane	13	7	15	33
Lincoln	29	20	25	7
Linn	28	8	27	24
Marion	17	23	22	31
Multnomah	10	23	21	17
Polk	10	23	9	32
Tillamook	21	21	6	10
Wasco	19	19	11	16
Yamhill	14	16	5	30

One factor that does not have positive relationships with urbanized areas is the percentage of uninsured adults. Although urbanized areas do not rank extremely low for this indicator, they tend to rank very close to the state average. This is one health indicator that does not rank urban counties as significantly higher than rural counties. However, urban counties regain some of their previous positive rankings in the indicators of access to care and quality of care, as shown in Table 4.17 below.

Table 4.17. Ranked Oregon Percent Uninsured Adults, Access to Care, and Quality of Care: 2012

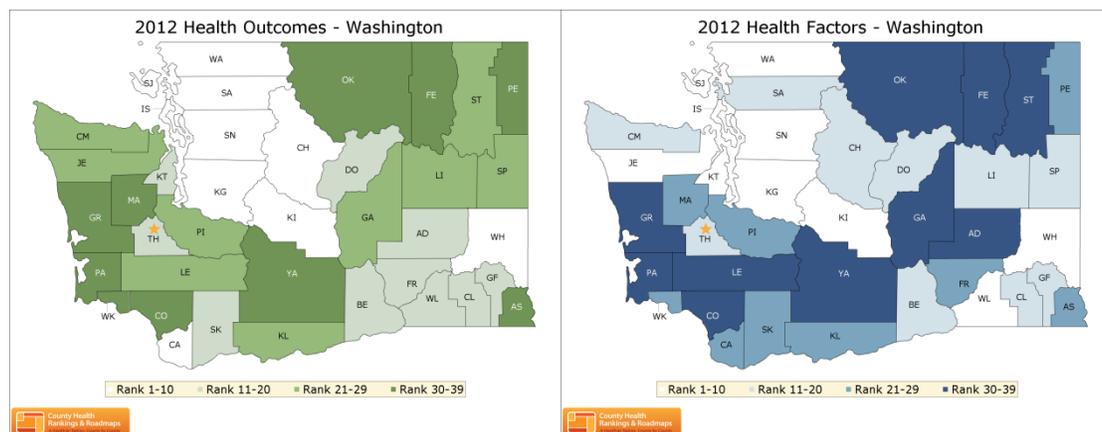
	% Uninsured		
	Adults	Access to Care	Quality of Care
Benton	15	1	1
Clackamas	16	6	13
Clatsop	21	17	32
Coos	21	15	27
Curry	23	28	21
Deschutes	20	12	2
Douglas	20	21	16
Hood River	24	2	4
Jackson	21	14	11
Jefferson	26	31	5
Josephine	20	19	12
Klamath	23	7	17
Lane	20	8	10
Lincoln	22	26	6
Linn	19	9	8
Marion	24	27	10
Multnomah	19	3	6
Polk	19	18	8
Tillamook	22	20	24
Wasco	22	23	15
Yamhill	19	11	23

Washington

The State of Washington contains 39 counties, all of which are ranked by the County Health Rankings program. Nineteen counties in Washington contain proposed CHA lands, and all of them are included in the listing below. They include: Chelan, Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, King, Kittitas, Klickitat, Lewis, Mason, Okanogan, Pierce, Skagit, Skamania, Snohomish, Thurston, Whatcom, and Yakima Counties. Of these, there are multiple CHA counties with highly urbanized areas, including King, Pierce, Snohomish, Thurston, and Whatcom Counties.

The general trend towards healthier urban populations continues with Washington State, which is shown in the health factors and health outcomes maps provided by the County Health Rankings & Roadmaps program in Map 4-3 below.

Map 4-3. Health Outcomes & Health Factors for the State of Washington: 2012¹²



Rankings for urbanized areas include both better health outcomes and health factors. Pierce County is the lowest ranked of these urbanized counties, ranking 25 against a 21.1 state average for health factors. Pierce County is also below average across all the categories of health outcomes, mortality, and morbidity. This appears to be the exception among urbanized counties, however, with all other urban counties ranking above average for health outcome and health factors. Rural counties once again comprise some of the unhealthiest in the state. Grays Harbor for example is ranked lowest in health factors, and has very poor rankings for health outcomes, mortality, and morbidity. The one exception among rural counties is the rather high rankings for Kittitas County. Washington State rankings are listed in Table 4.18

Table 4.18. Ranked Washington Health Factors, Health Outcomes, Mortality, and Morbidity: 2012

	Health Factors	Health Outcomes	Mortality	Morbidity
Chelan	11	7	5	9
Clallam	20	24	30	5
Clark	21	8	7	14
Cowlitz	35	33	31	32
Grays Harbor	39	36	33	34
Jefferson	7	21	27	12
King	3	6	4	8
Kittitas	8	2	10	2
Klickitat	23	22	19	23
Lewis	30	23	24	24
Mason	29	35	29	36
Okanogan	33	37	36	35
Pierce	25	26	23	29
Skagit	17	10	13	6
Skamania	28	17	17	20
Snohomish	9	9	8	17
Thurston	12	14	14	16
Whatcom	12	5	6	3
Yakima	38	31	28	33

¹² Retrieved 6/29/2012; <http://www.countyhealthrankings.org/>

The correlation between higher health and urbanized areas continues in regard to health behaviors, clinical care, social and economic factors, as shown in Table 4.19 below. In these rankings some of the rural counties have higher scores than would be expected, such as Kittitas County, but urban counties continue to fare better in general. A good example of this is the listing for King County (which encompasses Seattle), where all rankings are high except for physical environment.

Table 4.19. Ranked Washington Health Behaviors, Clinical Care, Social & Economic Factors, and Physical Environment: 2012

	Health Behaviors	Clinical Care	Social & Economic Factors	Physical Environment
Chelan	7	5	19	7
Clallam	11	8	30	2
Clark	18	22	20	24
Cowlitz	39	20	34	26
Grays Harbor	38	37	38	8
Jefferson	6	3	16	1
King	2	2	6	38
Kittitas	8	17	10	5
Klickitat	14	32	25	10
Lewis	33	30	26	12
Mason	37	27	24	11
Okanogan	32	26	35	30
Pierce	25	21	22	35
Skagit	15	15	18	17
Skamania	29	28	27	15
Snohomish	16	12	12	14
Thurston	20	14	5	27
Whatcom	3	10	8	18
Yakima	27	36	39	31

Urban areas exhibit high rates of uninsured adults, but all counties with major urban areas rank higher than the overall state average of 20.7. Rural counties exhibit mixed ranking in regard to this indicator, but the majority are actually above average. Quality of care appears to be rather low for urban counties. One of the highest rankings in the state for this indicator is the rural county of Chelan. All of these rankings are listed in Table 4.20 below.

Table 4.20. Ranked Washington Percent of Uninsured Adults, Access to Care, and Quality of Care: 2012.

	% Uninsured Adults	Access to Care	Quality of Care
Chelan	24	15	3
Clallam	21	18	4
Clark	18	16	28
Cowlitz	20	21	20
Grays Harbor	24	32	38
Jefferson	17	5	6
King	15	1	13
Kittitas	21	25	15
Klickitat	24	28	33
Lewis	20	27	26
Mason	21	31	17
Okanogan	30	30	18
Pierce	18	14	30
Skagit	21	6	22
Skamania	17	29	19
Snohomish	16	20	9
Thurston	16	2	32
Whatcom	20	10	12
Yakima	31	36	35

Washington’s tobacco use, diet and exercise, and alcohol use rankings are listed in Table 4.21 below. The mixed results between rural and urban are more pronounced in Washington than in California and Oregon, which showed a higher rate of unhealthy lifestyle behaviors in rural areas. A number of Washington rural counties above average for lifestyle indicators. Chelan County ranks at 9 for tobacco use (against a 19.2 average), 5 for diet and exercise (against an 18.4 average), and 8 for alcohol use (against a 20.8 average). Rural Mason County shows some of the worst rankings in the state, and is overall worst for tobacco use. Urban King County is second healthiest in diet and exercise, but twenty-fourth in alcohol use. Such mixed rankings for these specific indicators in Washington counties make it more difficult to make generalizations across urban and rural counties.

Table 4.21. Ranked Washington Tobacco Use, Diet and Exercise, and Alcohol Use: 2012

	Tobacco Use	Diet and Exercise	Alcohol Use
Chelan	9	5	8
Clallam	17	11	6
Clark	21	19	5
Cowlitz	9	38	26
Grays Harbor	37	35	35
Jefferson	11	4	33
King	4	2	24
Kittitas	7	7	30
Klickitat	16	17	13
Lewis	30	36	11
Mason	39	28	32
Okanogan	32	18	34
Pierce	26	26	16
Skagit	14	8	25
Skamania	29	30	38
Snohomish	18	13	12
Thurston	26	15	17
Whatcom	8	3	23
Yakima	12	34	7

All-State Summary

There are several trends that appear in California, Oregon, and Washington health rankings that provide a general understanding of the health patterns of the northwest region. The most explicit of these is that rural areas tend to have poor health rankings in general, and are more prone to negative health outcomes and health factors than urban areas. Rural counties exhibit a higher prevalence of lifestyle choices that negatively influence health, such as smoking, alcohol use, and poor diet & exercise (although this is less distinct in Washington). Rural counties also have lower rankings for health behavior in general, clinical care and social & economic factors.

One area where rural counties surpass their urban counterparts is the ranking for quality of physical environment. Although rural counties have more access to dispersed recreation opportunities, and lower levels of environmental pollutants, this does not seem to provide as positive an influence on health outcomes as some might believe. This reality contradicts a commonly held assumption that rural areas experience better health in large part due to healthier environments.

Access to care is also a challenge to rural counties, and they frequently have poor rankings for this indicator. This is also true for quality of care. The few exceptions to this rule may be due to small population size, although this is not directly apparent in the available data. Closely related to access to care and quality of care is the percentage of uninsured adults. Urban areas tend to fare poorly with this ranking, but do not surpass rural counties in any significant way.

It is clear from the numbers that rural counties in California, Oregon, and Washington experience worse health in general than urbanized counties. In addition to the physical health of individuals, it also appears that socioeconomic well-being is lower for rural county residents. Healthcare

infrastructure may be difficult to access for rural residents, and the quality of existing facilities or services may be lower than in urban areas. All of these factors place a disproportionate burden on rural residents of CHA counties.

Chapter V. Community Well-Being: A Preliminary Analysis

A. FREE AND REDUCED-PRICED MEALS

School Free and Reduced-Price Meals (FRPM) enrollment data is a useful tool for understanding socioeconomic conditions. The FRPM program—including the well-known National School Lunch Program—provides free or reduced-price meals to public school students. All foster children, students with a parent laid off from work, and students from households with incomes of 130 percent of poverty level (\$29,055 for a family of four) or less qualify for a free meal; those students from households with incomes between 130 and 185 percent qualify for a reduced-priced meal.¹³

Data from the FRPM program enrollment are collected at the individual student level, and numbers are tracked annually. Because of the frequency of collection, collection of these data at every school, and accuracy due to federal reimbursement for the meals, this information is particularly useful for analyzing and understanding socioeconomic conditions at multiple scales of analysis. This includes school districts as well as individual schools that often align with communities.

Because the vast majority students qualify for FRPM based on low household income or an unemployed parent or guardian, FRPM enrollment is an excellent indicator of family- and community-level economic conditions. FRPM enrollment data was collected for all of the 2012 Critical Habitat Area (CHA) counties. California data collected include the total number of students by school, total number of FRPM enrolled students, and the percentage of students enrolled in FRPM. The same was collected in Washington. In Oregon only the percentage of students enrolled in FRPM data was collected. Data were obtained at the individual school level.

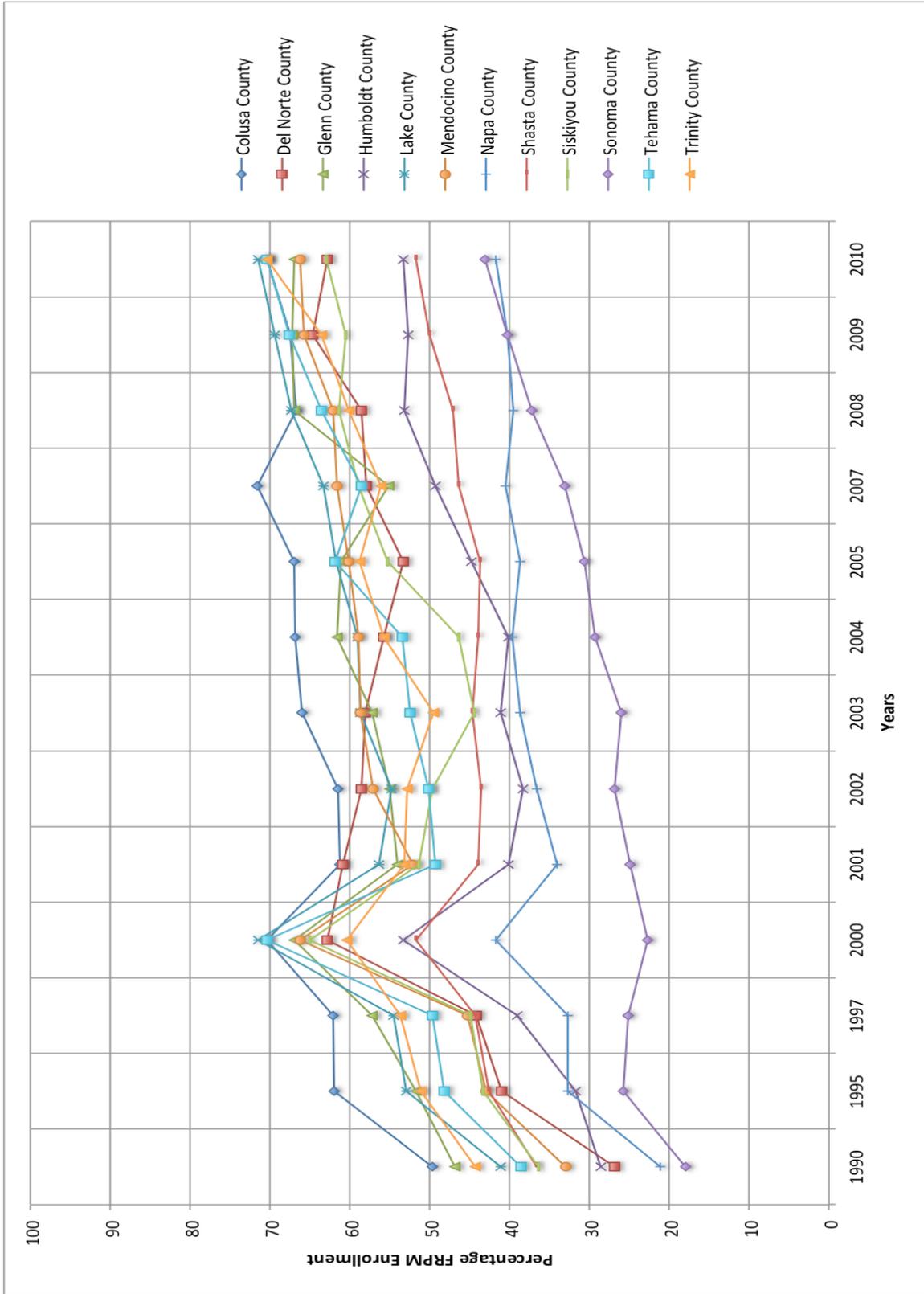
FRPM data were collected for elementary schools throughout the region, in one of the first-ever efforts in using these data at the level of a school to assess socioeconomic well-being. High schools were excluded from consideration due to the stigma older students attach to participating in the program. Elementary school students are less conscious of the perceived stigma of receiving subsidized meals, and parents have more control over the decision to enroll their children in the program. Grade six is the upper grade level, although schools with higher grades, such as K-7 or K-8, were included if the majority of students were 6th grade and under.

California

FRPM data was collected for twelve CHA counties in California. These include: Colusa, Del Norte, Glenn, Humboldt, Lake, Mendocino, Napa, Shasta, Siskiyou, Sonoma, Tehama, and Trinity Counties. Data were collected for the years 1990, 1995, 1997, and 2000 through 2010. Figure 5.1 and shows the percentage of FRPM enrollment for each county.

¹³ USDA National School Lunch Program 2011-2012 Fact sheet at <http://www.fns.usda.gov/cnd/lunch/>.

Figure 5.1. California Percentage of FRPM Enrollment by County: 1990 to 2010

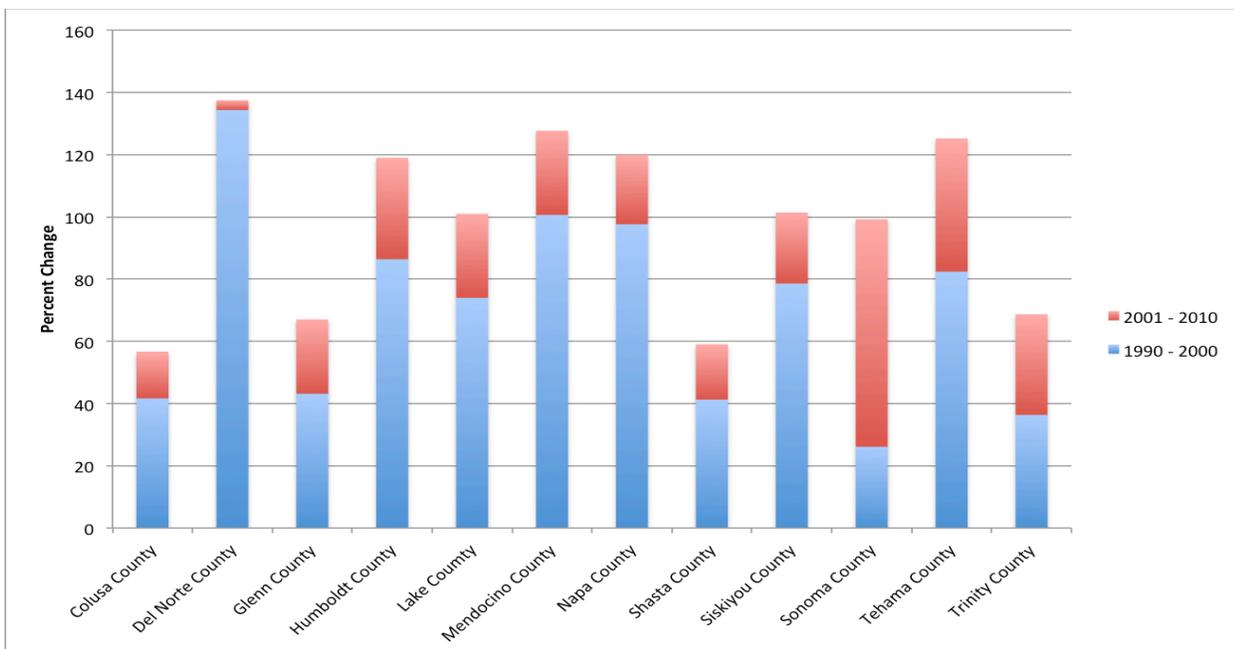


Two immediately remarkable patterns are evident: (1) consistently upward trending lines indicating an increasing percentage of students enrolled in FRPM from 1990 to 2010 for included California counties, and (2) a dramatic spike in the rates between 1997 and 2000. The 1997 to 2000 increase reflects a policy change rather than any underlying economic phenomenon. This spike is attributable to the enactment of Temporary Assistance to Needy Families on July 1, 1997. This “welfare to work” program replaced Aid to Families with Dependent Children, and reduced the allowable limit on receipt of federal aid and required many families to readjust the way they obtain assistance.

Enrollment in the 1990s appears to have increased more than in subsequent years, but this is because only four years of data were collected for the decade (note the 1990s numbering on the ‘x’ axis of Figure 5.1). Excluding the 2000 anomaly, the percentage of enrollment in FRPM has steadily increased over the two decades. In 2001, only four counties had a FRPM enrollment percentage below 45%, with the rest clustered between roughly 50-60%. By 2010, all of these counties had the percentage of children enrolled in FRPM increase on average roughly 12.5%.

Figure 5.2 shows the percent change for each of the California counties for this period. Although some counties experienced occasional declines in the percentage of FRPM enrollment, all counties showed increases. Relative rise in many cases determines the percentage increase. While Sonoma increased the most, it started as the county with the lowest percentage of students enrolled in FRPM and by 2010 only slightly topped Napa County, which had the lowest rate. Del Norte County, however, began the period with a FRPM rate of 26.8% for its elementary school children enrolled in FRPM in 1990—the third lowest ranked county in the group. By 2010, however, Del Norte had over 60 percent of its children enrolled.

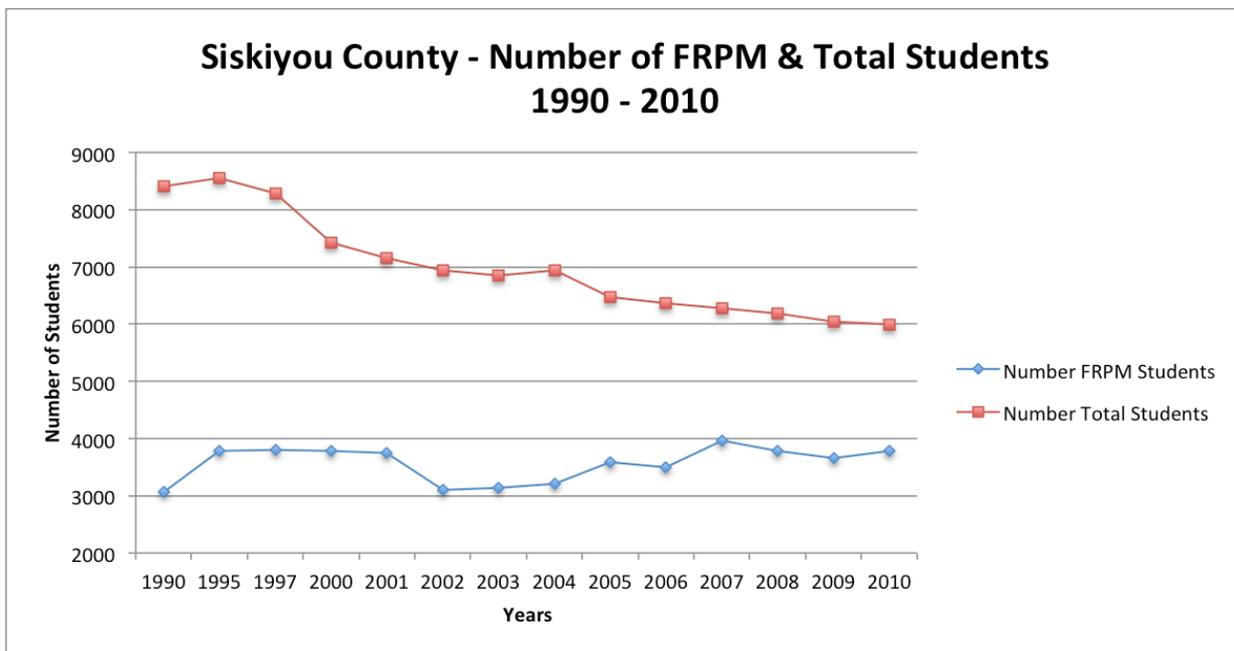
Figure 5.2. California Percent Change of FRPM Enrolled Students: 1990 to 2010.



More closely examining the patterns of one specific county reveals additional and important information. Siskiyou County had a 73% increase in FRPM enrollment over the two decades. This is 8% lower than the average change for California study counties. Yet, while total student enrollment in FRPM between 1990 and 2010 increased by 24%, from 3,059 to 3,778, total student

enrollment plummeted 29%, decreasing from 8,411 in 1990 to 5,996 in 2010. This relationship is shown in Figure 5.3.

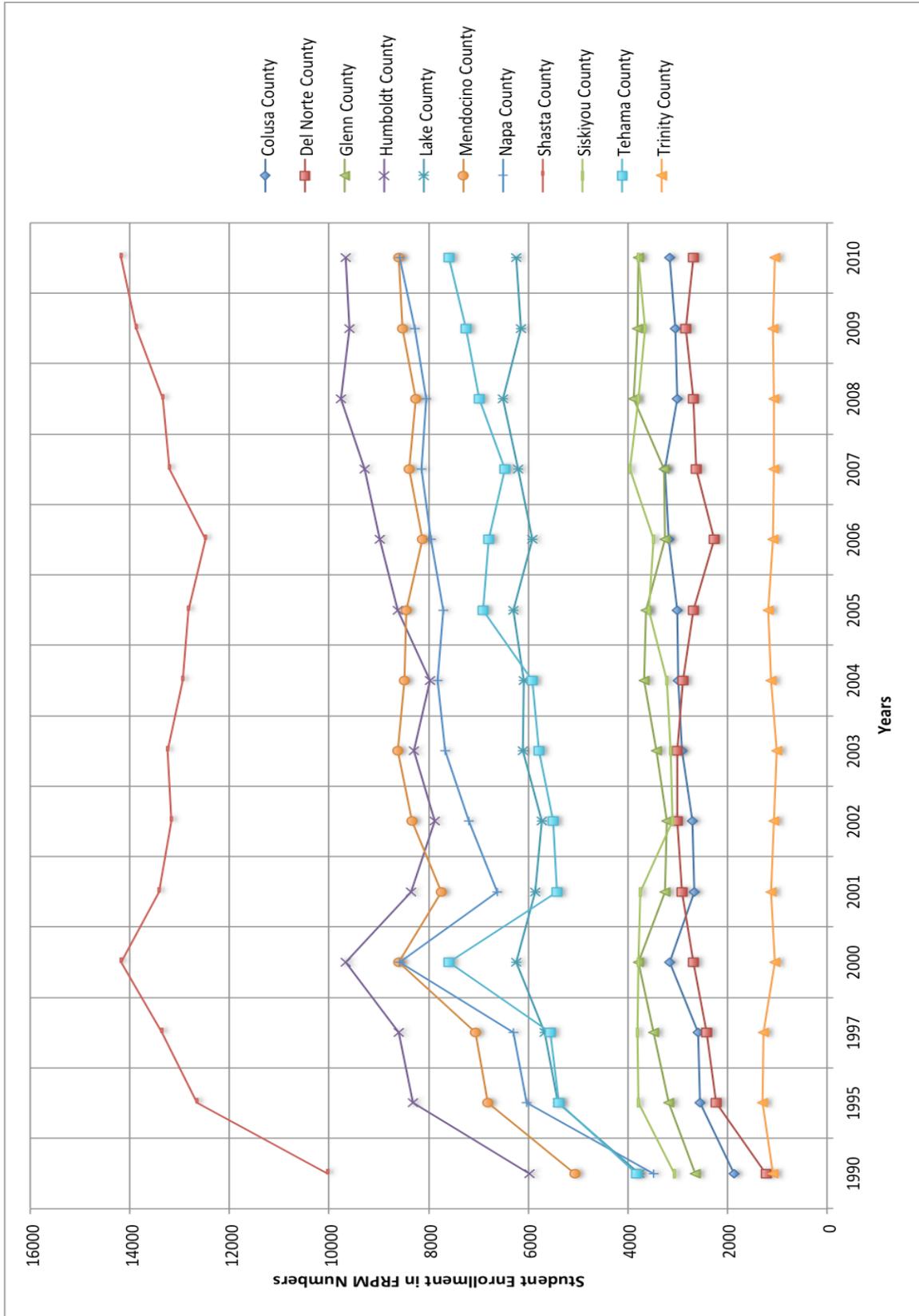
Figure 5.3. Siskiyou County Number of FRPM Enrolled Students: 1990 to 2010



These data powerfully suggest that Siskiyou County households with children are faring worse, both by families leaving the area—represented by the decline in student enrollment, and by the increasing percentage of students experiencing household impoverishment. The two are typically linked. These data do not reveal whether increasing numbers of Siskiyou households are falling into adverse economic situations or impoverished families are moving to Siskiyou. But when coupled with industry decline and high rates of unemployment that have plagued the county, along with the general reluctance of families to leave their homes and communities, evidence is suggestive it has more to do with poverty created in place. See the Siskiyou case study for more.

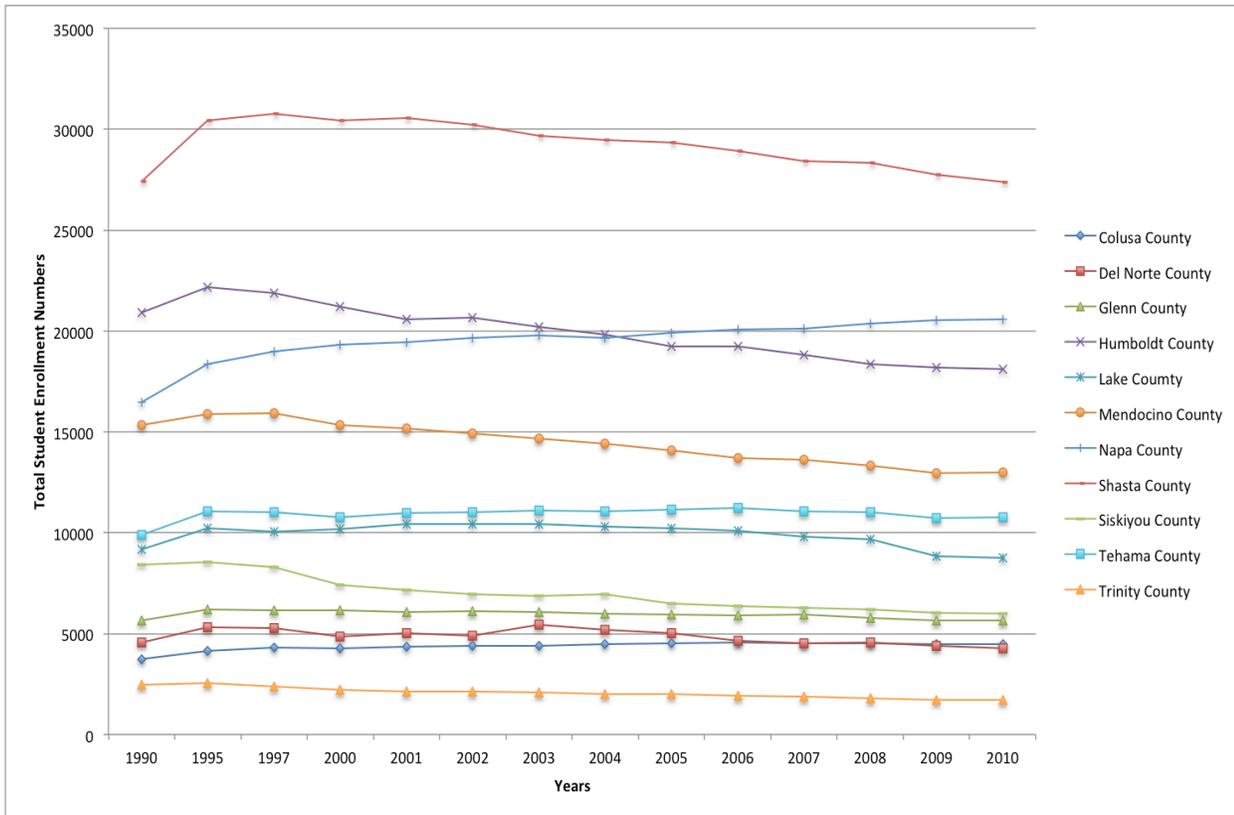
The trend of increasing percentages of students enrolled in FRPM across the study area counties appears generally the same. The number of FRPM enrolled students increases over time (except for Trinity County), shown in Figure 5.4 below. Because Sonoma County has so many more students it is excluded from this figure to improve the display clarity of the other counties.

Figure 5.4. California CHA Counties FRPM Student Enrollment: 1990 to 2010



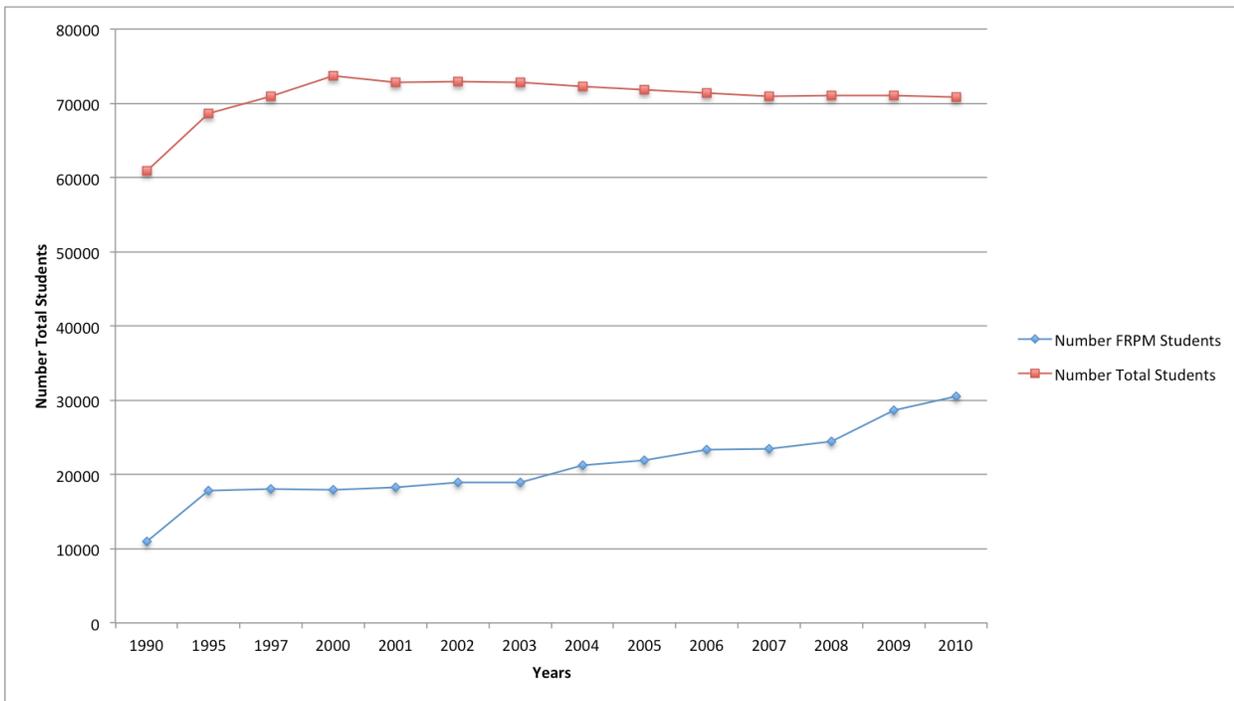
During the same time period, and similar to Siskiyou County, the majority of counties experienced a decrease of overall school enrollment. Exceptions to this include Colusa, Napa, Sonoma, and Tehama counties. County student enrollment numbers (except for Sonoma) are shown in Figure 5.5.

Figure 5.5. California Total Student Enrollment: 1990 to 2010



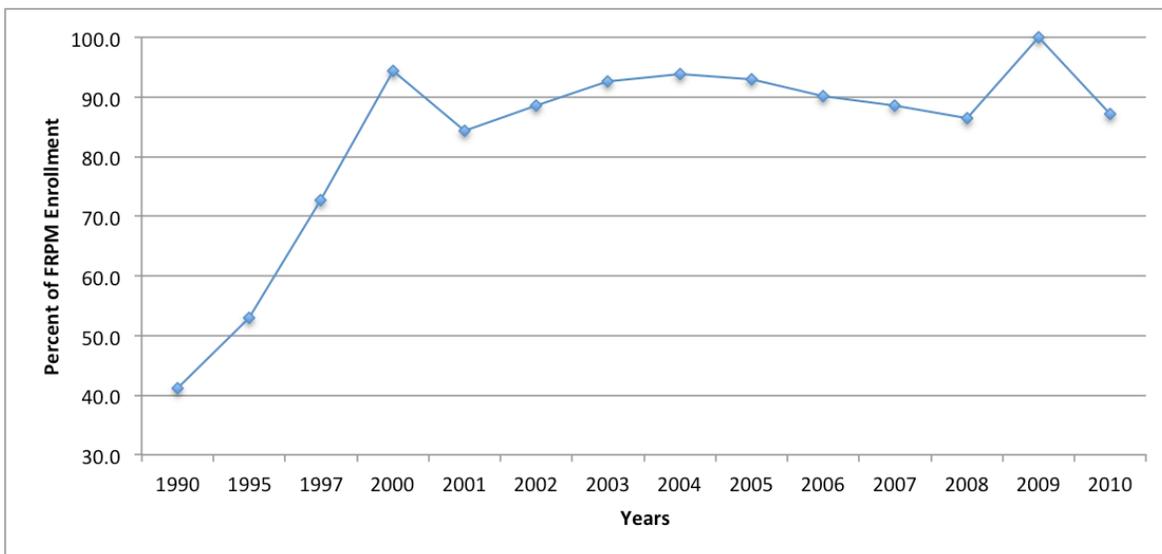
Sonoma County shows similar trends compared to the rest of California counties, but at a larger scale. See Figure 5.6 below. The county lost 2,822 students between 2000 and 2010, from the 2000 enrollment of 73,689 students. Overall, however, there was a net increase of students between 1990 and 2010. During the years between 1990 and 2010, there was a consistent rise in FRPM enrollment as well, which increased by 25%.

Figure 5.6. Sonoma County FRPM & Total Student Enrollment: 1990 to 2010.



Individual schools have their stories to tell as well. Peninsula Union Elementary, part of the Peninsula Union School District along Humboldt County’s Pacific Coast, serves the small community of Samoa with a population of 258 (2010). Samoa is extremely close to the City of Eureka, but is separated physically from the mainland by Humboldt Bay. Peninsula Union is the only elementary school in the district. The percentage of FRPM enrollment at Peninsula Union Elementary has been consistently high since the late 1990s. This is shown in Figure 5.7.

Figure 5.7. Peninsula Union Elementary FRPM Enrollment: 1990 to 2010



FRPM enrollment peaked in 2009, with 100% of the students receiving FRPM assistance. Student population numbers show a consistent decline in numbers of FRPM enrolled from 2001 to 2009, shown in Figures 5.8 and 5.9.

Figure 5.8. Peninsula Union Elementary FRPM Student Enrollment: 1990 to 2010

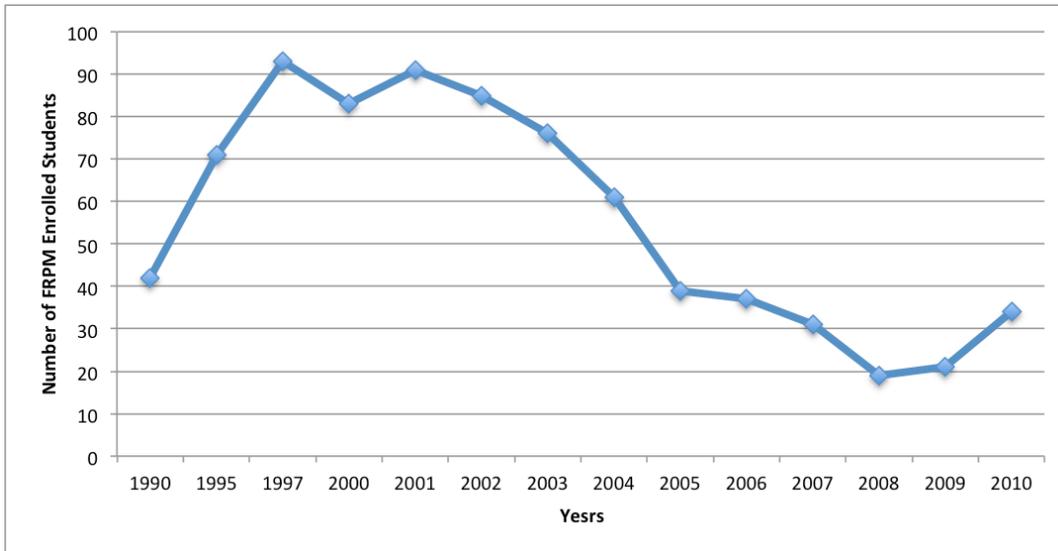
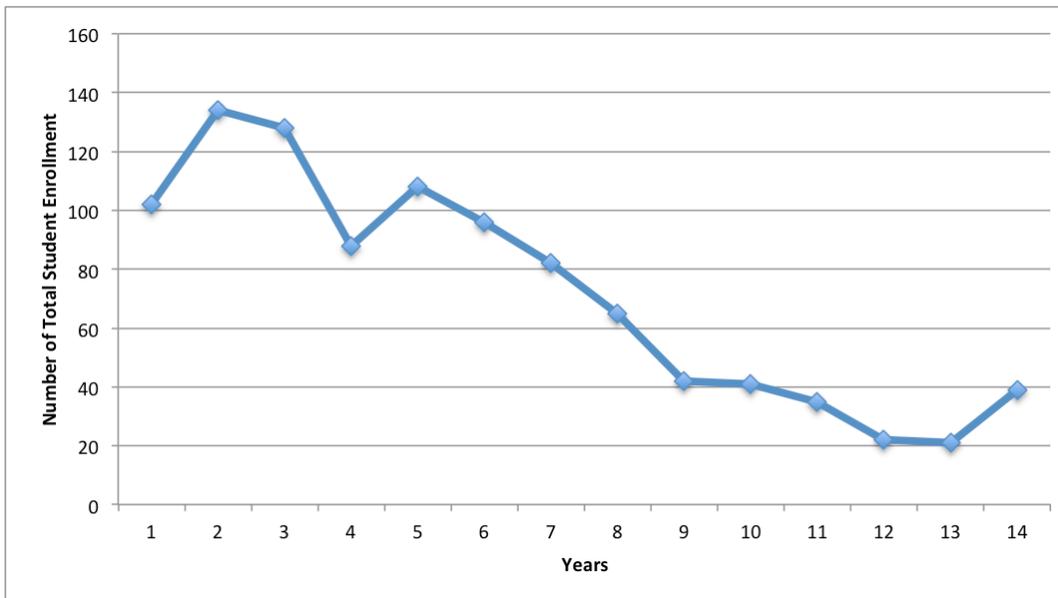


Figure 5.9. Peninsula Union Elementary Total Student Enrollment: 1990 to 2010

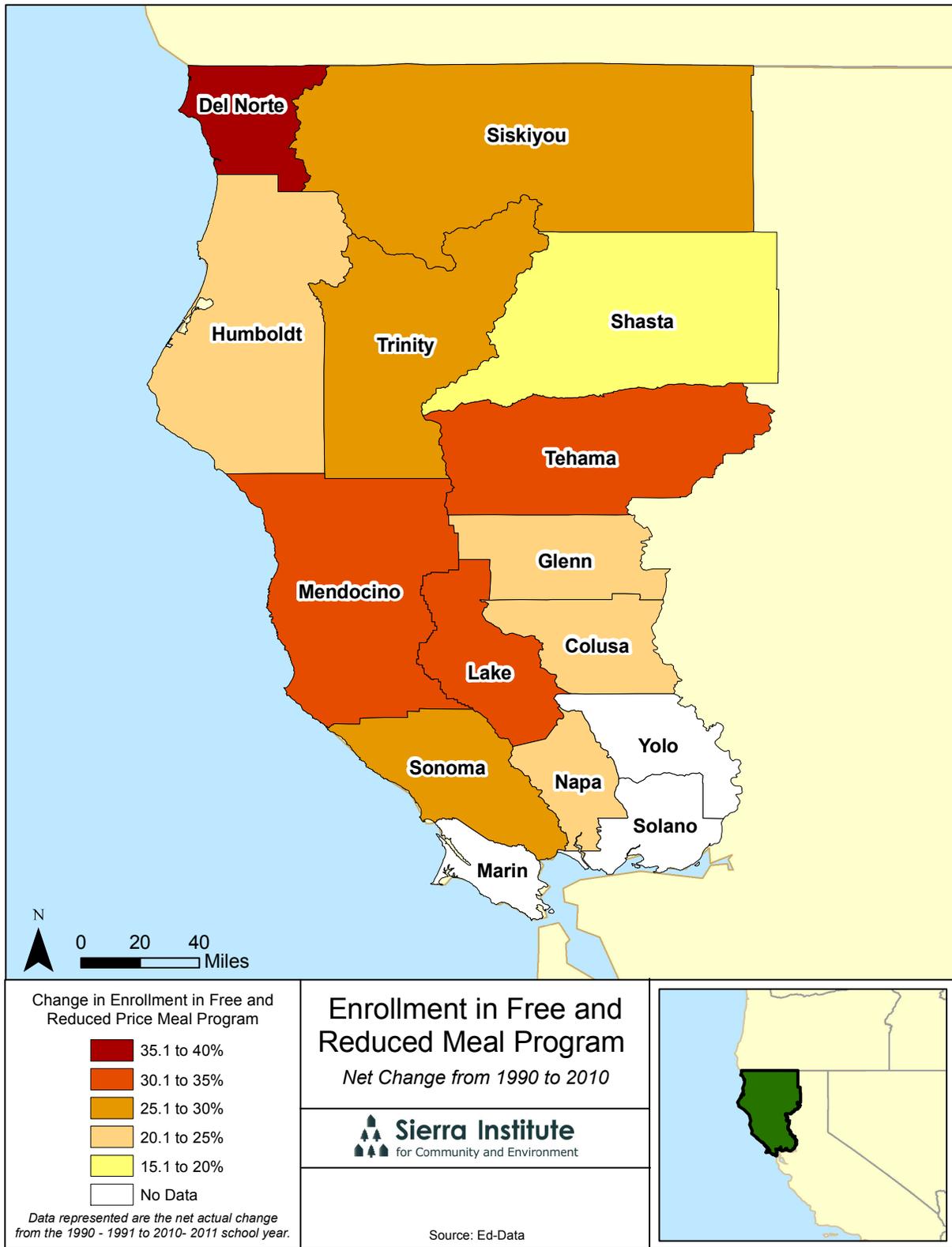


The decline in student numbers accompanied by the extremely high reliance on FRPM suggests Peninsula Union Elementary and the Town of Samoa as struggling and socioeconomically deteriorating. Indeed, Samoa has lost 2 mills during the years 1995 and 2008. There were 140 jobs lost in the 1995 Louisiana-Pacific mill closure. The 2008 Evergreen Pulp mill closure cost 200 jobs. Although Census population data are not available for the town of Samoa for these years, the 2010 population of 258 helps to put in perspective the jobs lost. There were increases in FRPM enrollment following both of these mill closures. The dwindling student enrollment indicates that families were also leaving the town, likely due to the lack of employment options.

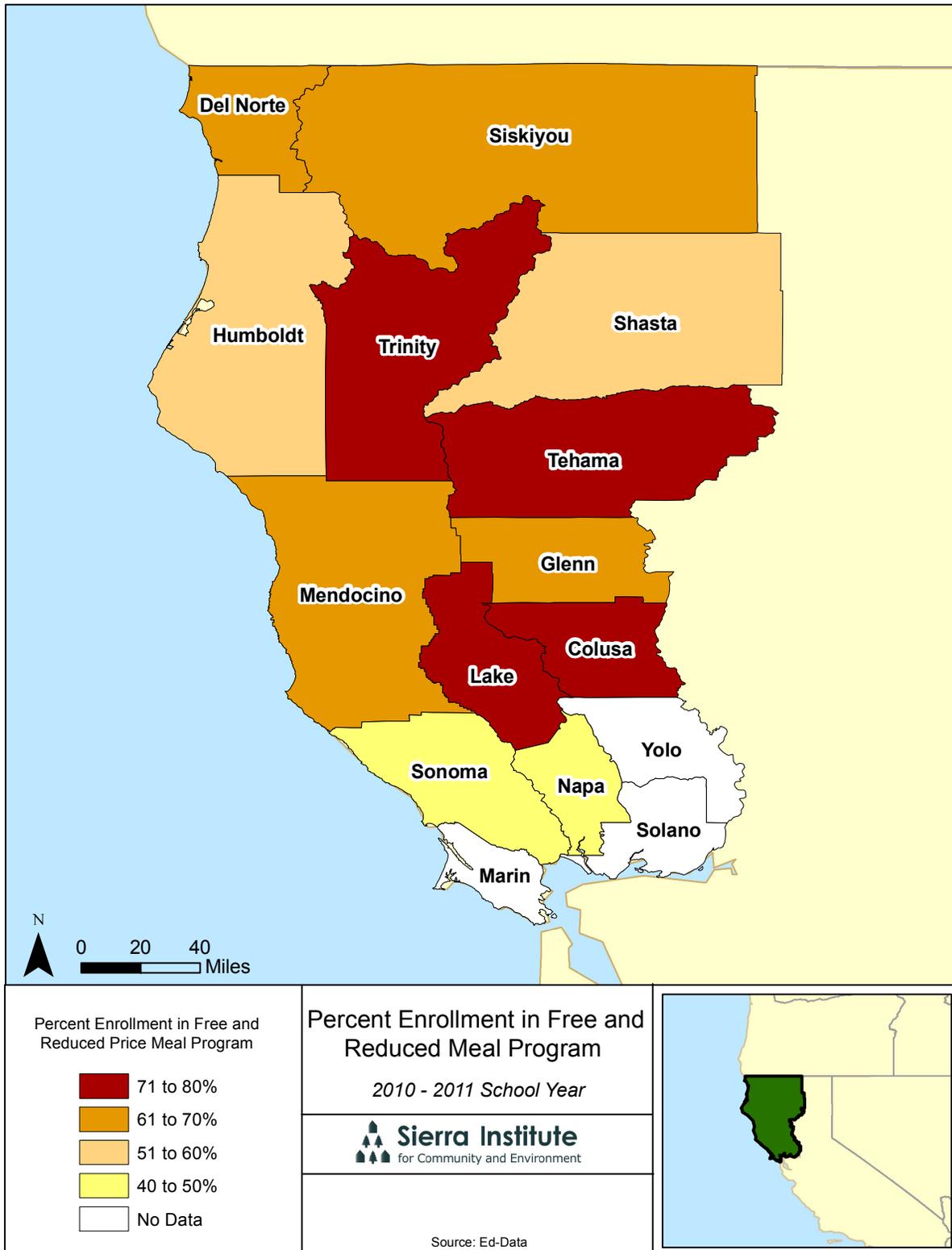
As a final review of California FRPM data, Map 5-1 shows California FRPM enrollment net change by county between 1990 and 2010. This Map represents spatially the individual counties, and their respective amounts of change. Del Norte has the highest net change, followed closely by Tehama, Mendocino, and Lake counties. Led by Shasta County with lowest percentage change, counties that extend into the Central Valley, with the exception of Tehama, have the lowest in percent change in enrollment in the FRPM program.

Map 5-2 shows the most recent data for California CHA counties percent of FRPM enrollment, for the 2010 – 2011 school year. This map provides a county-level visual representation of condition, and allows comparison of counties with each other. Colusa, Lake, Tehama, and Trinity counties all had FRPM rates between 71 % and 80% for 2010-2011 school year (70.4%, 71.5%, 70.4%, and 70.4% respectively). These are extraordinarily high rates. With rates between 61% and 70%, Del Norte, Glenn, Mendocino, and Siskiyou Counties have high rates as well. Only two counties, Napa and Sonoma, have rates below 51%, but remain above 40%.

Map 5-1



Map 5-2



In summary, California CHA counties experienced an overall increase in the percentage of students participating in the FRPM during the years between 1990 and 2010. This was a time that many counties saw a decrease in overall student numbers. The enrollment declines coupled with increasing rates of FRPM participation reveals challenging socioeconomic conditions faced by schools and communities. The decline in students, whether FRPM enrolled or not, is suggestive of the loss of population or at least the loss of younger families. Those that remain, particularly in those communities with high FRPM enrollment, are facing challenging issues.

Oregon

There are twenty-one counties in Oregon with proposed CHA lands. These include: Benton, Clackamas, Clatsop, Coos, Curry, Deschutes, Douglas, Hood River, Jackson, Jefferson, Josephine, Klamath, Lane, Lincoln, Linn, Marion, Multnomah, Polk, Tillamook, Wasco, and Yamhill.

Oregon data collected includes FRPM percentage of students enrolled for the years 1997 and 2001 through 2011. Although some school district information includes the 1997 school year, no data was collected for 1998 or 1999. The same is true for 2001, and only 2000 data was collected for Benton County.¹⁴ Total student population numbers and number of students enrolled in FRPM were not collected. The disparity of collected data makes it impossible to compare Oregon and California counties during the 1990s and 2000-1. This precludes drawing conclusions about community-level trends for these years, as well as the relationship between the 1990s and 2000.

One very general indicator of the potential student population is county population totals and percent of persons under 18. Although this number does not accurately represent the number of students enrolled in county schools, it is revealing of different county demographics. These data from the 2010 Census Bureau are presented in Table 5.1 below. Population numbers are from 2010 Census data.

Table 5.1. Oregon County Population, Population Density, and Percent Under 18: 2010

County	County Population	Persons Per Square Mile	% of Persons Under 18
Benton	85,581	126.6	17.1%
Clackamas	375,992	201	23.2%
Clatsop	37,039	44.7	20.2%
Coos	63,043	39.5	18.8%
Curry	22,364	13.7	15.7%
Deschutes	157,733	52.3	22.7%
Douglas	107,667	21.4	20.0%
Hood River	22,346	42.8	25.5%
Jackson	203,206	73	21.6%
Jefferson	21,720	12.2	24.8%

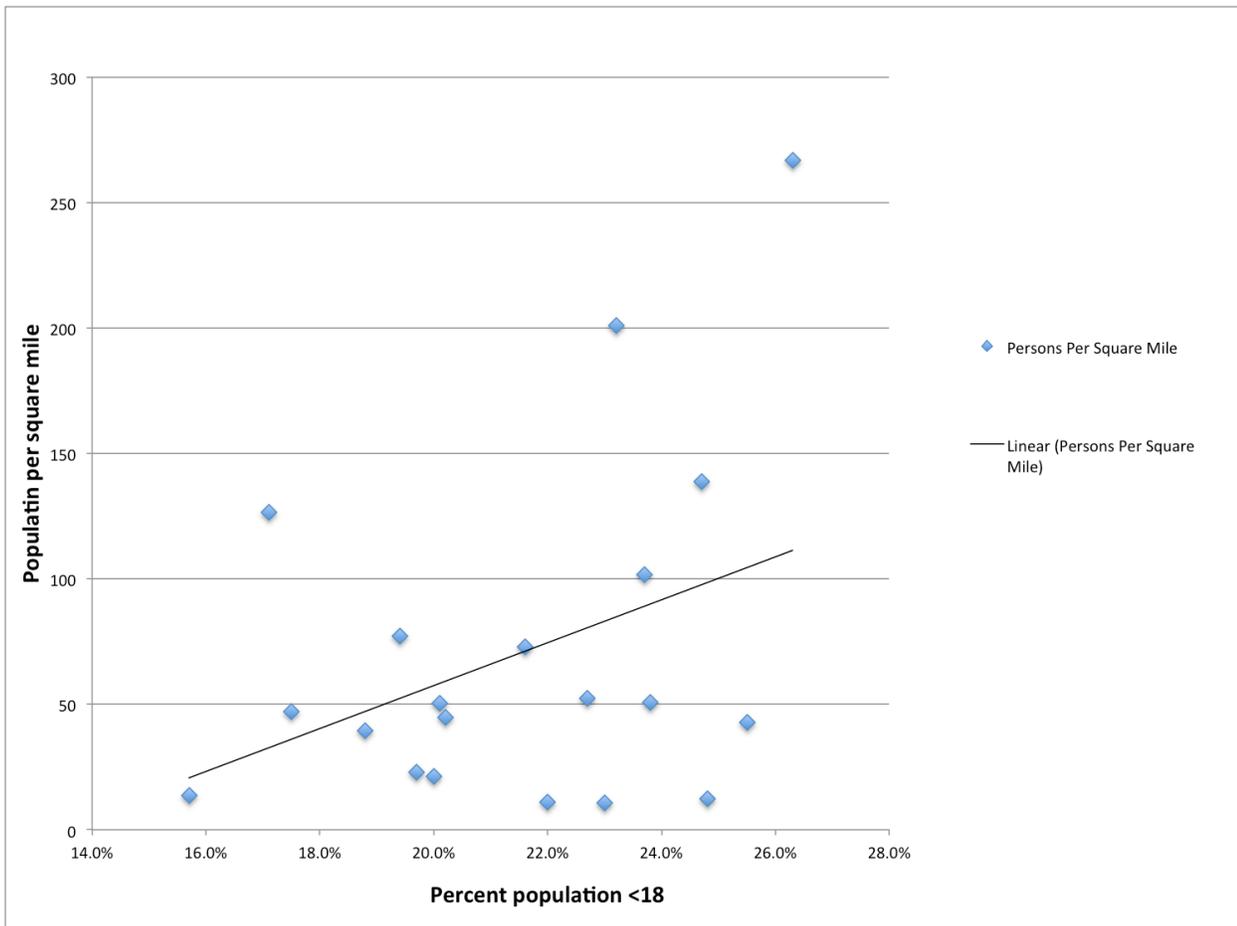
¹⁴ Because of the difficulty of obtaining needed information and limited time for collecting data, analyzing it, and developing and submitting comments, only limited Oregon school data was collected for the 1990s and 2000-1.

County	County Population	Persons Per Square Mile	% of Persons Under 18
Josephine	82,713	50.4	20.1%
Klamath	66,380	11.2	22.0%
Lane	351,715	77.2	19.4%
Lincoln	46,032	47	17.5%
Linn	116,672	50.9	23.8%
Marion	315,335	266.7	26.3%
Multnomah	735,334	1704.9	20.4%
Polk	75,403	101.8	23.7%
Tillamook	25,250	22.9	19.7%
Wasco	25,213	10.6	23.0%
Yamhill	99,193	138.6	24.7%

Multnomah County, with the largest city in the state, Portland, is also the largest county with 735,000 people. Clackamas, Marion, and Lane Counties, at roughly half the size of Portland, are next largest. The remaining counties range in size from Jackson, with slightly more than 200,000 people, to Jefferson, with 21,720.

The percent of persons under 18 ranges from a low of 15.7% in Curry County to 26.3% in Marion County, the percentage of which is two-thirds higher than that of Curry. The average of all the Oregon counties included in the study area totals 21.4%. It appears that counties with lower population density have a lower percentage of people under the age of 18. Figure 5.10 is a scatter plot of population densities plotted against percent of persons under the age of 18 in Oregon CHA counties. With its comparatively very high population density, Multnomah County was not included in the scatter plot. The upwardly sloping trend line suggests that as population density increases so does the percentage of people under 18. This means that more rural areas proportionally have a lower under-18 population. More analysis is warranted.

Figure 5.10. Oregon County Persons per Square Mile & Percent of Persons Under 18: 2010



Figures 5.11 and 5.12 highlight the percentage of students participating in the FRPM for Oregon Counties in the study area. Because of data limitation discussed above, FRPM participation is shown for 2002 to 2011. The large number of Oregon counties necessitated dividing the counties in two groups.

Figure 5.11. Oregon County Percent FRPM Enrollment, Benton through Jefferson: 2002 to 2011

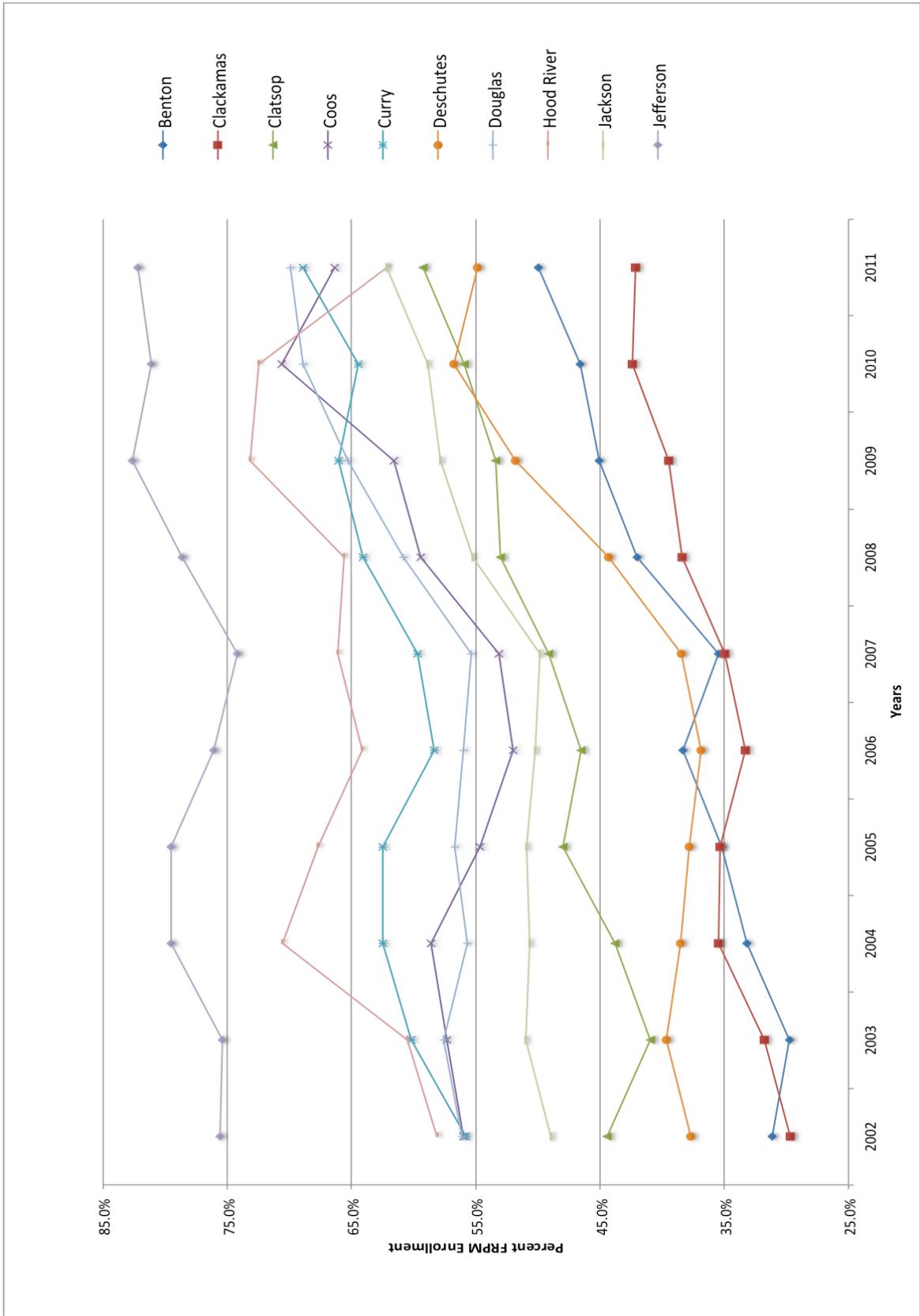
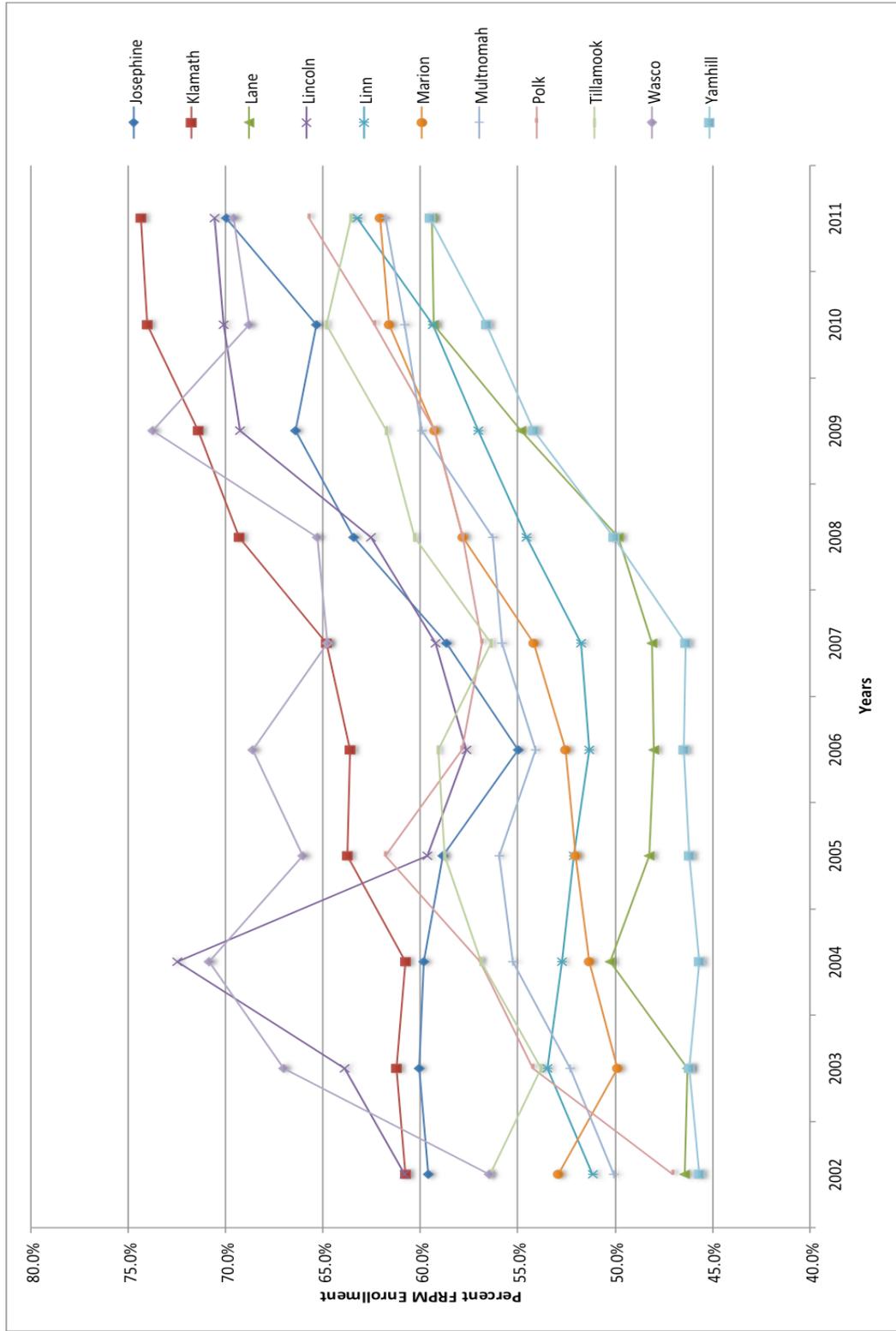
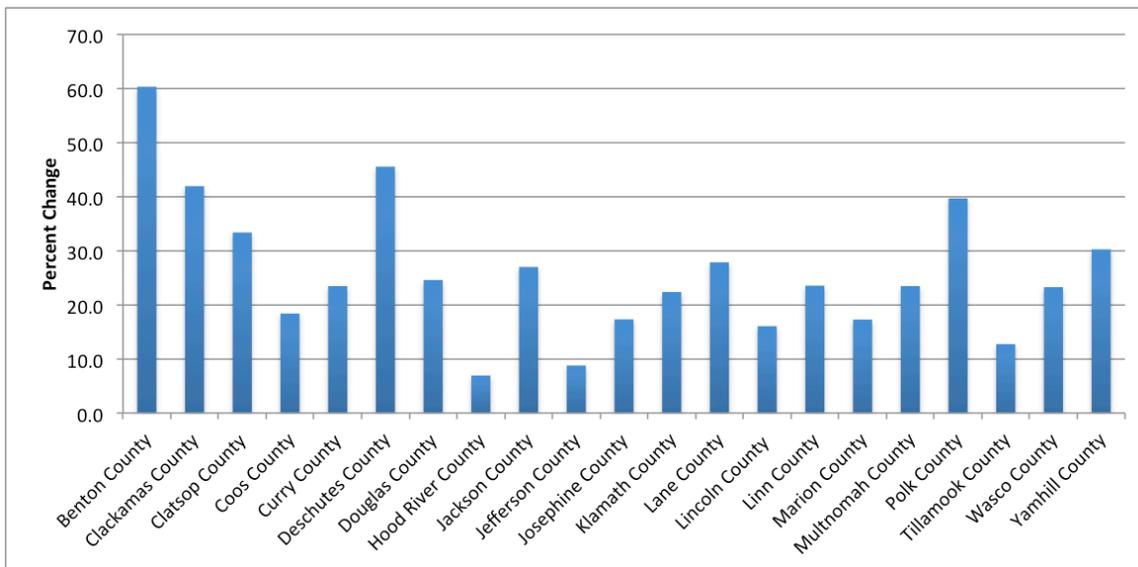


Figure 5.12. Oregon County Percent FRPM Enrollment Josephine through Yamhill: 2002 to 2011



The percent of students participating in Oregon FRPM display a trend similar to that of California: a steady increase in participation. Periodic drops in FRPM enrollment occur, but all Oregon counties experienced an increase in FRPM enrollment over the last ten years. This percent change for each county is shown in Figure 5.13.

Figure 5.13. Percent Change of FRPM Enrollment in Oregon: 2002 to 2011



The average increase for all counties totals 12.2% over the ten-year period. The percent increase in FRPM participation range from 4% and 6.6% in Hood River County and Jefferson County, respectively, to an increase of 45% in Deschutes County and 60% in Benton County. The average percentage increase for all counties is 25.9%.

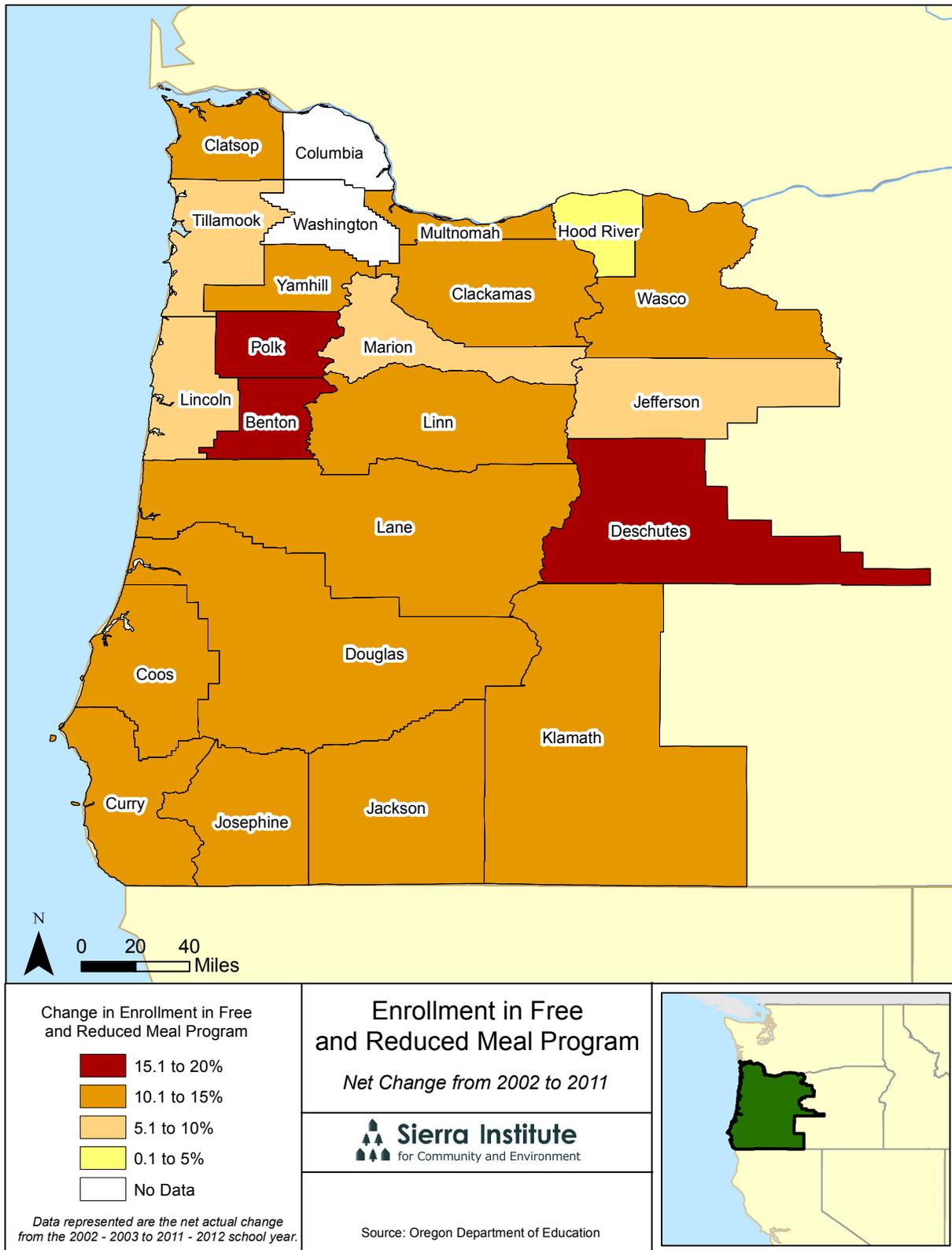
The counties that experienced the highest percentage increase, however, were different from the counties that had the highest FRMP percent enrollment. The three counties that on a percentage basis increased the most, also had the lowest enrollment rate in 2002 (Benton (31.1%), Deschutes (37.7%), and Clackamas (29.7%)). Counties that had a high percentage enrollment to start typically had a low overall percent increase. For example, Jefferson County, with over 75.6% of students enrolled in the FRPM program in 2002—the highest of all Oregon counties, and Hood River County, the third highest at 58.1%, had the two lowest percentage increases. This indicates that the majority of Oregon counties started with very high FRPM enrollment and maintained these numbers between 2002 and 2011. Nonetheless, Hood River County ended the period with the highest percentage of students participating in the FRPM at 82.2%.

Referring to Figures 5.11 and 5.12, it is apparent that some counties experienced fluctuating levels of FRPM enrollment. Hood River County had a 2011 FRPM enrollment of 62.2%, which returned it to almost 2003 levels (58.1%), after two periods of increases and decreases. Similarly, Lincoln County experienced a dramatic spike in FRPM enrollment in 2004, followed by a sharp decrease, and then a subsequent rise. The 15% drop in FRPM enrollment in Lincoln County between 2004 and 2006 is not apparent if only percent change data is examined. Although fluctuations have occurred in FRPM enrollment in Oregon counties, all counties increased the percentage of students enrolled in the FRMP.

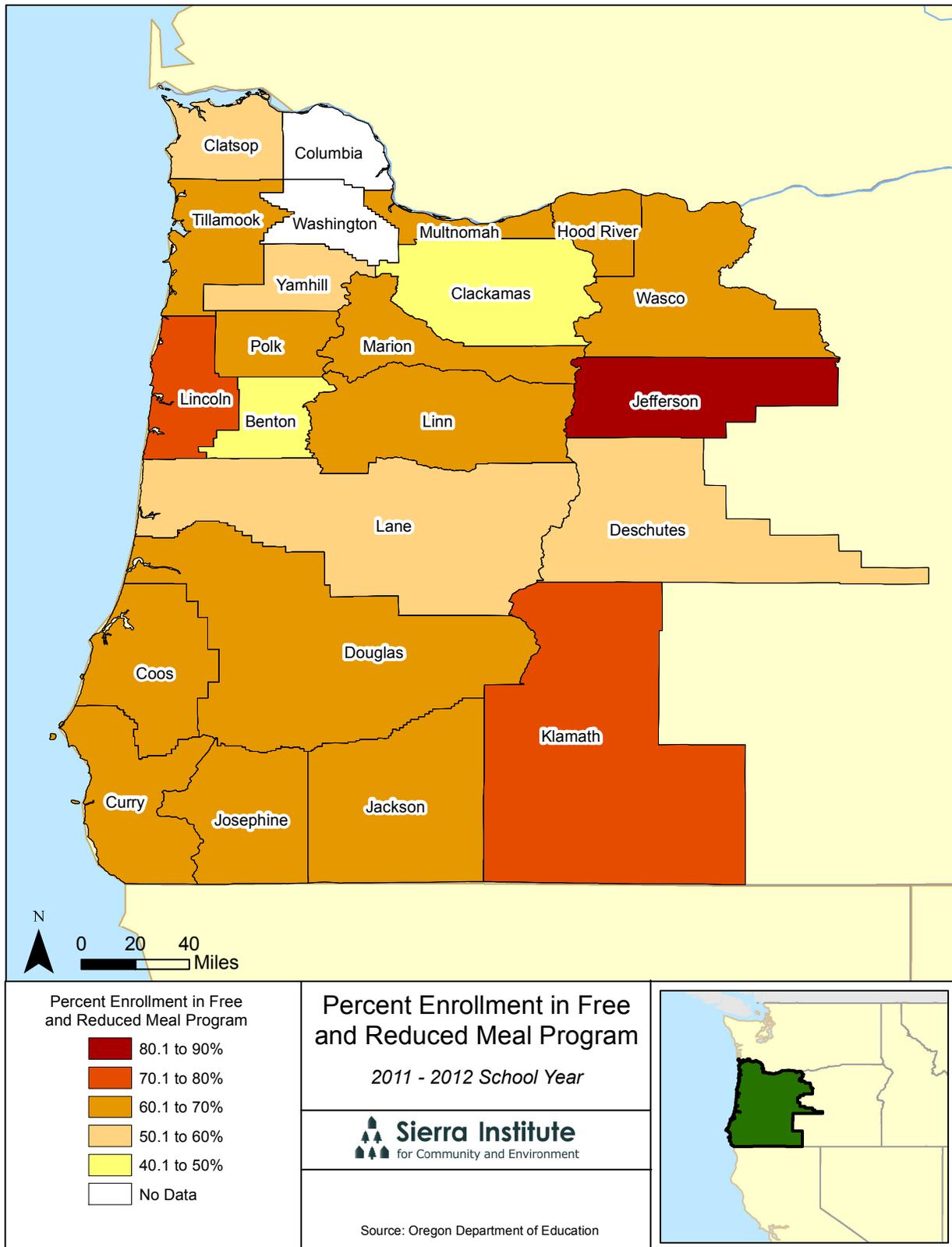
Map 5-3 displays Oregon FRPM enrollment net change between 2002 and 2011. Benton, Deschutes, and Polk counties all have net increases of 18.8%, 17.1%, and 18.7% respectively. The majority of all CHA counties in Oregon have a net increase of between 10.1% and 15%. Only Jefferson, Lincoln Marion, and Tillamook Counties reach levels as low as between 5.1% and 10%.

Map 5-4 displays Oregon 2011 FRPM rates by county for the 2011-2012 school year. This data represents the most recent year for which these data are available, and the map shows how Oregon CHA counties compare with one another. Jefferson County by far has the highest FRPM enrollment at 82.2%. Lincoln County follows behind with 70.6%. The majority of Oregon's CHA counties fall within the range of 60.1% to 70%. Four of the counties have comparatively low rankings of 50.1% to 60% FRPM enrollment.

Map 5-3



Map 5-4



Washington

Free and Reduced Price Meal data was collected for the 19 Washington counties with CHA designations. These counties include: Chelan, Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, King, Kittitas, Klickitat, Lewis, Mason, Okanogan, Pierce, Skagit, Skamania, Snohomish, Thurston, Whatcom, and Yakima. Data were collected for the 2005-2006 through 2011-2012 school years. Lack of grade level designation for data prior to the year 2005 precluded collection of pre-2005 data for this analysis.

King County is home to Seattle, the largest city in Washington, and is the most populous county in the three-state study area. At nearly 800,000, Pierce County, encompassing Tacoma and the heavily urbanized area south of Seattle, is the second most populous county in Washington. Including the City of Everett and the urbanized area to the north of Seattle, Snohomish is the third largest county in Washington with 713,000 residents. These counties, along with Clark County, the 4th most populous county, are the most densely populated. The highly urbanized school districts within these counties have been excluded from this analysis in order to more accurately represent the rural communities that are typical for the majority of CHA counties and associated with CHA designation. However, it should be understood that there is still some effect from suburban expansion into formerly rural areas, and this may cause changes in student population and FRPM enrollment numbers.

Another influence on some county level enrollment numbers is school districts that include schools from a neighboring county. For example, the majority of the Washougal School District land area is in Skamania County, but the district includes a portion of Clark County and is listed as a part of this county. This is a function of the large expanses of rural or uninhabited land in Washington counties. Because this is a relatively uncommon occurrence, and students cannot always be disaggregated by county, students are counted in the home county of a district.

The percent of persons under 18 ranges from a low of 14.3% in Jefferson to 30.4% in Yakima. The average percentage of persons under the age of 18 for all the Washington counties included in the study area totals 22.2%. There have been inconsistent trends in the total student populations within study counties. Ten counties experienced a decrease in student numbers between the years 2005 and 2011. There is no discernable characteristic of counties that have experienced a loss of students, and they appear to be evenly distributed between more urbanized and rural counties. Nine counties experienced an increase in student numbers with the most dramatic experienced by Klickitat County, as it had a 60.4% percent increase, representing a net gain of 700 students. Although some rural counties experienced student population increases, a slight majority were counties with major urban centers.

While the trend in student numbers is variable across counties, the trend in FRPM program enrollment shows little change between 2005 and 2007, followed by a general increase between 2007 and 2011. The only exceptions to this trend are King and Klickitat counties. Across all the counties, FRPM enrollment rates averaged an increase of 6.8%. If King and Klickitat counties are excluded, the average increase is 8%. This increase mostly took place in a four-year span. Figures 5.14 and 5.15 highlight the percentage of students participating in the FRPM for individual Washington counties. Washington counties are shown divided between two figures to facilitate clear display of the 2005-2011 totals.

Figure 5.14. Washington Counties Percent FRPM Enrollment, Chelan through Lewis: 2005 to 2001

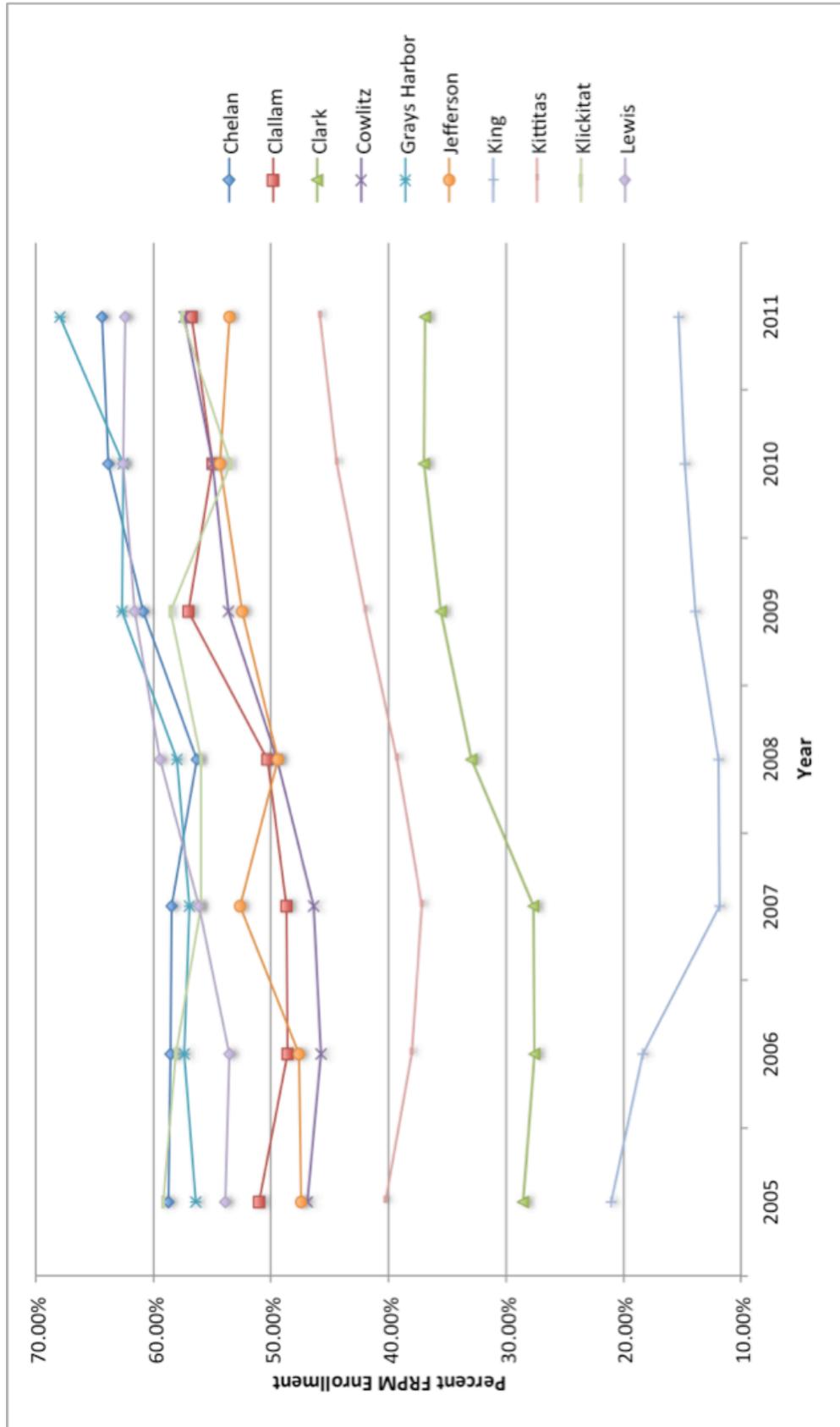
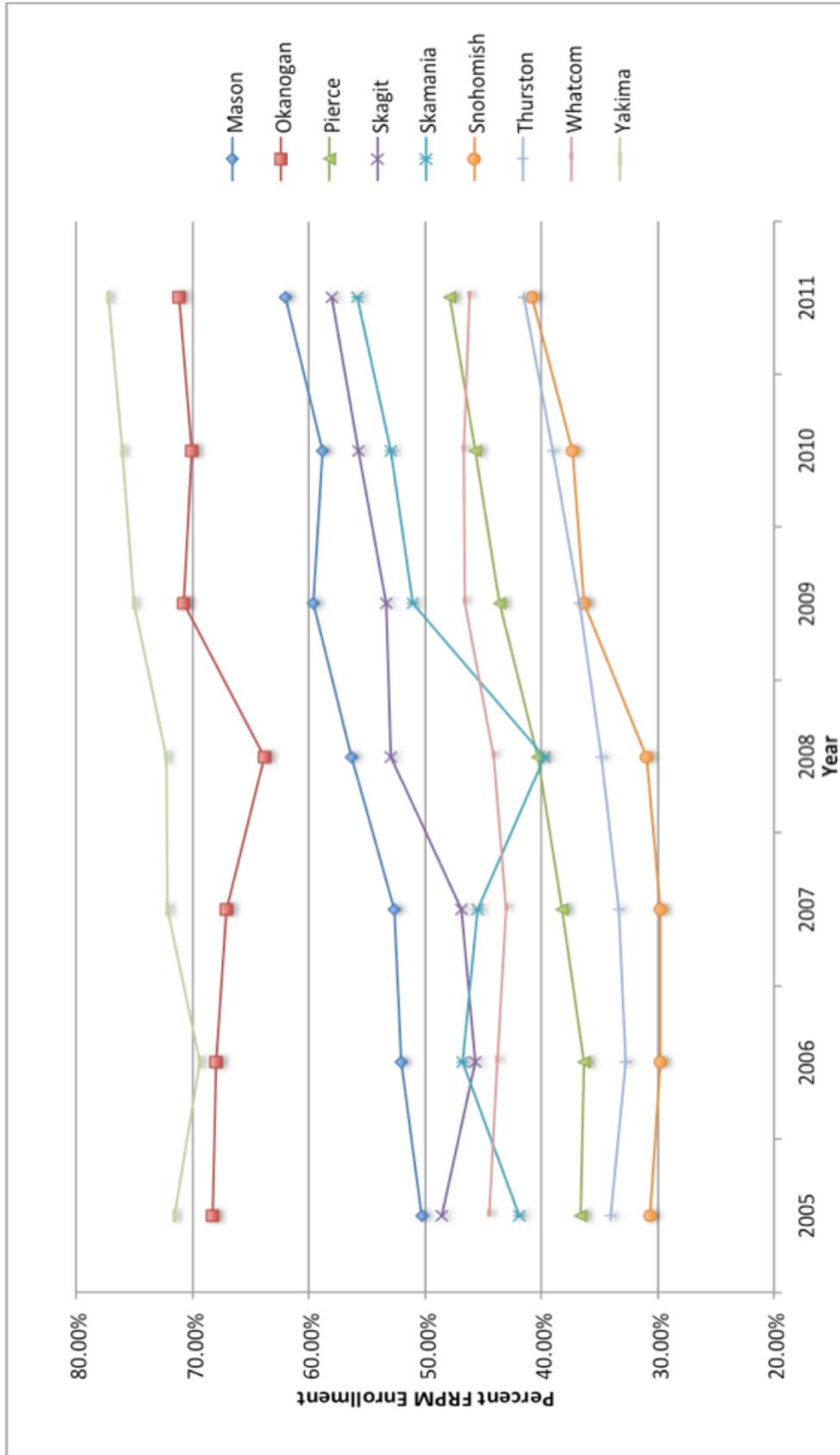


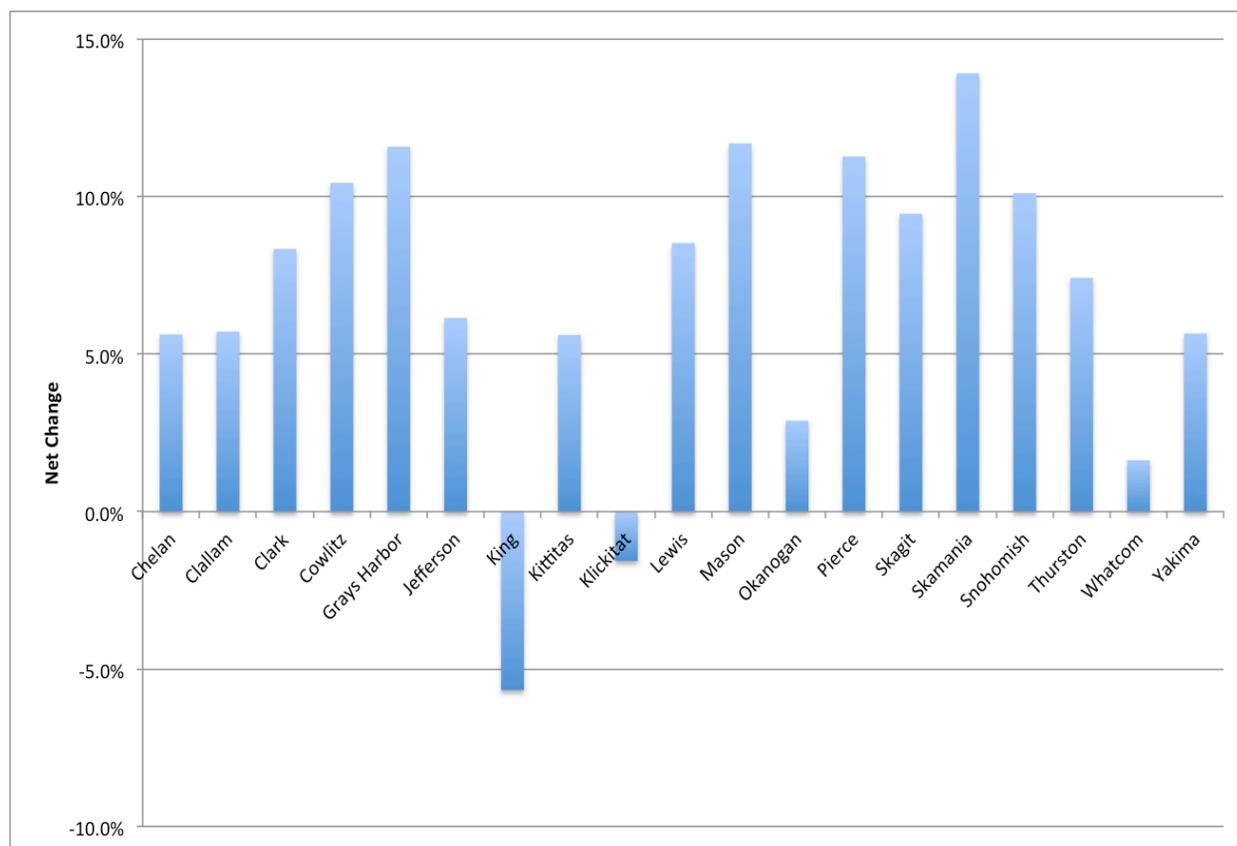
Figure 5.15. Washington Counties Percent FRPM Enrollment, Mason through Yakima: 2005 to 2011



Washington, although it does show a general increase over time in FRPM enrollment for most counties, does not increase as dramatically as California and Oregon. Washington counties tend to begin high and remain high in their percentage of FRPM enrollment. Skamania has seen an increase of 14% between 2005 and 2011. Other counties, like Yakima, have had consistently high numbers with lower rates of increase. Yakima has only experienced a 5% increase in FRPM enrollment during this same time period, but has maintained rates at or above 70% FRPM enrollment for the entire time.

Of the three states with CHA counties, only Washington has counties with negative net changes in FRPM enrollment (Figure 5.16). Klickitat County experienced a 1.6% decline in FRPM enrollment. This decline may not seem significant, but it occurred at the same time the county experienced a 60.5% increase in its total student population. It is clear that unlike other counties that increased FRPM, the increase in students was not accompanied by an increase in FRPM that characterized most of the other counties. King County also showed a decline in FRPM enrollment between the years 2005 and 2011. It also experienced an increase in the student population of 6.8% during this time. This is more easily explained by the presence of the City of Seattle, and likely suburban expansion into previously rural areas.

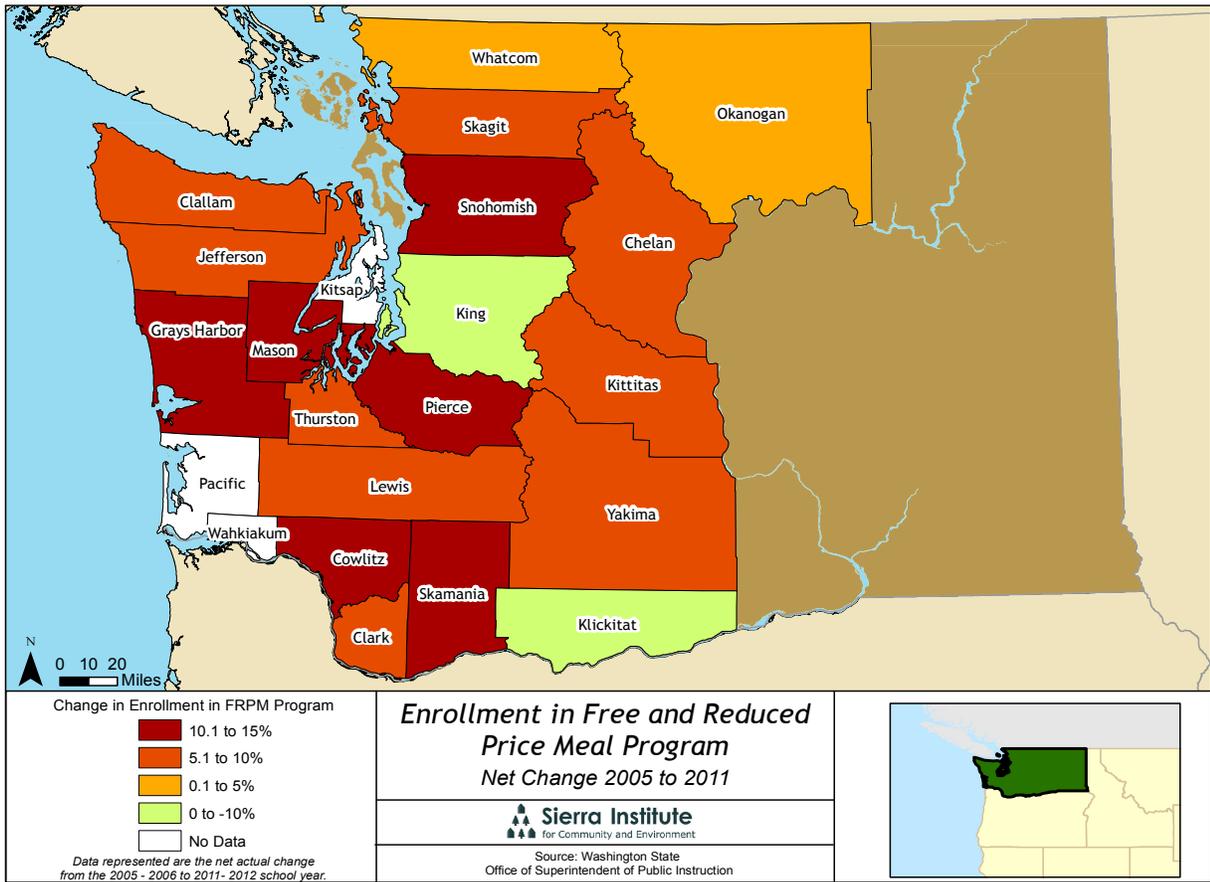
Figure 5.16. Washington Counties Net Change in FRPM Enrollment: 2005 to 2011



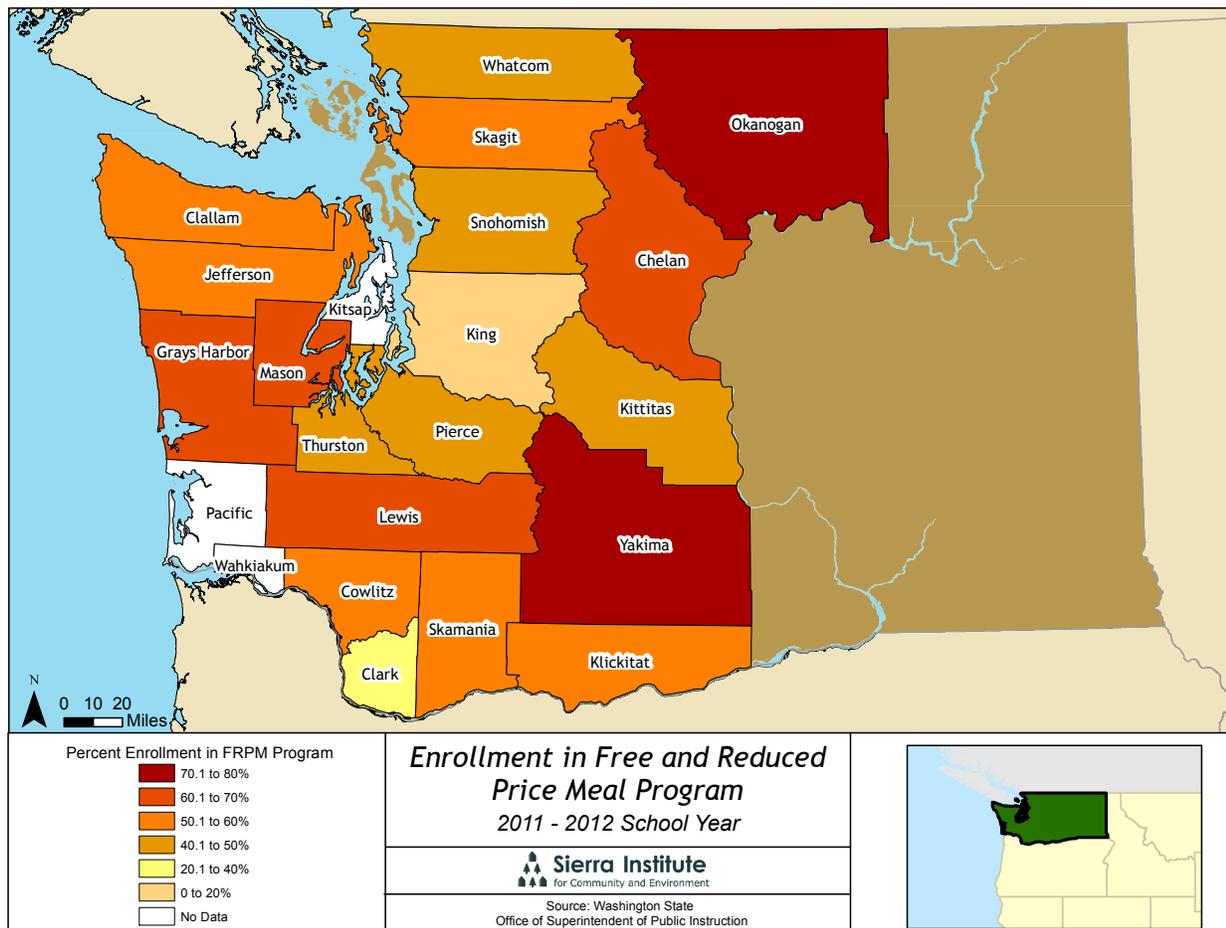
Skamania County increased 13.9%, in 2005-2011, the biggest increase of all Washington counties. Although this percent change is significant, it is far lower than most of the increases experienced in both California and Oregon. Skamania ranks as having the ninth highest FRPM enrollment rate in relation to other Washington counties. Map 5-5 shows the net change in Washington State FRPM

enrollment rates by county between 2005 and 2011. It displays a wide variability in net change by county. Skamania and Mason counties have increased the most, 13.9% and 11.7%, respectively. The two counties that enjoyed a decrease in their FRPM participation rates showed no geographic relationship to one another.

Map 5-5



Map 5-6



Map 5-6 shows the rate of FRPM enrollment for Washington Counties for the 2011 – 2012 school year, the most recent year for which numbers are available. This map shows the many different ranges of FRPM in Washington. Yakima County has the highest FRPM enrollment, at 77.2%, and King County the lowest, at 15.3%.

All-State Summary

FRPM data can be used to understand both pattern and trend for a community, county, or region. Having raw student numbers as were obtained in California and Washington aided the analysis and also helped avoid making sweeping statements about schools and areas based on relatively few students. This level of data allows for a more detailed understanding.

The general message from these data is that need for subsidized meals assistance has increased during the study period. With very few exceptions, this need has increased through time, and does not show sign of diminishing. Forty percent of students at a school enrolled in FRPM is troubling, but three quarters of the students enrolled, which is increasingly common, is unacceptable. This speaks directly to the socioeconomic situations faced by families in CHA affected counties. It is beyond the scope of the current analysis to link school FRPM program findings with land

management and specifically CHA designation, but it represents information the needs to be taken into consideration when assessing socioeconomic conditions and the well-being of families and communities in study region.

B. DEMOGRAPHIC PATTERNS

Available Census data at the Census tract level was downloaded from United States Census Bureau websites (US Census Bureau 2012abc) for the years available from 1990-2010. Aggregated Census data was summarized at the county and school district levels by percent change over time and or rank as appropriate for available data.

There are no counties in the study area with negative population growth between 1990 and 2010. The population growth within study area counties in California was substantially lower than study areas in Oregon and Washington. Proximity to urban areas of some counties in the Pacific Northwest may be a critical factor.

There was a pronounced decrease through time in persons self identified as white across the entire study area, with the greatest decreases in California. Overall, populations of persons self identified as American Indian are small but stable, with the exceptions of a few noted counties (Del Norte, Jefferson, and Okanogan) where American Indians make up 8-17% of the total population. There has been a substantial increase in the Hispanic population; with the greatest overall percent increase in Washington-area counties. It is important to note that after 1990 census, persons were encouraged to self identify more than one ethnicity, which can lead to "double counting" of some individuals. With that said, the substantial increase in the Hispanic population and consistent decrease of the white population in the study area is consistent between 1990-2010.

Total Population (California)

Between 1990 and 2010, as shown in Table 5.2, the total population for California counties in the study area increased by 21%. During the same period, the counties with the lowest percent change in total population are Mendocino, Siskiyou, and Trinity Counties. These three counties had between a 3-9% increase in population. No individual counties in the California Study area had a population decrease during this period (1990-2010).

Table 5.2. Total California Population and Population Percent Change: 1990 to 2010

County	1990 Total Population	2000 Total Population	2010 Total Population	1990-2000 Percent Change In Total Population	2000-2010 Percent Change In Total Population	1990-2010 Percent Change In Total Population
Colusa	16,275	18,804	21,419	16%	14%	32%
Del Norte	23,460	27,507	28,610	17%	4%	22%
Glenn	24,798	26,453	28,122	7%	6%	13%
Humboldt	119,118	126,518	134,623	6%	6%	13%
Lake	50,631	58,309	64,665	15%	11%	28%

County	1990 Total Population	2000 Total Population	2010 Total Population	1990-2000 Percent Change In Total Population	2000-2010 Percent Change In Total Population	1990-2010 Percent Change In Total Population
Marin	230,096	247,289	252,409	7%	2%	10%
Mendocino	80,345	86,265	87,841	7%	2%	9%
Napa	110,765	124,279	136,484	12%	10%	23%
Shasta	147,036	163,256	177,223	11%	9%	21%
Siskiyou	43,531	44,301	44,900	2%	1%	3%
Sonoma	388,222	458,614	483,878	18%	6%	25%
Tehama	49,625	56,039	63,463	13%	13%	28%
Trinity	13,063	13,022	13,786	0%	6%	6%
All California Counties	1,296,965	1,450,656	1,537,423	12%	6%	19%

Ethnicity

Between 1990 and 2010, persons self identified as “white” decreased in all California study counties (Table 5.3). The counties with the smallest decrease in the white population included Shasta, Siskiyou, and Trinity Counties. During the same period, percent change in the American Indian Population showed great fluctuation, though it is important to note, these large changes can be attributed to small changes in small populations. Generally speaking, persons self identified as American Indian made up between 2-8% of counties in the California study area, with the greatest percentage of county populations residing in Del Norte, Humboldt, and Mendocino Counties. Between 1990 and 2010, persons self identified as “Hispanic” increased in all California study area counties. The counties with the greatest increases in the Hispanic population included Lake, Sonoma, and Humboldt Counties.

Table 5.3. California Percent Change of Persons Self-Identified as White, American Indian, or Hispanic: 1990 to 2010

County	White % Change			American Indian % Change			Hispanic % Change		
	1990-2000	2000-2010	1990-2010	1990-2000	2000-2010	1990-2010	1990-2000	2000-2010	1990-2010
Colusa	-16%	1%	-15%	11%	-16%	-7%	40%	18%	65%
Del Norte	-8%	-6%	-14%	1%	22%	23%	35%	28%	73%
Glenn	-16%	-1%	-17%	1%	5%	7%	48%	26%	87%
Humboldt	-6%	-4%	-10%	4%	0%	4%	55%	51%	134%
Lake	-6%	-7%	-12%	33%	4%	38%	59%	51%	139%
Marin	-5%	-5%	-10%	25%	41%	76%	42%	40%	99%
Mendocino	-10%	-5%	-15%	16%	2%	18%	60%	35%	116%
Napa	-10%	-11%	-20%	12%	-8%	4%	64%	36%	124%
Shasta	-5%	-3%	-8%	3%	1%	4%	43%	52%	118%
Siskiyou	-5%	-3%	-8%	-6%	4%	-2%	29%	36%	76%

County	White % Change			American Indian % Change			Hispanic % Change		
	1990-2000	2000-2010	1990-2010	1990-2000	2000-2010	1990-2010	1990-2000	2000-2010	1990-2010
Sonoma	-10%	-6%	-15%	4%	14%	18%	63%	44%	134%
Tehama	-8%	-4%	-11%	8%	23%	33%	53%	38%	112%
Trinity	-4%	-2%	-6%	1%	-2%	-1%	20%	75%	111%
California	-10%	-6%	-15%	2%	5%	7%	47%	37%	102%

Social Structure (Age Structure): California, Oregon, and Washington Counties

In California, between 1990 and 2010, with the exception of Colusa County, all of the study area counties within California experienced a decline in the percentage of the population less than 5 years old. This decline ranged from 5%-34% across counties and averaged 15% for all counties in the state as a whole. During this same period six of the study counties in California had declines in the population of 5-19 years olds. These declines were greatest in Trinity, Siskiyou, and Del Norte Counties. The aggregated data for percent of population between 20 and 64 years old was generally stable, with the most notable changes in Lake County, which increased by 10%. The percent of population greater than 64 years old varied widely between counties, with the most notable changes in Siskiyou and Trinity Counties, where the percent of population in the greater than 64 years old increased by 111% to 139%, respectively.

In Oregon, between 1990 and 2010, with the exception of Marion County, all of the study area counties, experienced a decline in the percentage of the population less than 5 years old. This decline ranged from 6%-32% across counties and averaged 16% for all counties in the state. During the same period, seven of the study counties in Oregon had declines in the population of 5-19 years olds. These declines were greatest in Lincoln, Coos, and Douglas Counties. The percent of population greater than 64 years old varied widely between counties, with the most notable changes in Wasco and Curry Counties, where the percent of population in the greater than 64 years old increased by 74% to 102%.

In Washington, with the exception of Yakima County, all of the study area counties experienced a decline in the percentage of the population under five years old. This decline ranged from 9%-37% across counties and averaged 17% for all counties in the state. During this same period, ten of the study counties in Washington had declines in the population of 5-19 years olds. These declines were lead by Jefferson, Klickitat, and Skamania Counties. The aggregated data for percent of population between 20 and 64 years old was generally stable. The percent of population greater than 64 years old varied widely between counties, with the most notable changes in Clallam and Jefferson Counties, where the percent of population in the greater than 64 years old increased by 126% to 137%.

In summary, across all study area counties, the most notable demographic change is the large decline in the percentage of the population under 5 years old. This portion of the population declined by 16% between 1990-2010. There were counties within the study area with dramatic increases in the percentage of population over 64 years old, though it is not possible to determine if these changes were due to in-migration of persons in this age group, emigration of persons in younger age groups, or a combination of the two.

Social Structure (Total Population): Oregon

The total percent increase in population in all study counties in Oregon between 1990 and 2010 is 36%, as shown in Table 5.4. During the same period, the counties with the lowest percent change in total population are Coos, Clatsop, and Douglas Counties. These counties had between a 5-14% increase in population. Notably, Deschutes County experienced a 110% percent increase in population between 1990 and 2010. No counties in the Oregon Study area had a population decrease during this period (1990-2010).

Table 5.4. Total Oregon Population and Population Percent Change: 1990 to 2010

County	1990 Total Population	2000 Total Population	2010 Total Population	1990-2000 Percent Change In Total Population	2000-2010 Percent Change In Total Population	1990-2010 Percent Change In Total Population
Benton	70,811	78,153	85,579	10%	10%	21%
Clackamas	278,850	338,391	375,992	21%	11%	35%
Clatsop	33,301	35,630	37,039	7%	4%	11%
Coos	60,273	62,779	63,043	4%	0%	5%
Curry	19,327	21,137	22,364	9%	6%	16%
Deschutes	74,958	115,367	157,733	54%	37%	110%
Douglas	94,649	100,399	107,667	6%	7%	14%
Hood River	16,903	20,411	22,346	21%	9%	32%
Jackson	146,389	181,269	203,206	24%	12%	39%
Jefferson	13,676	19,009	21,720	39%	14%	59%
Josephine	62,649	75,726	82,713	21%	9%	32%
Klamath	57,702	63,775	66,380	11%	4%	15%
Lane	282,912	322,959	351,715	14%	9%	24%
Lincoln	38,889	44,479	46,034	14%	3%	18%
Linn	91,227	103,069	116,672	13%	13%	28%
Marion	228,483	284,834	315,335	25%	11%	38%
Multnomah	583,887	660,486	735,334	13%	11%	26%
Polk	49,541	62,380	75,403	26%	21%	52%
Tillamook	21,570	24,262	25,250	12%	4%	17%
Wasco	21,683	23,791	25,213	10%	6%	16%
All Oregon Counties	2,247,680	2,638,306	2,936,738	17%	11%	31%

Social Structure (Ethnicity): Oregon

Between 1990 and 2010, persons self identified as “white” decreased in all Oregon study counties (Table 5.5). The decrease was relatively even across counties (between 5%-9%) with the exception of Marion and Multnomah Counties, which experienced decreases of 12%-14%. During the same period, percent change in the American Indian Population showed great fluctuation, though it is important to note that these large changes can be attributed to small changes in small population sizes. Generally speaking, persons self identified as American Indian made up between 1%-4% of counties in the Oregon study area, with the exception of Jefferson County, where persons self described as American Indian made up 16-17% of the population between 1990-2012. Between 1990-2010, persons self identified as “Hispanic” increased in all Oregon study counties. The counties with the greatest increases the “Hispanic” population included Tillamook, Lincoln, and Clatsop Counties.

Table 5.5. Oregon Percent Change of Persons Self-Identified as White, American Indian, or Hispanic: 1990 to 2010

County	White (% Change)			American Indian (% Change)			Hispanic (% Change)		
	1990-2000	2000-2010	1990-2010	1990-2000	2000-2010	1990-2010	1990-2000	2000-2010	1990-2010
Benton	-3%	-2%	-5%	1%	-7%	-6%	90%	37%	161%
Clackamas	-5%	-3%	-8%	1%	16%	17%	94%	57%	203%
Clatsop	-3%	-2%	-6%	-8%	-5%	-13%	130%	71%	294%
Coos	-4%	-2%	-6%	4%	4%	8%	51%	58%	140%
Curry	-4%	-1%	-5%	-11%	-11%	-20%	97%	49%	193%
Deschutes	-3%	-3%	-6%	-4%	11%	6%	83%	99%	265%
Douglas	-3%	-2%	-5%	-2%	19%	16%	39%	44%	100%
Hood River	-13%	5%	-8%	-6%	-28%	-32%	54%	18%	81%
Jackson	-4%	-3%	-7%	-14%	7%	-8%	65%	60%	163%
Jefferson	-7%	0%	-7%	-20%	8%	-14%	68%	9%	82%
Josephine	-3%	-2%	-5%	-10%	9%	-2%	53%	49%	127%
Klamath	-5%	-2%	-7%	2%	-2%	0%	50%	34%	101%
Lane	-5%	-3%	-7%	-1%	3%	2%	90%	62%	207%
Lincoln	-6%	-3%	-9%	28%	10%	41%	210%	67%	416%
Linn	-4%	-3%	-6%	10%	0%	10%	84%	79%	228%
Marion	-11%	-4%	-14%	0%	9%	9%	114%	42%	205%
Multnomah	-9%	-3%	-12%	-11%	4%	-8%	138%	45%	246%
Polk	-4%	-4%	-8%	22%	16%	42%	55%	37%	113%
Tillamook	-4%	-3%	-6%	8%	-14%	-7%	196%	76%	422%
Wasco	-6%	-1%	-6%	-8%	16%	7%	89%	60%	202%
All Oregon Counties	-7%	-3%	-10%	-3%	5%	2%	108%	47%	206%

Social Structure-Total Population (Washington)

The total percent increase in population in all Washington counties between 1990 and 2010 is 38%, as shown in Table 5.6. During the same period, the counties with the lowest percent change in total population are Grays Harbor, Klickitat, and Okanogan Counties. These counties had between a 13-23% increase in population. No counties in the Washington study area had a population decrease during this period (1990-2010).

Table 5.6. Total Washington Population and Population Percent Change: 1990 to 2010

County	1990 Total Population	2000 Total Population	2010 Total Population	1990-2000 Percent Change In Total Population	2000-2010 Percent Change In Total Population	1990-2010 Percent Change In Total Population
Chelan	52,250	66,616	72,453	27%	9%	39%
Clallam	56,464	64,525	71,404	14%	11%	26%
Clark	238,053	345,238	425,363	45%	23%	79%
Cowlitz	82,119	92,948	102,410	13%	10%	25%
Grays Harbor	64,175	67,194	72,797	5%	8%	13%
Jefferson	20,146	25,953	29,872	29%	15%	48%
King	1,507,319	1,737,034	1,931,249	15%	11%	28%
Kittitas	26,725	33,362	40,915	25%	23%	53%
Klickitat	16,616	19,161	20,318	15%	6%	22%
Lewis	59,358	68,600	75,455	16%	10%	27%
Mason	38,341	49,405	60,699	29%	23%	58%
Okanogan	33,350	39,564	41,120	19%	4%	23%
Pierce	586,203	700,820	795,225	20%	13%	36%
Skagit	79,555	102,979	116,901	29%	14%	47%
Skamania	8,289	9,872	11,066	19%	12%	34%
Snohomish	465,642	606,024	713,335	30%	18%	53%
Thurston	161,238	207,355	252,264	29%	22%	56%
Whatcom	127,780	166,814	201,140	31%	21%	57%
Yakima	188,823	222,581	243,231	18%	9%	29%
All Washington Counties	3,812,446	4,626,045	5,277,217	21%	14%	38%

Social Structure-Ethnicity

Between 1990 and 2010, persons self identified as “white” decreased in nearly 60% of Washington study counties. This is shown in Table 5.7. The greatest decreases are seen in King, Snohomish, Yakima, Washington, and Chelan Counties, which experienced decreases of persons self identified as white of 14%-19%. During the same period, percent change in the American Indian population

showed great fluctuation, though it is important to note, these large changes can be attributed to small changes in small populations. Generally speaking, persons self identified as American Indian made up between 1%-5% of counties in the Washington study area, with the exception of Okanogan County, where such persons consistently made up 11% of the population between 1990-2012. Between 1990 and 2010, persons self identified as “Hispanic” increased in all Washington study area counties. The counties with the greatest increases the Hispanic population include Grays Harbor, Snohomish, and Cowlitz Counties.

Table 5.7. Washington Percent Change of Persons Self-Identified as White, American Indian, or Hispanic: 1990 to 2010

County	White % Change			American Indian % Change			Hispanic % Change		
	1990-2000	2000-2010	1990-2010	1990-2000	2000-2010	1990-2010	1990-2000	2000-2010	1990-2010
Chelan	-10%	-5%	-14%	6%	-3%	4%	110%	34%	182%
Clallam	-4%	-2%	-6%	7%	-1%	7%	68%	49%	149%
Clark	-6%	-4%	-10%	-13%	1%	-12%	91%	61%	207%
Cowlitz	-4%	-3%	-7%	-7%	1%	-7%	124%	71%	282%
Grays Harbor	-6%	-4%	-10%	12%	-2%	9%	165%	78%	371%
Jefferson	-4%	-1%	-5%	-18%	-1%	-19%	72%	38%	137%
King	-11%	-9%	-19%	-20%	-9%	-27%	86%	63%	203%
Kittitas	-4%	-3%	-6%	12%	6%	19%	95%	53%	198%
Klickitat	-5%	0%	-5%	-1%	-32%	-32%	40%	37%	91%
Lewis	-4%	-3%	-8%	13%	16%	32%	133%	61%	276%
Mason	-5%	-3%	-8%	0%	-1%	-1%	108%	67%	247%
Okanogan	-9%	-2%	-11%	6%	-1%	5%	73%	22%	111%
Pacific	-3%	-3%	-7%	-11%	-6%	-16%	119%	60%	250%
Pierce	-8%	-5%	-13%	0%	-4%	-4%	57%	66%	161%
Skagit	-7%	-4%	-11%	-14%	16%	0%	106%	51%	209%
Skamania	-4%	1%	-4%	-8%	-29%	-35%	94%	24%	141%
Snohomish	-8%	-8%	-16%	-1%	1%	0%	106%	91%	294%
Thurston	-7%	-4%	-10%	-2%	-8%	-10%	50%	56%	133%
Whatcom	-5%	-3%	-8%	-10%	0%	-10%	79%	50%	169%
Yakima	-11%	-3%	-14%	1%	-3%	-2%	50%	25%	88%
All Washington Counties	-8%	-5%	-13%	-4%	1%	-3%	67%	44%	142%

C. OTHER SIGNIFICANT RELATIONSHIPS

Analysis of the Relationship Between the Percentage of Students Participating in the Federal Reduced Priced Meal Program and Proximity to Open and Closed Mills.

An initial analysis of the relationship(s) between the rates of student participation in the federal FRPM program, and the distance of schools those students attend to nearby open or closed mills through time was conducted. Analysis focused on whether the relationship of mills to FRPM rates is any different for mills in urban, rural, or other areas that are a mix of the two. Specifically, the analysis focuses on the following questions:

- 1) Is there a relationship between a school's physical distance to a mill and percentage of students participating in FRPM at that school?
- 2) Does the relationship described in question 1 vary by state?
- 3) Does the relationship described in question 1 vary by mill location in an urban, rural, or a town that has a mix of urban and rural characteristics?
- 4) Is there a discernible trend in this relationship by community population size or time elapsed since mill closure for those communities with closed mills?

The analysis integrates information from four spatial and non-spatial datasets. These datasets include: 1) location of all existing mills in the study area, including their status as open or closed, and if closed, the year of closure; 2) location of all public schools in the study region;¹⁵ 3) percentage of the school population participating in FRPM programs; and 4) a Sierra Institute developed scale identifying all mills as either urban, rural, or a mix of the two.

Using the spatial locations of all mills and schools, the distance between every school and mill within 50 miles was calculated. Mills were assigned a 1 to 3 "urban-rural" score (see the methods section for description of the methodology used to develop the distances between schools and mills and mill scores). These data enabled analyses of the relationship between school FRPM percentage and school distance to mill, mill status (open or closed), time since mill closure, and rural-urban character by state and county. Schools with less than 30 students are excluded from analysis due to the fact that small variations in students can dramatically skew total percentage of FRPM.

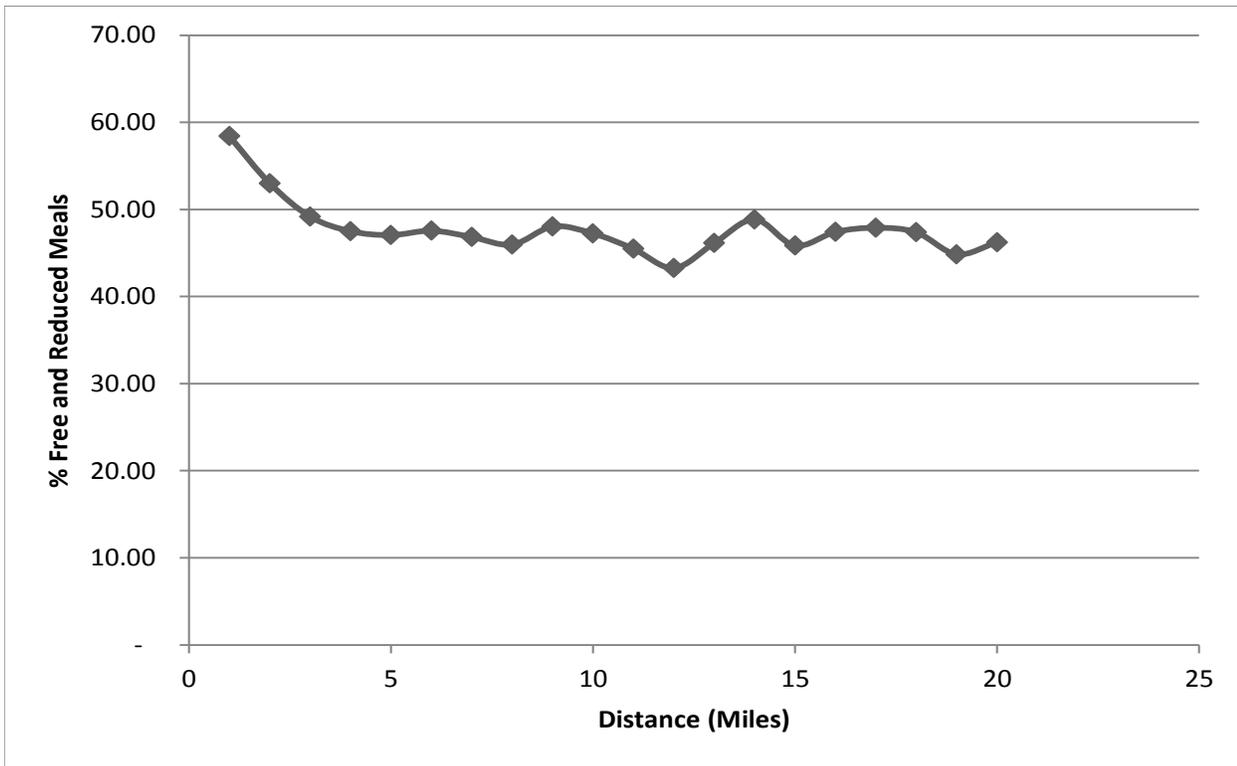
Findings

- 1) *Is there a relationship between a schools physical distance to a mill and percentage of students participating in FRPM at that school?*

When averaged across all study area counties and all mills, regardless of status (open or closed), there was a general increase of students participating in the FRPM in schools within three miles of a mill. Figure 5.17 shows that schools within three miles of a mill have higher FRPM participation rates. The data show considerable variability beyond three miles, but without a discernible pattern.

¹⁵ From ArcGIS 2012.

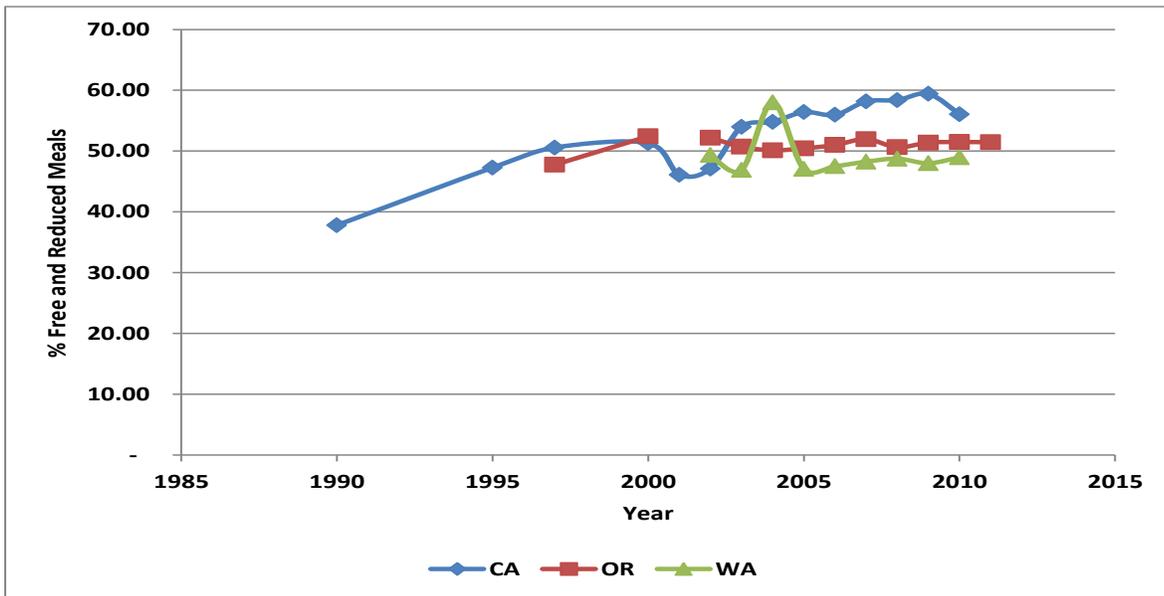
Figure 5.17. Percent of Students in FRPM by Distance to Mill



2) *Does the relationship described in question 1 vary by state?*

In general, California had the highest percentage of students participating in FRPM program compared to Oregon and Washington. Figure 5.18 shows this relationship holds regardless of school's distance to mills. This higher rate of participation in FRPM programs was consistent for schools greater than 5, 10, and 20 miles from mills. Oregon generally had higher rates of FRPM enrollment than Washington, although the difference between the states became more discernible when schools greater than 10 or 20 miles from mills were included in the analysis.

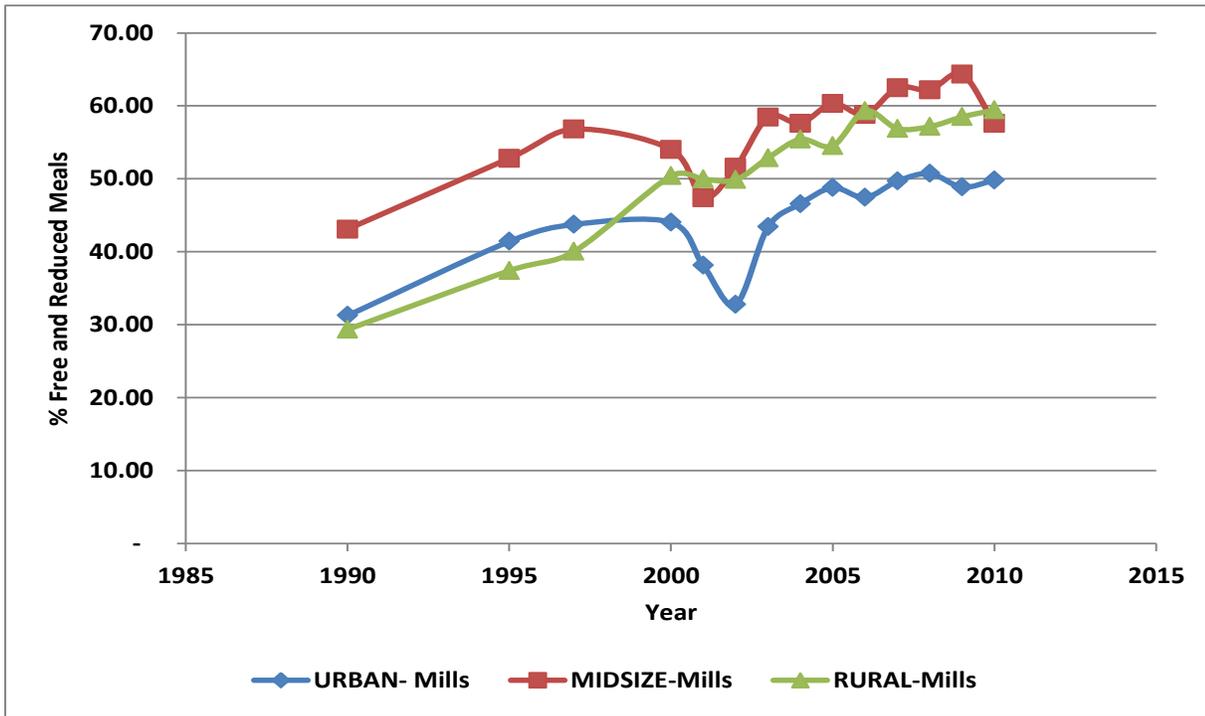
Figure 5.18. Average Percentage of FRPM Enrollment per School by State and Year



3) *Does the relationship described in question 1 vary by mill location in an urban, rural, or a town that has a mix of urban and rural characteristics?*

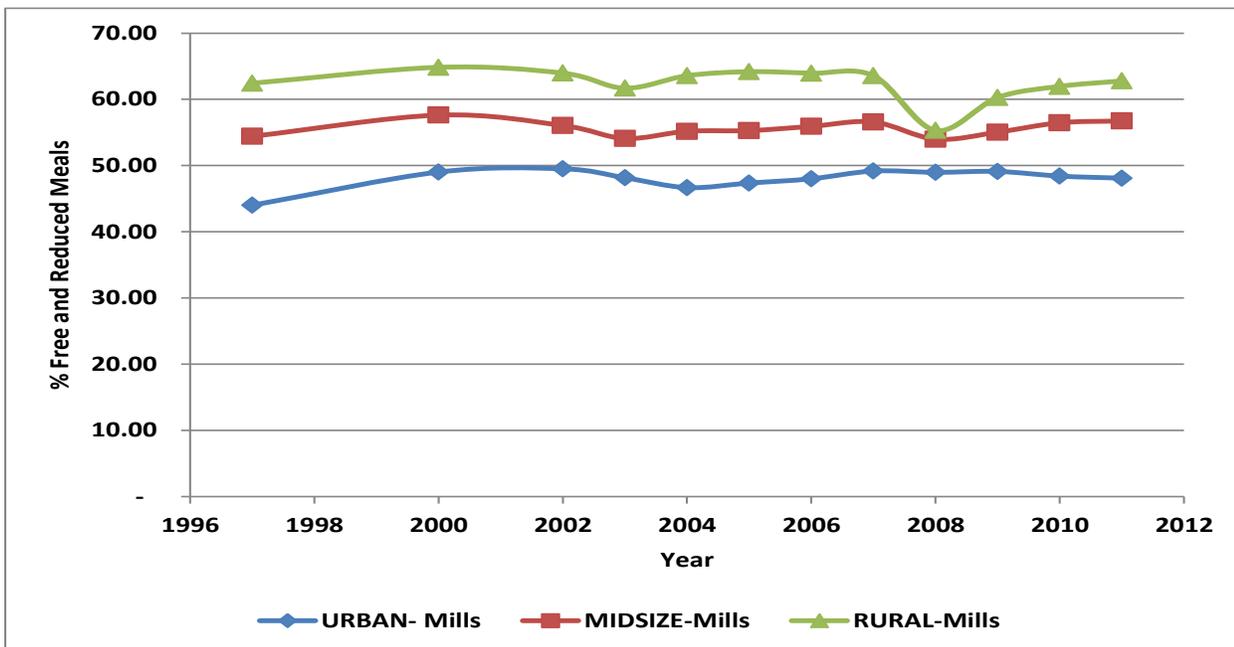
In urban communities that experienced mill closures, FRPM rates were consistently lower. This is shown in Figure 5.19. In California, there were no mills closed in communities that are considered “urban.” (There are only two urban areas in the California study area.) Within both mid-sized and rural communities that experienced mill closures within ten years, the percentage of students participating in the FRPM program between community types (mid-sized vs. rural) was similar after 2000, though mid-sized areas tended to have higher rates of FRPM participation than those considered rural, though this difference was less pronounced as schools greater than 10 miles away are included in the analysis.

Figure 5.19. Average Percentage of FRPM in California by Rurality and Closed Mills and Year: 1990 to 2010



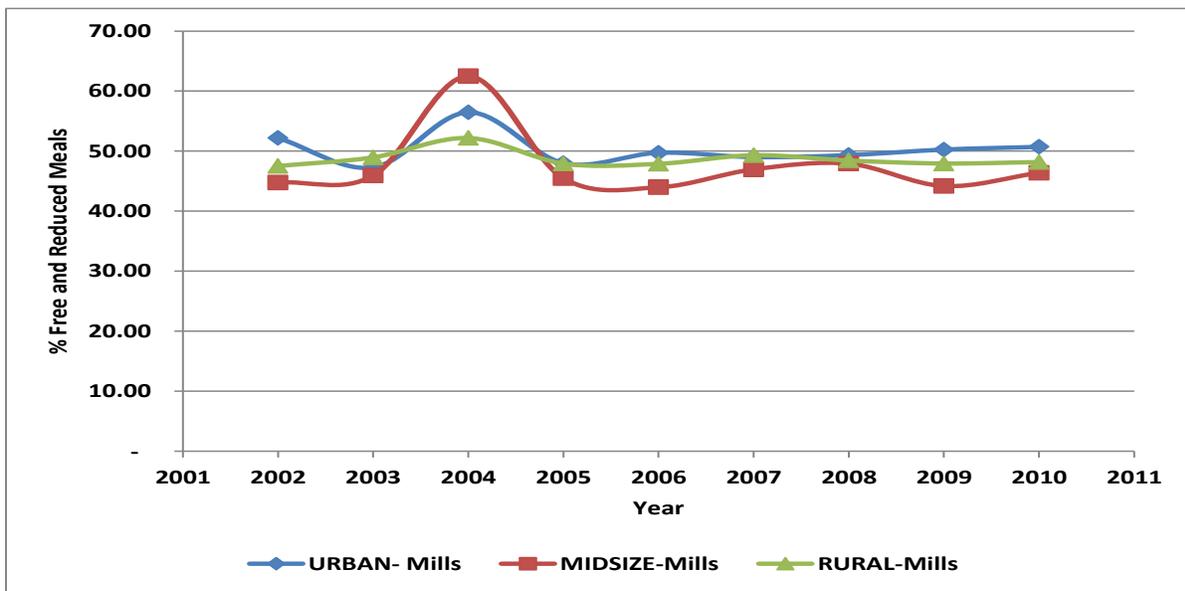
In Oregon, for schools in rural areas that experienced a nearby mill closure had substantially higher rates of FRPM participation than schools in mid-sized and urban areas that experienced a nearby mill closure. This relationship holds for mills that are ten miles away. This is shown in Figure 5.20.

Figure 5.20. Average Percentage of FRPM in Oregon by Rurality and Closed Mills and Year: 1996 to 2010



In Washington, It is notable that there is no clear trend of FRPM participation in urban, mid-sized, or rural communities that have experienced a mill closure. These data are shown in Figure 5.21 by data points and connecting lines that remain close together. It is not possible to discern between the rates of FRPM participation between communities of different sizes unless schools greater than 20 miles from a mill are included in the analysis.

Figure 5.21. Average Percentage of FRPM in Washington by Rurality and Closed Mills and Year: 2002 to 2010



4) *Is there a discernible trend in this relationship by community population size or time elapsed since mill closure for those communities with closed mills?*

The limits of the data set precluded detailed analysis of this question. Nonetheless, within eight years of a mill closer FRPM rates were higher in mid-sized communities.

Summary

When averaged across all study area counties and all mills, regardless of status (open or closed) or population size, there was a general increase of students participating in the FRPM in schools within five miles of a mill. This may be the result of mills location in industrial areas or more impoverished sites to begin with. Trends differ among the three states, with rural areas in Oregon generally having higher rates of student participation in the FRPM program than students in mid-sized and urban areas. In California schools in mid-sized communities generally had higher rates of FRPM enrollment within eight years of mill closure, but was more similar to rural areas after eight years. It should be noted that the dataset of closures after eight years is limited and warrants further analysis. In Washington, trends between the different size communities were similar unless schools greater than 20 miles are included in the analysis.

These data are presented to offer a flavor of the kinds of analyses possible. There was inadequate time to conduct more detailed assessment, especially in light of the complexity of obtaining necessary data and organizing it in ways to facilitate analyses. The FRPM data is a powerful measure that when linked with geo-located schools and mills offers opportunity to quantitatively

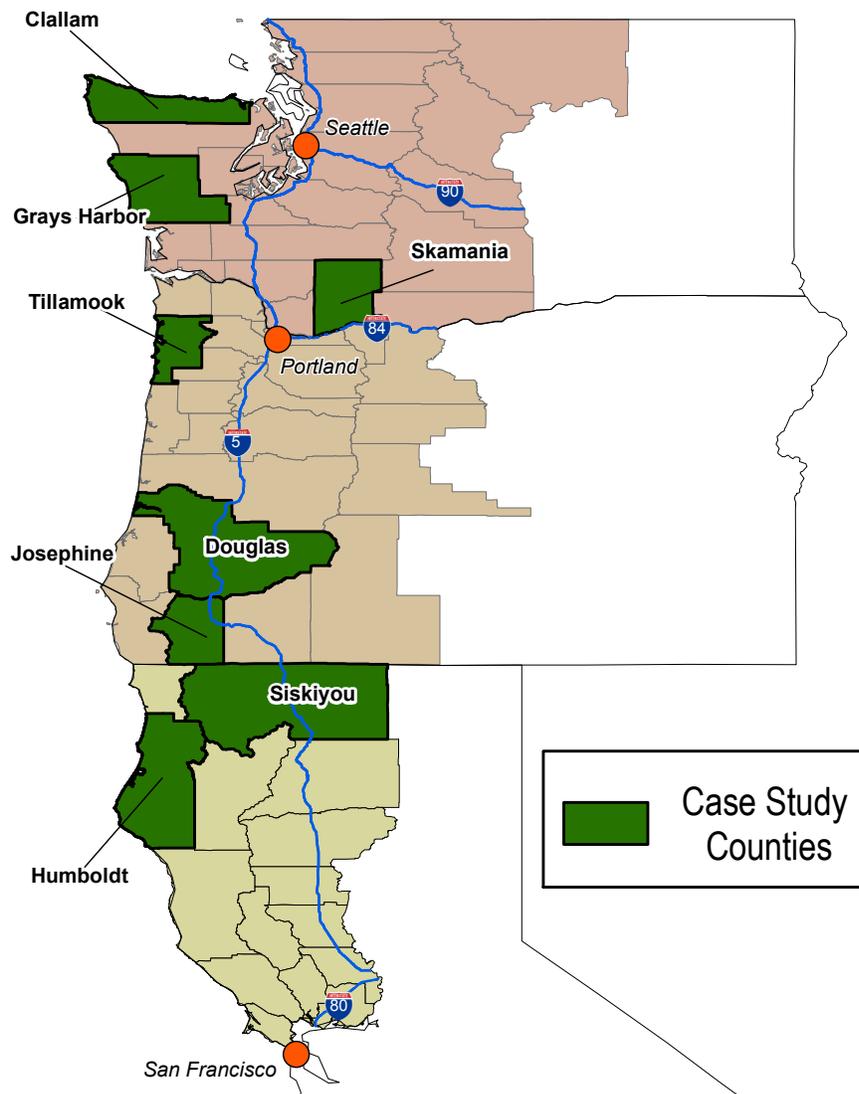
assess a relationship that has not been analyzed before. The same is true for the mill location by urban, rural, or semi-rural/urban: it offers a way to assess impacts and determine if one kind of area is disproportionately affected as measured by participation in FRPM.

Additional work should probe these data sets and relationships more deeply, as well as draw in Census and other data to explore additional socioeconomic and demographic effects.

Chapter VI. Cases: The Reality on The Ground in Counties

In order to understand and analyze socioeconomic impacts of the proposed revised critical habitat area designation for the northern spotted owl, analysis at a finer scale than the entire three-state region or states is needed. A sample of counties were selected to facilitate such analysis, allowing a more in-depth examination of current and recent issues, general health and well-being of individual communities and counties, and the “field” on which CHA designation and potential impacts will play out.

Map 6-1. Case Study Locations



Selection Method

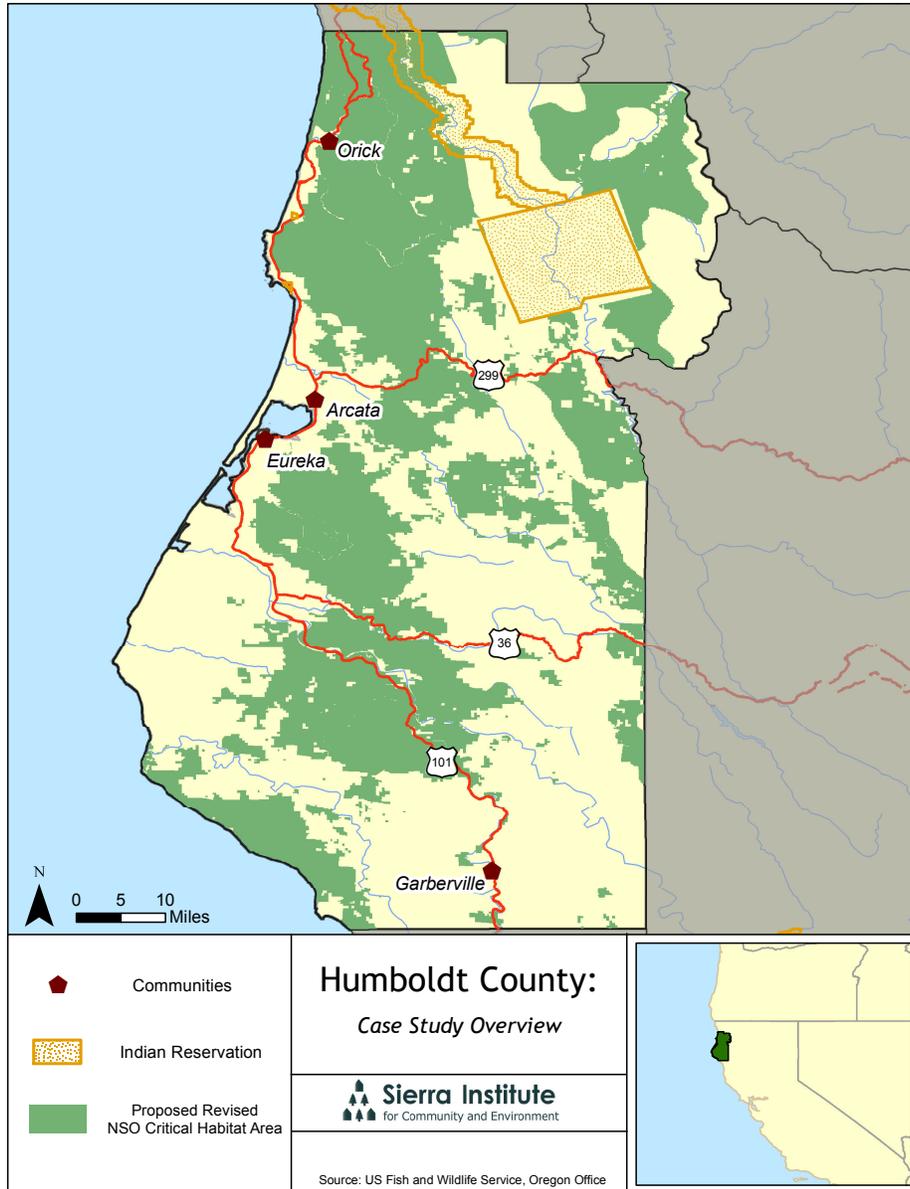
Selection of counties for case studies was done using a process informed by the following databases: enrollment in Free and Reduced Price Meal program over time, employment dependence on timber-related industries, presence of operating or recently closed mills, and the land base covered under the proposed revised critical habitat area designation. In addition to information from these databases, selection was also informed by demographic information collected from the U.S. Census Bureau. Other selection criteria included the presence of large metropolitan areas, interstate commerce corridors, and other variables reflecting key issues for CHA counties in California, Oregon, and Washington.

Counties were selected to reflect the diversity that exists among the rural counties that contain area listed as proposed revised CHA as well as to illustrate the kinds of socioeconomic issues that warrant exploration because of potential impacts from CHA designation specifically and landscape management generally. To reflect the unequal distribution of CHA designation, – three counties were selected in Washington and Oregon and two counties in California. Through this selection process, the counties shown in Map 6.1 and were chosen for inclusion as county case studies.

CALIFORNIA

Humboldt County

Map 6-2



Densely forested Humboldt County comprises about 20% of timber production in California, and 28.7% of the total timber harvested in California CHA counties.¹⁶ Of the county’s 2.3 million acre land base, almost half (1,018,514 acres) is private land designated for timber production. The proposed 2012 CHA acreage totals 927,712 acres, and of this, 53.7% of proposed critical habitat area (498,936 acres) is private timberland.

¹⁶ Industrial Economics, Incorporated, 2012. Exhibit 3-2, page 3.5.

With the exception of the Arcata-Eureka urban area, Humboldt County is sparsely populated, with just over 134,000 people in 2010. Humboldt County trends north to south, with an average population density of 37 people per square mile. It ranges from a low of 1.8 people per square mile in the southwest, to over 4,000 people per square mile in Eureka. One-third of county residents live in the Eureka-Arcata area, which contains both the county seat and the campus of Humboldt State University. The county maintained a steady growth rate of 6% during the 1990 to 2000 and 2000 to 2010 decades.

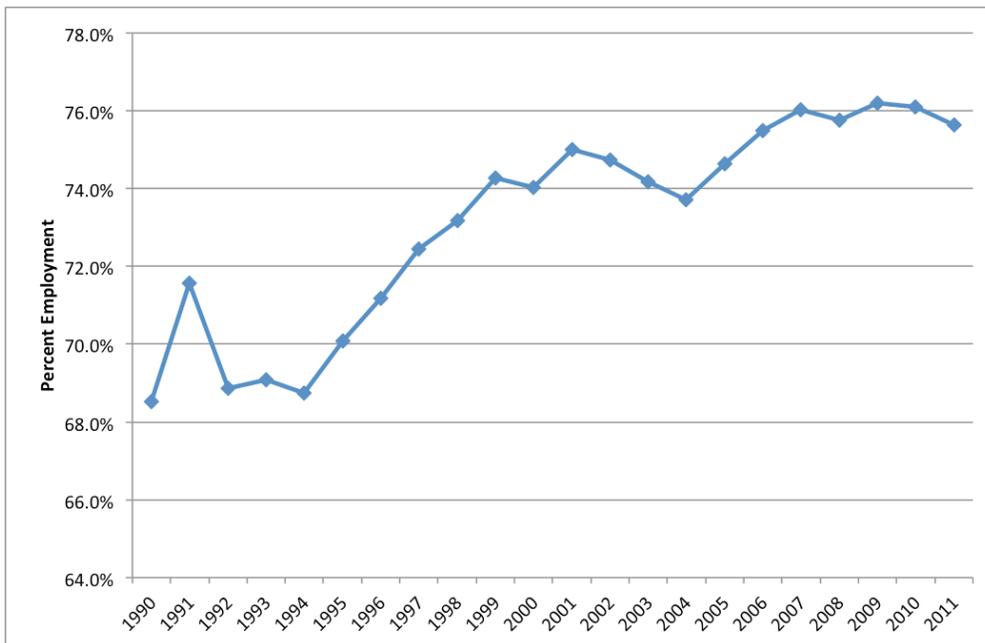
The greater Eureka area is the largest urban settlement on the Pacific Coast between San Francisco and Portland. The County has eight Native American reservations within its borders. One of the eight is the Hoopa Reservation, the largest reservation in California. Humboldt County has seven incorporated cities (listed by population size, from largest to smallest):

- Eureka (43,000)
- Arcata (17,000)
- Fortuna (12,000)
- Rio Dell (3,400)
- Ferndale (1,300)
- Blue Lake (1,250)
- Trinidad (350)

Employment and Regional Economics

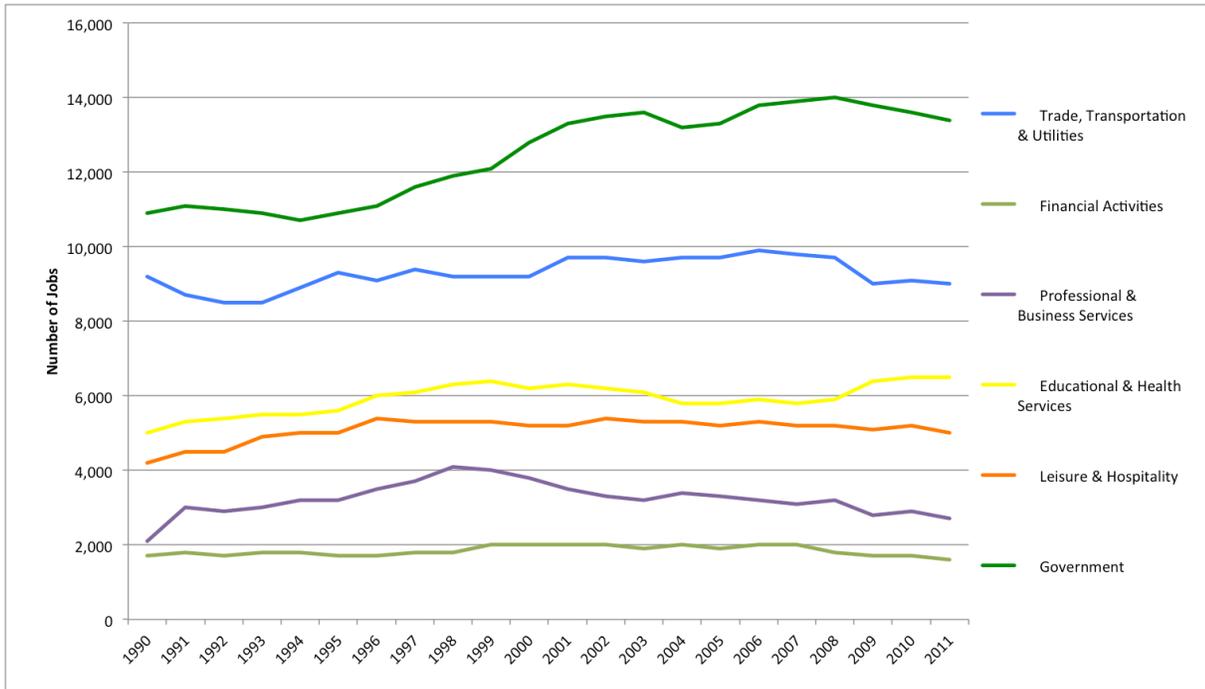
Major industries are divided into two categories: service-providing and goods-producing. Since 1995, more than 70% of Humboldt County workers were employed in service-providing industries. Figure 6.1 shows the change in this sector from 1990 to 2011.

Figure 6.1. Humboldt County Employment in Service Providing Industries: 1990 to 2010



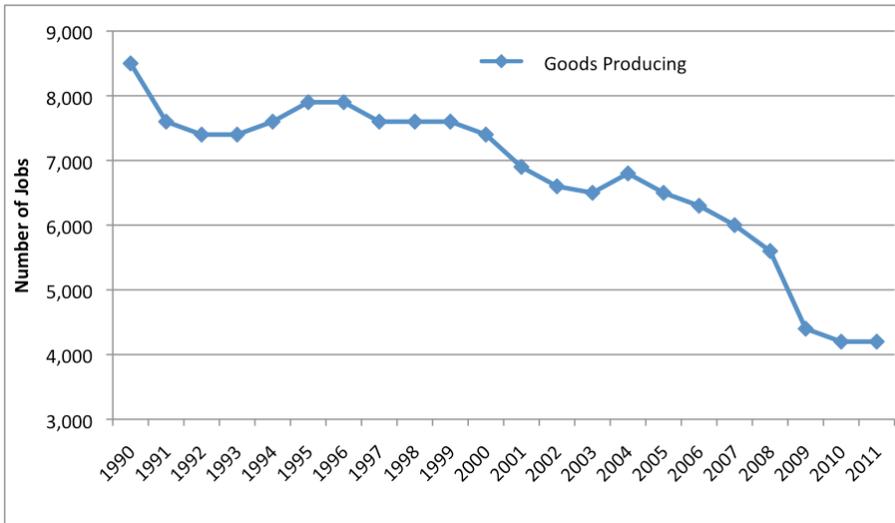
By investigating the major sectors that comprise service-providing industries, a more detailed analysis of the Humboldt County economy is possible. Figure 6.2 shows service job sub-sectors. The largest subsector is government, which itself includes local, state, education, and federal employment. This subsector has grown nearly 23% since 1990; the Educational and Health Services subsector has shown the most growth on a percentage basis at nearly 30%.

Figure 6.2. Humboldt County Employment by Service Sub-sector: 1990 to 2011



Manufacturing, a key sub-sector of the goods producing sector, however, is quite different, showing a precipitous decline since the beginning of the period. From 1990 to 2010, over half the jobs in the sector were lost. Manufacturing is one of three goods-producing sub-sectors, with the other two being Mining and Logging, and Construction. Figure 6.3 shows the overall decrease in the goods producing sector from 1990 to 2011.

Figure 6.3. Humboldt County Employment in Goods Production: 1990 to 2011



Job losses have occurred in all three of these sub-sectors, with the manufacturing industry losing 65% of total jobs from 1990 to 2011. This is shown in more detail in Figure 6.4, which displays jobs by sectors in manufacturing along with other traditionally blue-collar jobs. The construction sub-sector lost jobs in the early 1990s, enjoyed a steady gain from 2000 to 2004, and then saw a loss of a third of the jobs, going from a high of 2,400 jobs to 1,700 in 2011 with the recession. These jobs have not returned. Since 1990, mining and logging jobs have decreased 42% and construction jobs are down 19%.

Figure 6.4. Humboldt County Employment in Major Timber-Related Industries: 1990 to 2011

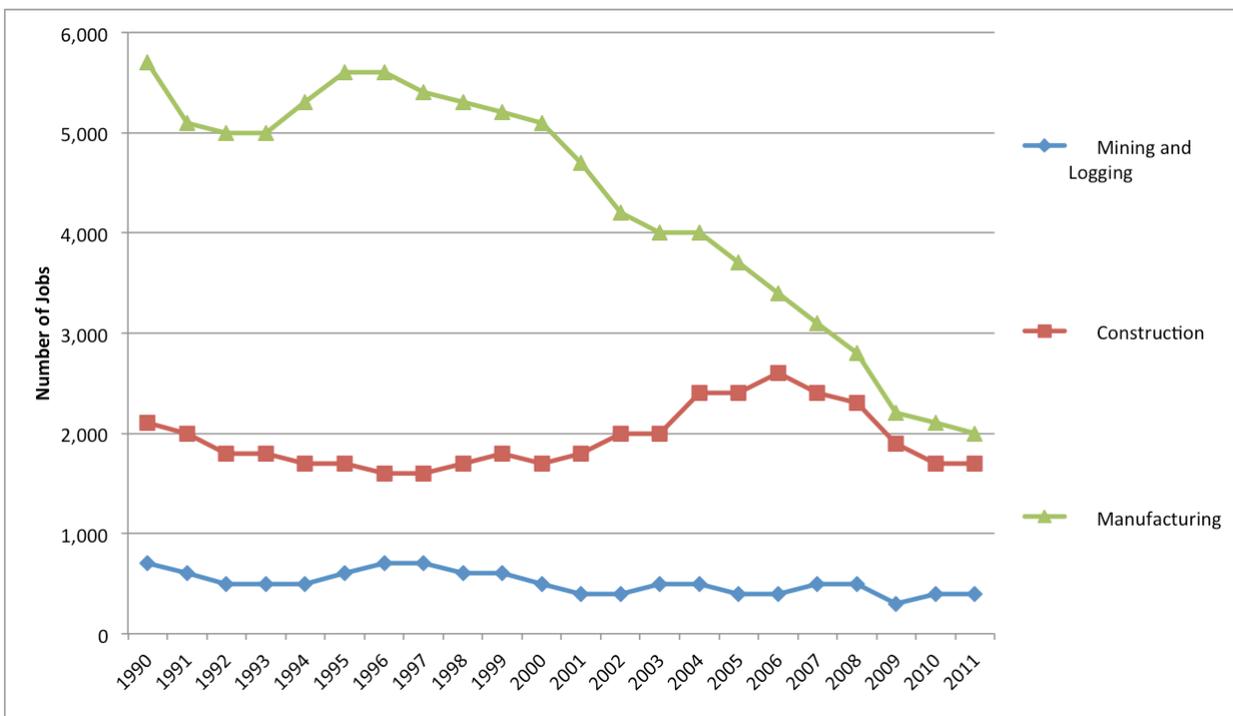


Figure 6.5 shows the goods and service sectors in the county by total wages. Both private industry and service industry jobs dropped during the Great Recession, but otherwise had grown relatively consistently since 1990. The unadjusted for inflation totals suggest total wages for these sectors recovered somewhat in 2009-2010. In contrast, goods producing wages have been stagnant. This sector also declined in 2008 and did not recover. Inflation adjusted totals would show a more significant net loss of wages for this sector over the 20-year period.

Figure 6.5. Humboldt County Total Wages by Major Sectors: 1990 to 2010 (unadjusted for inflation)

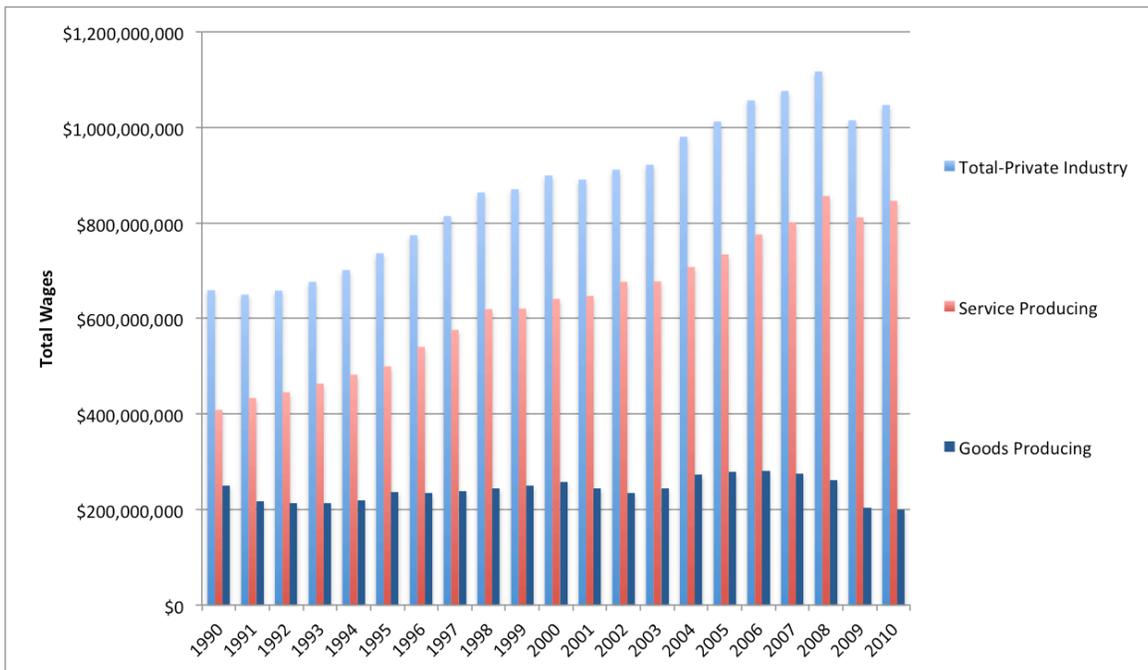


Figure 6.6 shows manufacturing jobs in the wood products industry and Figure 6.7 shows other jobs most closely related to the timber industry (sawmills and wood preservation, truck transportation, and forestry and logging). A total of 5,732 jobs were lost in these sub-sectors over the past two decades.

Figure 6.6. Humboldt County Wood Product Manufacturing Employment: 1990 to 2011

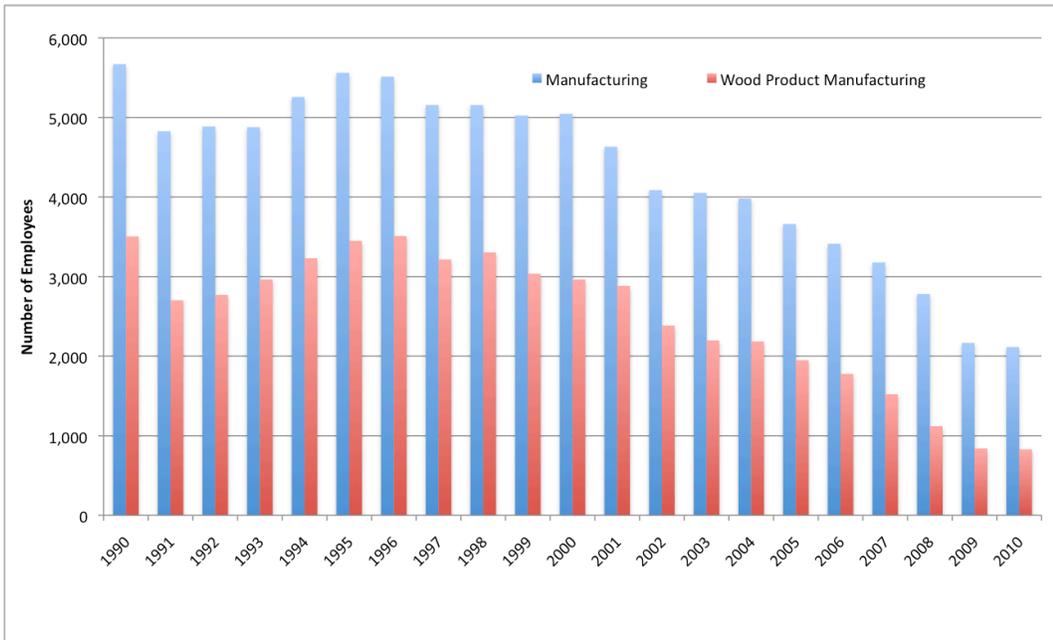
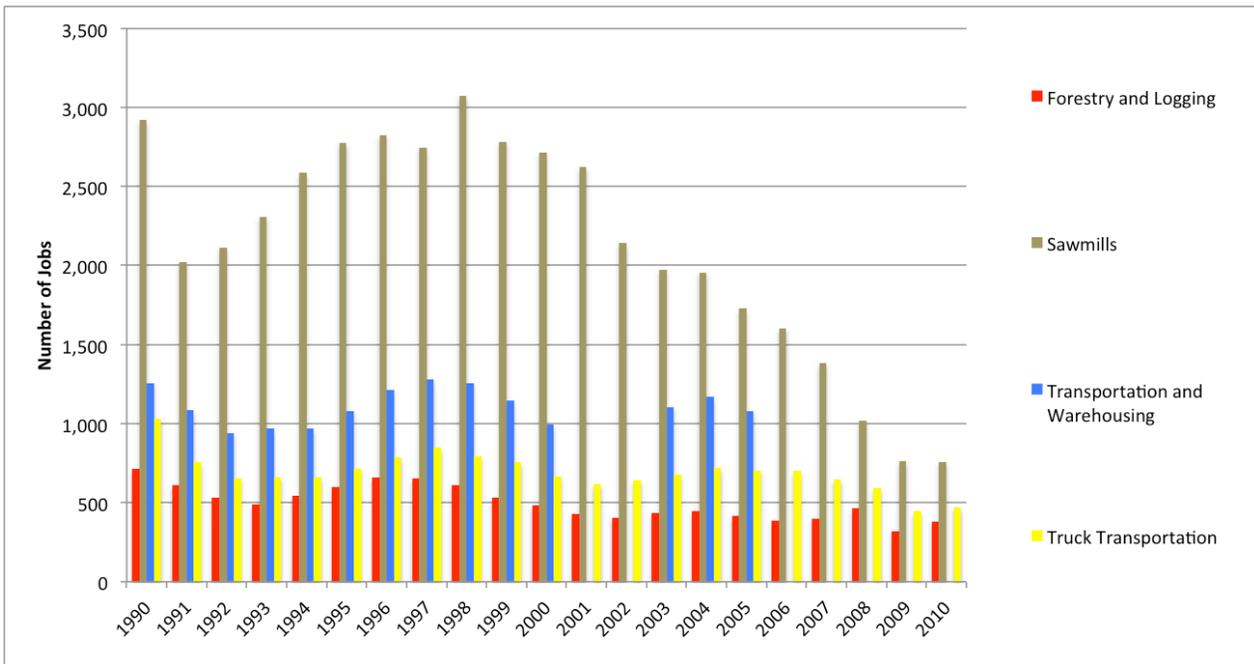
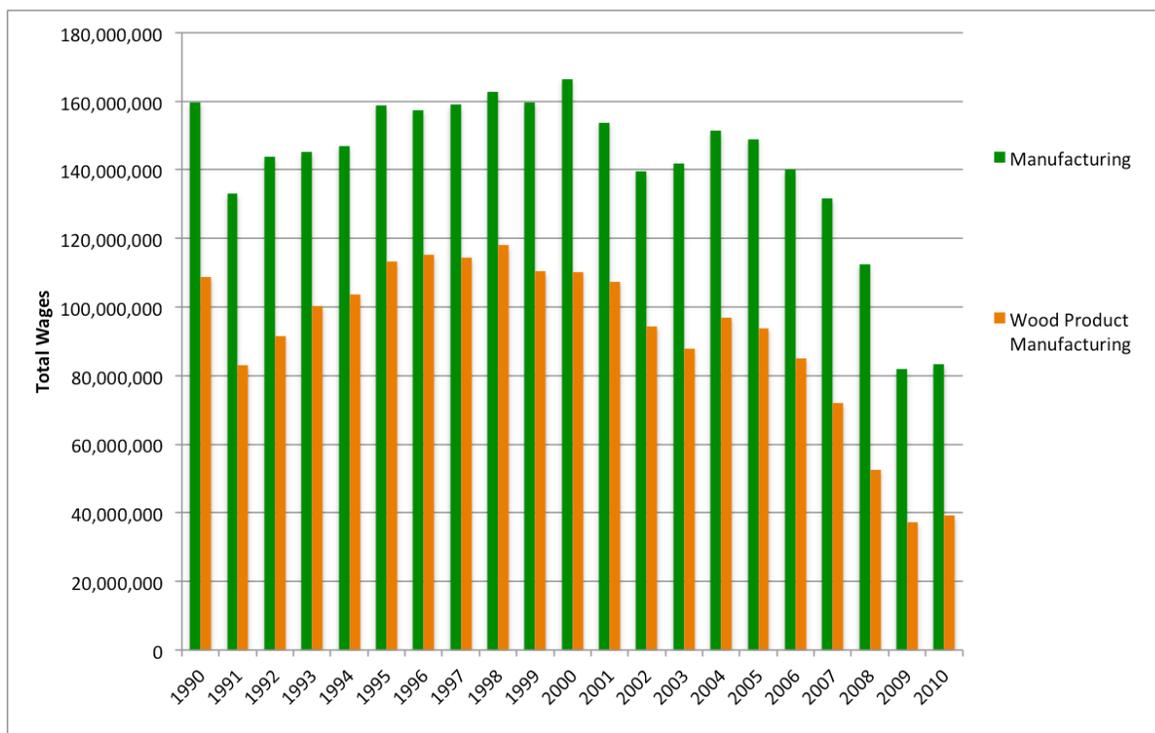


Figure 6.7. Humboldt County Jobs Related to Timber Manufacturing by Sector: 1990 to 2011



Although timber product manufacturing has decreased by 36% between 1990 and 2010, it still accounts for 47% of all manufacturing wages in 2010 as shown in Figure 6.8. These wage totals are unadjusted for inflation.

Figure 6.8. Humboldt County Total Wages by Manufacturing Sectors: 1990 to 2010 (unadjusted for inflation)



Two other economic engines for Humboldt County are Humboldt State University in Arcata and Humboldt Bay Port. Although one of the smallest CSU campuses (enrollment approximately 9,000), and the most remote CSU campus in California, it has been important to the area since its founding in 1914. Students comprise roughly half the population of the town of Arcata. According to one 2005 report, the university injects over two-hundred million a year into the Humboldt County economy.¹⁷ The university is the county’s second largest employer, and one in 14 Humboldt County residents is a part of the HSU community. As the only deep-water port between San Francisco and Coos Bay, Oregon, Humboldt Bay is a critical link in near-shore shipping operations. Additionally, Humboldt Bay is homeport to about 200 vessels for both commercial fishing operations and recreational charters.

Mill Closures, School Closures, and Free and Reduced Price Meal Program Enrollment

Currently, there are six operating mills in the county, with four in the Arcata-Eureka area, and one each in Scotia and Korb. Since 1990, Humboldt County experienced 17 mill closures, with a combined production of more than 1,000 MMBF and an average employment of about 125 employees associated with each of these closures. Five occurred between 1990 and 1999, with the other 12 closing in the 2000s. Mill closures by year are shown in Table 6.1.

¹⁷ HSU Impact Summary. 2005. Humboldt State University, “What is the impact of Humboldt State University on the Economy?”

Table 6.1. Humboldt County Mill Closures: 1990 to 2012

Year	City	Company	PLANT	PRODUCTION	EMPLOYEES
1990	Alton	Eel River Redwood	sawmill	40 MMBF	80
1993	Fairhaven	Simpson Timber	pulp	705 TPD	262
1993	Carlotta	Carlotta Lumber Co.	sawmill	25 MMBF	30
1995	Samoa	Louisiana-Pacific	sawmill	100 MMBF	140
1999	Big Lagoon	Simpson Timber	sawmill	20 MMBF	50
2000	Redcrest	Eel River Sawmills, Inc.	sawmill	58 MMSB	120
2001	Scotia	Pacific Lumber Co. / Mill A	sawmill	88 MMBF	140
2001	Scotia	Pacific Lumber Co. / Mill B	sawmill	41 MMBF	135
2002	Blue Lake	Blue Lake Lumber	sawmill	75 MMBF	150
2004	Carlotta	Pacific Lumber Co.	sawmill	90 MMBF	100
2005	Fortuna	Pacific Lumber Co.	sawmill	90 MMBF	170
2005	Fortuna	Eel River Sawmills Inc. / Mill A	sawmill	66 MMBF	160
2007	Arcata	Pacific Lumber Co. Britt Fence	sawmill	90 MMBF	60
2008	Samoa	Evergreen Pulp	pulp	350 TPD	200
2009	Orick	Simpson Timber	sawmill	48 MMBF	200
2010	Arcata	Mad River Redwood Co.	sawmill	5 MMBF	12
2011	Arcata	Humboldt Flake Board (Hambro)	board	130 MMSF 3/8"	n/a

The impact of mill closures on communities can be evaluated by the proximity of closed mill sites to school closures, student enrollment, and percentage of students using the Free and Reduced-Price Meal (FRPM) program. Table 6.2 shows the schools, school districts, mill closures, and closed schools.

For example, two schools in the Big Lagoon Union Elementary School District closed following mill closures. Both schools are located in an area (Orick/Big Lagoon) with no more than 500 people that had two operating mills producing a combined output of 68 MMBF annually and employing 340 people. In 1999, Simpson Timber closed its Big Lagoon sawmill, which produced 20 MMBF and employed 140 people. Ten years later, Simpson Timber closed its sawmill in Orick, which had produced 48 MMBF annually and employed 200 people.

Table 6.2. Humboldt County Closed Mills and Schools: 1990 to 2010

Year Closed	Community	School District	Closed Mills 1990-2010	Closed Schools 1990-2010	Employees or Students¹⁸
1993	Arcata / Eureka	Peninsula Union Elementary SD	Simpson Timber		262
1995	Arcata / Eureka	Peninsula Union Elementary SD	Louisiana-Pacific		140
2001	Arcata / Eureka	Eureka City Unified		Eureka Elementary Community Day	300
2001	Arcata / Eureka	Eureka City Unified		Marshall Elementary	378
2003	Arcata / Eureka	Eureka City Unified		Worthington Elementary	292
2006	Arcata / Eureka	Arcata Elementary SD		Bloomfield Elementary	386
2006	Arcata / Eureka	Arcata Elementary SD		Sunset Elementary	592
2006	Arcata / Eureka	Eureka City Unified		Jefferson Elementary	273
2007	Arcata / Eureka	Arcata Elementary SD		Trillium Elementary	40
2007	Arcata / Eureka	Arcata Elementary SD	Pacific Lumber		60
2008	Arcata / Eureka	Eureka City Unified		Lincoln Elementary	531
2008	Arcata / Eureka	Peninsula Union Elementary SD	Evergreen Pulp		200
2009	Arcata / Eureka	Eureka City Unified		Winship	644
2010	Arcata / Eureka	Arcata Elementary SD	Mad River Redwood Co.		12
2011	Arcata / Eureka	Arcata Elementary SD	Hambro		n/a
2002	Blue Lake	Blue Lake Union Elementary SD	Blue Lake Timber		150
1990	Carlotta / Fortuna	Fortuna Union Elementary SD	Eel River Redwood		80
1993	Carlotta / Fortuna	Cuddeback Union Elementary SD	Carlotta Timber Co.		30
2004	Carlotta / Fortuna	Cuddeback Union Elementary SD	Pacific Lumber		100
2005	Carlotta / Fortuna	Fortuna Union Elementary SD	Pacific Lumber		170

¹⁸ This is the peak number of students at the school from 1990 to the time of closing.

Year Closed	Community	School District	Closed Mills 1990-2010	Closed Schools 1990-2010	Employees or Students¹⁸
2005	Carlotta / Fortuna	Fortuna Union Elementary SD	Eel River Sawmills, Inc.		160
1999	Orick	Big Lagoon Union Elementary SD	Simpson Timber		50
2005	Orick	Big Lagoon Union Elementary		Big Lagoon Charter	233
2007	Orick	Big Lagoon Union Elementary		Northcoast Charter	235
2009	Orick	Orick Elementary SD	Simpson Timber		200
2000	Scotia	Scotia Union Elementary SD	Eel River Sawmills, Inc.		120
2001	Scotia	Scotia Union Elementary SD	Pacific Lumber		140
2001	Scotia	Scotia Union Elementary SD	Pacific Lumber		135

In addition to closed schools, overall student enrollment reveals another dimension of community well-being. In Humboldt County between 1990 and 2010, the number of students enrolled in schools decreased by 13%.

The number of students enrolled in the FRPM program also provides window into the well-being of the community. The surviving schools in Big Lagoon and Orick have an FRPM program enrollment rate of over 90% at the elementary school. In the case of the Peninsula School District, although no schools closed after three mill closures in the district– the only school in the district had its total student enrollment drop 60% and the rate of student participation in the FRPM jump to 80%. Another example is Big Lake Union Elementary School District, which is located in a community that lost a mill in 2002. The existing school’s enrollment dropped 9% from 2002 to 2010.

Comparing mill closures to the closures of schools within a community requires a close examination to understand the relationship between the two. Table 6.2 shows that the area covered by the Arcata Elementary School District lost three mills and three schools. Just this data alone might suggest a relationship of causality between mill and school closures. But, a much deeper examination of community-level dynamics, however, is necessary to ascertain the relationship between mill and school closures, FRPM enrollment rates, and other community socioeconomic measures.

Health and Well-being

Access to health care and overall population health characteristics are an important measure of community well-being. The County Health Rankings and Roadmaps rank Humboldt County as 42nd of 56 California counties in health indicators. The County Health rankings utilize a number of diverse socioeconomic indicators, including the percent of children living in poverty. Many categorical indicators of adult health in Humboldt County are close to state averages.

When comparing major categories, Humboldt County is typically in line with the state, but different than the national average. For instance, 20% of the county residents are uninsured compared to the national average of 11% and the same rate for the state. The percentage of those in Humboldt County being of “poor or fair health” is 14%, which falls between the state average of 19% and the national average of 10%. The county’s 26% adult obesity rate is in line with both the national average of 25%, and the state average of 24%. Adult smoking is higher, reaching 21% in Humboldt County, versus the 14% for both the national and California’s average. Humboldt County has 22% of its children living in poverty, which contrasts rather strikingly against the 13% national average, but is equal to the state rate.

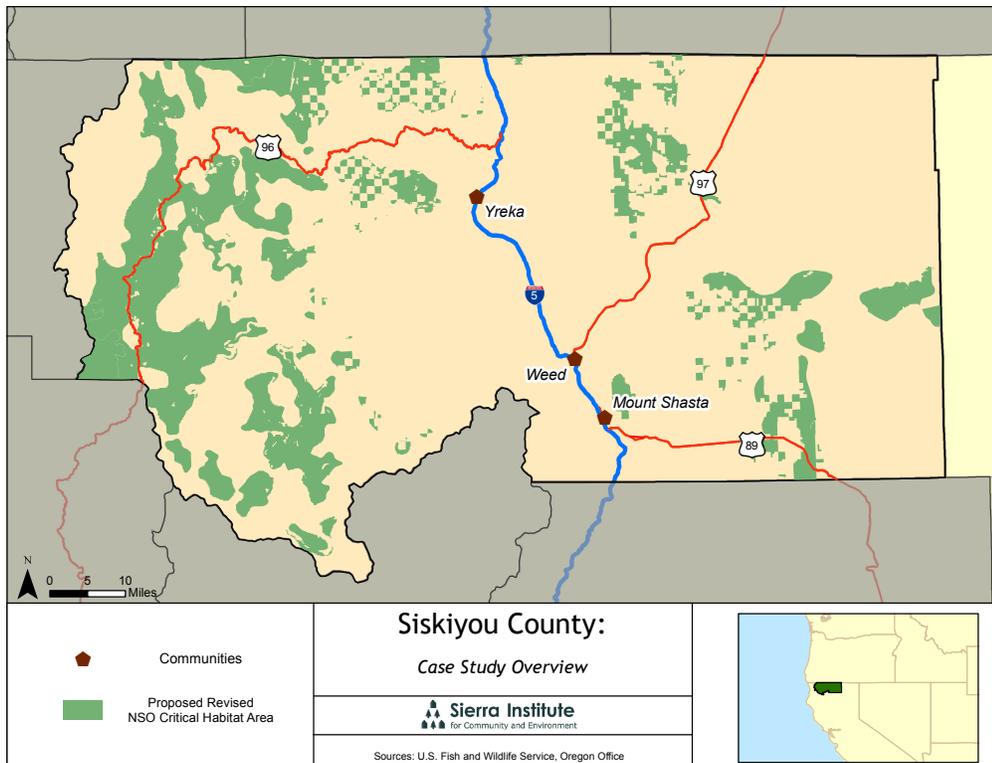
In a few categories, Humboldt County’s indicators suggest a positive difference between it and the state, in particular:

- High school graduation (80% for the county v. 74% for the state rate)
- Violent crime rate (385 for the state v. 500 for the state)
- Residents with inadequate social support (18% for the county v. 25% for the state)
- Illiteracy rate (9.4 for the county v. 23.1 for the state)

However, 39% of children in the county live in single-parent households, which is above the state average of 30%.

Siskiyou County

Map 6-3



As the fifth largest county in California, sprawling Siskiyou County encompasses 6,300 square miles. The roughly rectangular county shares its 100 mile northern border with Oregon, and stretches south a little over 50 miles. The county's population in 2010 was 44,900. The average population density is 7.2 people per square mile. This density is the second lowest of the large counties over 5,000 square miles in California.

Siskiyou County trends east to west, and the only major population area is the county seat of Yreka, with a 2010 population of 7,765. Yreka is located in the busy I-5 corridor that bisects the county. Other than Yreka, the county has only cities with more than 1,000 residents.

The U.S. Forest Service manages 66% of the land in Siskiyou County. The vast majority of this land is the Klamath National Forest. Seventeen percent, or 708,435 acres, of the county is designated as CHA for the northern spotted owl. Ninety-nine percent of this total, or 707,435 acres, is national forest land.

In 2010, of the 1,160,588 MBF harvested in California, Siskiyou County accounted for 16% of the total, up from about 10% of the timber harvest in 2000.¹⁹ Timber harvest in Siskiyou County in 2010 accounted for 25% of the total harvest in all of California's CHA counties.

¹⁹ UC Davis. 2003. Forestry, Forest Industry, and Forest Products Consumption in California (in file)

Employment

Between 1990 and 2011, Siskiyou County's unemployment rate was consistently higher than California's unemployment rate, as seen in Figure 6.9. Employment opportunities in the county are limited to a handful of industries and the number of jobs in the county has decreased since 1990. The total number of private sector employees has decreased 9.6% between 1990 and 2010, as shown in Figure 6.10. Because of the job increases during the mid- and late 1990s, the 1990-2010 decline is less. Job losses since 2000 are almost double the 1990-2010 average.

Figure 6.9. Unemployment Rate for Siskiyou County and California: 1990 to 2011

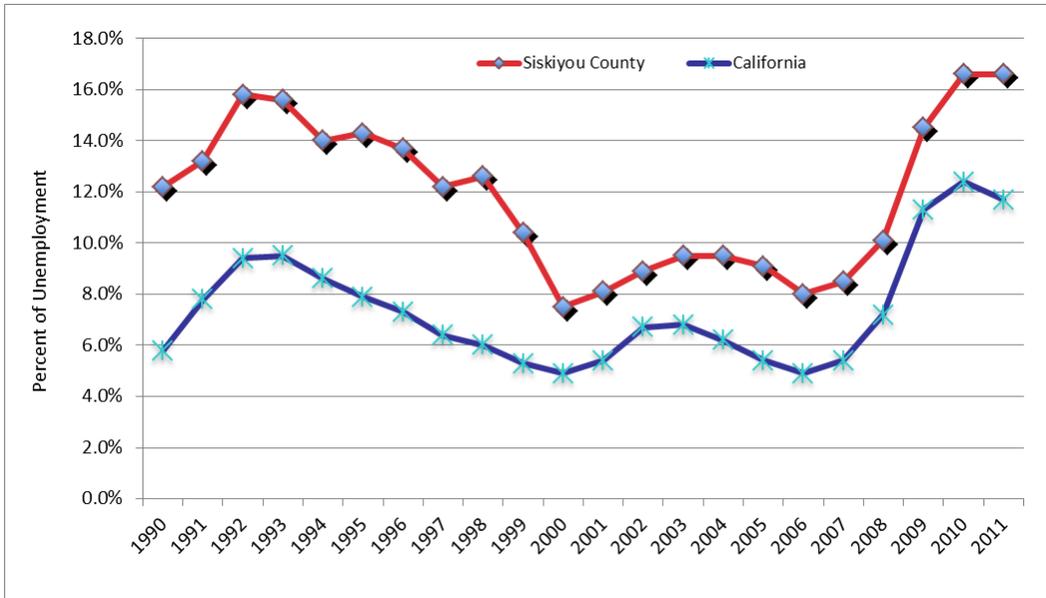
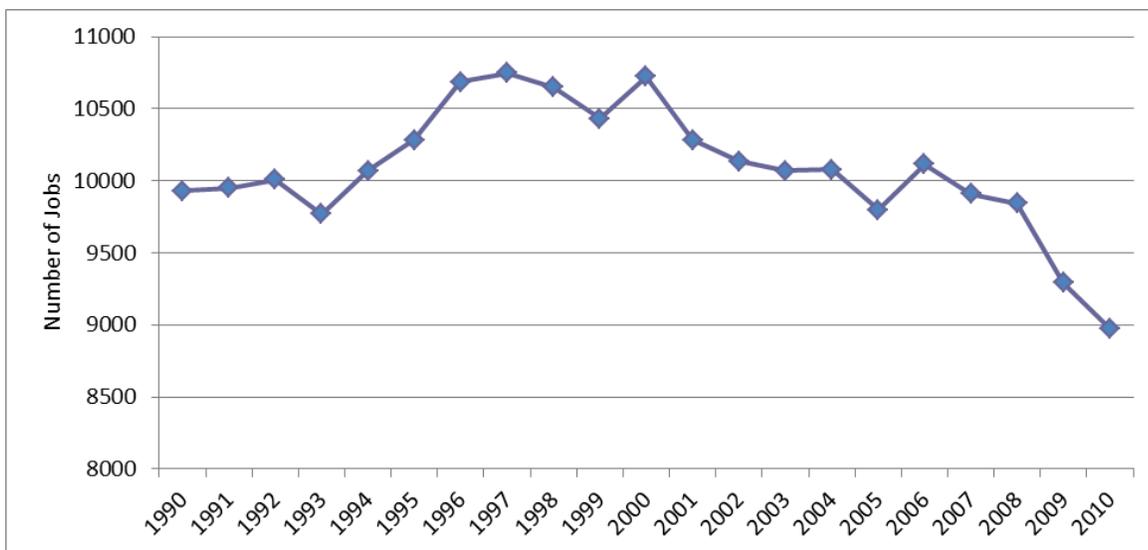


Figure 6.10. Siskiyou County Private Industry Employment: 1990 to 2010



In 1990, the service-providing sector comprised 68% of private industry employment and the goods-producing sector accounted for 32%. The service-providing sector accounts for 79% of private

industry employment today, as shown in Figure 6.11. Jobs in the goods-producing sector now account for 21% of all private industry employment. This trend is not unique to Siskiyou County, as the role that goods production plays in all CHA counties in Washington, Oregon and California has been diminished and service-providing jobs are now a larger portion of private sector jobs. Jobs in the service-providing sector provide more than \$250 million in wages for Siskiyou County workers and account for most of the county’s economic growth over the last 20 years, based on total wages as shown in Figure 6.12.

Figure 6.11. Siskiyou County, Primary Sectors by Total Number of Employees: 1990 to 2010

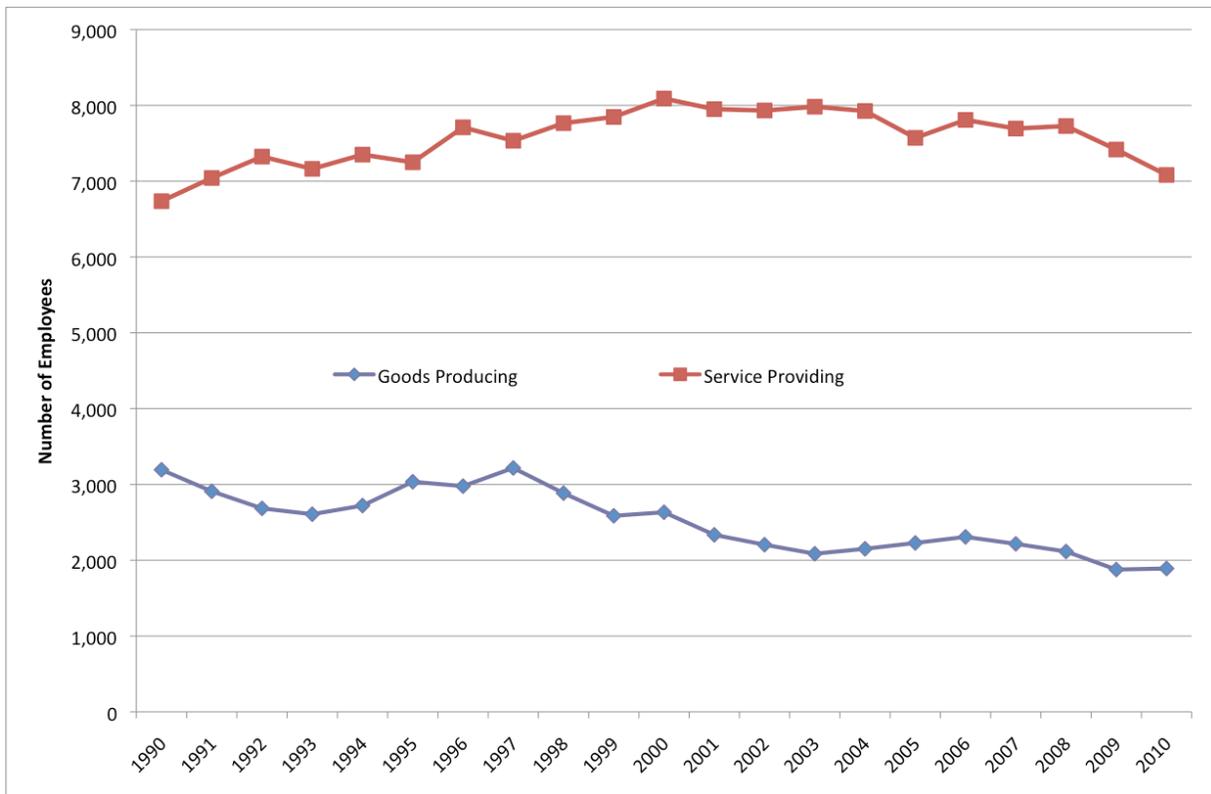
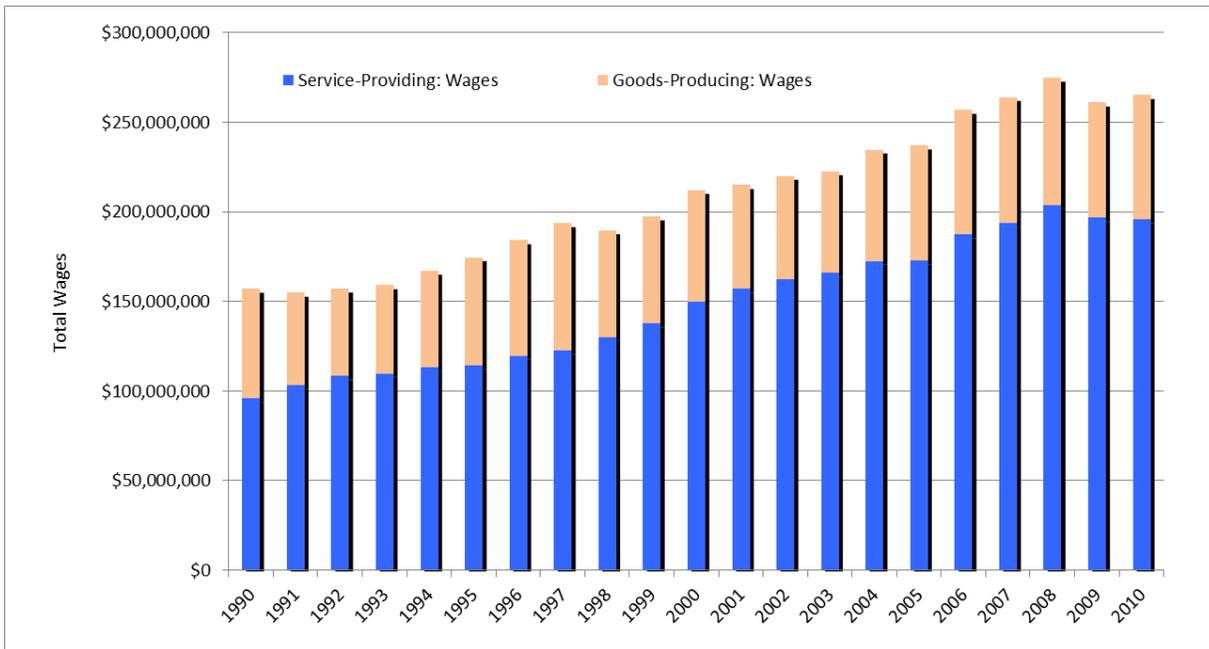
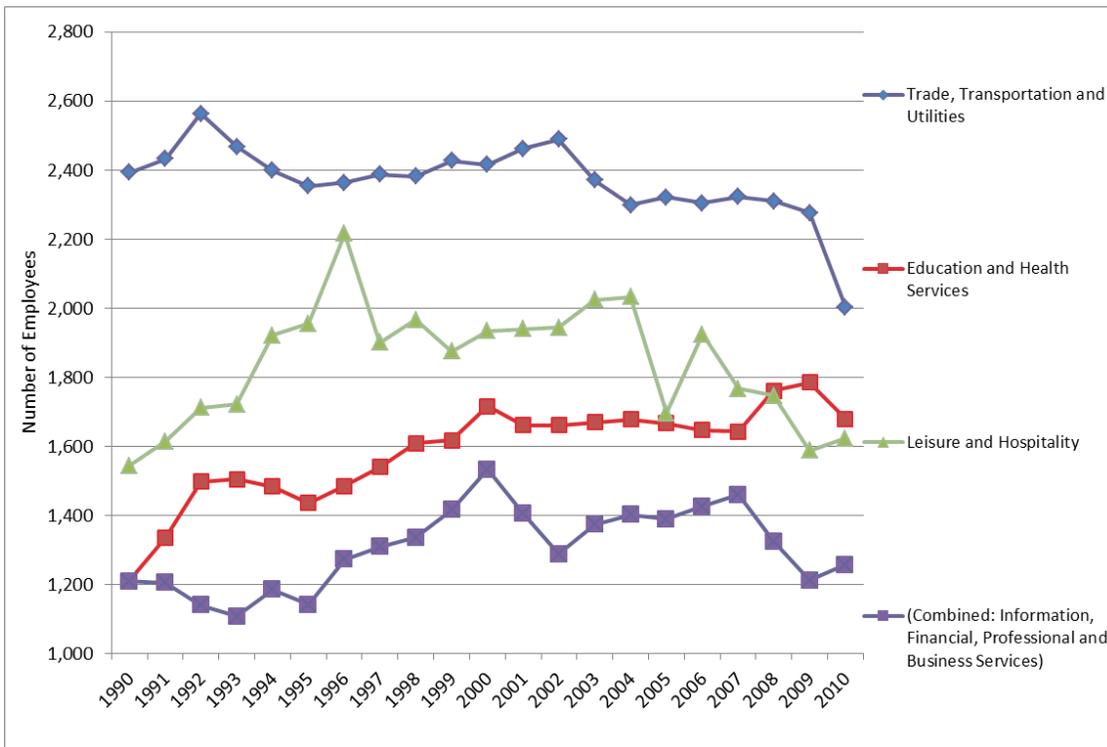


Figure 6.12. Siskiyou County, Primary Sectors by Total Wages: 1990 to 2010



The service-providing sector consists of numerous subsectors that experienced varying degrees of growth and decline, as shown in Figure 6.13. Jobs in Education and Health Services increased 38%, while jobs in Trade, Transportation and Utilities decreased 16%. Other subsectors include Information, Financial, Professional and Business Services. When these are combined, they employ less than the Education and Health Services subsector.

Figure 6.13. Siskiyou County Service Subsectors by Total Number of Employees: 1990 to 2010



Although the Information, Financial, Professional and Business Services subsectors employ the fewest workers, total wages between 1990 and 2007 are generally equivalent to the Education and Health Services subsector, as shown in Figure 6.14. Comparatively, total wages in Trade, Transportation and Utilities and in Leisure and Hospitality have increased at a much slower rate. The Trade, Transportation and Utilities, and Leisure and Hospitality subsectors bring in proportionally much lower wages than the combined Information, Financial, Professional and Business Services subsectors despite employing two-thirds and one-third more people, respectively.

Mill Closures

The timber industry has long served as an anchor industry in Siskiyou County. Between 1990 and 2003, the county experienced five sawmill closures and no longer has an operating sawmill. Combined, these mill closures laid off approximately 385 people and had a production of 164 MMBF. Currently, there are two operating veneer mills, one in Yreka and one in Weed, which together employ 225 people. The loss of these jobs have resulted in cascading negative impacts on support industries and other goods-producing employment sectors.

The overall decline of the goods-producing sector is the result of varying job decreases in Construction, Manufacturing and Natural Resources and Mining, as shown in Figure 6.16. Between 1990 and 2010, jobs in Natural Resources and Mining were cut in half and employment in the Manufacturing sector decreased by roughly one-third. The number of Construction jobs has remained relatively stable since 1990, though a slow decline is evident.

Wages paid to employees in all goods-producing subsectors fluctuated between 1990 and 2010, with an overall increase in Manufacturing and Construction wages, as shown in Figure 6.15. In 1991, wages from Manufacturing comprised 40% of all goods-producing wages, and now account for 47% of the total goods-producing wages. Wages earned in the Natural Resources and Mining subsector comprised 40% of all wages earned in goods-producing jobs. Its proportional impact began to decrease in 1996, and now accounts for one-third of all goods-producing wages, as shown in Figure 6.16.

Figure 6.14. Siskiyou County Service Subsectors by Total Wages: 1990 to 2010 (unadjusted for inflation)

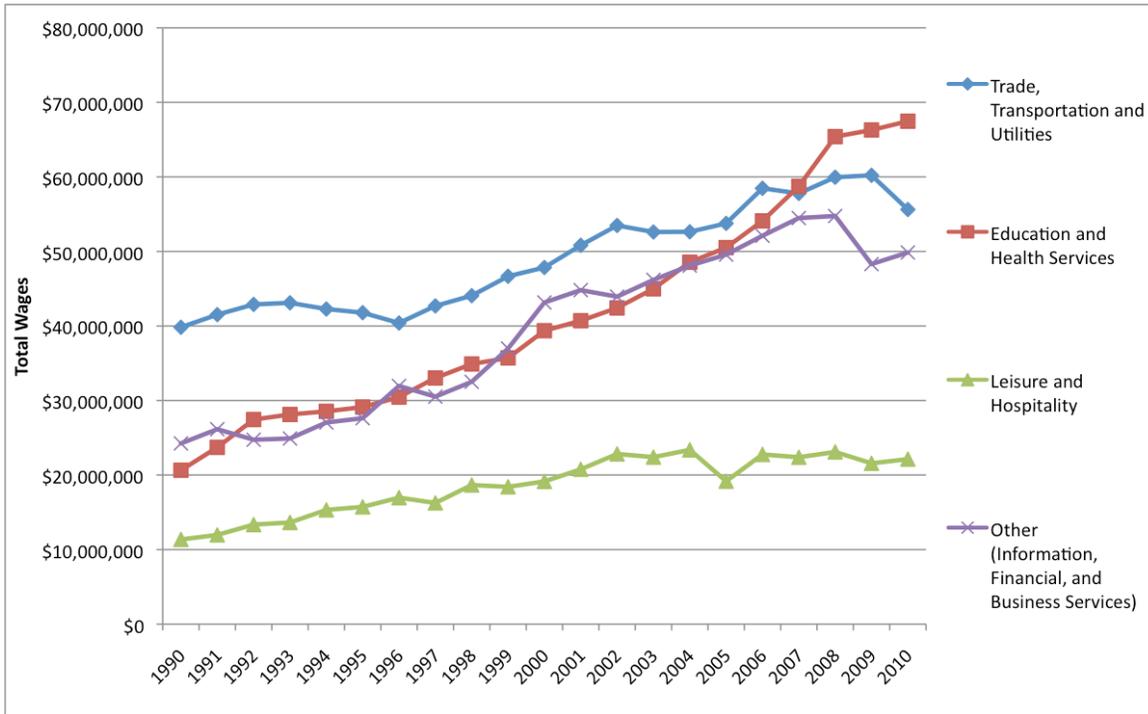


Figure 6.15. Siskiyou County Goods-Producing Subsectors by Total Number of Employees: 1990 to 2010

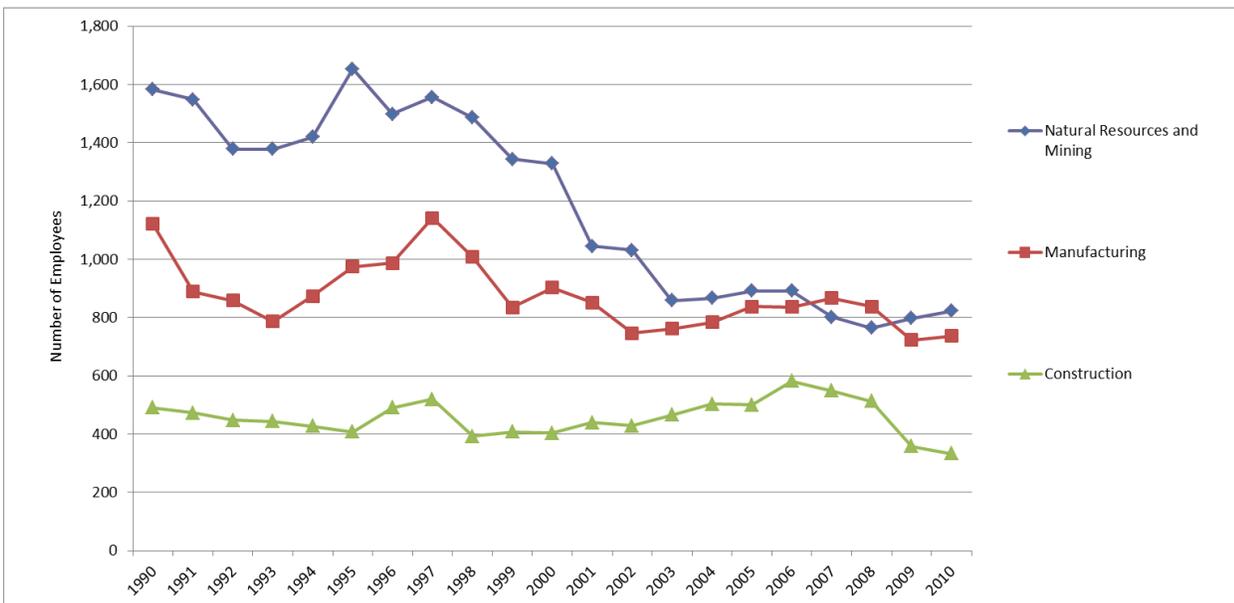
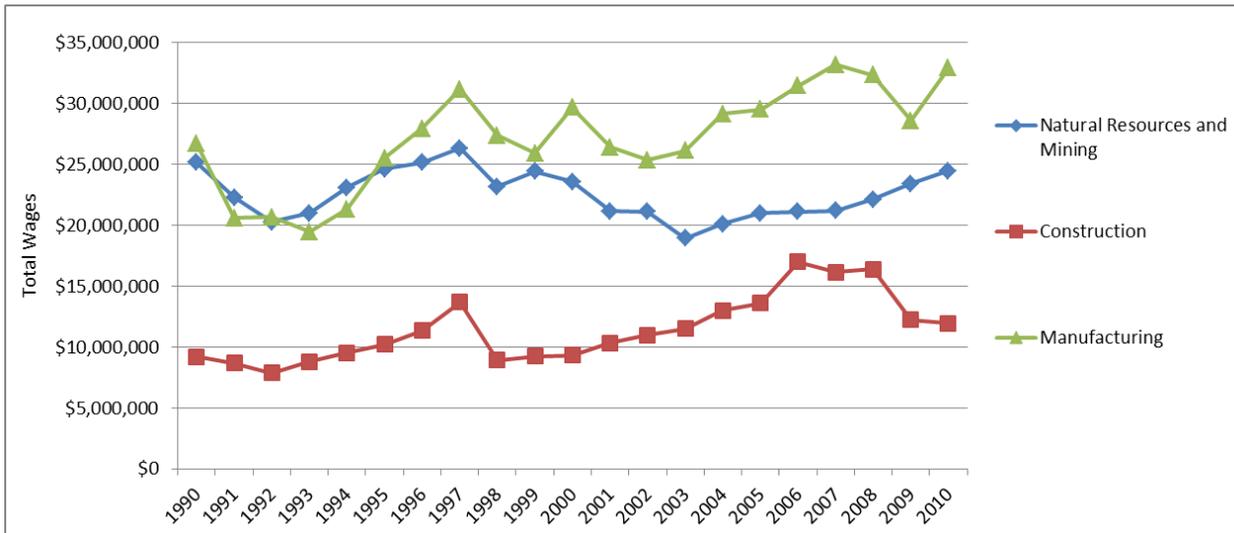


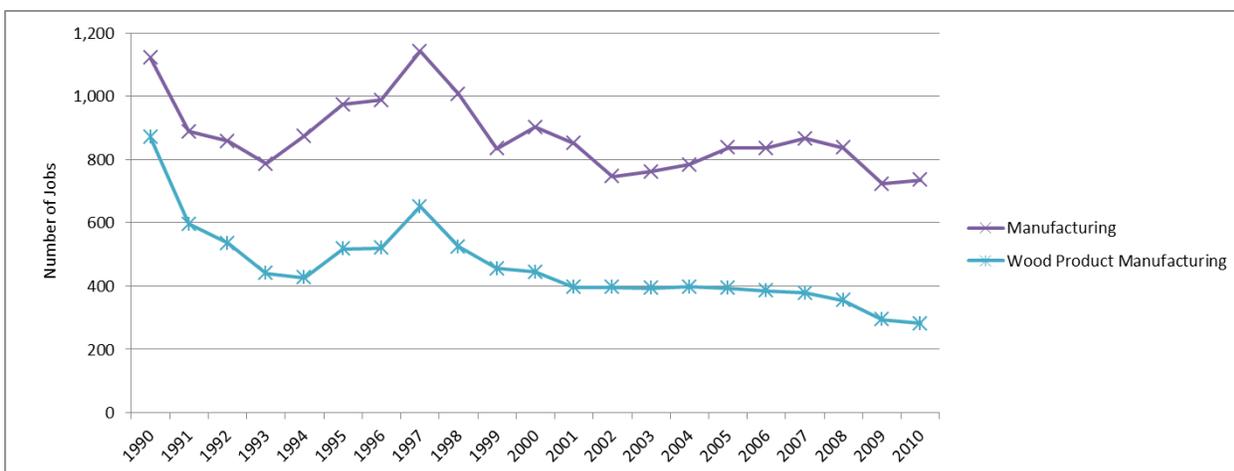
Figure 6.16 Siskiyou County Goods-Producing Subsectors by Total Wages: 1990 to 2010 (unadjusted for inflation)



Manufacturing includes of several types of specialized manufacturing. In 1990, wood product manufacturing comprised roughly 78% of all manufacturing jobs, as shown in Figure 6.17.

By 2010, only 38% of Siskiyou County manufacturing jobs were in wood manufacturing. A similar decline was experienced in the number of wood product manufacturing establishments. In 1990, there were 14 establishments identified as producing wood products. Over the next 20 years, the number of wood producing establishments dropped 57% resulting in just 6 such establishments by 2010. During this period, Siskiyou County lost about 70% of wood product manufacturing-related employment 589 jobs.

Figure 6.17. Siskiyou County Manufacturing Jobs: 1990 to 2010

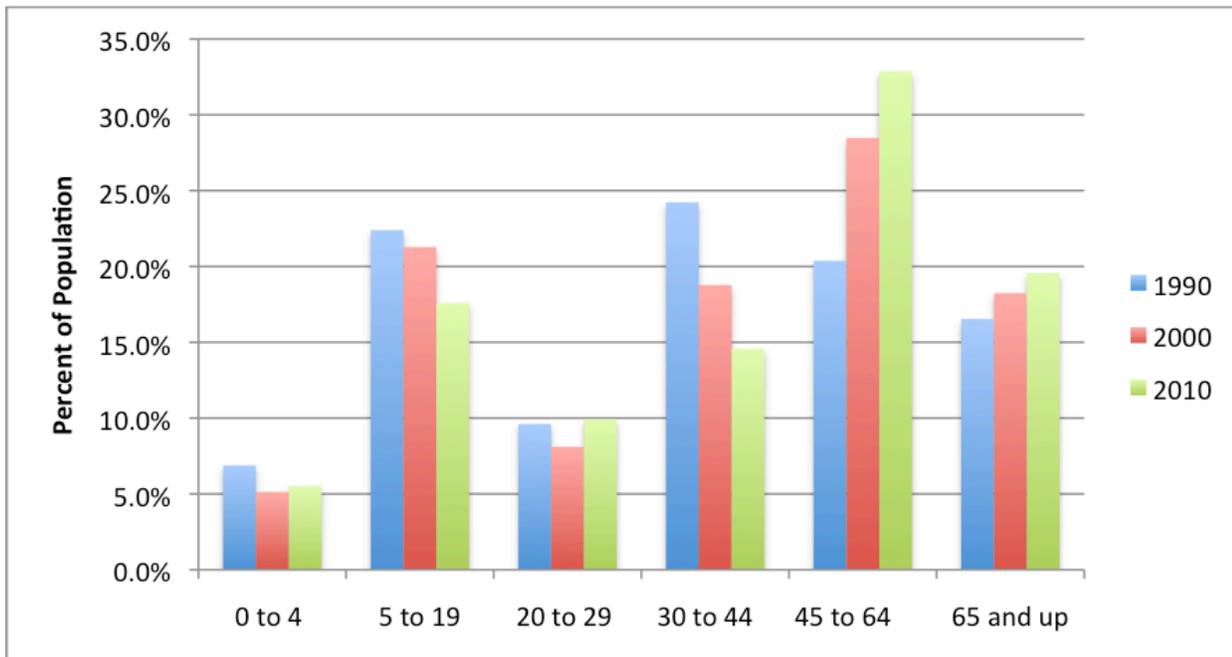


In addition, there were 56 separate forestry and logging establishments in Siskiyou County in 1990 and by 2010, this dropped 55% to 25 establishments. Truck transportation establishments also declined more than 50% in the same time period.

Age of Population

Not only is physical capital affected by the loss of mills and other businesses, but human capital also declines. In the case of Siskiyou County, this decline is evidenced by an aging population. Since 1990, the median age of Siskiyou County residents has increased to 47 and the age distribution has shifted toward an older population. Nearly 20% of the county’s population is over the age of 65, up from 16.5% in 1990. The largest change is in the population age 30 to 44. In 1990 this age group constituted about 25% of all residents and is now down to 15%, as seen in Figure 6.18.

Figure 6.18. Siskiyou Population Distribution by Age Group: 1990, 2000, and 2010



Health Indicators

The County Health Rankings and Roadmaps rank Siskiyou County 54th out of 56 California Counties in the health outcomes and 33rd in health factors. In health outcomes, the county ranked particularly poorly in mortality and morbidity, yet fared well in clinical care and physical environment. In health factors, the county’s worst ranking was for income and employment while it ranked better for environmental quality and education.

Siskiyou County ranks similarly to the State of California for the number of residents being of “poor or fair health” (19%) and adult obesity (25%). However, the county has a higher percentage of adult smokers (21%) than the state (14%) and a higher percentage of children living in poverty (31%) than the state (22%) and the national average (13%). Also 37% of children in the county live in single-parent households, which is seven points higher than the state average.

Siskiyou County has only a handful of rankings that suggest a positive difference between it and the state:

- High School Graduation (88% for the county and 74% for the state)

- Violent Crime (an annual rate of 369 per 100,000 people for the county compared to 500 for the state)
- Residents With Inadequate Social Support (18% for the county and 25% for the state)

School Enrollment

Enrollment rates tend to be reflective of overall community health, as those with dependable employment tend not to move and migrate out of the area. Additionally, enrollment of students in the Free and Reduced-Price Meal (FRPM) program can be used to assess overall family and community socioeconomic health. For Siskiyou County, overall student enrollment has decreased 29% since 1990, as shown in Figure 6.19, and enrollment in the FRPM program has increased 24%, as shown in Figure 6.20.

Figure 6.19. Siskiyou County Student Enrollment: 1990 to 2010

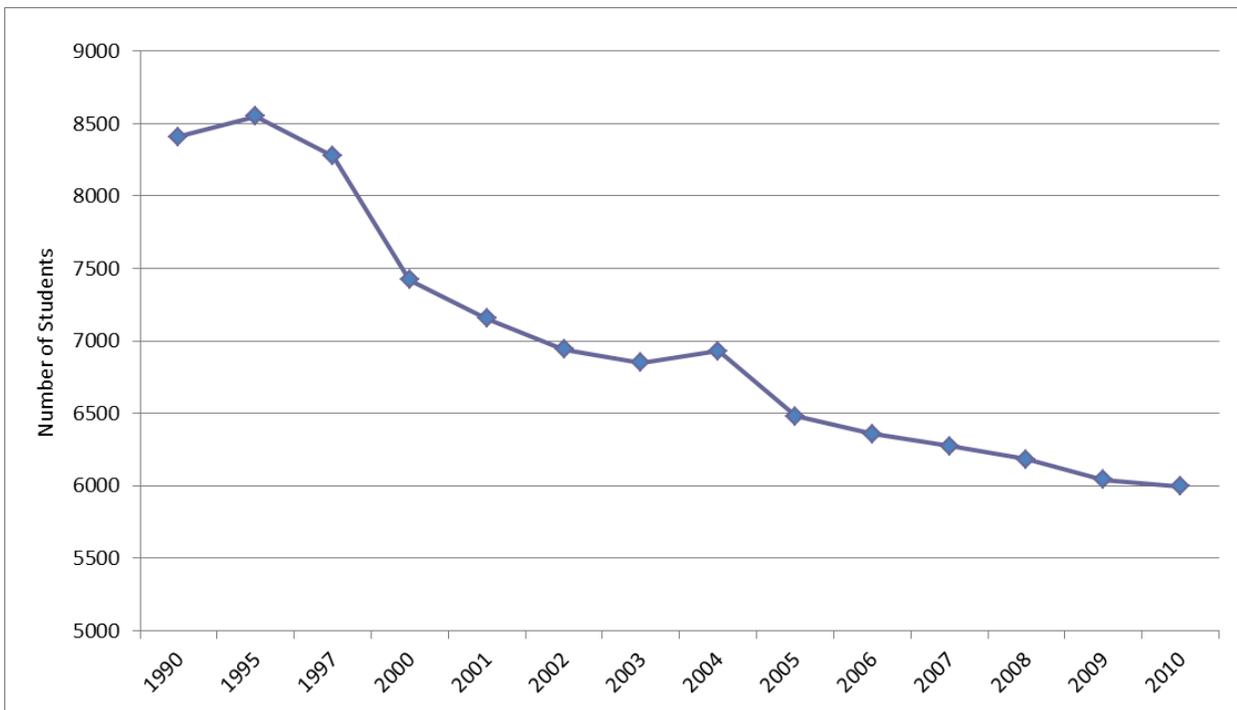
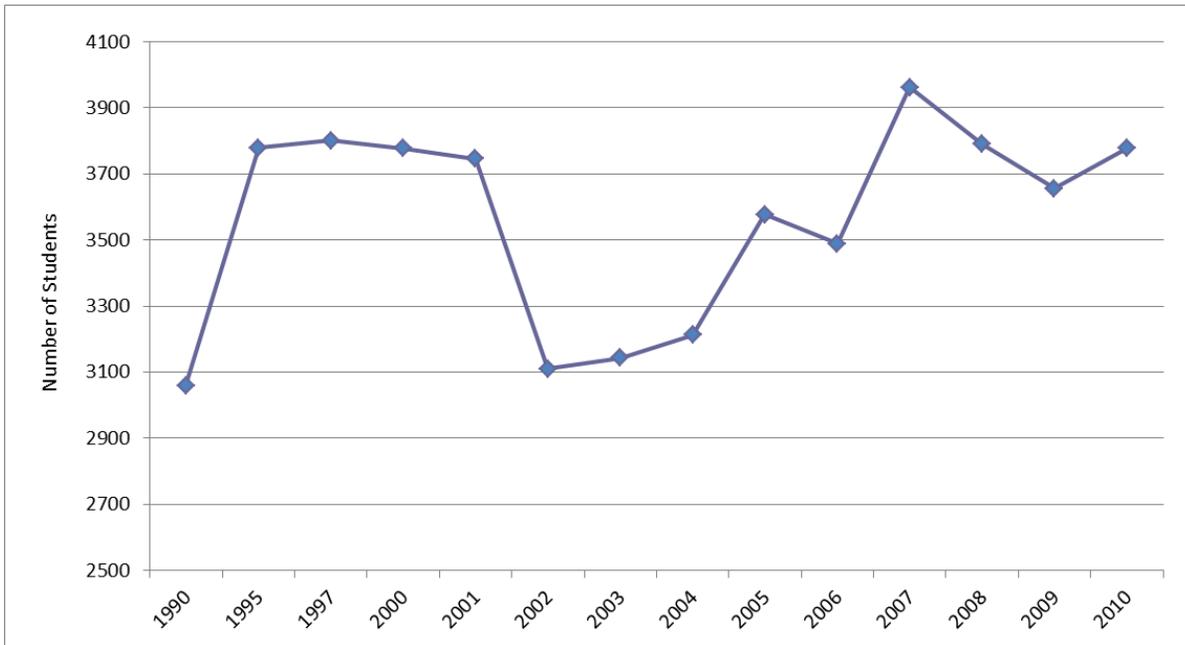


Figure 6.20. Siskiyou County FRPM Enrollment: 1990 to 2010



A community losing students will often close or consolidate schools. Between 2001 and 2012, the county experienced nine school closings, as shown in Table 6.3. For a county with a population of no more than 45,000 – nine closed schools is nearly one school closed for every 5,000 residents. Additionally, four school districts were consolidated into one district after the 2006-2007 school year.

Table 6.3. Siskiyou County School Closings: 2001 to 2012

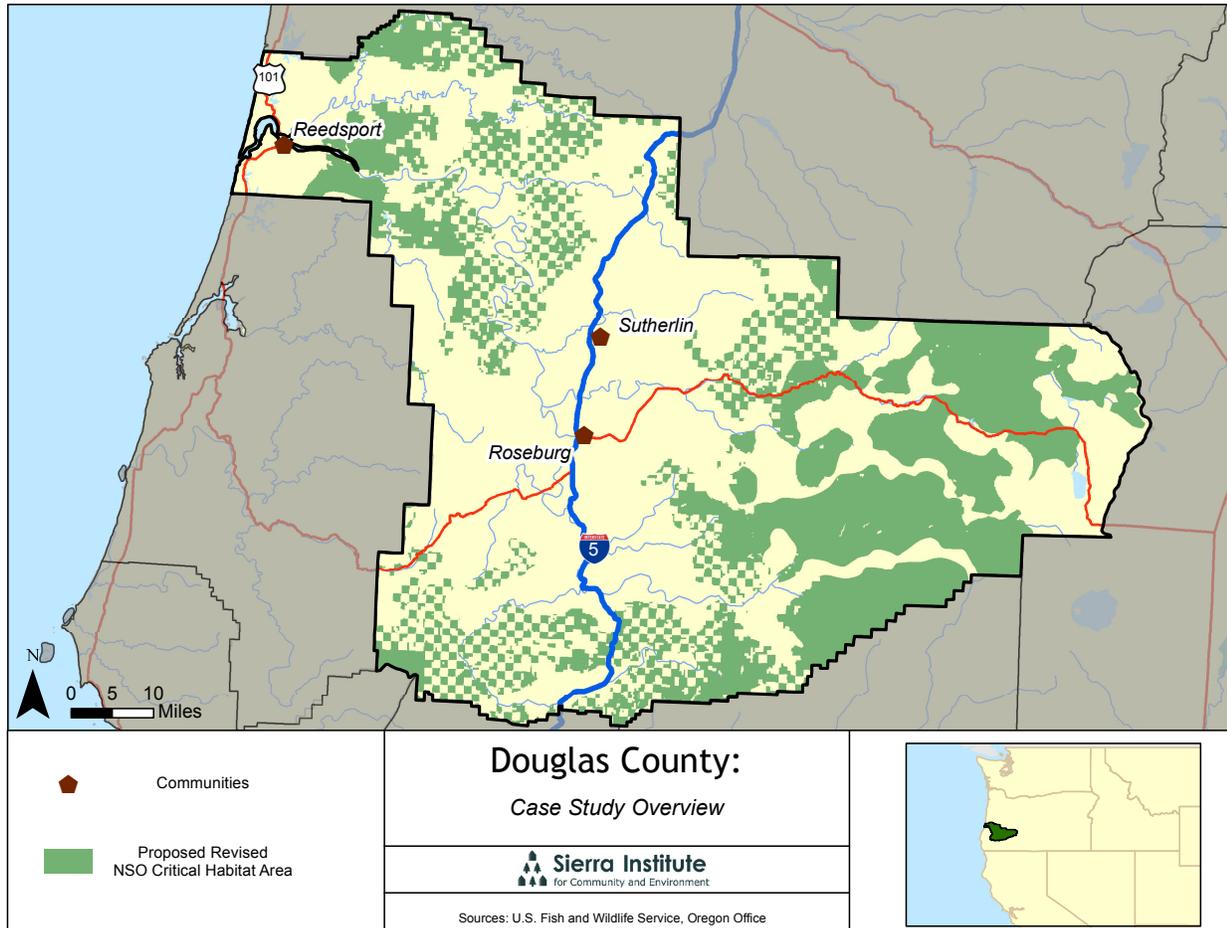
District Name	School Name	First Year Not Operating
Forks of Salmon Elementary	Northern Light Charter	2001
	Sawyers Bar Elementary	2001
Mt. Shasta Union Elementary	Mount Shasta Union Community Day	2001
Scott Valley Unified	Etna Academy of Arts, Sciences and Technology	2008
	Fort Jones Community Day	2009
	Quartz Valley Elementary	2010
Siskiyou County Office of Education	Juvenile Hall / Community	2001
Yreka Union Elementary	Gold Street Elementary	2012

The viability and quality of schools that remain is affected as well, particularly in Siskiyou County where options for students are limited by the remoteness of the nearest school and the often prohibitive travel conditions between them. Several schools in Siskiyou County experienced a dramatic decrease in enrollment, which affects the ability of the school district to offer students a comprehensive education. In some cases, classes are cut to the point where to graduate, students must use online resources. In McCloud, the elementary school had 239 students in 1990 and now has less than 100, while the high school went from 108 students in 1998 to just 21 students today. Schools in Happy Camp also saw enrollment decrease, with the elementary school having just 38% of the students it had in 1990 and the high school losing 37% of its students since 1998.

OREGON

Douglas County

Map 6-4



Overview

Douglas County is a rural county located in western Oregon, and is centrally located along the Pacific coastline. Covering an area of 5,071 square miles, Douglas County encompasses a considerable land area, rich in natural resources. Thirty-three percent of the county is designated as Umpqua National Forest, which covers more than a million acres. The Umpqua River watershed is contained entirely within Douglas County boundaries, and enters the Pacific Ocean along part of Douglas County's coastline. The county experienced a decrease in Critical Habitat Area (CHA) for the protection of the northern spotted owl, from 26% of its land area in 1992 to 15% in 2008 (843,369 acres and 481,550 acres respectively). Proposed CHA designation for Douglas County increases this total to 34% (1,099,001 acres), making it the largest CHA percentage of land area for any county in Oregon. Forestry and forest industries are key economic and employment mainstays of the county.

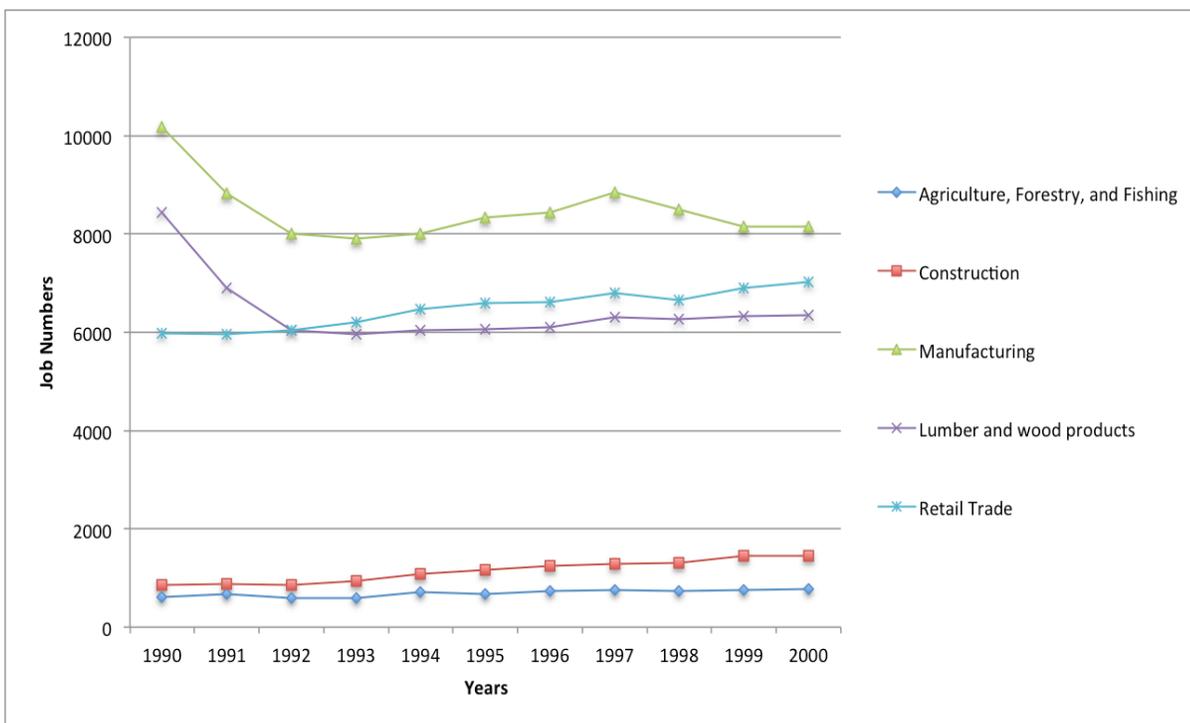
Population density in Douglas County remains relatively low, with only 21.4 people per square mile (2010). There are few urban areas, and only twelve incorporated cities. Towns range in population from as little as 170, to a high of 18,635 in the county seat of Roseburg. The majority of these are in close proximity to the Interstate 5 corridor that roughly bisects the county. Accordingly, population densities are greatest there, reaching a high of 6,475 people per square mile in one census block of the City of Roseburg (2010). This is contrasted against some eastern regions of the county with an average of only 0.8 people per square mile.

Employment

Employment in Douglas County is limited to relatively few industries. The percent of labor force in relation to the total population is 43.3%, and much of this labor force is involved in the harvest, extraction or processing of forestry resources, or related support industries. Nineteen percent of the workforce is involved with harvesting and processing timber, and another 30% provides necessary support services for this industry.

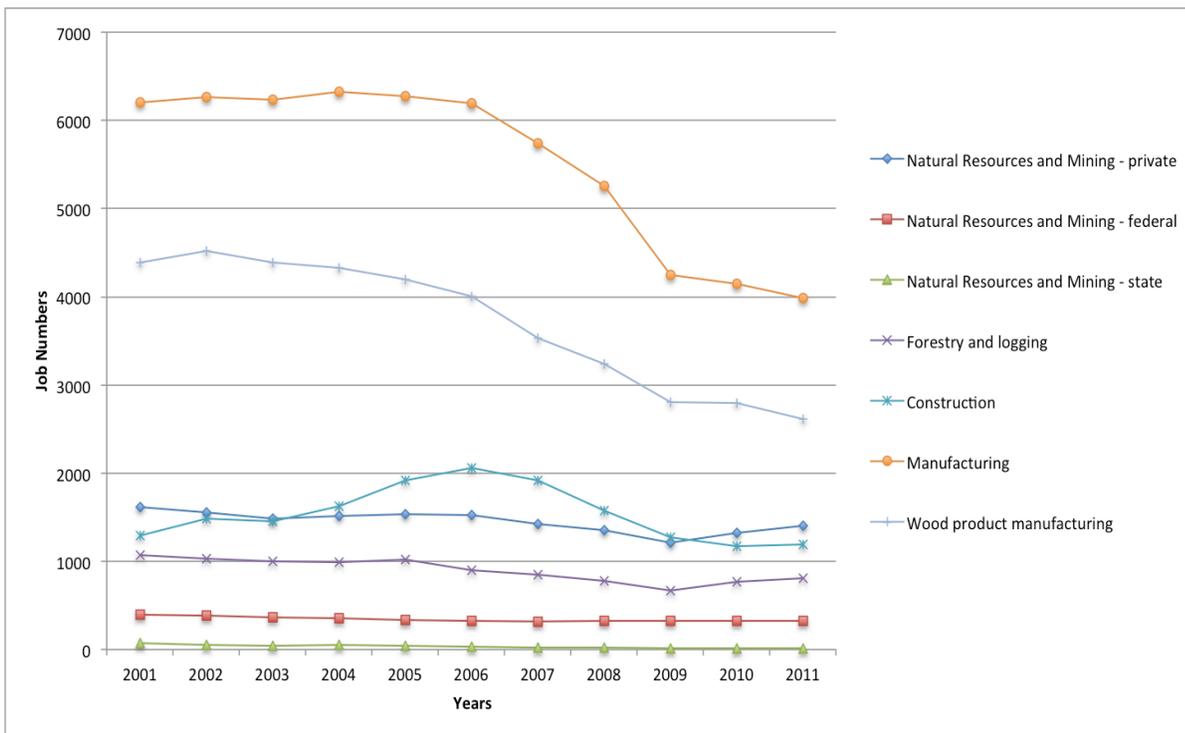
Manufacturing also provides a significant portion of county employment. Douglas County has taken aggressive steps to diversify its economy away from sole reliance on natural resource industries, and has sought to foster the establishment of unique or niche manufactured products. These products include specialty electronics, electrical cable, recreational boats, and “unique law enforcement rain gear.” These manufacturing jobs, as well as relatively high levels of retail employment and construction provide the majority of employment outside of the Forestry and Natural Resources Industries. Figure 6.21 shows jobs by industry in Douglas County from 1990 to 2000.

Figure 6.21. Douglas County Employment by Industry: 1990 to 2000



Employment in many of Douglas County’s key industries has declined over the last two decades. Manufacturing, including Wood Product Manufacturing, has consistently declined since 1990. Although Manufacturing remains as the largest single industry employer in the county, the decline in this sector is significant. A total of 6,016 jobs were lost in this industry between 1990 and 2011. This is shown in Figure 6.22. Forestry related jobs have declined since 1990, but not to the same degree in terms of overall jobs lost.

Figure 6.22. Douglas County Employment by Industry: 2001 to 2011



Mill Closures

Douglas County has experienced a significant number of mill closures in recent decades. Since 1990, there has not been any three-year period without at least one mill closed in the county. In total, eighteen mills have closed since 1990. Fourteen are still in operation. Job loss caused by these closures totals 940, as shown in Table 6.4.

Total jobs lost by mill closures, however, does not fully represent the overall decline in forestry related industries in Douglas County. Trends in Wood Products Manufacturing employment show an overall loss of 1,821 jobs between 2001 and 2011. The general decline in Natural Resources and Mining (which encompasses forestry-related employment), and specifically Forestry and Logging, represent 756 jobs lost between 2001 and 2011.

Although these numbers are not strikingly high at the county level over a ten-year period, they do indicate that the forestry industry in general is in decline in Douglas County. Closure of more than half of the total number of mills in the county over a twenty-year period has reduced production capacity in the region as well.

Table 6.4. Douglas County Mill Closures: 1990 to 2008

YEAR CLOSED	COMPANY	CITY	PLANT	EMPLOYEES
2008	SWANSON GROUP	GLIDE	SAWMILL	140
2008	DR JOHNSON LUMBER CO	ROUND PRARIE	SAWMILL	40
2008	SWANSON GROUP	GLIDE	SAWMILL	140
2005	MURPHY CO., THE (DESTROYED BY FIRE)	SUTHERLIN	PLYN	250
2003	ROSEBURG FOREST PRODUCTS #3	ROSEBURG	PLYV	230
2001	SUN VENEERS INC.	ROSEBURG	VENEER	90
2001	CALIFORNIA CEDAR PRODUCTS (P&M)	ROSEBURG	SAWMILL	50
2000	ROSEBURG FOREST PRODUCTS	DILLARD	SAWMILL	215
1998	INTERNATIONAL PAPER	GARDINER	PULP	295
1997	ROSEBURG FOREST PRODUCTS	DIXONVILLE	VENEER	45
1996	SELECT CUT LUMBER MILL	ROSEBURG	SAWMILL	4
1994	DOUGLAS COUNTY FOREST PRODUCTS	WINCHESTER	VENEER	40
1992	CHAMPION INTERNATIONAL	ROSEBURG	PLYV	340
1992	WILLAMETTE INDUSTRIES, INC.	GARDINER	SAWMILL	275
1991	ROSEBURG FOREST PRODUCTS	DILLARD	SAWMILL	125
1991	GREGORY FOREST PRODUCTS, INC.	GLENDALE	SAWMILL	75
1991	EMERALD FOREST PROD./WILLAMETTE IND.	DRAIN	PLYN	200
1990	WTD/YONCALLA VENEER	YONCALLA	VENEER	60
1990	PACIFIC CHIPS	ROSEBURG	SAWMILL	36

Health Indicators

Health care access and overall population health characteristics are an important measures of community well-being. Douglas County is ranked as 32nd of 33 Oregon counties in health indicators by the County Health Rankings and Roadmaps. Twenty percent of the county residents are uninsured, and another 22% are rated as being of “poor or fair health.” Other categorical indicators of adult health in Douglas County are also higher than state and national averages. These include 31% adult obesity in Douglas County, versus the national average of 25%, and the state average of 26%. Adult smoking is also higher, reaching 26% in Douglas County, versus the 14% national average and 18% state average.

Many other socioeconomic indicators with effects upon population health are highlighted by the County Health rankings, including the percent of children living in poverty. Douglas County has 31% of its children living in poverty, which contrasts rather strikingly against the 13% national average. Thirty-four percent of children in the county live in single-parent households. While these numbers do not address specific health concerns, they do indicate the relative proportion of potential at-risk children.

Free and Reduced Price Meal Program Enrollment

Overall student enrollment in Free and Reduced Price Meals (FRPM) programs can be a dependable measure of family well-being within a given community. At a countywide level, Douglas County had 48.9% of K-6 students enrolled in FRPM in 2000, and 69.9% in 2011. This is shown in Figure 6.23. Seven of Douglas County’s 13 school districts experienced a 50% increase or greater in FRPM enrollment from 2000 to 2011 as shown in Figure 6.24. Roseburg School District, which is the largest in the county and contains nine schools, has experienced a 49% increase in FRPM Enrollment between the years 2000 – 2011. See Figure 6.25. The Oakland School District

has experienced the greatest percent change of FRPM Enrollments of any district in the county: an 80% increase between 2000 and 2011. This is shown in Figure 6.26.

Figure 6.23. Douglas County FRPM Enrollment: 2000 to 2011

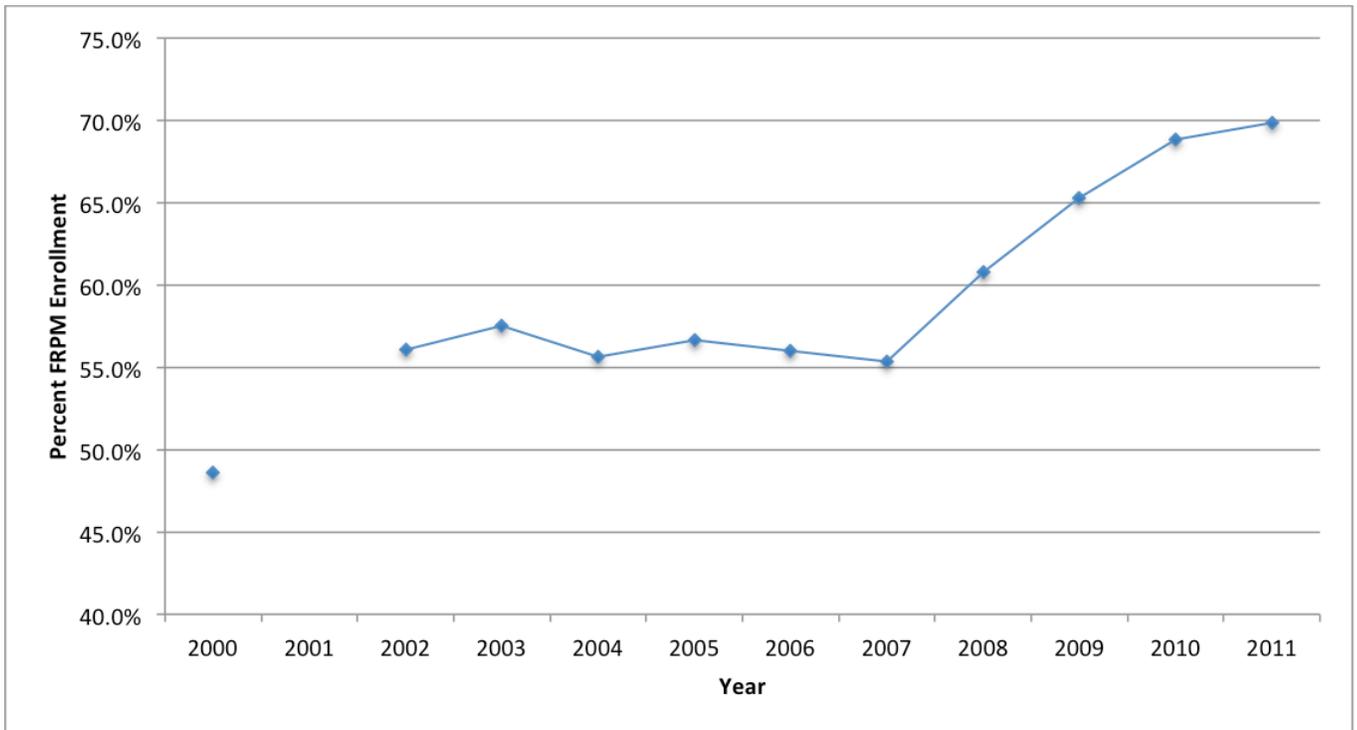


Figure 6.24. Douglas County School Districts Percent Increase of FRPM Enrollment: 2000 to 2011

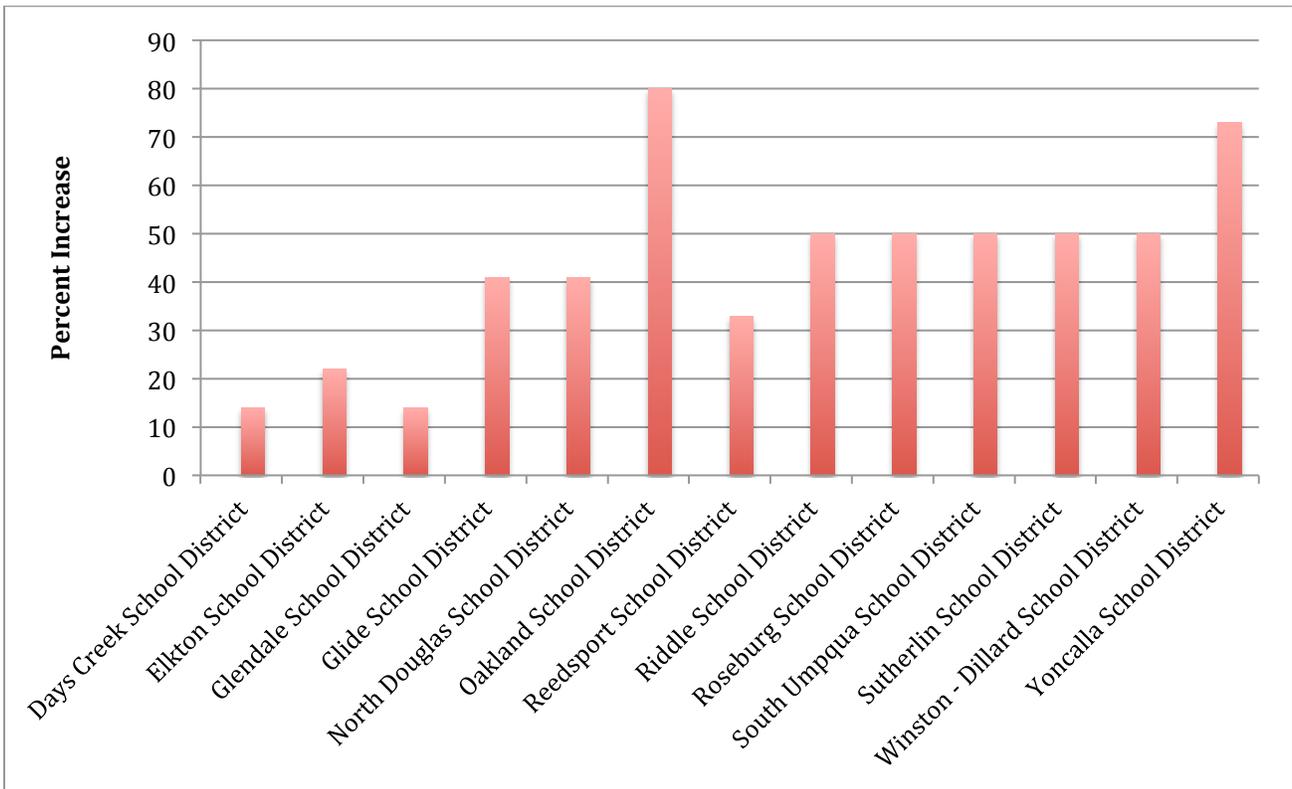


Figure 6.25. Roseburg School District FRPM Enrollment: 2000 to 2011

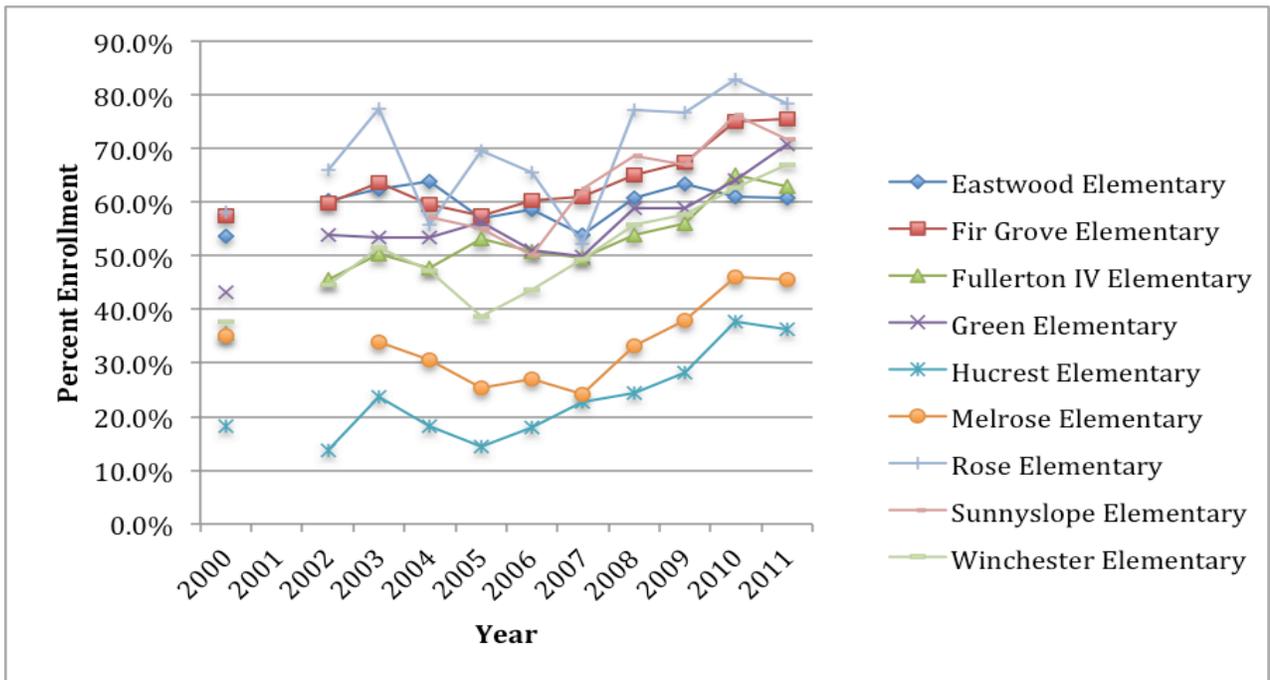
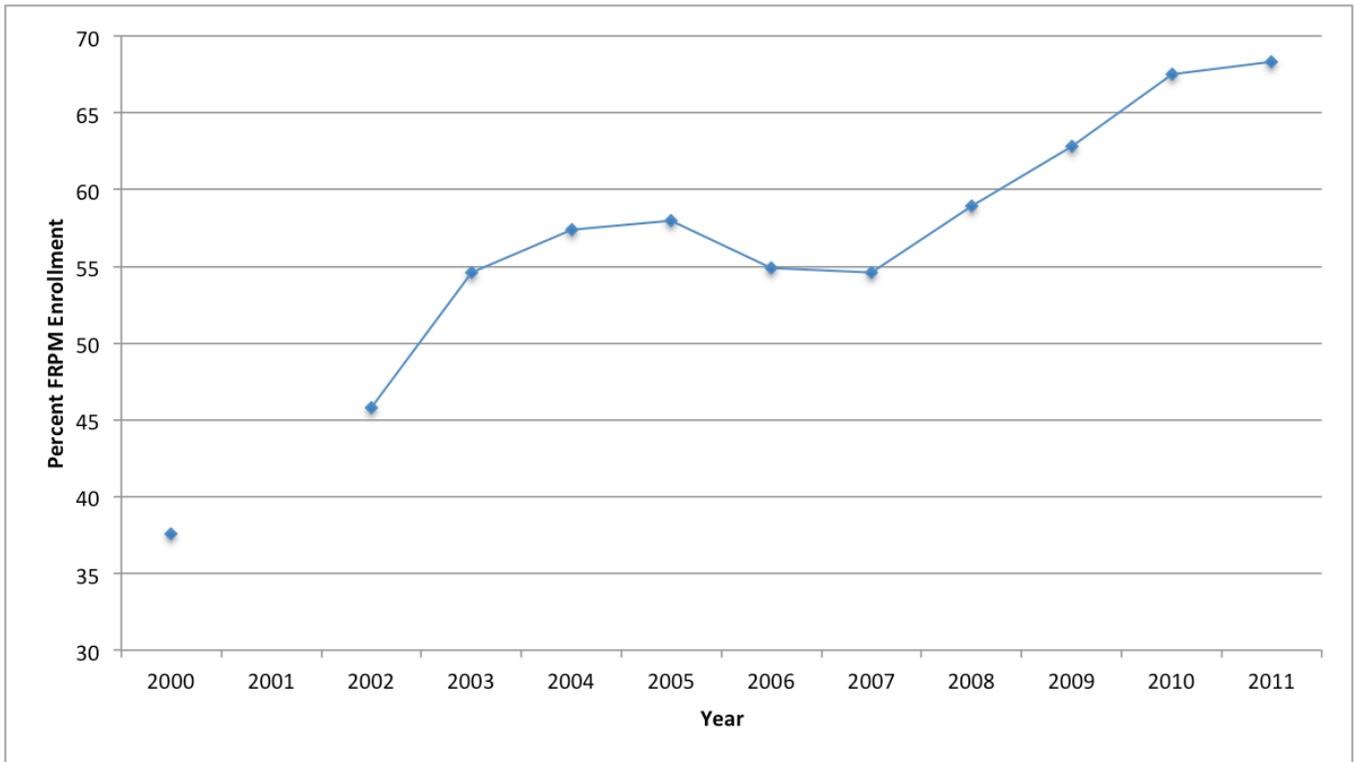


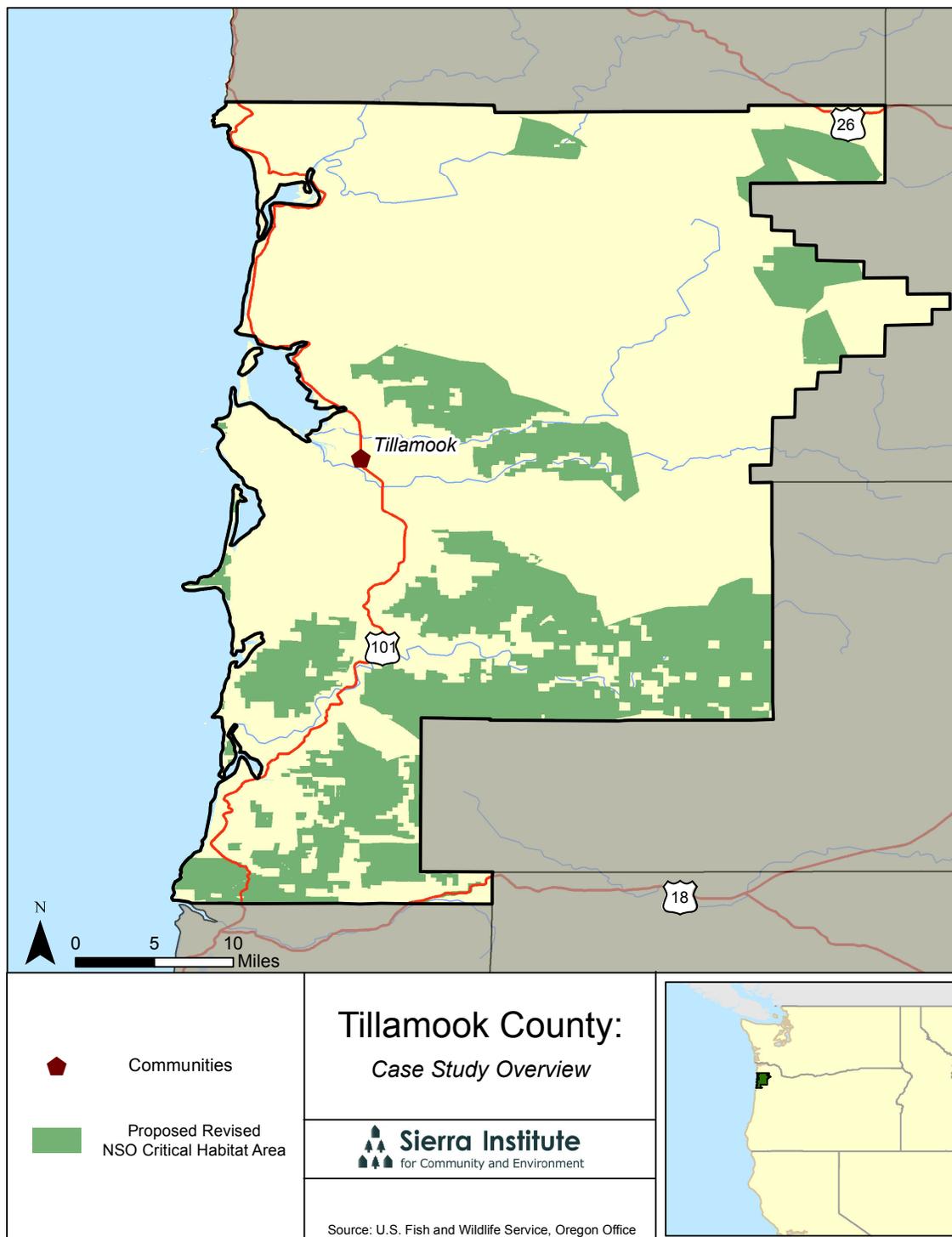
Figure 6.26. Oakland Elementary School District FRPM Enrollment: 2000 to 2011



The increases in FRPM enrollment rates indicate that there is an increasing need for supplemental support to families in Douglas County, in the form of subsidized meal programs provided by schools. This is occurring across the entire county, and the trend suggests that enrollment percentages in these programs will continue to increase. The trend towards increased FRPM enrollment appears to be related to the decline of employment opportunities in the county.

Tillamook County

Map 6-5



Overview

Tillamook County is located in the northwest corner of Oregon. The county lacks large urban areas, and most settlements are located along 75 miles of Pacific coastline. There are seven incorporated cities in the county, with the county seat of Tillamook the largest population center. There are 25,250 people in Tillamook County, based on the 2010 Census. The county covers 1,103 square miles with a population density of 22.9 persons per square mile (2010). A Census block in the southeastern part of the county has the lowest population density of 6.2 persons per square mile. The highest population density Census block contains 5,980 persons per square mile, and is located in the City of Tillamook.

The county's economy is partially based in agriculture, including the famous Tillamook Cheese Factory. Logging has historically been an important industry for the county as well. Due to its natural amenities and location between the City of Portland and the coast, Tillamook County has increasingly served as a tourist and second home destination.

Survival of the timber industry in Tillamook was challenged by what is known as the "Tillamook Burn," a series of wildfires between 1933 and 1951 that destroyed more than 360,000 acres of forested lands. This widespread destruction led to much of the affected land being acquired by the Oregon Department of Forestry in 1949 for the largest reforestation project ever undertaken. These acres are now designated the Tillamook State Forest. The reforested area has been managed as a sustainable harvest forest, and production is just beginning to approach pre-burn levels. Many hope that logging will regain its former economic importance in the region.

Proposed 2012 CHA land covers 25% of the county, totaling 179,085 acres. Of this amount, 72% overlaps a portion of Siuslaw National Forest that extends into Tillamook County (a total of 80,195 CHA affected acres). State managed lands contain 7.9% CHA, the majority of which are in the Tillamook State Forest. Current CHA designation will increase from 1992 levels, when 17% of the county was designated. The 2008 designation affected only 10% of the county. The difference between 2008 and proposed 2012 CHA represent an increase of 57,951 acres.

Employment

Tillamook County experienced a dramatic reduction in its forest industry after the "Tillamook Burn." Although the "Tillamook Burn" period occurred in the relatively distant past, such a large segment of harvestable lands was eliminated from the forestry base that recovery has been slow for the industry. It nonetheless has remained a consistent source of employment in the county, as other industries have grown.

Retail is one of the largest employers in the county. During the 1990s, the Retail industry saw a 14% increase in jobs, with a total number of 1,660 people employed in 2000. Manufacturing did improve during these years in terms of jobs created, with a 30.7% increase. In 2000, the Manufacturing sector employed 1,041 people. Forestry-related employment follows the Retail and Manufacturing industries in terms of overall numbers, employing 931 people in 2000. Although Forestry employed fewer people, it experienced a 48.2% increase in jobs between 1990 and 2000.

The Construction sector saw a dramatic 86.2% increase in jobs numbers between the years 1990 and 2000, but employed only 339 people by 2000. These employment trends are shown in Figure 6.27. Categorization of jobs by the state changed in 2000, and more industry categories were established

for the years 2001 through 2011. Some industry definitions were altered, preventing direct comparison with data from the 1990s. Employment numbers are shown by industry in Figures 6.27 and 6.28.

Figure 6.27: Tillamook County Employment by Industry: 1990 to 2000.

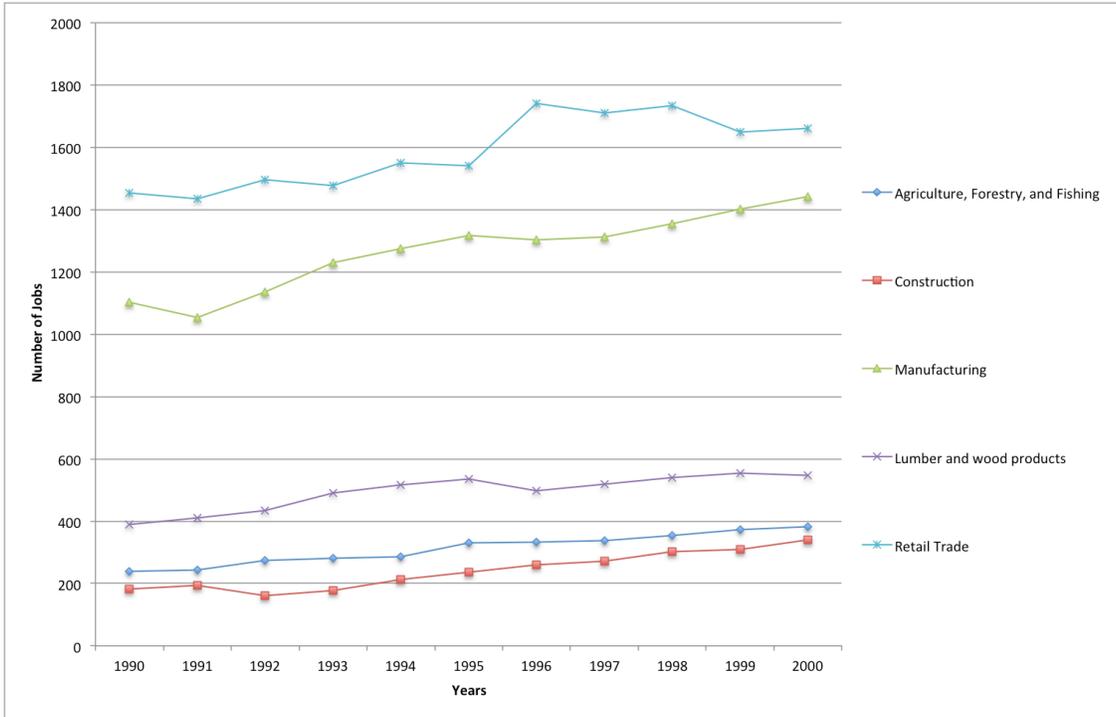
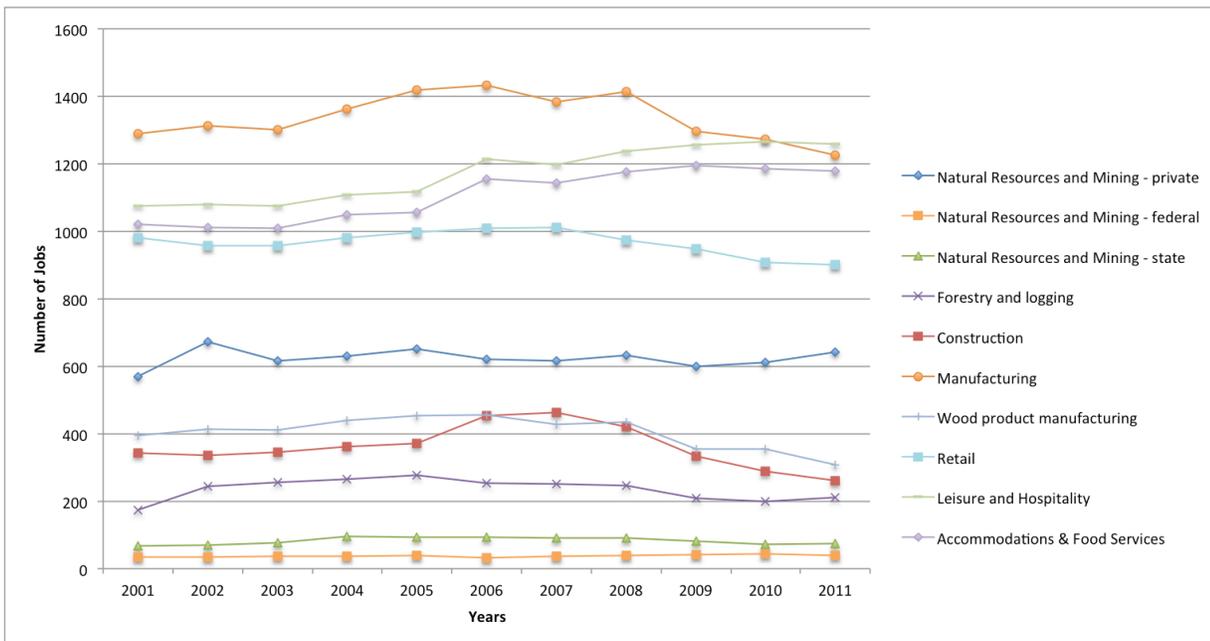


Figure 6.28. Tillamook County Employment by Industry: 2001 to 2011

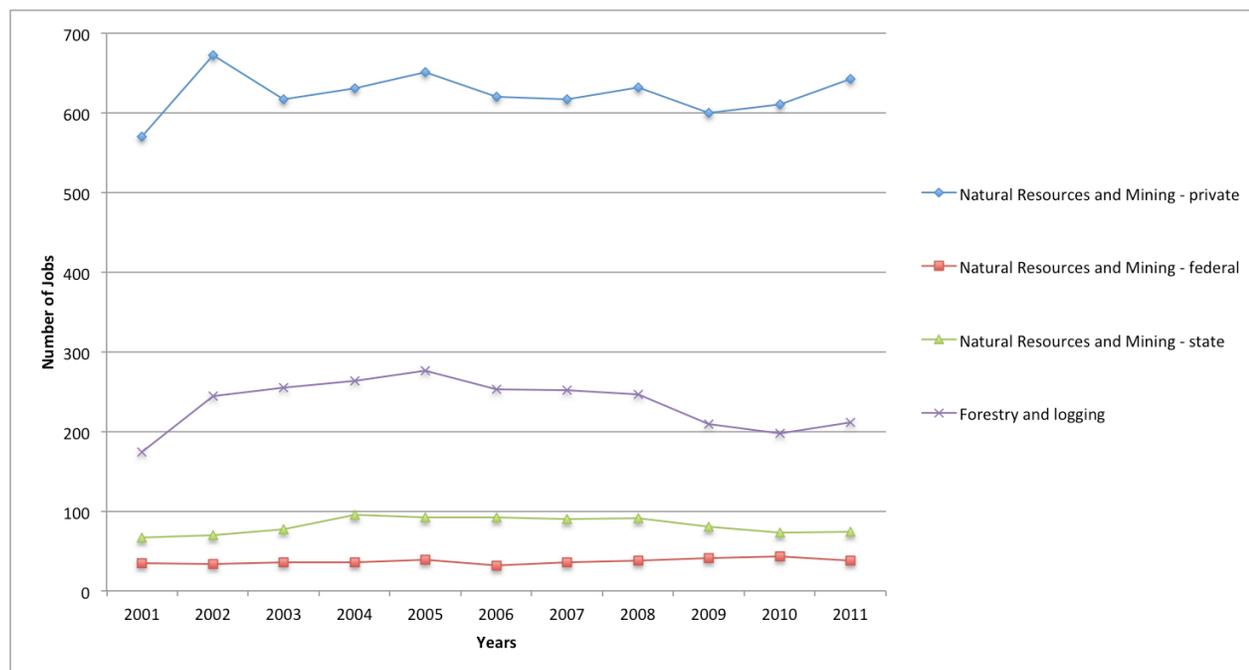


In the 2000s, Manufacturing overtook Retail as the major employer, due largely to changes in the definition of the sector. Manufacturing saw an overall decrease of 5% between 2001 and 2011, employing 1,226 people by 2011. This decrease is largely attributable to the 2008 economic downturn. From 2001 to 2008, Manufacturing increased 9%, followed by a 2008-2011 decline of 13.3% (a loss of 188 jobs). The Retail sector declined as well between 2001 and 2011, employing 900 people in 2011, a loss of 8% of the 2001 job total. The decline in Retail began in 2007, until which time the sector had seen a 3.2% increase in jobs.

Two industries that experienced an overall increase in jobs between 2001 and 2011, with little to no decline in the recent economic downturn, are Accommodations and Food Services, and Leisure and Hospitality. Accommodations and Food Services experienced a 15.5% jobs increase between 2001 and 2011, employing 1,178 people in 2011. During this same period, Leisure and Hospitality experienced a 16.8% increase; 1,259 were employed in this sector in 2011. These totals underscore the increasing importance of travel and tourism in the county.

Forestry related employment remained relatively steady between the years 2001 and 2011, and provided a consistent source of employment in the county. The trends in forestry-related jobs are shown in Figure 6.29. The industry definition of Natural Resource and Mining includes the Forestry sector. There was an overall 14.2% increase in this sector between 2001 and 2011, with 966 total jobs in 2011. This sector experienced a decrease in jobs after the 2008 economic decline.

Figure 6.29. Tillamook County Employment by Industry: 2001 to 2011



Mill Closures

There have been no mills closures in Tillamook County over the last 21 years. However, it is likely that a number of mills were closed in the years associated with the “Tillamook Burn” that caused the virtual collapse of the timber industry. It is beyond the scope and timing of this work to investigate these closures, nonetheless, CHA establishment may influence investment decisions that might otherwise be made given the recovery of the “Tillamook Burn” forests.

Health Indicators

Tillamook County ranked 27th out of 33 Oregon counties by the County Health Rankings & Roadmaps project. These data provide a glimpse of community health and socioeconomic well-being, as well as how Tillamook County compares to the rest of Oregon and beyond.

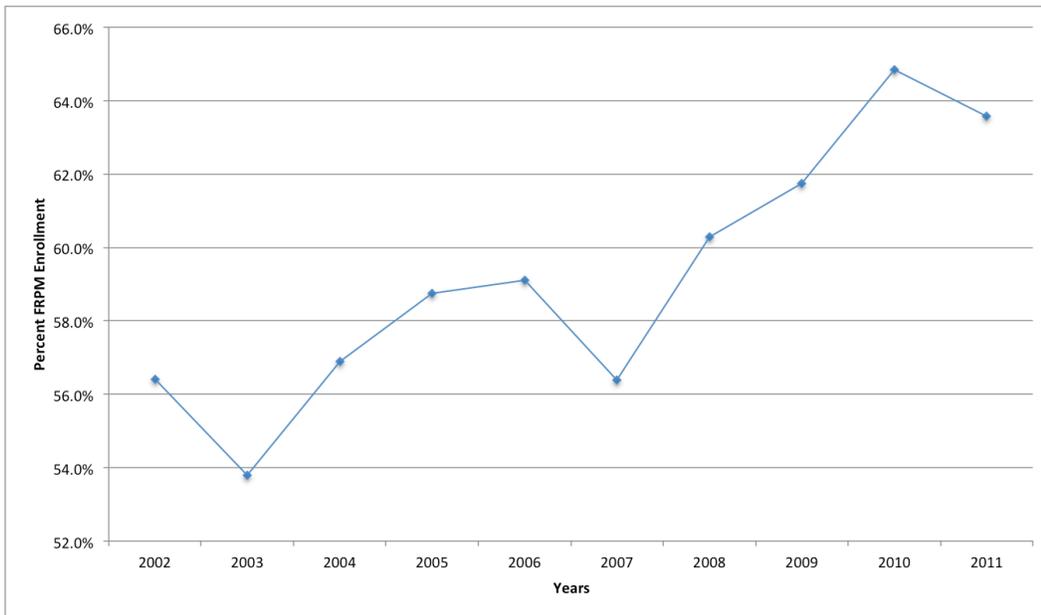
Twenty-two percent of Tillamook County residents are uninsured, versus the Oregon state average of 19%, and national average of 11%. Tillamook County residents also fare slightly worse in adult obesity at 27%, against Oregon’s average of 26%, and the national average of 25%. Tillamook ranks better than Oregon’s average 14% of the population in “poor or fair health,” with only 11% of its population so designated. This is only slightly worse than the national average of 10%. Twenty percent of adults in the county smoke, which is higher than the national average of 14%, and slightly higher than the Oregon average of 18%.

Although socioeconomic factors do not always have direct impacts on health, they have been linked to negative health outcomes. Tillamook County has 24% of its children living in poverty. This is almost double the national average of 13%, and slightly higher than the Oregon state average of 22%. Children living in single-parent households reach a strikingly high 39%. This is close to double the national average of 20%, and 9% higher than the Oregon average of 30%.

Free and Reduced Price Meal Program Participation

Free and Reduced-Price Meals (FRPM) assistance is given to students whose families are experiencing economic hardship. The rate of FRPM enrollment in a given community can be a valuable indicator of family well-being. The percent of the student population that was enrolled in the FRPM programs between 2002 and 2011 are shown in Figure 6.30 below.

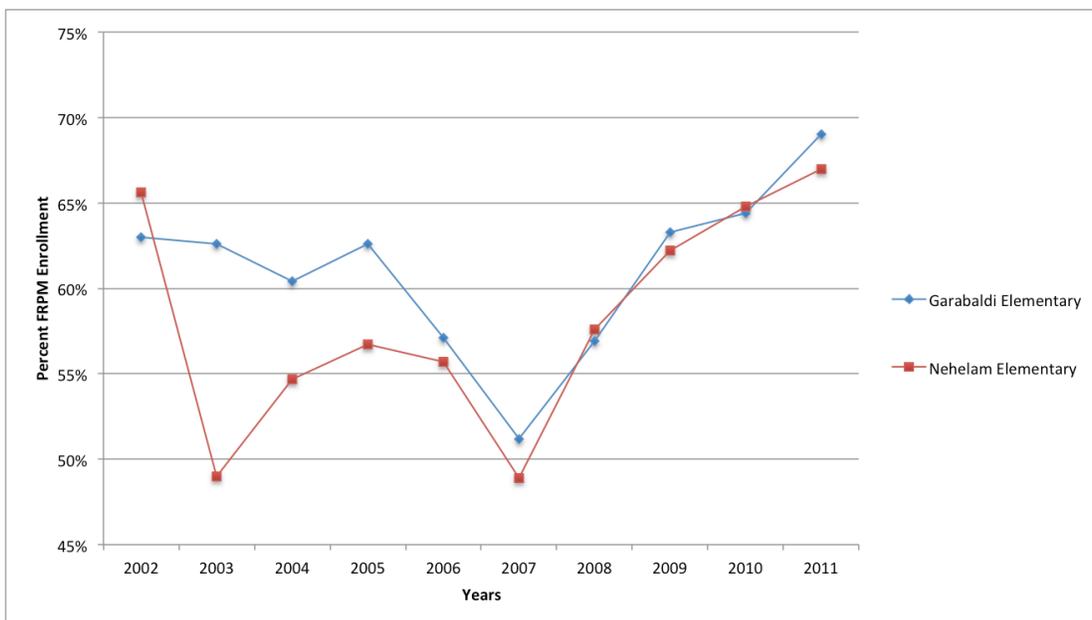
Figure 6.30. Tillamook County Percent FRPM Enrollment: 2002 to 2011



Enrollment in FRPM has generally increased in the county since 2002, despite three years in which the percentage of FRPM enrollment declined (2003, 2007 and 2011). The 2011 FRPM total is 63.6%, an increase of 12.7% over the 2002 total. The decreases in FRPM enrollment, especially for 2007 and 2010, correlate with worsening job numbers in construction, manufacturing (including wood products), and retail sectors, which all declined during these years.

There are only three elementary school districts in Tillamook County, and only six elementary schools among them. These schools offer a glimpse of evolving socioeconomic health in areas within the county.

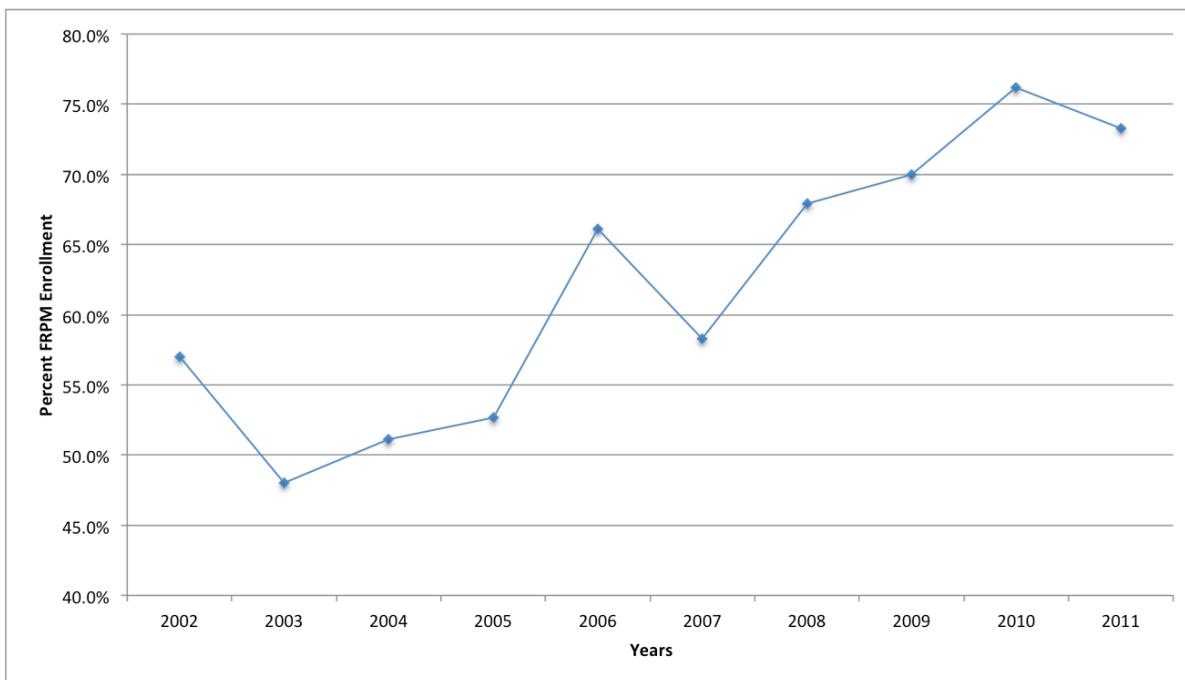
Figure 6.31. Neah-Kah-Nie School District Percent FRPM Enrollment: 2002 to 2011



The FRPM participation rates at two elementary schools in the Neah-Kah-Nie School District are shown in Figure 6.32. Both schools have experienced periods of rapid increases and decreases in FRPM enrollment. Garibaldi Elementary saw a drop of 12% in FRPM enrollment between 2005 and 2007. This was followed by an 18% increase between 2007 and 2011. Nehelam Elementary experienced a 17% decline in FRPM enrollment between 2002 and 2003. It experienced an 18% increase in FRPM enrollment between 2007 and 2011. Both schools' increase in FRPM enrollment generally correlates to the financial downturn of 2008.

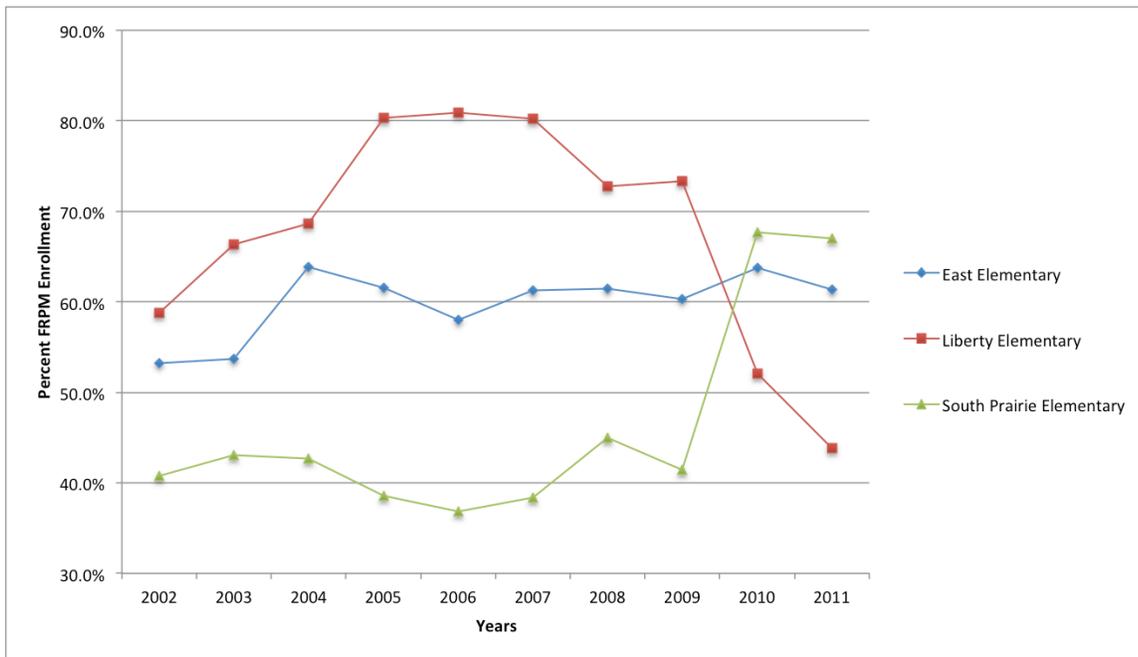
Nestuca Valley School District, shown in Figure 6.31, has only one elementary school. Between 2002 and 2011, Nestuca Valley Elementary experienced an overall increase of 28% in FRPM enrollment. The same three intervals of FRPM decrease, in 2003, 2007, and 2011, evident at the county level are evident in Nestuca Valley Elementary as well. The highest year of FRPM enrollment was 2010, with 76.2% of students receiving assistance. As in the Neah-Kah-Nie school district, an increase occurred after 2007.

Figure 6.32. Nestuca Valley School District Percent FRPM Enrollment: 2002 to 2011



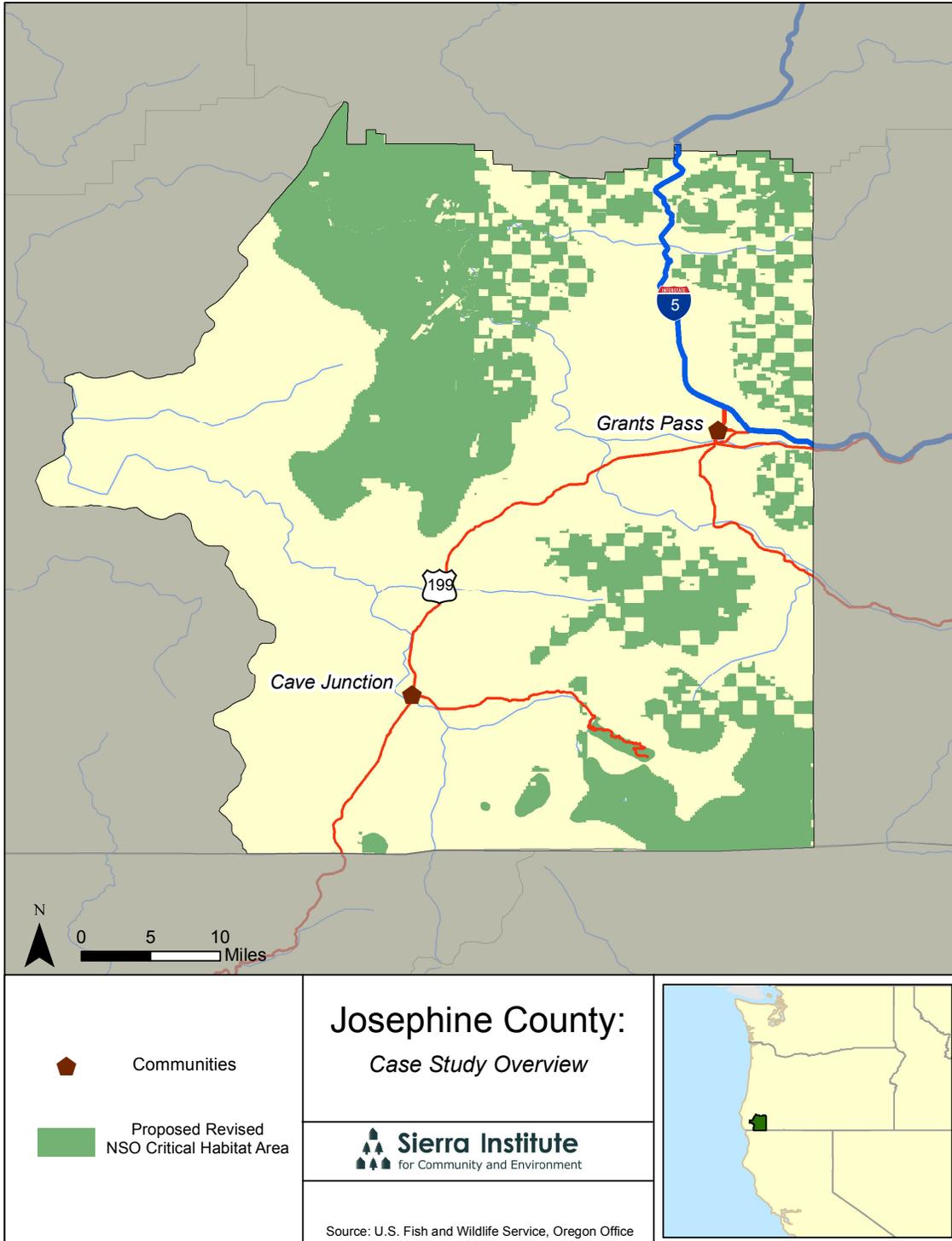
Finally, Tillamook School District shows some mixed trends among its elementary schools, as shown in Figure 6.33. Liberty Elementary is unique due to its dramatic decline in FRPM enrollment, which occurred during the financial downturn. This may reflect less on economic conditions than the fact that Liberty is a K-1 school running mostly half-day programs for students. More research is needed. South Prairie Elementary and East Elementary both increased FRPM utilization in 2009, though East Elementary is quite small. Compared to the county, both these districts show unusually little variability between 2002 and 2009.

Figure 6.33. Tillamook School District Percent FRPM Enrollment, 2002 to 2011



Josephine County

Map 6-6



Overview

Josephine County is located in southwest Oregon, and borders California to the south. The northern extent of the Siskiyou Mountains reaches into Josephine County, which contains portions of the Siskiyou National Forest and Kalmiopsis Wilderness Area, and the Oregon Caves National Monument. These designated areas represent 40% of the land area of Josephine County. This landscape provides both recreational and economic resources to the county, and forest industries and timber harvest have been important economic foundations for the county's communities.

Josephine County experienced a drop in Critical Habitat Area (CHA) for the protection of the northern spotted owl, from 24% in 1992 to 17% of the county's land area in 2008 (257,044 acres and 177,670 acres respectively). Proposed 2012 CHA would increase this total to 30% (316,840 acres). This increase would rank Josephine County as having the fourth highest percentage in the state, with only Douglas, Lane, and Jackson counties surpassing the percentage of CHA designated land.

The wild character of the county includes rugged terrain that largely challenges the development of infrastructure. Although the county population is 82,713, there are few population centers. The only two incorporated cities in the county are Cave Junction, and the county seat of Grants Pass. Grants Pass is located along the Interstate 5 corridor, and contains the highest population density in the county. The most concentrated population density in Grants Pass is a Census block containing 6,577 people per square mile. The total population for the town is 34,533 (2010). Cave Junction has a high population density of 647 people per square mile, and an overall population of 1,883 (2010). The lowest overall population densities are found in the northwest section of the county, with a low of 3.8 people per square mile.

Employment

Employment in Josephine County has shifted away from historically important forestry and logging industries. This shift was largely caused by increased federal restrictions on logging, increased land area designated as CHA, and increased mill efficiency, which reduced the number of jobs. County payroll from forestry and logging in the 1970's accounted for 20% of employment, but by 2005 this industry only accounted for 4.1%.²⁰ This history has reduced forestry to nominal levels of importance in the county in terms of job numbers. The most important employment sectors are now Retail and Manufacturing, which provide the majority of jobs in the county.

Remaining Forestry, Logging, and Wood products industry employment has experienced mixed trends in recent decades. There was a decline in Lumber and Wood Products employment between 1990 and 2000, with a 25.2% loss of jobs. The Agriculture, Forestry, and Fishing sector saw a 4.9% increase in job numbers between 1990 and 2000, although the data do not specify how many of these jobs are forestry related. Between 2001 and 2011 there was an overall decline in forestry related employment, with a loss of 21.5% of jobs. Figure 6.34 shows changes in employment by industry from 1990 to 2000.

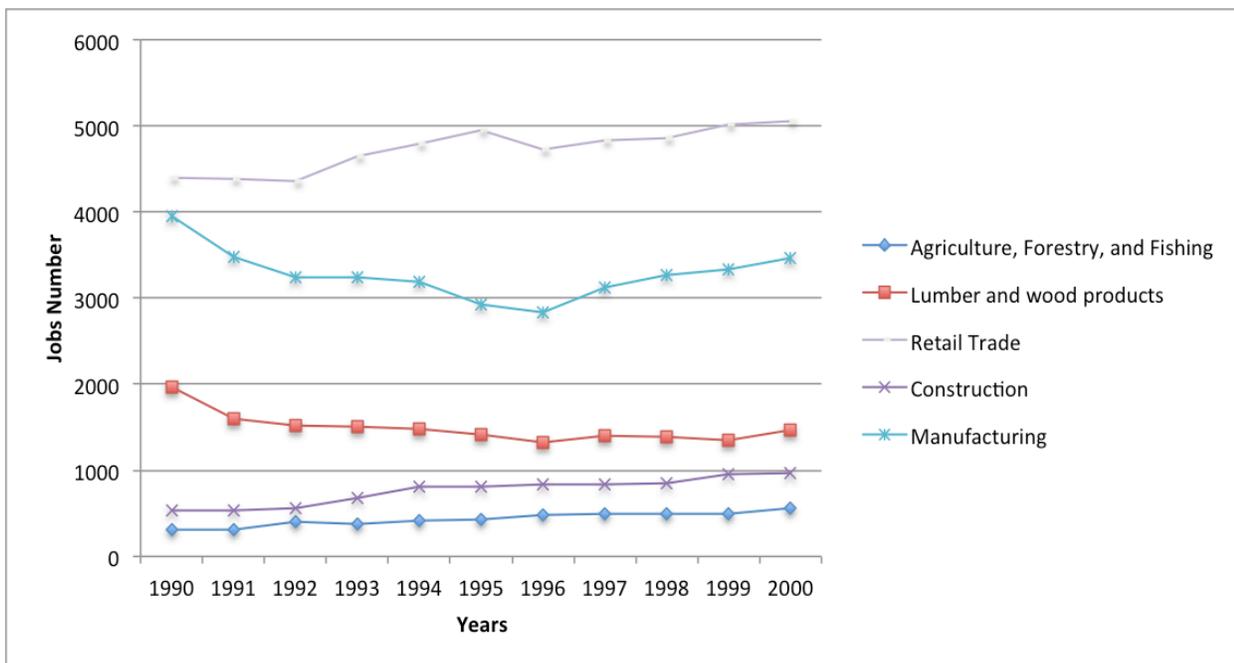
The Retail sector is the major employer in the county, and is the only industry to experience an increase. Between 1990 and 2000, the retail sector increased by 13%. There was a nominal increase between the years 2001 and 2011, however, as this overall increase followed a period of gain and

²⁰ Tauer, Guy. 2006. Josephine County Manufacturing – All Eggs No Longer in Wood Products Basket.” Oregon Labor Trends

loss in the mid- 2000's. Manufacturing is also a major employer, but has experienced overall decline. Between 1990 and 2000, 12.4% of Manufacturing jobs were lost. An additional 19.9% of these jobs were lost between 2001 and 2011. The economic downturn that occurred in 2008 had a negative effect upon the local economy in general, with all sectors experiencing job loss as shown in Figure 6.34.

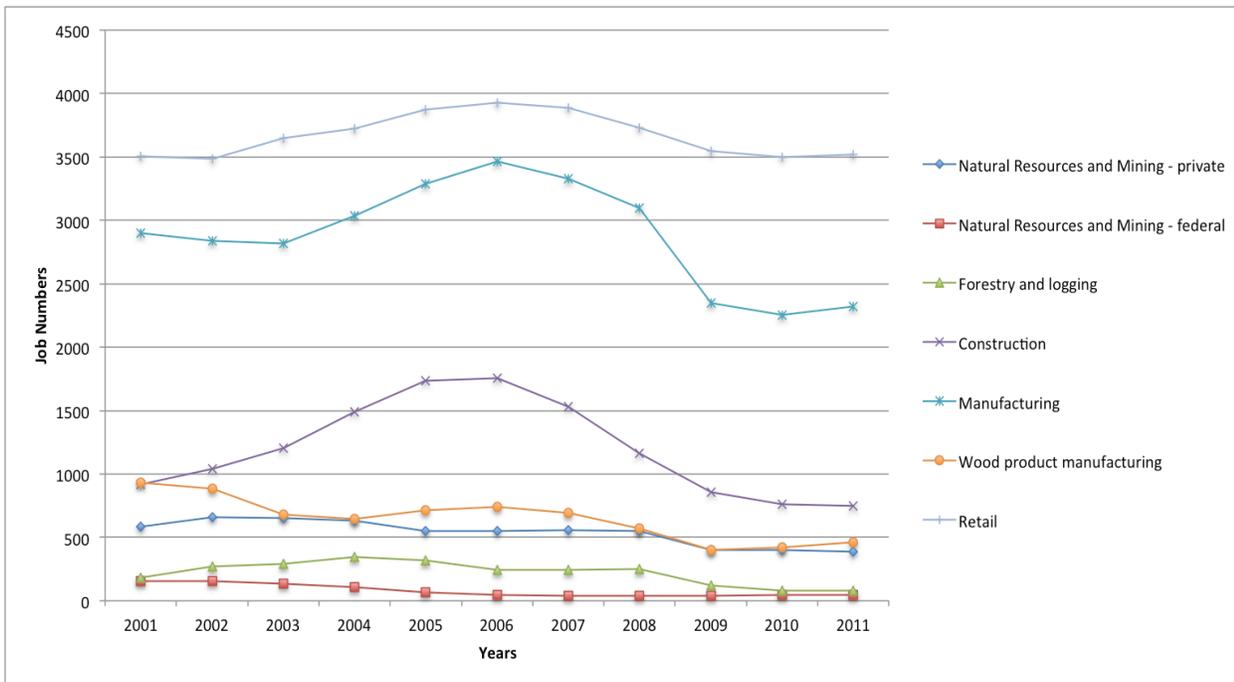
Although Retail and Manufacturing provide large numbers of jobs, overall wages have declined. Josephine County has experienced a 21% decrease in inflation-adjusted real wages, and wages for the manufacturing industry remain equivalent to what they were in 1976²¹. Wages have stagnated in Josephine County, and they remain two-thirds of the Oregon average. This indicates that as the local economy adapted to changing employment sources, gain in wages did not kept pace.

Figure 6.34. Josephine County Employment by Industry: 1990 to 2000



²¹ Tauer, Guy. 2006. Josephine County Manufacturing – All Eggs No Longer in Wood Products Basket.” Oregon Labor Trends

Figure 6.35. Josephine County Employment by Industry: 2001 to 2011



Mill Closures

There have been six mill closures in Josephine County since 1990. Only two mills remain open, one each in the towns of Cave Junction and Grants Pass. These closures follow the trend of decline in the forestry and forest products industry for Josephine County. Although jobs lost total 767 over a thirteen year period, this total represents 8.1% of the available forestry industry jobs for 2003 (the year of the last mill closure). Mill closures are listed in Table 6.5 below.

Table 6.5. Josephine County Mill Closures: 1990 to 2003

YEAR CLOSED	COMPANY	CITY	PLANT	EMPLOYEES
2003	U.S. FOREST INDUSTRIES, INC	GRANTS PASS	PLYN	210
2002	FOURPLY INC.	GRANTS PASS	PLYN	105
1998	SPALDING & SONS INC.	GRANTS PASS	SAWMILL	210
1993	STIMSON LUMBER	MERLIN	PLYN	120
1991	MURPHY CREEK LUMBER CO.	GRANTS PASS	SAWMILL	80
1990	STC CORPORTATION/WEBCO FOREST PROD.	WILLIAMS	SAWMILL	42

Health Indicators

Josephine County is ranked as 29th out of thirty-three counties in health indicators by the County Health Rankings and Roadmap for the state of Oregon. These indicators provide a reference to the overall health and well-being of the county, and provide a better understanding of the community at large. Twenty percent of the county residents are uninsured, versus the national average of 11%, and just slightly above the Oregon average of 19%. Twenty percent of the county is listed as being of “poor or fair health,” which is double the national average of 10%, and higher than the Oregon state average of 14%. Adult obesity is at the national average of 25%, and slightly below the overall Oregon average of 26%.

Socioeconomic indicators of well-being are also provided. Thirty-one percent of children in Josephine County live in poverty, which is well above the national average of 13% and the Oregon state average of 22%. Thirty-two percent of children live in single-parent households, which is also higher than the national average of 20%, and the Oregon state average of 30%

Free and Reduced Price Meals

There are only two elementary school districts in Josephine County, with a total of 15 elementary schools. Of these 15, all but one have seen steady increases in Free and Reduced Price Meal (FRPM) enrollment. Enrollment in FRPM programs is an important indicator of family well-being, and it appears that many communities in Josephine County are in need of subsidized meal programs. There was a 4.8% decrease in FRPM enrollment in 2005 and 2006, which are the same years that saw an increase in employment in the Construction, Manufacturing, and Retail sectors. All other years have seen an overall increase of FRPM enrollment at the county level. In 2000, 59.4% of K-6 students were enrolled in FRPM. This increased to 70% in 2011. These changes are shown in Figure 6.36.

Figure 6.36. Josephine County FRPM Enrollment: 2000 to 2010

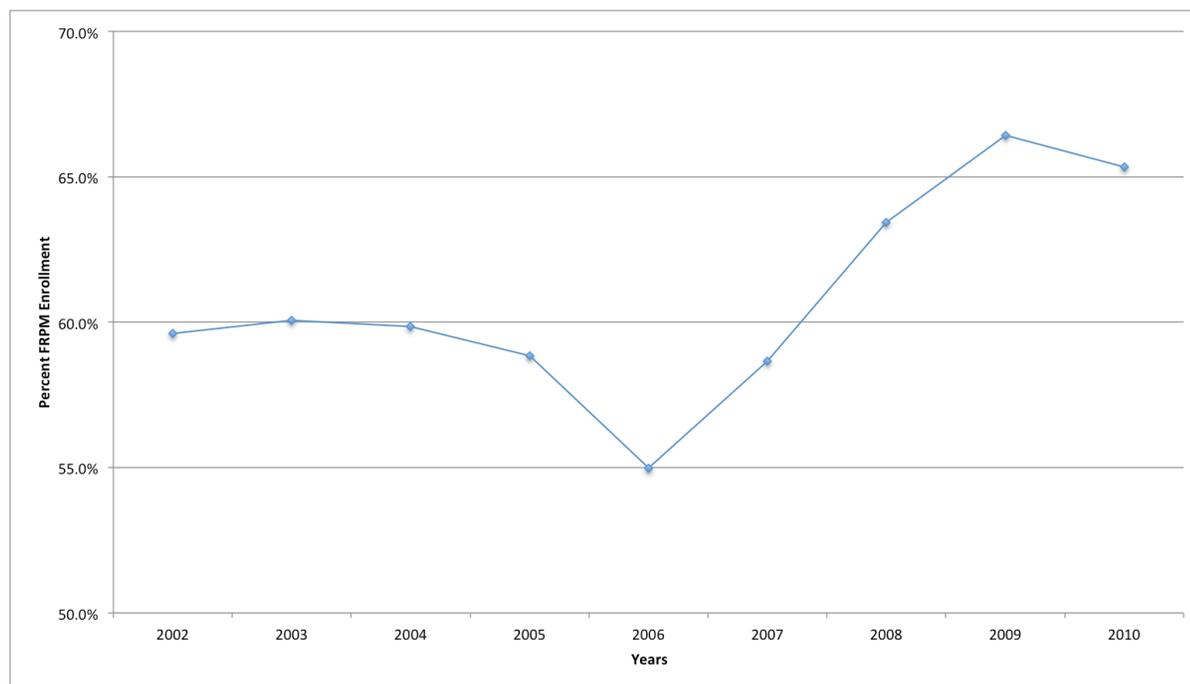
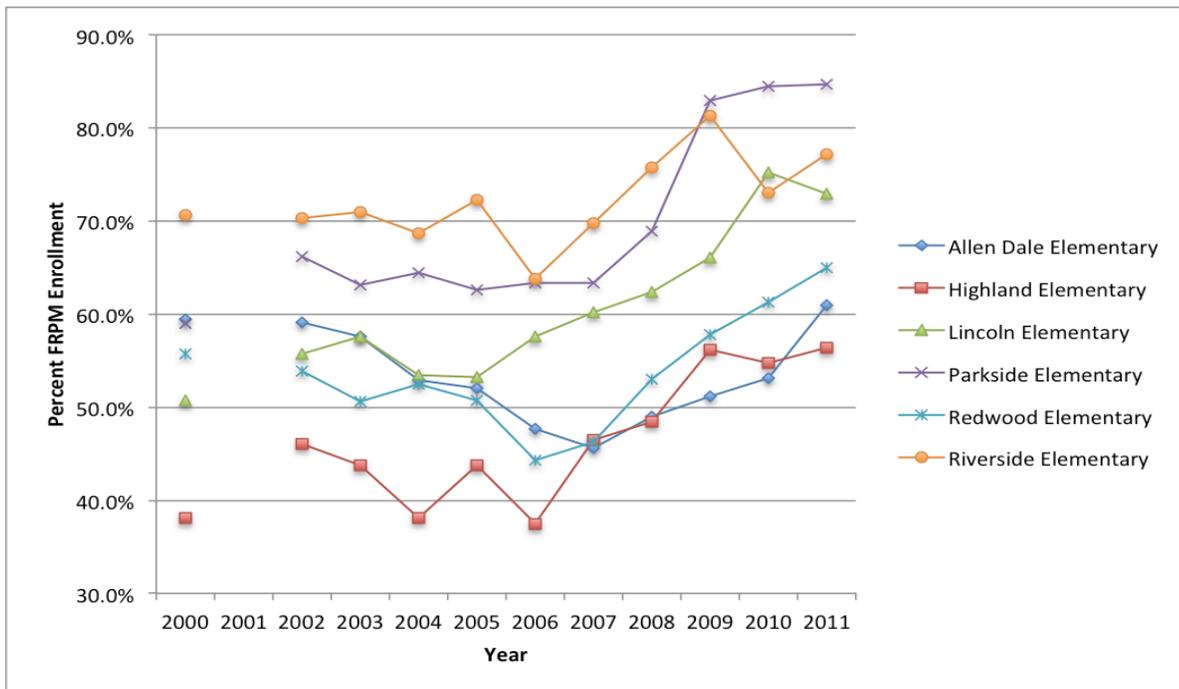


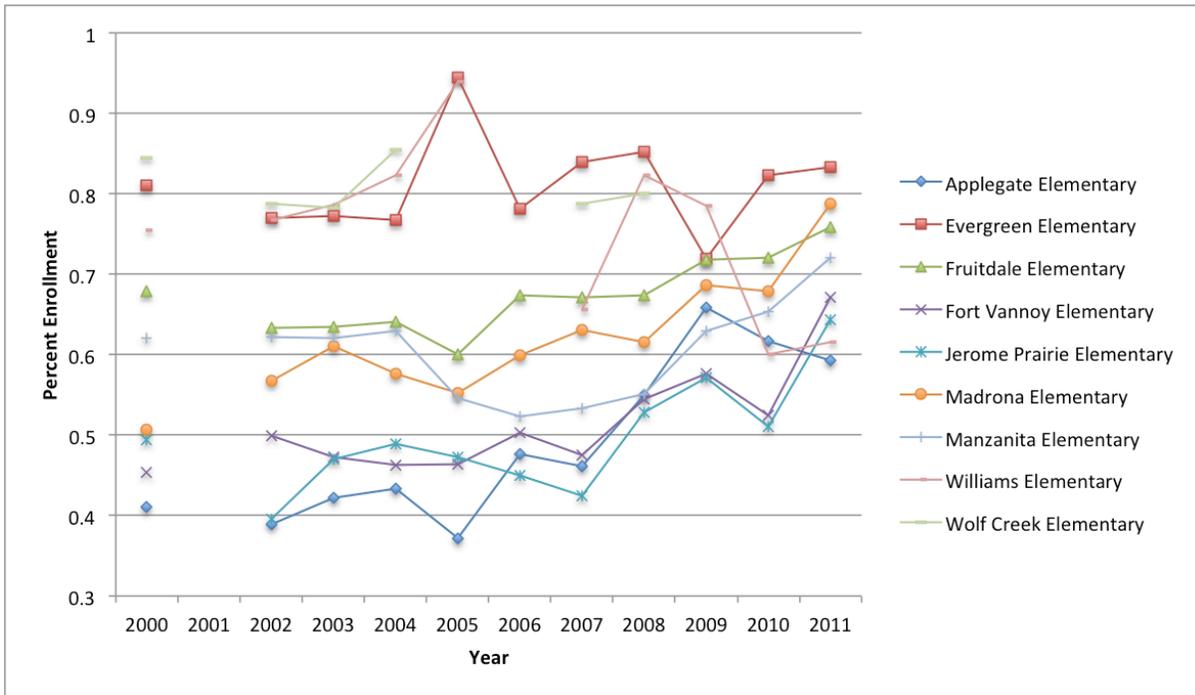
Figure 6.37. Grants Pass School District FRPM Enrollment: 2000 to 2011



Grants Pass School District experienced a 25.1% increase in FRPM enrollment between the years 2000 and 2011, as shown in Figure 6.37. Every school in the district experienced increased FRPM enrollment during these years. Parkside Elementary in Grants Pass showed the greatest increase between 2000 and 2011, increasing FRPM enrollment by 44%.

The Three Rivers School District saw an overall increase of 13.4% FRPM enrollment between the years of 2000 and 2011, as shown in Figure 6.38. Although some schools, like Williams Elementary show an overall decline in FRPM enrollment, the general trend is upward for most schools. Madrona Elementary shows the greatest increase over time with a 55% change between 2000 and 2011. A spike in FRPM enrollment occurs for Evergreen Elementary and Williams Elementary for the 2005-2006 school year, but then decreases to comparable 2004 levels. Increased FRPM enrollment corresponds closely to the decline in jobs that began in 2006.

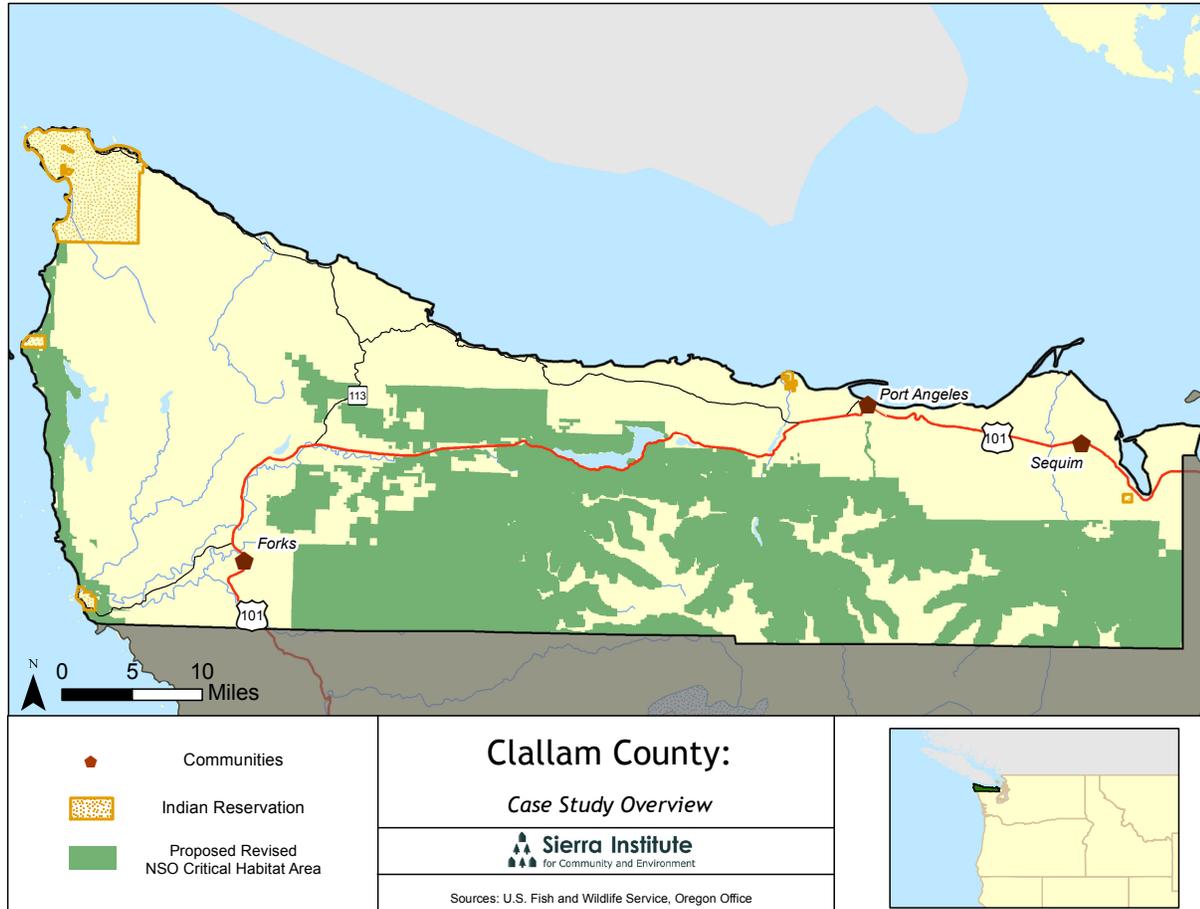
Figure 6.38. Three Rivers School District FRPM Enrollment: 2000 to 2011



WASHINGTON

Clallam County

Map 6-7



Overview

Clallam County is the northernmost county on Washington’s Pacific Coast, covering the northern half of the Olympic Peninsula. The county has a plethora of natural amenities from high mountains to a rugged coastline to miles of rivers. Most of the county has a mild maritime climate. With Olympic National Park covering 314,208 acres, the National Park Service is the largest land manager in the county. The U.S. Forest Service manages another 237,886 acres. Together USFS and NPS lands encompass almost 50% of Clallam County. In 2012, the U.S. Fish and Wildlife Service announced designation of over 439,000 acres, roughly 39% of the county, as critical habitat area for the northern spotted owl. Clallam County has been at the center of the “owls v. timber” conflict and has struggled to regain the economic base that was supplied by the timber industry. As timber and fisheries declined, the county has relied more on tourism to bolster its economic base.

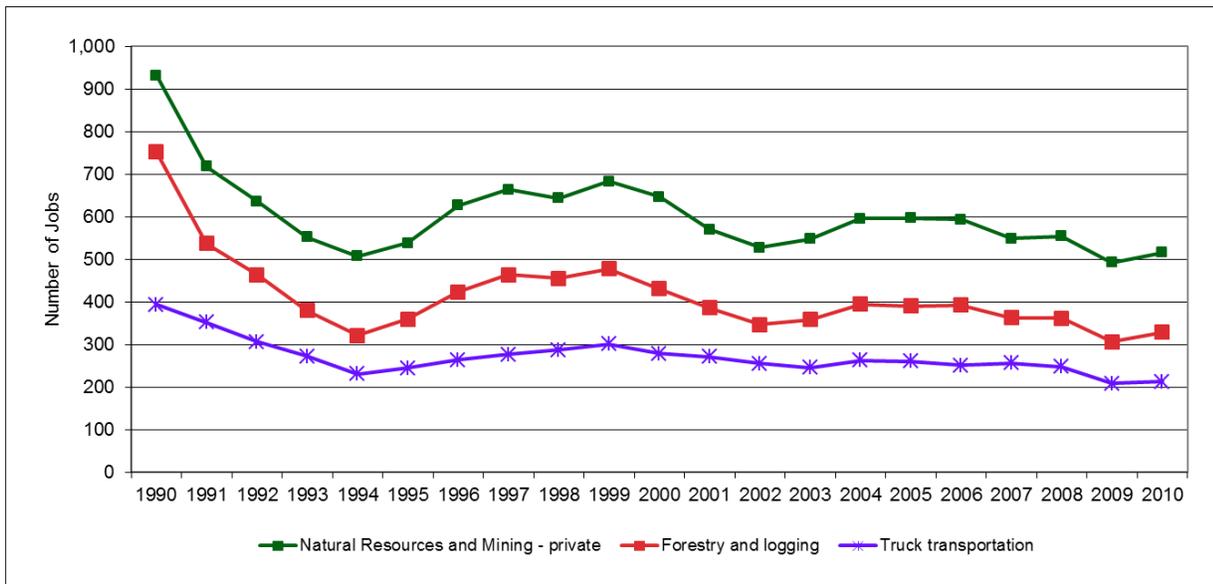
Since 2000, the county population has increased from 64,525 to 71,404 as reported by the 2010 Census. Census-recognized communities in Clallam County are Bell Hill, Blyn, Carlborg, Forks,

Neah Bay, Port Angeles, Port Angeles East, River Road, and Sequim. The majority of the population is clustered along the northern coastline between Port Angeles and Sequim. Forks, the county's next most densely populated area, has a total population of 3,532.

Employment Trends

Since 1990, Clallam has experienced declines in employment of 45% in the private Natural Resources and Mining, 56% in Forestry and Logging, and 46% Truck Transportation sectors as shown in Figure 6.39. Job loss in these industries totals 1,020. The sharpest decline was seen between 1990 and 1994.

Figure 6.39. Clallam County Jobs in Natural Resources and Mining, Forestry and Logging, and Truck Transportation: 1990 to 2010



During this period, employment in the Forestry and Logging sector dropped by 431 jobs (57%) and overall Natural Resources and Mining employment decreased by 425 jobs (46%). Though fluctuating over the years, employment in Forestry and Logging and Natural Resources and Mining in 2010 are close to 1994 levels. Employment in Truck Transportation also saw a sharp decline from 1990 to 1994, but rose between 1994 and 1999 and then slowly declined between 1999 and 2010 falling to a low of 208 jobs in 2009. Construction, Manufacturing, and Wood Product Manufacturing also saw decreasing employment over the two-decade period, though it was not as dramatic as other sectors. Employment in the Leisure and Hospitality sector has remained steady since 1990, and job increases have occurred in the Health, Social Assistance, and Education sectors.

Mill Employment

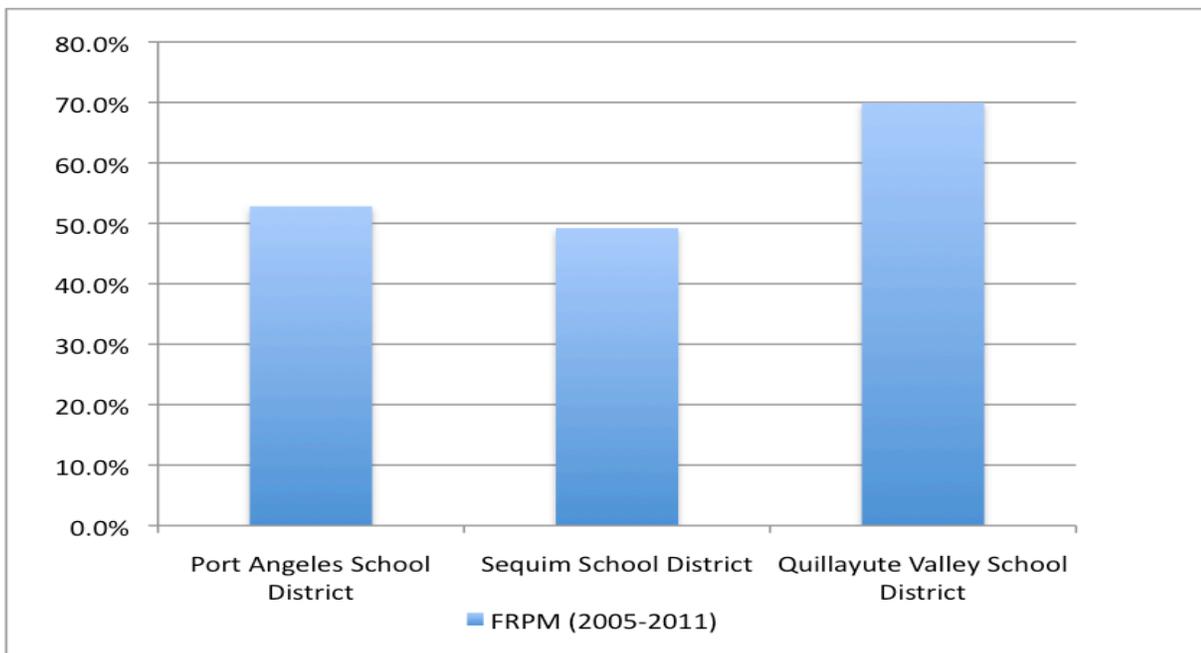
Historically, the timber industry and related economic activities had been a major part of the economic base in Clallam County. However, as industry efficiencies increased, mills became more mechanized, and regulation reduced the land base available for logging, the timber industry declined. This is illustrated through the dramatic declines in related industry employment and through mill closures. Eight mills closed in Clallam County between 1990 and 1995. These mills

employed people in Forks, Beaver, Sequim, and Port Angeles. Five of the eight closures occurred in Forks and Beaver, located in the rural western part of the county.

Free and Reduced Price Meal Information

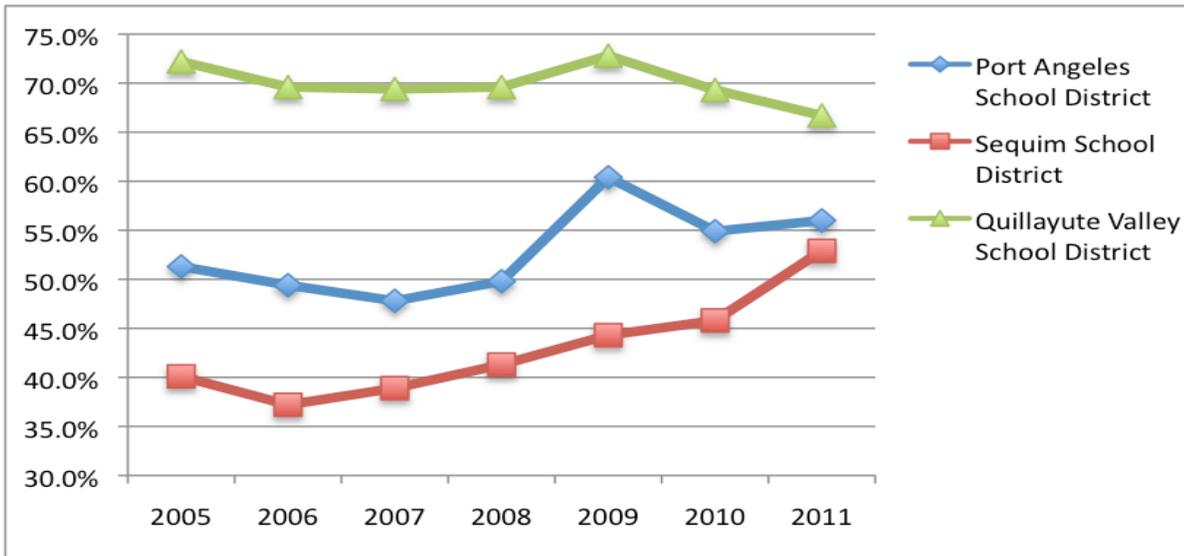
Between 2005 and 2011, county enrollment in the Free and Reduced Price Meals (FRPM) program fluctuated between a low of 49% and a high of 57%, but generally remained within 10 percentage points of the statewide average. Within the county, there is considerable variability among the schools and districts. The lowest average FRPM enrollment, 42.9%, is in the Sequim School District at the more populous eastern end of Clallam County. The highest enrollment is at the remote western end of the county in the Quillayute Valley School District at 69.9% as shown in Figure 6.40.

Figure 6.40. Clallam County Average FRPM Enrollment by School District: 2005 to 2011



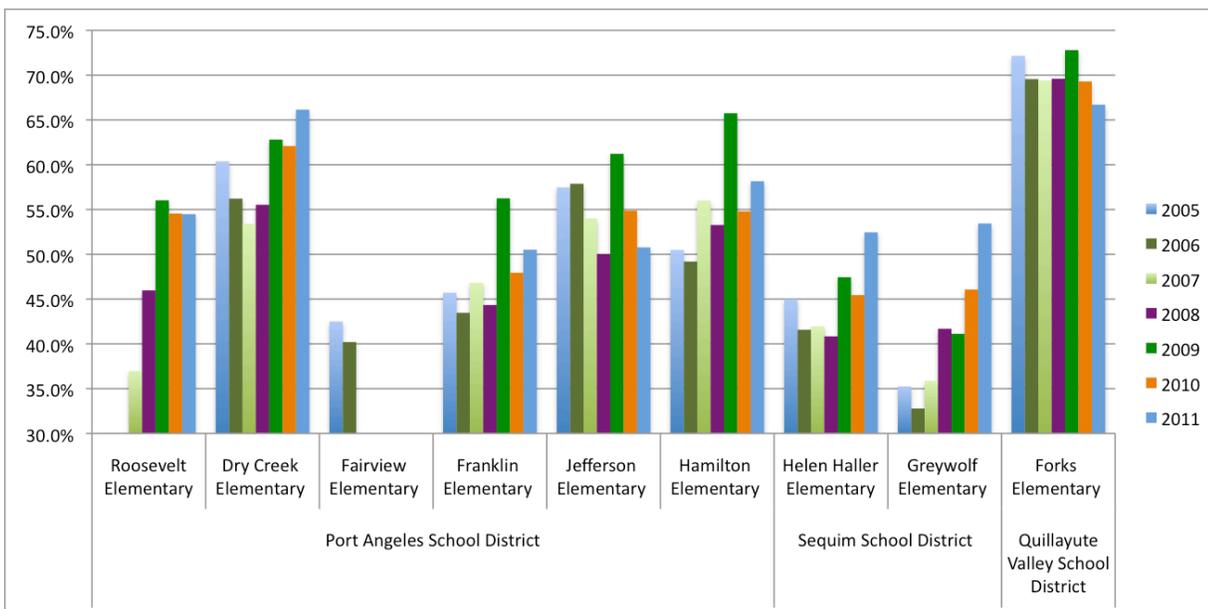
The Quillayute Valley School District has higher populations of American Indian and Alaska Native persons than the rest of the county and serves region, which are geographically isolated from large population centers. Enrollment in the FRPM program in the Quillayute Valley School District decreased between 2005 and 2011, while the other two district's rates increased, yet FRPM enrollment in the Quillayute Valley School remains more than 20 percentage points higher than enrollment in the other two districts as shown in Figure 6.41.

Figure 6.41. Clallam County Average FRPM Enrollment Trends by School District: 2005 to 2011



The Quillayute Valley School District data comes from one elementary school, Forks Elementary that did not experience much variation in FRPM enrollment rates from 2005 to 2011. Individual schools in the Port Angeles and Sequim School Districts experienced enrollment rates that varied as much as 20 percentage points. For instance, Greywolf Elementary School in the Sequim School District had an enrollment rate of 32.8% in 2006 and a rate of 53.4% in 2011. These variations can be seen in Figure 6.42.

Figure 6.42. Clallam County Average FRPM Enrollment Trends by School: 2005 to 2011



Health Indicators

Overall, Clallam ranks 24th in health outcomes comprised of mortality and morbidity measures. A ranking of 30 out of 39 in mortality comes from very high premature death figures. Conversely, a ranking of 5 in morbidity is found as many of the indicators including poor or fair health, poor physical health days, and poor mental health days are relatively on par with the statewide total. Low birth weight is indicated as being quite low at just 4.6%, however, oftentimes in rural areas high-risk pregnancies are sent to hospitals in more populous areas, so this measure may reflect under-reporting.

Ranking 20th in health factors, Clallam County is level with the state total on most measures and even scores better on some. For example, excessive drinking in the state of Washington is at 17% of the adult population while Clallam totals 13%. In comparison to other rural counties in Washington, the county rates well when clinical care is examined – ranking 8th out of all counties in the state. Perhaps the most disconcerting measure describing clinical care in Clallam is the 18% of the population who are uninsured, compared to the state total of 15%. Clallam County has a lower primary care physician to patient ratio and fewer preventable hospital stays than the state as a whole.

Ranking 30th in social and economic health factors, the county graduates less than 30% of its students from high school, whereas the state graduates 73%. Unemployment is higher (10.4%) than the state average (9.6%) and a measure of children living in poverty is 27%, above the state total of 18%. The percent of children living in single-parent households, a common indicator of distressed socioeconomic conditions, is 40% compared to the state total of 28%.

Grays Harbor County

Map 6-8



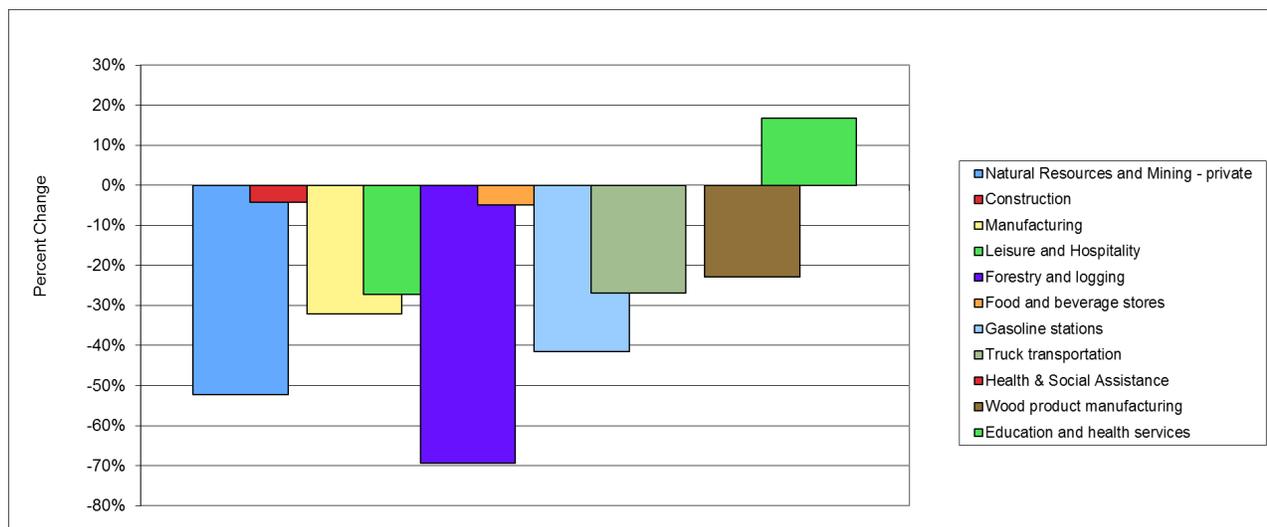
At approximately 1,900 sq. miles, Grays Harbor County is the 14th largest county in Washington. A total of 148,072 acres, 12% of the county, is proposed for northern spotted owl critical habitat area designation in 2012. Of this total over 99% is located on public lands, 91% occurs on land managed by the U.S. Forest Service and 8% on land managed by the National Park Service. The acreage proposed for designation is roughly 55% more than was designated in 1992.

In 2010, the county population of 72,797 is approximately 8% more than the 2000 population of 64,175. The county seat is Montesano and the two largest cities are Aberdeen and Hoquiam. Grays Harbor has a generally cool, moist climate. Principal economic activities include wood and paper products, seafood processing, food processing, and manufacturing.²² In 2012, Grays Harbor was proclaimed a distressed county.²³ A total of 14.5% of residents 25 and older hold bachelor's degrees, a figure that is less than half of the statewide total (31%). Median household income is 27% below the state median (\$41,899 compared to \$57,244). Unemployment runs high in Grays Harbor: in May 2012, the unemployment rate for the county of Grays Harbor was 13.7%, compared to a statewide rate of 8.4%.

Employment Trends

Economic trends and conditions in Grays Harbor as shown by industry employment patterns were examined over a 20-year period from 1990 to 2010. During this time, every industry showed net job losses except for the Education and Health Services sector (Figure 6.43). Resource-dependent industries were hit especially hard. The Natural Resources and Mining, and Forestry and Logging sectors both lost over 50% of the jobs that were available in 1990, a combined loss of approximately 1,600 jobs. Manufacturing, another key economic industry for the county, also declined significantly. The Manufacturing sector lost 1,396 jobs during this period, with a 23% decline in Wood Product Manufacturing jobs alone.

Figure 6.43. Grays Harbor County Percent Change in Jobs by Industry: 1990 to 2010



²² <http://www.co.grays-harbor.wa.us/info/about/about.html>

²³ The Distressed Areas List identifies all counties with a three-year average unemployment rate equal to or greater than 120 percent of the statewide unemployment rate (Distressed Areas List, Washington State Employment Security Department; <https://fortress.wa.gov/esd/employmentdata/reports-publications/regional-reports/distressed-areas-list>).

Notably, the economic decline in Grays Harbor is not confined to extractive economies. Leisure and Hospitality, often highlighted as a key sector to replace lost resource-extraction jobs, declined by 27% since 1990. The Retail sector exhibited a 14% loss between 2001 and 2010. During this period, the Education and Health Services sector gained 330 jobs.

Given these trends, it is little surprise that Grays Harbor has consistently had a higher unemployment rate than the state average. The county's three-year average from January 2007-December 2009 was 9.0% compared to the state average of 6.3%. In the past three years (2009, 2010, 2011), Grays Harbor County unemployment has remained above 13%, reaching a peak of 13.6% in 2010.

Mill Employment

These employment trends and patterns are felt unevenly across the county. For example, the town of Hoquiam has seen eight mills close since 1990. Between 1991 and 1992, mill closures in Hoquiam left 524 employees in search of new jobs. In contrast, Montesano, the county seat, has seen no closures during this period and currently has one small sawmill in operation. The role of the timber industry in communities varies across the county, as does the impact of mill closures. Hoquiam currently has two operating mills which comprise over half of the current mill employment in Grays Harbor County. In communities with a high reliance on Wood Products and Manufacturing sectors, mill job losses correspond closely with social indicators revealing increasing impoverishment.

Health Indicators

A survey of community health and well-being ranked Grays Harbor County poorly, at 36th out of 39 Washington counties in terms of health outcomes. Components that contributed to this ranking include high instances of premature death and the finding that almost 20% of the populous was rated in poor or fair health. In regard to an analysis of health factors, including health behaviors, clinical care, socioeconomic conditions, and physical environment, Grays Harbor County ranked last in Washington. Both the rate of adult smoking and teen birth rate are approximately 50% higher than the statewide totals. Additionally, from a clinical care standpoint a primary care physician ratio (1,429:1) double the statewide ratio (736:1) and the high number of preventable hospital stays suggest that Grays Harbor lacks the health care services needed by its residents. The physical environment factors examined should bode well for the health and well-being of those residing in Grays Harbor as demonstrated by low pollution levels and good access to recreational facilities and healthy foods. However, as noted in Chapter IV, section B, and indicated by Gray's Harbor health rankings, healthy physical environments cannot be relied upon as an indicator of healthy populations.

Free and Reduced Price Meal Program

Student enrollment in the Free and Reduced Price Meal (FRPM) program is an indicator of socioeconomic well-being in communities. Since a stigma develops around enrollment in the program at the high school level, our analysis is restricted to enrollment at schools that house kindergarten through sixth grade. Since 2002, enrollment in FRPM programs in Grays Harbor County has consistently remained around 10% higher than the statewide average enrollment as shown in Figure 6.44. From 2005 to 2008, enrollment increased gradually, rising 2% in four years.

This stable period was followed by a nearly 10% increase in countywide enrollment occurring from 2008 to 2011. Similar to employment trends and mill closures, levels of FRPM program enrollment vary between and within districts.

Figure 6.44. Grays Harbor County Percent FRPM Enrollment: 2005 to 2011

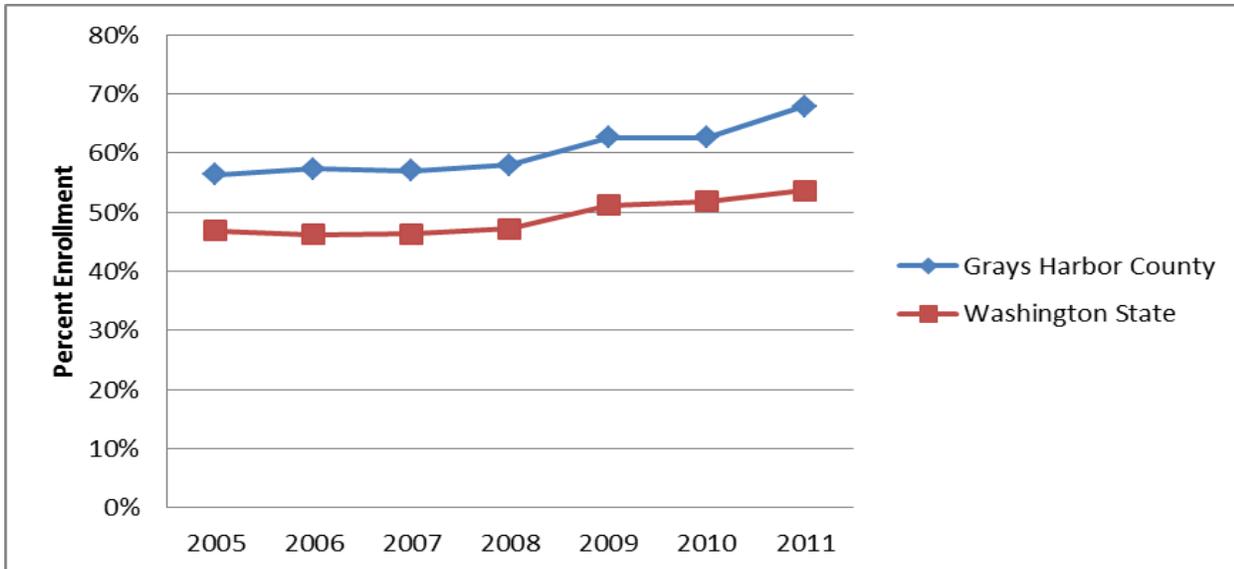
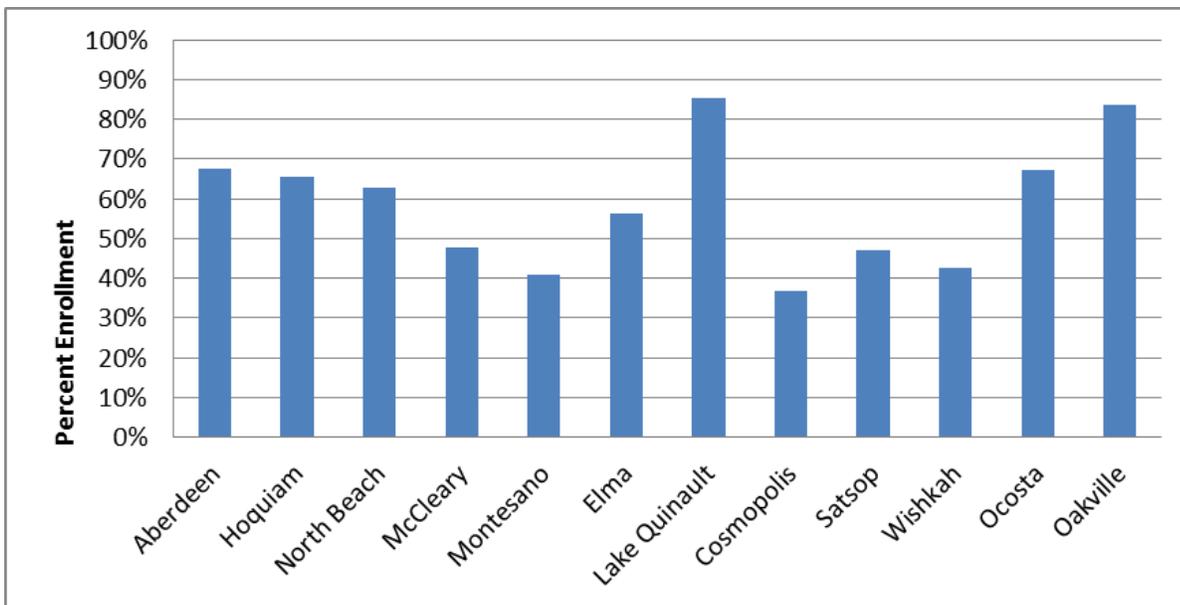


Figure 6.45. School Districts in Grays Harbor County Average FRPM Enrollment: 2005 to 2011



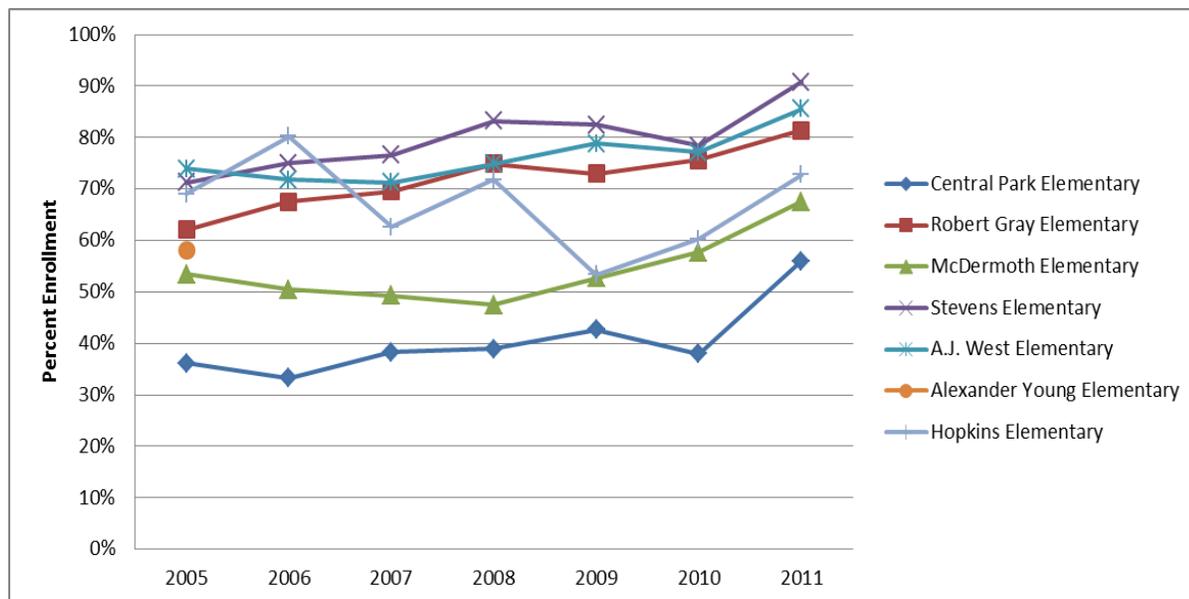
Districts

In the section below, several school districts are highlighted to illustrate the diversity in economic well-being within these social units, as well as between them as shown in Figure 6.46.

Aberdeen

The Aberdeen School District covers the most densely populated area of the county, but also extends into areas that have population densities as low as 3.6 people per square mile. True to its demographic diversity, the district has a wide range of percentage of students enrolled in FRPM program, as shown in Figure 6.46. Enrollment in FRPM at all elementary schools trended upward from 2002 – 2010. The smallest increase occurred at Hopkins Elementary, which went up 3.7 percentage points since 2005. FRPM enrollment at three schools, Central Park Elementary, Robert Gray Elementary and Stevens Elementary increased by over 19% between 2005 and 2011. Central Park Elementary had the lowest enrollment percentage during this period. Enrollment in FRPM, however, increased from 36% in 2005 to approximately 56% in 2011, a jump of 55%.

Figure 6.46. Aberdeen School District FRPM enrollment at Elementary Schools: 2005 to 2011

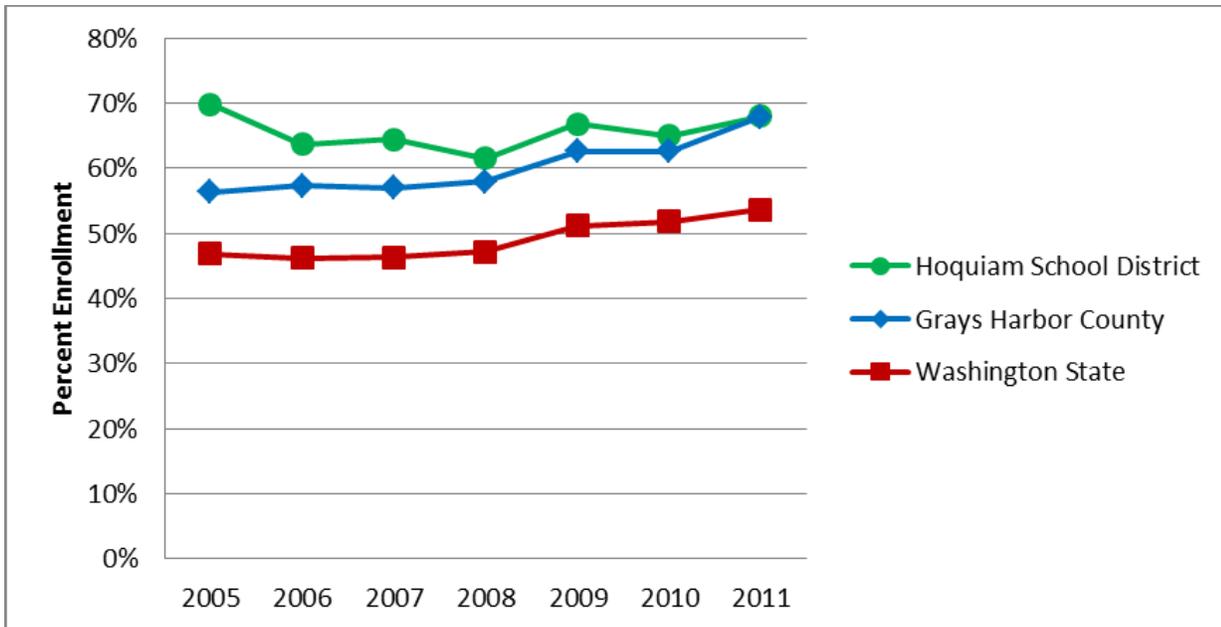


Hoquiam

Hoquiam School District is a relatively large school district with a boundary beginning just west of Aberdeen and stretching north up Highway 101 and west almost to the coast. Similar to the Aberdeen district, Hoquiam School District covers a diversity of population densities from around 2,000 people per square mile to 7 per square mile. Hoquiam is a community that has historically been tied to mill operation and the timber industry. Since 2002, the district average FRPM enrollment has been ten to twenty percent above the state wide total as shown in Figure 6.47. Despite an overall increase in FRPM enrollment in the county, FRPM enrollment in Hoquiam School District remained steady around 70% from 2005 to 2011, dipping to 62% in 2008. In addition to high FRPM enrollment, within the community of Hoquiam a total of 13.3% of persons

25 and over hold Bachelor’s degrees or higher, one in five persons live in poverty, and the median household income from 2006 to 2010 was 44% below the state total.

Figure 6.47. Hoquiam School District FRPM Enrollment: 2005 to 2011

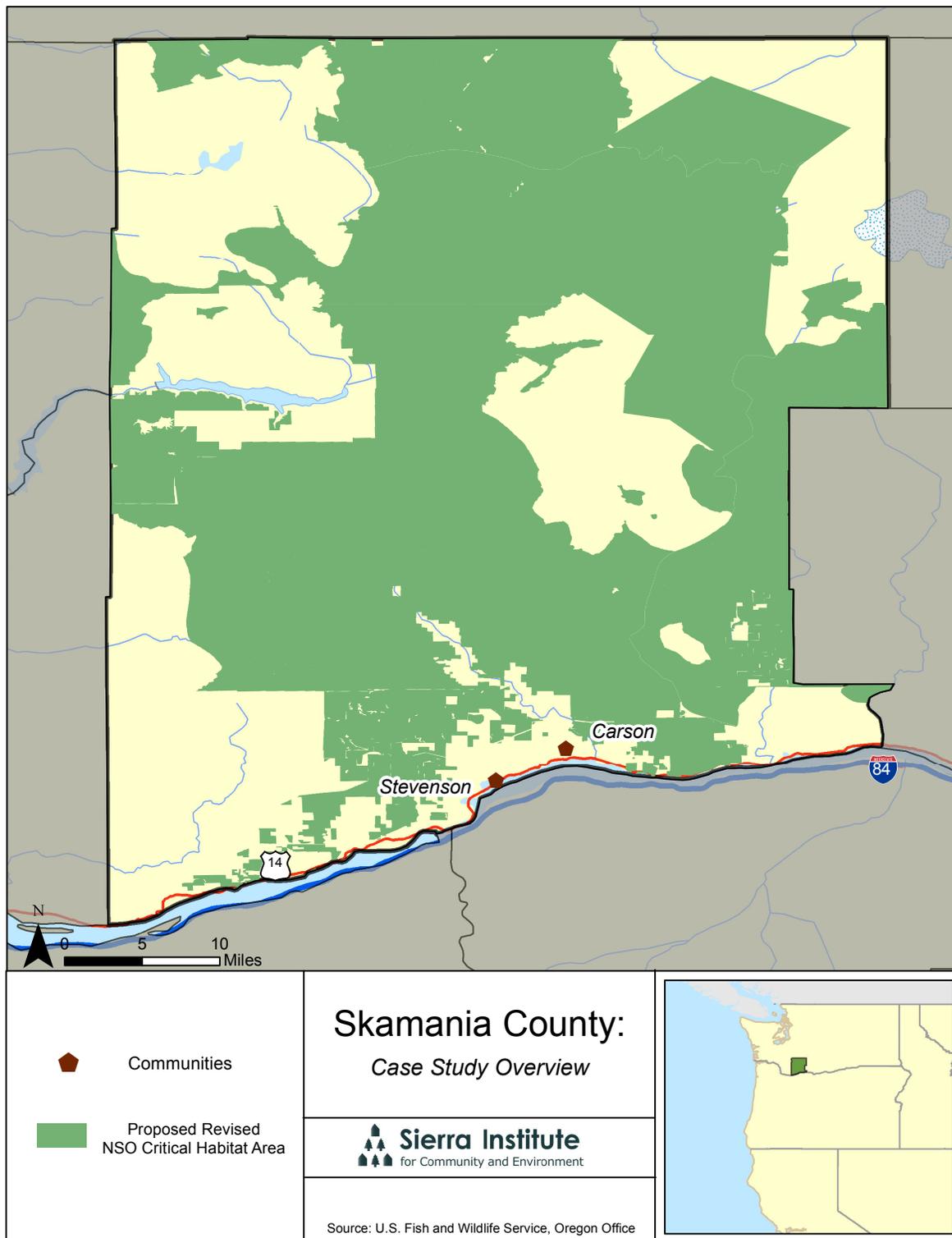


Lake Quinault and Oakville

These two school districts held the highest average percentage enrollment in FRPM from 2005 to 2011. Both are located in quite rural areas – though Oakville is less than a 20-minute drive from the Interstate 5 corridor. Lake Quinault School District FRPM enrollment increased from 82% in 2005 to 92% in 2011. Over this period, FRPM enrollment in Oakville School District increased 13 percentage points from 75% enrollment to 88% enrollment. In addition to their highly rural character, both districts have a relatively high percentage of Native Americans.

Skamania County

Map 6-9



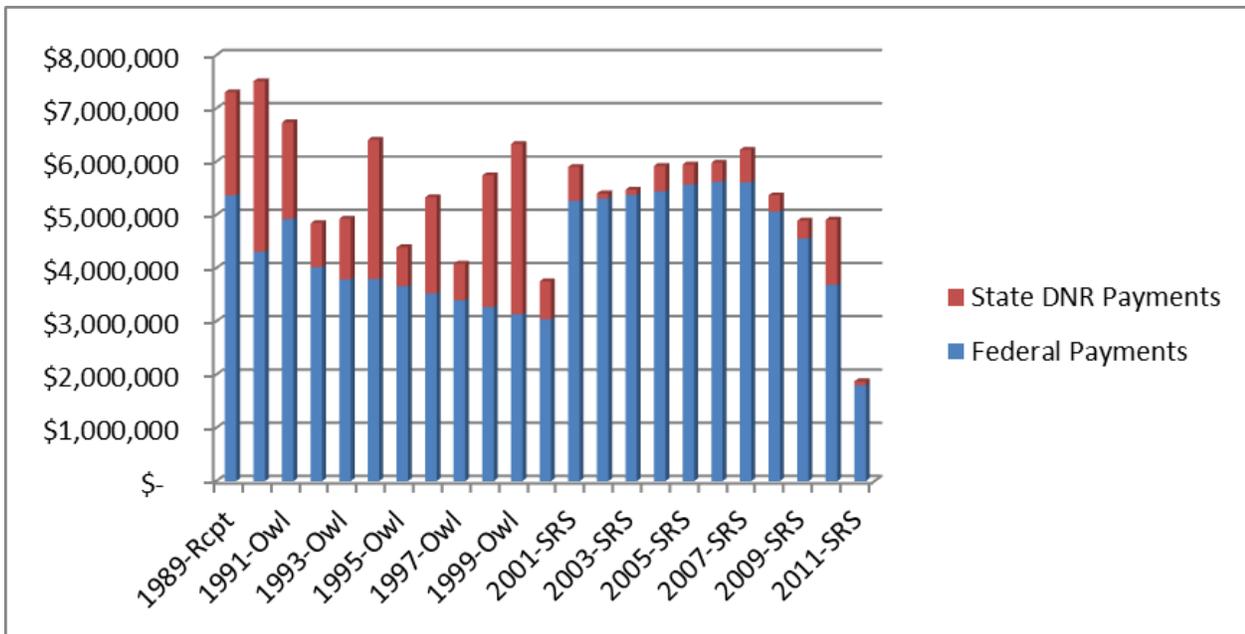
Overview

Skamania County encompasses just over one million acres of mostly forested land in southwestern Washington. It is home to roughly 11,000 residents. Stretching from Mt. St. Helens in the north to the Columbia River in the south, the county has a wealth of natural capital. At approximately 90%, Skamania County has the highest proportion of county land designated as National Forest of any county in the entire study region. A total of 59% of Skamania County is designated as CHA. With so much of its land under public ownership, federal revenue sharing payments, initially relying on the harvest of timber and later from federal programs designed to replace lost timber revenues, make up a majority share of Skamania County’s general fund budget.

In 1990, timber receipts provided \$7,507,740 to a county general fund that totals \$12 to \$14 million. From 1991 to 2000, the county received on average \$5,254,332 annually in what were termed owl “safety net” payments, to replace lost timber receipts. Owl “safety net” payments were replaced in 2001 by Secure Rural Schools and Community Self Determination Act payments. These payments averaged \$5,600,749 through 2010. In 2011, the county received \$1,875,000 in SRS payments. Figure 6.48 shows federal and state natural resource payments to Skamania County since 1989.

Only very recently Secure Rural School payments were approved for FY 2013, but continued battles in Washington, D.C. coupled with federal deficit-driven budgeting threaten the future of this program. The county acknowledges the role of these federal payments in Skamania County and the tenuousness of these programs. Seven town hall meetings to address the “State of the County” have been held recently. For the first time, school districts passed levies to fund their schools.

Figure 6.48. Federal Payments to Skamania County: 1989 to 2011



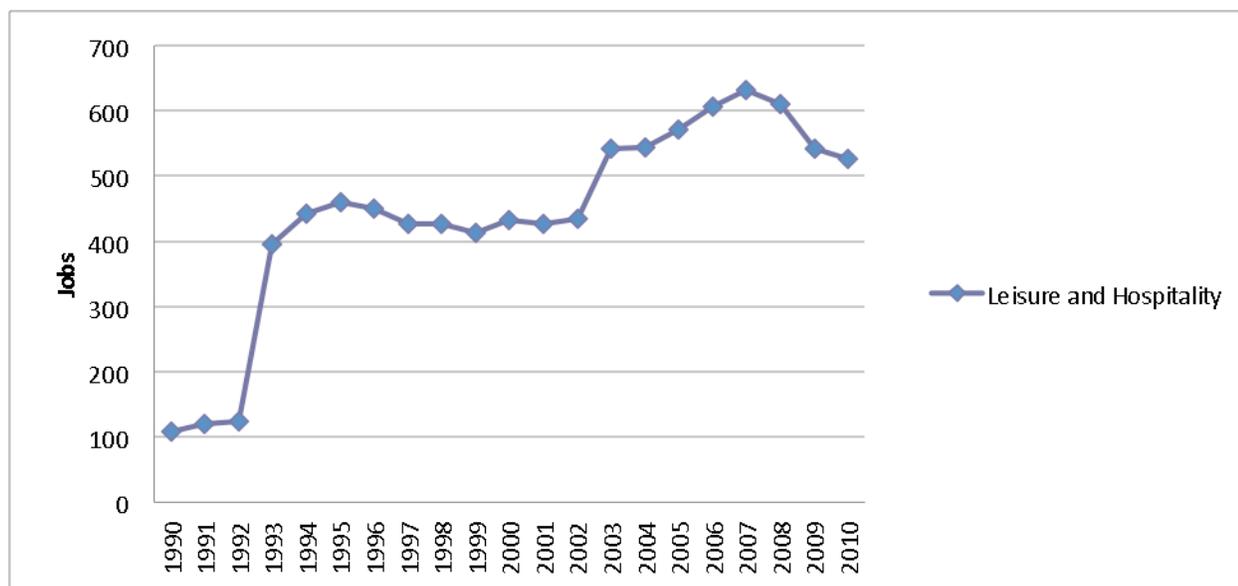
Employment Trends

Skamania County reported 2,134 jobs in 2010. Since 1990, unemployment in Skamania County has generally remained between one and three percent above the statewide rate. The greatest declines in available jobs have occurred in the private Natural Resources and Mining and the Manufacturing sectors, both of which have declined over 50%. Eighty-nine jobs were lost in the Natural Resources and Mining sector, representing a 63% decrease in employment. Over the same period, the Manufacturing sector lost 217 jobs, a 52% decline.

Employment in the Construction, Leisure and Hospitality, Food and Beverage stores, Gasoline Stations, and Education and Health Services sectors all gained jobs since 1990. The most significant increase is in the Leisure and Hospitality sector. This sector nearly quadrupled in size, gaining 418 jobs – a 387% increase from 1990 as shown in Figure 6.49. This dramatic increase occurred largely from 1992 to 1993 when the sector gained 271 jobs, going from 124 to 395, as the Skamania Lodge Mountain Resort was opened in the Columbia Gorge. The Leisure and Hospitality industry continued to grow, hitting a peak of 631 jobs in 2007 before falling to 526 in 2010, as the area was affected by the Great Recession.

Average wages in Skamania County trail the national average. In 2010, Skamania County’s average wage per job was \$34,111, 30% below the national average of \$48,531.

Figure 6.49. Skamania County Leisure and Hospitality Employment: 1990 to 2010



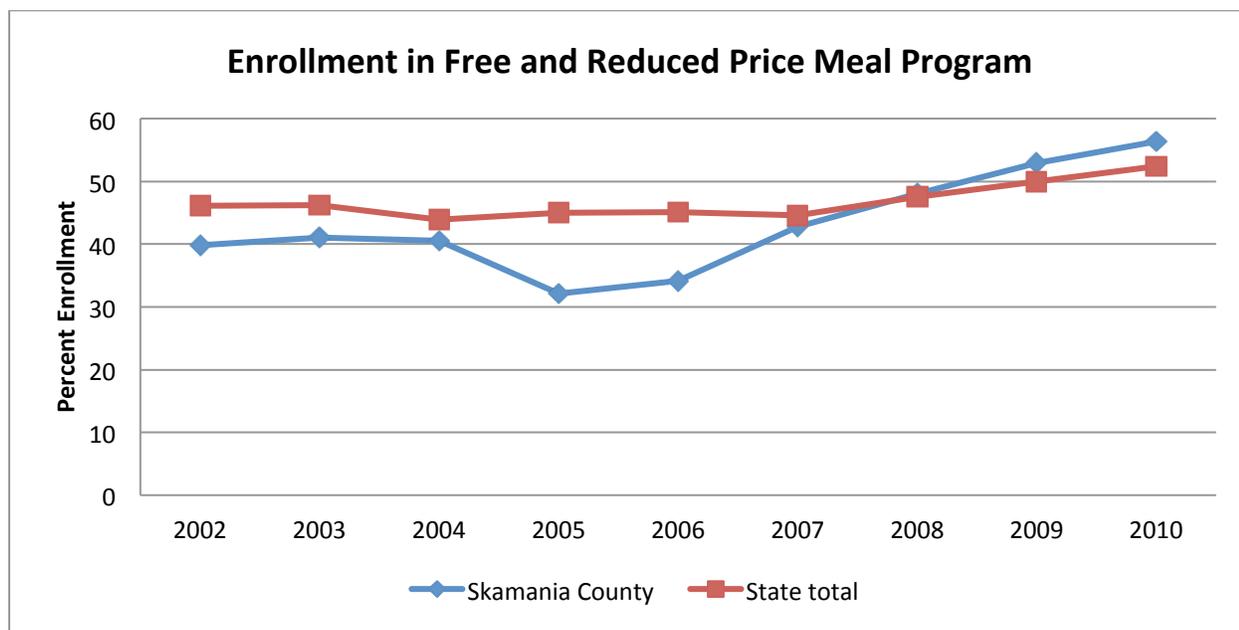
Mill Employment

Historically, the timber industry played a major role in the economy of Skamania County, employing over 10% of the workforce. Since 1990, two mills in Skamania County have closed. A veneer mill in Carson, owned by Wilkins, Kaiser & Olsen, Inc., closed in 1991 leaving eight workers out of a job. In 1992, the Stevenson Co-ply, Inc., mill in Stevenson closed, resulting in a loss of 175 jobs. Today, one mill remains in the county. Wilkins, Kaiser, & Olsen, Inc. operate a sawmill in Carson employing 75 workers with a production capacity of 110 million board feet.

Free and Reduced Price Meal Program

Enrollment in the Free and Reduced Price Meal (FRPM) program in Skamania County was at or below the statewide average until 2010. Though enrollment in the FRPM program has been relatively low compared to many counties with lands designated for critical habitat, it has been steadily increased 33% since 2005. Figure 6.50 shows seven years of recent FRPM enrollment data. Data were collected from five elementary schools in the county: Carson Elementary, Mill A School Elementary, Mount Pleasant School, Skamania Elementary, and Stevenson Elementary. Enrollment in FRPM at Mount Pleasant School, the elementary school with the lowest enrollment, increased from 0% in 2005 to 17.2% in 2011. In 2011, Mill A School Elementary had the highest rate of enrollment in FRPM at 73.3%. Every elementary school in Skamania showed an increase in enrollment rates, ranging from as small as 2.5 percentage points to 24.5 percentage points in the case of Stevenson elementary School.

Figure 6.50. Skamania County FRPM Enrollment: 2002 to 2010



Health Indicators

According to the “County Health Rankings and Roadmaps,” a project of the University of Wisconsin, Skamania ranks 17th out of Washington counties in overall health outcomes and 28th in terms of health factors. The majority of health indicators for Skamania are close to state averages. Some exceptions include an extremely low ratio of physicians to residents, with just one primary care physician for every 5,432 residents. However, it is important to consider the county’s proximity to a large metropolitan area where services are available, such as the Portland-Vancouver area. According to Indicators Northwest, the percent of Skamania County teens who are unemployed and not in school increased from 5.8% in 1990 to 9.0% in 2000. In general, Skamania scored well on indicators assessing the physical environment’s impacts on health and well-being. However, the access to healthy foods is limited. This scale reported that 26% of the population has limited access to healthy foods.

Chapter VII. Conclusion

The May 29, 2012 draft report, “Critical Habitat Designation for the Northern Spotted Owl,” prepared by Industrial Economics for the U.S. Fish and Wildlife Service, is inadequate for assessing socioeconomic conditions associated with establishing almost 14 million acres of critical habitat area (CHA) for the northern spotted owl (NSO). Industrial Economics’ analysis is insufficient in documenting cumulative socioeconomic impacts as well as current socioeconomic conditions and how CHA designation might affect counties and communities.

With this report the Sierra Institute for Community and Environment offers a more extensive examination of socioeconomic conditions for counties with CHA, beginning in 1990 and extending through 2012. The limited time associated with the review period did not allow direct evaluation of the connection between land management restrictions and NSO management to specific job losses and decline in natural resource and timber industry sectors. A linkage appears to exist, but additional research is needed to determine the strength of this relationship.

It is abundantly clear that the loss of jobs in natural resources and the manufacturing sectors has contributed to increasing impoverishment of communities and counties in the California, Oregon, and Washington NSO region. This is particularly true for workers and families who lost jobs. Evaluation of the designation of CHA must address this. Indeed, President Obama in his February 28, 2012 Memorandum for the Secretary of the Interior insisted on it, as a part of U.S. Fish & Wildlife Service’s assessment of CHA designation.

In the NSO region a total of 32,924 jobs were lost from the closure of 316 wood product mills alone, and many more were lost in support industries. Mirroring a pattern elsewhere in the country, manufacturing jobs were lost and were not replaced by jobs that paid commensurately, if they were replaced at all. Some of the manufacturing jobs that remained were paid at rates that did not keep pace with inflation. Contrary to the statements by Industrial Economics, regional population and job growth is not spread evenly spatially or temporally, and did not offset the impacts of local job losses in many areas. Yet, still, in many locales the timber industry remains a vital economic base and maintaining it and family-wage jobs are important for multiple reasons.

To more substantively comment with timely data, in addition to Census and state employment data, the Sierra Institute collected Free and Reduced Priced Meal (FRPM) Program participation rates by individual school districts throughout the study region. This is one of the first-ever efforts to use these data to assess current socioeconomic condition and trend.

A disturbing finding from FRPM analysis is that student participation in this federally subsidized program is high and growing startlingly higher across the study area. For all three states and for all but two counties, the average enrollment in the FRPM program increased during the period of analysis. In California the increase across study counties is 12.5%, in Oregon 12.2%, and in Washington 6.8%. If the only two counties that experienced a reduction in FRPM program participation rate are excluded, Washington’s average increase is 8%, with most of this increase taking place over the last four years.

Industry shifts, job loss, and other factors associated with the Great Recession contributed to an increase in the percentage of students participating in the FRPM program. Instead of rates of 40% or

50% of a student body participating in the FRPM program, rates of 50% to 60% are now common in many schools, and some in 2011 have participation rates of over 80%. Four California study counties have rates over 70% for the 2010-2011 school year. High participation rates are a serious socioeconomic issue for children, their families, and their communities, and reflect a deepening impoverishment of families in place.

Consistent with FRPM rate increases, almost one in five families live in poverty across the region in 2010, with some counties considerably higher. Many counties in the study region have unemployment rates that exceed state and national levels.

While student enrollment in FRPM increased, many school districts and counties experienced a decline in the number of students, revealing a loss of younger families. One of the more notable demographic changes in California, Oregon, and Washington study area counties is the 15%, 16%, and 17% decline, respectively, in the percentage of the population under five years old (data for elementary and high school-aged children were unavailable). Some counties lost over 30% of their under-five population, indicating an exodus of young families. The loss of young families presents challenges to school districts to keep schools open and maintain robust enough offerings to retain the students they have.

Finally, perhaps a somewhat surprising finding from Sierra Institute work is that rural counties in the study region fared worse than their urban counterparts in county health rankings. Study counties were more likely than other counties in their state to have negative health outcomes and health factors, largely because of lifestyle choices that negatively influence health. Rural counties in the NSO region also fared less well because of reduced access to care and social and economic factors.

* * *

Despite the grim picture that much of the socioeconomic and health data paint for most of the study region in 2012, there remains not only considerable need but also opportunity to address CHA issues beyond simple land designation and in ways that can contribute to improved socioeconomic conditions.

The primary purpose of CHA designation is preservation of northern spotted owl habitat through land designation and restriction of activities. Ignored for the most part, however, are threats to existing habitat and habitat to be developed for the future. Industrial Economics' assessment and the U.S. Fish and Wildlife Service both assume that land designation is the primary pathway for maintaining viable NSO populations. There is little about land management to promote habitat, and direct threats to habitat and the species are for the most part ignored.

Threats to NSO population and habitat include: 1) catastrophic wildfire, the threat of which is pervasive in east side forests and on the increase in west side forests, and exacerbated in both areas by densely-stocked stands; 2) diminished land value stemming from CHA designation, especially by private owners, resulting in land being left unmanaged or sold for development; and 3) barred owl competition and interbreeding with northern spotted owls, to mention just a few.

Fires currently burning across the West—and including NSO habitat area—as this conclusion is being written, bring home the point that there is a need for managing forests and reducing the threat of catastrophic wildfire. Catastrophic wildfire destroys habitat. Forest management can contribute to maintaining and improving habitat.

Citing a Washington state official, Industrial Economics acknowledged that designation of CHA in private forestland may reduce the value of land and timber resources to the point that owners decide not to manage it because of the expense. There was little discussion beyond this acknowledgement, however. Private forest land owners “walking away” from managing stands may lead to increased density and an increased risk of catastrophic wildfire. Landowners may also choose to sell encumbered land rather than absorb the expense of managing it, resulting in habitat fragmentation or destruction through development.

Competition between the barred owl and the northern spotted owl presents an altogether different challenge. Barred owl outcompeting the NSO and interbreeding may represent a greater long-term threat, and one that is unlikely to be addressed by CHA designation alone. Additional work is needed to understand these impacts and the role of critical habitat designation and active forest management on northern spotted owl species viability.

Industrial Economics briefly discussed forest management involving “new ecological forestry” principles that can lead to improved forest management and habitat and increased timber production. This discussion, however, is much too limited in the report and, by Industrial Economics’ own admission is unlikely to lead to much timber production. It is important to recognize that their approach relies on the “more conservative” prescriptions of 20 years ago. What is not clear is why newer knowledge and approaches to forest management are not incorporated in their analysis and discussion. It is needed.

Industrial Economics discusses ecological forestry, a primary purpose of which is “to better reconcile competing economic and conservation goals.” Ecological forestry offers the opportunity to improve NSO habitat and simultaneously improve forest work opportunities and forest employment. This begs the question of how much active land management can contribute to improved NSO conditions, including the reduction of the threat of catastrophic wildfire that would destroy NSO habitat, and impact northern spotted owl viability. It is this kind of work and analysis that is needed in the future.

The time has long since past that we “reconcile” what Industrial Economics’ terms “competing economic and conservation goals.” Newer approaches address forestry as a “triple-bottom-line” endeavor—one in which economy, environmental, and community (or equity) benefits are all a part and integrated. Such an approach is not about trading off harvests at the expense of the environment, or environmental outcomes with community and economic interests, but integrating them in ways that advance them collectively. The tenets of ecological forestry are suggestive, but Industrial Economics paints this picture far too narrowly. Regardless of whether one calls it ecological forestry, restoration forestry, or something else, active forest management is needed to address socioeconomic and habitat issues of the northern spotted owl, and the point is that they can be successfully integrated in new and potent ways. A new comprehensive vision and approach is needed for the forests, for the counties and communities dependent on them, as well as for the northern spotted owl.

APPENDIX A: Methods

Free and Reduced Price Meal Program

The analysis of enrollment in Free and Reduced Price Meal (FRPM) programs was conducted to provide an additional indicator of socioeconomic conditions in rural areas of counties containing 2012 CHA's. In certain instances school districts were excluded from this analysis because they formed part of highly urbanized areas. Including highly urbanized areas with the largely rural area data may unduly influence this indicator, causing it to reflect more on the conditions of urban areas and issues unrelated to CHA designation. School districts in California's southern Sonoma County, Oregon's greater Portland-Vancouver area, and Washington's Seattle-Tacoma-Everett were excluded on this basis. The entirety of Marin County was also excluded from analysis because of its linkage to the San Francisco Bay Area economy.

The identification of school districts to be excluded was an iterative process that considered population demographics, road densities, and other social factors. Determination of specific school districts to include or exclude also involved consideration of the proximity to both 2012 CHAs and operating or closed mills. These factors were combined to approximate the degree of rurality, present or historical dependence on the timber industry, and likelihood of impact from the 2012 CHA designation for each district.

Grade levels of students are also selective for this analysis. High school student enrollment in FRPM programs may not accurately represent family economic hardships. This is because high school students resist participation in these programs due to the stigma of participation among their peers. As a result, high school data are excluded. Elementary school students are less aware of perceived stigma among their peers for participating in FRPM programs, and parents exert more control in deciding to enroll their children at this age. For this reason, grade levels K-6 are included in the data collected for FRPM analysis.

There is some variation in grade level representation, however, based on local requirements for school establishment. For example, some schools may include K-7 or K-8 students. Schools in which 7th and 8th graders are included in school FRPM totals are included in the analysis only if the majority of students are 6th grade and below.

Health

Analysis of overall regional and county-level health was conducted based on work by the University of Wisconsin Population Health Institute and a model of population health that focuses on factors that contribute to community health. The County Health "Rankings and Roadmap" project provides information about county-level health and well-being. This information is utilized in order to provide descriptive statistics about each study area.

A variety of data is provided in the county health listings, ranging across incidence of certain diseases, lifestyle choices, and socioeconomic factors. These data serve to highlight trends of health and well-being, and are available at the county level.

Labor

Although the Bureau of Labor Statistics measures labor market activity for all counties in the country, this data is collected by each state as well, and for our primary sources we used state data.

The ability to assess data is more critical for intra-county comparison at the state level, as state policies and regulations more deeply affect local conditions. It was more important to evaluate and compare county labor data in relation to other counties in the same state, rather than compare counties with each other across three states. Hence, three sources were used to build the data bases on which comparison is based:

1. California data was collected by the California Employment Development Department, Labor Market Information Division²⁴
2. Oregon data was collected by the Oregon Employment Department, Labor Market Information System²⁵
3. Washington data was collected by the Bureau of Labor Statistics, as the Washington Department of Employment Security had limited data (no pre-2005 data)²⁶

The key challenge to data collection across all states is the switch from Standard Industrial Classification (SIC) codes to North American Industry Classification System (NAICS) codes in 2001. In general, Oregon collected data strictly according to code so that comparison between counties had to be broken down by 1990 to 2000 and 2001 to 2010. However, because the California data was more generalized, data could be compared across one time-frame, but was less specific. Finally, Washington data was obtained from the federal Bureau of Labor Statistics because the state did not have pre-2005 data available. For a complete listing of data collected, by code, see Table M-1.

Data Collected for Oregon, Washington, and California

NAME	CATEGORY	DESCRIPTION	TIMEFRAME	STATE
Private		Accommodations & Food Services	1990 to 2011	WA
			2000 to 2011	OR
01 to 09	Agriculture, Forestry, and Fishing	Agricultural production (crops and livestock); Agricultural services, Forestry, and Fishing, Hunting and Trapping	1990 to 2000	OR
15-17	Construction	General Building; heavy; and special trade contractors	1990 to 2000	OR
Private	Construction	Construction of buildings; Heavy and Civil Engineering construction	1990 to 2011	WA
			2001 to 2011	OR
611	Education	Industries in the Educational Services subsector provide	1990 to 2011	WA

²⁴ <http://www.labormarketinfo.edd.ca.gov/Content.asp?pageid=170>

²⁵ <http://www.qualityinfo.org/olmisj/CEP>

²⁶ <ftp://ftp.bls.gov/pub/special.requests/cew/beta/>

NAME	CATEGORY	DESCRIPTION	TIMEFRAME	STATE
		instruction and training in a wide variety of subjects. The instruction and training is provided by specialized establishments, such as schools, colleges, universities, and training centers.	2001 to 2011	OR
Private	Education and health services		1990 to 2011	WA
			2001 to 2011	OR
Federal	Federal Government		1990 to 2011	WA
			1990 to 2011	OR
445	Food and beverage stores	Industries in the Food and Beverage Stores subsector usually retail food and beverage merchandise from fixed point-of-sale locations. Establishments in this subsector have special equipment (e.g., freezers, refrigerated display cases, refrigerators) for displaying food and beverage goods. They have staff trained in the processing of food products to guarantee the proper storage and sanitary conditions required by regulatory authority.	1990 to 2011	WA
			2001 to 2011	OR
722	Food Services and drinking places	Industries in the Food Services and Drinking Places subsector prepare meals, snacks, and beverages to customer order for immediate on-premises and off-premises consumption. There is a wide range of establishments in these industries. Some provide food and drink only; while others provide various combinations of seating space, waiter/waitress services and incidental amenities, such as limited entertainment.	1990 to 2000	WA
			2001 to 2011	WA
113	Forestry and logging	Industries in the Forestry and Logging subsector grow and harvest timber on a long production cycle (i.e., of 10 years or more).	1990 to 2011	WA
			2001 to 2011	OR
25	Furniture and fixtures	This major group includes establishments engaged in manufacturing household, office, public building, and restaurant furniture; and office and store fixtures.	1990 to 2000	OR
337	Furniture and related product manufacturing	Industries in the Furniture and Related Product Manufacturing subsector make furniture and related articles, such as mattresses, window blinds, cabinets, and fixtures. The processes used in the manufacture of furniture include the cutting, bending, molding, laminating, and assembly of such materials as wood, metal, glass, plastics, and rattan. However, the production process for furniture is not solely bending metal, cutting and shaping wood, or extruding and molding plastics. Design and fashion trends play an important part in the production of furniture.	1990 to 2011	WA
			2001 to 2011	OR
447	Gasoline stations	Industries in the Gasoline Stations subsector group establishments retailing automotive fuels (e.g., gasoline, diesel fuel, gasohol) and automotive oils and retailing these products in combination with convenience store items.	1990 to 2011	WA

NAME	CATEGORY	DESCRIPTION	TIMEFRAME	STATE
		These establishments have specialized equipment for the storage and dispensing of automotive fuels.	2001 to 2011	OR
452	General merchandise stores	Industries in the General Merchandise Stores subsector retail new general merchandise from fixed point-of-sale locations. Establishments in this subsector are unique in that they have the equipment and staff capable of retailing a large variety of goods from a single location. This includes a variety of display equipment and staff trained to provide information on many lines of products.	1990 to 2000	WA
			2001 to 2011	WA
Private	Health & Social Assistance		1990 to 2011	WA
			1990 to 2011	OR
80	Health Services	This major group includes establishments primarily engaged in furnishing medical, surgical, and other health services to persons. Establishments of associations or groups, such as Health Maintenance Organizations (HMOs), primarily engaged in providing medical or other health services to members are included, but those which limit their services to the provision of insurance against hospitalization or medical costs are classified in Insurance, Major Group 63.	1990 to 2000	OR
622	Hospitals	Industries in the Hospitals subsector provide medical, diagnostic, and treatment services that include physician, nursing, and other health services to inpatients and the specialized accommodation services required by inpatients. Hospitals may also provide outpatient services as a secondary activity.	1990 to 2000	WA
			2001 to 2011	WA
70	Hotels and other lodging places	This major group includes commercial and noncommercial establishments engaged in furnishing lodging; or lodging and meals, and camping space and camping facilities.	1990 to 2000	OR
Private	Leisure and Hospitality		1990 to 2011	WA
			2001 to 2011	OR
24	Lumber and wood products	This major group includes establishments engaged in cutting timber and pulpwood; merchant sawmills, lath mills, shingle mills, cooperage stock mills, planing mills, and plywood mills and veneer mills engaged in producing lumber and wood basic materials; and establishments engaged in manufacturing finished articles made entirely or mainly of wood or related materials.	1990 to 2000	OR
20-39	Manufacturing	Food; textile; apparel; lumber and wood; and variety of other products	1990 to 2000	OR
private	Manufacturing		1990 to 2011	WA

NAME	CATEGORY	DESCRIPTION	TIMEFRAME	STATE
			2001 to 2011	OR
339	Misc. manufacturing	Industries in the Miscellaneous Manufacturing subsector make a wide range of products that cannot readily be classified in specific NAICS subsectors in manufacturing. Processes used by these establishments vary significantly, both among and within industries. For example, a variety of manufacturing processes are used in manufacturing sporting and athletic goods that include products, such as tennis racquets and golf balls. The processes for these products differ from each other, and the processes differ significantly from the fabrication processes used in making dolls or toys, the melting and shaping of precious metals to make jewelry, and the bending, forming, and assembly used in making medical products.	1990 to 2000	WA
			2001 to 2011	WA
453	Misc. store retailers	Industries in the Miscellaneous Store Retailers subsector retail merchandise from fixed point-of-sale locations (except new or used motor vehicles and parts; new furniture and house furnishings; new appliances and electronic products; new building materials; and garden equipment and supplies; food and beverages; health and personal care goods; gasoline; new clothing and accessories; and new sporting goods, hobby goods, books, and music).	1990 to 2000	WA
			2001 to 2011	WA
Federal	Natural Resources and Mining		2001 to 2011	OR
			1990 to 2011	WA
Private	Natural Resources and Mining		1990 to 2011	WA
			2001 to 2011	OR
State	Natural Resources and Mining		1990 to 2011	OR
322	Paper manufacturing	Industries in the Paper Manufacturing subsector make pulp, paper, or converted paper products. The manufacturing of these products is grouped together because they constitute a series of vertically connected processes. More than one is often carried out in a single establishment. There are essentially three activities. The manufacturing of pulp involves separating the cellulose fibers from other impurities in wood or used paper. The manufacturing of paper involves matting these fibers into a sheet. Converted paper products are made from paper and other materials by various cutting and shaping techniques and includes coating and laminating activities.	1990 to 2011	WA
			2001 to 2011	OR
Private	Retail		1990 to 2011	WA
			2001 to 2011	OR

NAME	CATEGORY	DESCRIPTION	TIMEFRAME	STATE
52-59	Retail Trade	Bldg. material & garden supplies, general merchandise stores, food stores, auto dealers & service stations, apparel and accessory stores, furniture and home furnishing stores, eating and drinking places, and miscellaneous retail	1990 to 2000	OR
Local		Total local government	2001 to 2011	WA
			1990 to 2011	OR
State		Total state government	1990 to 2011	OR
484	Truck transportation	Industries in the Truck Transportation subsector provide over-the-road transportation of cargo using motor vehicles, such as trucks and tractor trailers. The subsector is subdivided into general freight trucking and specialized freight trucking.	1990 to 2011	WA
			2001 to 2011	OR
42	Trucking and warehousing	This major group includes establishments furnishing local or long-distance trucking or transfer services, or those engaged in the storage of farm products, furniture and other household goods, or commercial goods of any nature. The operation of terminal facilities for handling freight, with or without maintenance facilities, is also included.	1990 to 2000	OR
321	Wood product manufacturing	Industries in the Wood Product Manufacturing subsector manufacture wood products, such as lumber, plywood, veneers, wood containers, wood flooring, wood trusses, manufactured homes (i.e., mobile home), and prefabricated wood buildings. The production processes of the Wood Product Manufacturing subsector include sawing, planing, shaping, laminating, and assembling of wood products starting from logs that are cut into bolts, or lumber that then may be further cut, or shaped by lathes or other shaping tools. The lumber or other transformed wood shapes may also be subsequently planed or smoothed, and assembled into finished products, such as wood containers. The Wood Product Manufacturing subsector includes establishments that make wood products from logs and bolts that are sawed and shaped, and establishments that purchase sawed lumber and make wood products. With the exception of sawmills and wood preservation establishments, the establishments are grouped into industries mainly based on the specific products manufactured.	1990 to 2011	WA
			2001 to 2011	OR

Demographic Patterns

The data was compiled into a single GIS layer creating a seamless Geodatabase at the census tract and county level, which covered the entire area. The aggregated Census data was then aggregated to both the school district level using a technique called “Asymmetric Weighting”. Asymmetric Weighting is used to create spatial relationships of data within specific Census tracts using to account for populated and unpopulated areas of the individual tracts. In this case, areas that were

mapped as “developed” within LANDFIRE existing vegetation GIS data (LANDFIRE 2012) within census tracts were weighted as containing human populations and associated census data. In essence, this approach of asymmetric weighting greatly reduces errors associated with the assumption that populations are evenly distributed within census blocks, which is a problem particularly in census blocks dominated by public land, inaccessible areas, or other uninhabited places.

Other Significant Relationships - Relationship Between the Percentage of FRPM and Proximity to Open and Closed Mills

This analysis integrated information from 4 primary spatial and non-spatial datasets. These datasets included 1) the location of all existing mills in the study area, including their status as open or closed, and if closed, the year of closure, 2) the location of all public and private schools in study area, 3) the average percentage of the school population that is participating in the Free and Reduced School Lunch Program, and 4) the population of the community associated with a given mill.²⁷ Mill “rurality” was categorized by the population in the communities they are located in as “urban” (>25,000 people), “mid-sized” (5,000 to 25,000 people) or “rural” (<5,000 people). In cases where a mill was located in a rural community but within 20 miles of an urban community, its rurality was reclassified as mid-sized. In cases where a mill was located in a mid-sized community but within 20 miles of an urban community with more than 50,000 people, its rurality was reclassified as urban. Using the spatial locations of the mills and schools, the distance between every school and mill within 50 miles was calculated. This calculation resulted in a geospatial dataset of nearly 630,000 unique mill to school distance calculation records and associated FRPM use within the study area. This data was then exported into a pivot table, where additional filters of school student population, distance to mill, and time since closure mill could be filtered by state, county, and individual school. Schools with 30 or more students were included in the analysis as smaller school percentage of FRPM use would vary dramatically with relatively small numerical shifts in actual students using the program.

²⁷ ArcGIS 2012. Department of Education- U.S. Public, Private schools, colleges and universities. Downloaded from <http://www.arcgis.com/home/item.html?id=f8cf498555344ef880aa3361239c5abbn> 07/03/2012