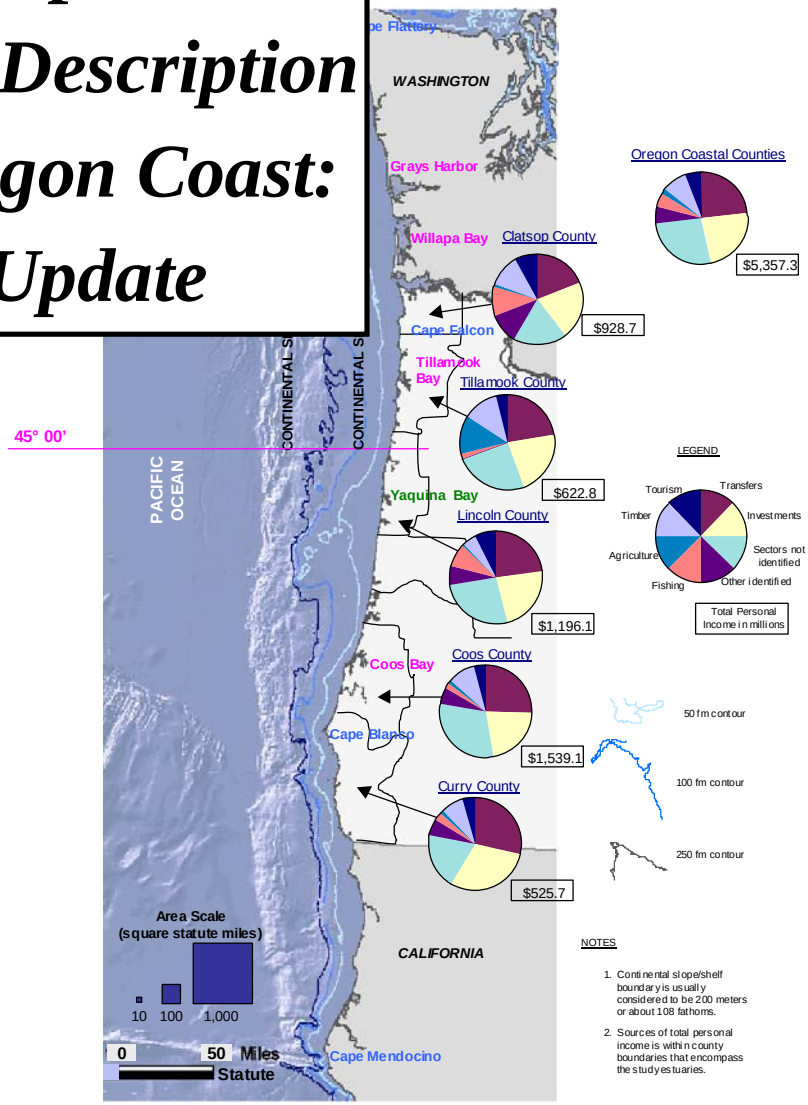
A Demographic and Economic Description of the Oregon Coast: 2006 Update



Oregon Coastal Zone Management Association

March 2006

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A message from Onno Husing, OCZMA Director:

The Oregon Coastal Zone Management Association (OCZMA) has become a trusted source of information about the Oregon Coast's economy. I am pleased to release this report containing social and economic descriptions of the Oregon Coast. It was prepared by The Research Group, Corvallis, Oregon with study principals Shannon W. Davis and Hans D. Radtke. Heartfelt thanks are extended to the Steering Committee and others who provided peer review of this important work.

This update builds upon a landmark coastal economic study prepared by The Research Group for OCZMA in 1994. Data for the update is as current as possible using Year 2000 decennial census and 2003 economic information.

Why is the information so important? This is like taking a chest x-ray of the Oregon Coast. It tells us what's really happening inside our economy. Local leaders can use this information to guide economic and community development activities. The report is an invaluable asset to grant writers because it organizes and analyzes data about the Oregon Coast from a variety of sources and analysis perspectives into a single document.

Then and Now: A Sense of Revelation

When the 1994 report was published, people were astonished to learn that the tourism industry only produced seven percent of the total earned personal income on the Oregon Coast (1991 data). Things have not changed much since 1991. In 2003, tourism only contributed six percent of the earned income on the Oregon Coast. We are not suggesting tourism is an unimportant industry on the Oregon Coast. Rather, we are merely placing tourism into a larger context.

Here's another important finding. In 1991 and 2003, transfer income (social security and other forms of government assistance) constituted 24 percent of total personal income on the Coast. Investment income (retirement accounts such as 401k accounts and pensions) constituted 23 percent (of the total personal income on the Coast. So, taken together, transfer payments and investment income make up 46 percent of the total earned income on the Oregon Coast. Those shares compare to 24 percent for Oregon and 31 percent for the U.S. This demonstrates how important retirees have become to the Oregon Coast.

What about other leading coastal industries? In 2003, timber is at nine percent of the coastal economy (down from 12 percent in 1991). In 2003, commercial fishing is the same percent for the Coast (at five percent) as in 1991. Agriculture has dropped to two percent in 2003 down from four percent in 1991. However, in Tillamook County, agriculture remains a major industry.

What Else is the Data Telling Us?

- There has been a decade of aggregate economic growth on the Oregon Coast. The natural resource industries have declined and tourism has stayed about the same. Increases in economic growth cannot be assigned to any single industry. Rather, the growth seems to be occurring through a variety of small businesses. This represents a welcome trend toward economic diversification of the Oregon Coast.

- Today, the Oregon Coast is less susceptible to dramatic swings in unemployment due to national economic business cycles.

- There has been a boom in the market for "second homes" on the Oregon Coast. In some coastal communities 50 percent of the housing stock are second homes. The median value of owner-occupied homes is less than Oregon. But, the residential assessed value per capita is much higher (which demonstrates the presence of higher-valued second homes on the Coast than the rest of Oregon). These second homes increase the property tax base. Unfortunately, the strong demand for second homes is pricing many coastal residents out of the housing market.

- The population is growing on the Oregon Coast. However, these increases are in older age groups. Natural population increase (births minus deaths) decreased to negative for the first time in Oregon coastal counties. The net migration growth is coming from the national "boomer generation" age cohorts. As these people reach retirement age they are coming to the Oregon Coast seeking a higher quality of life. Most migration is coming from California. Curry County has the highest growth of retirees but all coastal counties are experiencing an aging of the population (with lower school enrollments).

- Household incomes are lower along the Oregon Coast than the rest of Oregon. There are more people working in lower wage brackets. In addition, there are more part-time jobs on the Oregon Coast than statewide. The poverty rate on the Oregon Coast is slightly higher than the rest of Oregon. However, consider this. In some coastal communities, 70 percent of the children enrolled in school live in households that qualify for assisted school lunch programs.

Learning More About the Retirement Sector

The Steering Committee did not formulate policy recommendations about the large retirement community on the Oregon Coast. The bottom line is we don't know enough about these retirees to make recommendations. Additional original research on retirees on the Oregon Coast needs to be carried out. For instance, we need to learn more about their needs and their spending habits. This information can help us develop strategies to capture more of the dollars retirees spend here on the Oregon Coast.

Looking ahead, because of broadband technologies, more people will be moving to the Oregon Coast to live and work— and not just older retirees. This trend is already quietly underway. Telecommuters, for instance, are using the Internet to communicate with home offices located off the Oregon Coast. Indeed, I sense that the Oregon Coast is about to experience a major transition.

Useful Information at Your Fingertips

There are many tables and figures in the report showing data up to Year 2003 for most characteristics. If future years' characteristics are desired, there is an extensive bibliography containing serial publications where the data can be found. An interesting phenomenon that has happened since the last publication is the wholesale availability of data on the internet. An appendix contains the domain names organized by data subject to get the data in that manner. (A computer file can be downloaded from www.oczma.org containing this report in Acrobat Reader format, which has an appendix formatted using a "clickable" feature so the complicated domain names don't have to be retyped.)

It has been an honor to develop this update. We want to express gratitude to the three Regional Investment Boards on the Oregon Coast who funded the study. We hope the report helps people understand the unique qualities that define the Oregon Coast.

A Demographic and Economic Description of the Oregon Coast: 2006 Update

Prepared by

Shannon W. Davis and Hans D. Radtke
The Research Group
Corvallis, Oregon

Prepared for the

Oregon Coastal Zone Management Association

March 2006

PREFACE

This study was sponsored by the Oregon Coastal Zone Management Association (OCZMA). The OCZMA is a voluntary association of over 40 local coastal governments comprised of counties, cities, ports, Indian tribes, and soil and water conservation districts. The OCZMA contract manager, Onno Husing, Executive Director, provided insight and understanding of the issues facing coastal communities. Funding was provided by the three Regional Investment Boards on the Oregon Coast through a true multi-regional grant partnership.[1]

The study consultant was The Research Group, Corvallis, Oregon. Shannon Davis and Hans Radtke were the principal authors. The authors were greatly assisted by Kari Olsen at The Research Group. While other contributors provided information and comments, the principal authors take sole responsibility for describing project results.

This report provides updated information for a study completed in 1994 for the OCZMA. The same type of analysis was used in a study completed for the Pacific Northwest Coastal Ecosystems Regional Study (PNCERS) Project in 2002. However, the PNCERS report was limited to only counties containing the Coos River and Tillamook Bay estuaries. The PNCERS report also had analysis for two coastal counties in Washington containing the Willapa Bay and Grays Harbor estuaries. This new report updates and summarizes changes that have occurred in the last decade, and does not repeat all background material contained in the 1994 OCZMA report. It is encouraged that readers get copies of the 1994 OCZMA report and/or the PNCERS report if they are interested in expanded explanations about coastal economies and their relationship and contrasts with a State and national level economic perspective.

This report was reviewed in draft form to provide candid and critical comments. This feedback helped make the findings of this report as sound as possible and ensures the report meets standards for objectivity, evidence, and responsiveness to the study charges. Although reviewers provided many useful comments and suggestions, they were not asked to endorse study findings and recommendations. The authors are solely responsible for making certain independent examination of this report. We undertook that task in accordance with accustomed procedures and review comments were carefully considered.

The authors' interpretations and conclusions should prove valuable for this study's purpose. However, no absolute assurances can be given that the described results will be realized. Government legislation and policies, market circumstances, and other situations will affect the basis of assumptions in unpredictable ways and will lead to unanticipated changes. The information should not be used for investment or operational decision making. The authors and OCZMA do not assume any liability for the information and shall not be responsible for any

1. The Regional Investment Boards representing coastal counties are the BL3 (Benton, Lane, Lincoln, and Linn counties), CCD (Coos, Curry, and Douglas counties), and Northwest Oregon Economic Alliance (Clatsop, Columbia, and Tillamook counties). Regional Investment Boards were created by the 1999 Oregon Legislature to identify and coordinate regional economic and community development priorities. The three Boards representing coastal counties distribute funding from the Regional and Rural Investment Fund to create and retain family wage jobs and leverage and attract capital investment.

direct, indirect, special, incidental, or consequential damages in connection with the use of the information.

Authorization is granted for the study report's contents to be quoted either orally or in written form without prior consent of the authors. Customary reference to authorship, however, is requested.

ACKNOWLEDGEMENTS

A steering committee, comprised of the following members, provided study monitoring.

Steering Committee Members (invited)

Bill Boggess, Department of Head, Oregon State University (OSU) Agriculture and Resource Economics
Councilman Jack Brown, City of Depoe Bay
Commissioner Ralph Brown, Curry County
Chris Chandler Di Torrice, Director, Lincoln County Economic Development Alliance
Kaety Hildenbrand, Marine Fisheries Extension Faculty, Oregon Sea Grant
Carol Gundlach, CG Consulting
Susan Hanna, Professor, OSU Agriculture and Resource Economics
Erik Knoder, Oregon Employment Department (Newport)
Mary McArthur, Northwest Oregon Economic Alliance
Matt Spangler, Director, Lincoln County Planning Department
Gil Sylvia, Director, Coastal Oregon Marine Experiment Station
Guy Tauer, Oregon Employment Department (Medford)

Other study collaborators that were contacted for participation follow.

Project Collaborators

State Agencies responsible for managing natural resources

Oregon Department of Agriculture (Dalton Hobbs)
Oregon Department of Fish and Wildlife (Harry Upton)
Oregon Department of Forestry (Gary Lettman)
Oregon Department of State Lands (John Lilly)

State Agencies and Economic Development Councils (on Oregon coast) that assist local government in economic development and land use planning

Clatsop Economic Development Council (Julia Nevan Decker)
Economic Development Council of Tillamook County (Christy Vail)
Lincoln County Economic Development Alliance (Chris Chandler Di Torrice)
Northwest Oregon Economic Development Alliance (Mary McArthur)

Oregon Department of Land Conservation and Development (Laren Woolley)
Oregon Department of Transportation (John Baker and Terry Cole)
Oregon Economic and Community Development Department (John Gorlorwulu)
South Coast Development Council (Ron Opitz)
Umpqua Economic Development Partnership (Helga Conrad)

Higher education and local governments

Cascades West Council of Governments (Bill Wagner and Drew Foster)
Coos, Curry, Douglas Business Development Corporation (Larry Andrew)
Lane Council of Governments (Milo Mecham)
Oregon Coastal Zone Management Association (John Griffith)
Oregon Sea Grant Program (Jay Rasmussen)
OSU Extension Service (Kaety Hildenbrand)
Portland State University (George Hough)
Umpqua Regional Council of Governments (David Voss)

AUTHORS

The Research Group assigned the principals Shannon Davis and Hans Radtke to the study.

Shannon Davis is a planner, statistician, and systems research specialist with 30 years of experience in the field of planning and economics. He received his bachelor of science degree from the University of Oregon in 1971 and accomplished his master of science program at Colorado State University in 1972. His professional interests are in single/multiuse natural resource planning and management with a specialty in resource economic modeling. Mr. Davis served two terms on the Pacific Fishery Management Council's (PFMC) Scientific and Statistical Committee (SSC), during which time the Fishery Management Plan for Salmon Management was converted into a framework plan. Mr. Davis has collaborated with Dr. Radtke on numerous projects requiring econometric modeling. Mr. Davis has worked on the social and economic chapters of many federal environmental economic impact statements (EIS). Recent example projects are the Puget Sound Chinook Management Plan EIS and Lower Snake River Juvenile Salmon Migration Feasibility Report and EIS. Mr. Davis completed the most recent update to the West Coast Fishery Economic Assessment Model (FEAM) for the PFMC. (The FEAM is used to analyze management alternatives for various fisheries' species and species complexes under the jurisdiction of the PFMC.) Mr. Davis was the study principal to develop the Oregon Ports Reporting System and a resulting study that reports on Oregon ports economic contributions to local communities.

Hans Radtke is a professional resource economist who has worked many years in natural resource management. He completed his bachelor of science degree from Portland State University in 1964, received a master of science program from Montana State University in 1969, and accomplished his doctorate degree from Oregon State University (OSU) in 1972. He is currently an adjunct professor at OSU. He specializes in the relationships of resource-based industries and regional, state, and national economies. He has completed many economic

impact, feasibility, and policy analyses and developed computer models for the economic assessment of fisheries management alternatives. In 1993, he provided the economic analysis on coastal fisheries and tourism for President Clinton's Forest Summit Interagency Team. He was a volunteer advisor in Russia for the transition to privatization of agriculture (1994), and has done work for the World Wildlife Fund in Mexico (1997). He is currently serving a third term as a member of the Oregon Governor's Council of Economic Advisors. In 1997, he was appointed to the PFMC, of which he was Vice-Chairman in 2000 and Chairman in 2002-2003. He is on the PFMC's SSC for a four year term starting in 2003. He is a member of the Independent Economic Analysis Board (IEAB), an advisory board to the Northwest Power and Conservation Council (NPCC) for a four year term beginning in October 2001. Recent example projects are the State of Washington public grazing lands economic impact study for the Joint Legislative Audit and Review Committee (JLARC) and the economic contribution of Columbia River anadromous salmonid species production for the NPCC.

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Appendices

EXECUTIVE SUMMARY

Study Purpose

This study was undertaken to update a report published in 1994 that contained a comprehensive look at the Oregon Coast's demographic and economic trends. Both the 1994 and this update study were sponsored by the Oregon Coastal Zone Management Association (OCZMA) in the interest of providing consistent, accurate, and relevant information for member governments. The update was necessary to address the many significant changes that have taken place in the last decade in the national, State, and Oregon Coast's economies and population base. In particular, shifts in federal and state natural resource and land management policies sparked dramatic changes to economies and the general population. Looking at demographics, the Coast's population is accelerating away from young families raising children and moving toward a population of retirees who have either stayed in or relocated to the region to enjoy the environment and quality of life. These social changes have had a profound impact on school and other local government services.

Coastal leaders and communities benefit by having a single, overarching study to document area-wide and local trends. Study results help in having a cost-effective approach for developing plans and policies to address the trends. In the absence of a single study, individual jurisdictions would be forced to prepare their own background and assessments (if they were prepared at all). Locally prepared assessments would not be consistent with neighboring jurisdictions, making region-wide comparisons among jurisdictions difficult or impractical.

This study's final report is just one of the outcomes of the update project. Presentations were made at study steering group meetings and OCZMA board meetings to bring coastal leaders and data users up to speed on the trends and what they mean. Focused information from study results and links to other helpful resources are posted on the OCZMA website.

Study Approach

Updated descriptions are a result of (1) economic analysis tasks, (2) social analysis tasks, and (3) interpretive tasks.

(1) Economic Analysis Tasks

The economic analysis work has two parts: (a) economic base analysis, and (b) a special emphasis to determine the importance and opportunities from retirement and retirement related income.

(2) Social Analysis Tasks

Population information is from decennial census and other serial primary data collection programs. Social trends are itemized for demographic, housing, health and well being indicators, and wealth statistics at relevant temporal and spatial scales.

(3) Interpretive Analysis Tasks

The interpretive task overlaps the economic and social analysis. Study steering group meetings were held to define emerging issues, the influences and consequences of the issues, and how descriptive indicators can be used for policy and planning.

Economic base analysis used seven basic sectors to describe the economy: commercial fishing, timber, agriculture, tourism, "other identified export based industries," "other earned income," and "non-earned income." The other identified export based industries sector includes four subsectors: water transportation and marine cargo; paper and paperboard mills; ship building, steel fabrication, and other construction; and other identifiable such as government, research, communication, special education, and military. The other earned income sector contains other unique businesses found on the Oregon Coast which cannot be identified due to data confidentiality and/or data specification issues. Other earned income is a residual calculation after accounting for the other five earnings sectors multiplier effects. The non-earned income is transfer payments and investment earnings. The economic base model was developed to generate estimates of the seven basic sectors' direct, indirect, and induced income at the county level. The model was derived from an economic input-output methodology. The demographic and economic analysis uses Year 2000 census information and Year 2003 county level personal income released by the Bureau of Economic Analysis (BEA).

Demographic Description

Population Characteristics

Since 1970, the population of Oregon has been growing much faster than the population of the United States (Table ES.1). There has been overall growth in coastal counties, but at a slower pace than Oregon. The exceptions are Lincoln and Curry counties which have grown almost as

Table ES.1
Population Percent Change During 1970 to 2000 for U.S., Oregon, and Coastal Counties

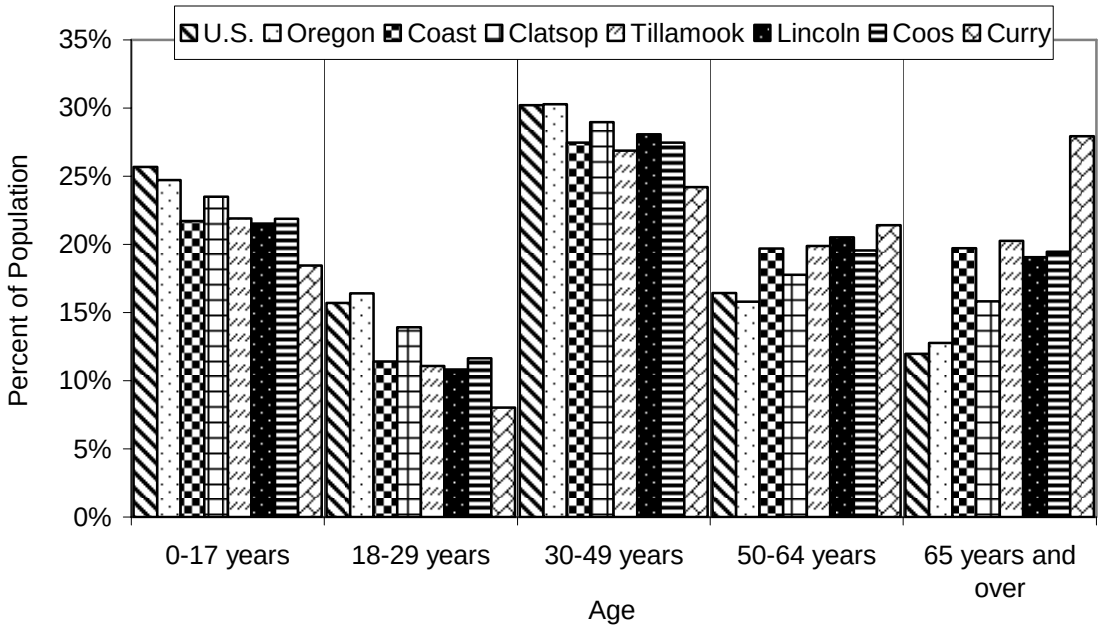
					Percent Change		
	1970	1980	1990	2000	1970-2000	1980-2000	1990-2000
Clatsop	28,473	32,489	33,301	35,630	25%	10%	7%
Tillamook	18,034	21,164	21,570	24,262	35%	15%	12%
Lincoln	25,755	35,264	38,889	44,479	73%	26%	14%
Coastal Lane	2,246	4,411	5,162	7,340	227%	66%	42%
Coastal Douglas	4,039	4,984	4,796	4,370	8%	-12%	-9%
Coos	56,515	64,047	60,273	62,779	11%	-2%	4%
Curry	13,006	16,992	19,327	21,137	63%	24%	9%
Coast	148,068	179,351	183,318	199,997	35%	12%	9%
Oregon	2,091,533	2,633,105	2,842,321	3,421,399	64%	30%	20%
U.S.	203,211,926	226,545,805	248,709,873	281,421,906	38%	24%	13%

Notes: 1. Cities of Florence and Reedsport represent coastal Lane and coastal Douglas counties, respectively.

fast as Oregon's population in the last two decades. The population of Coos County has been growing much slower than the Coast and the State.

Generally, coastal counties have an overall out-migration of young adults who leave the region to find education and employment opportunities. With these migration patterns alone, coastal areas would experience significant shifts in their demographic structure. However, this trend is exacerbated by in-migration patterns. The national population is "aging" with large population cohorts moving into middle and older age groups. The people in these retirement age cohorts are moving to the Coast. The trend is the same for Oregon, but more so for the coastal counties (Figure ES.1). Among the coastal counties, Tillamook and Curry counties are attracting the most retirement age people.

Figure ES.1
Study Area, State, and U.S. Age of Population in 2003

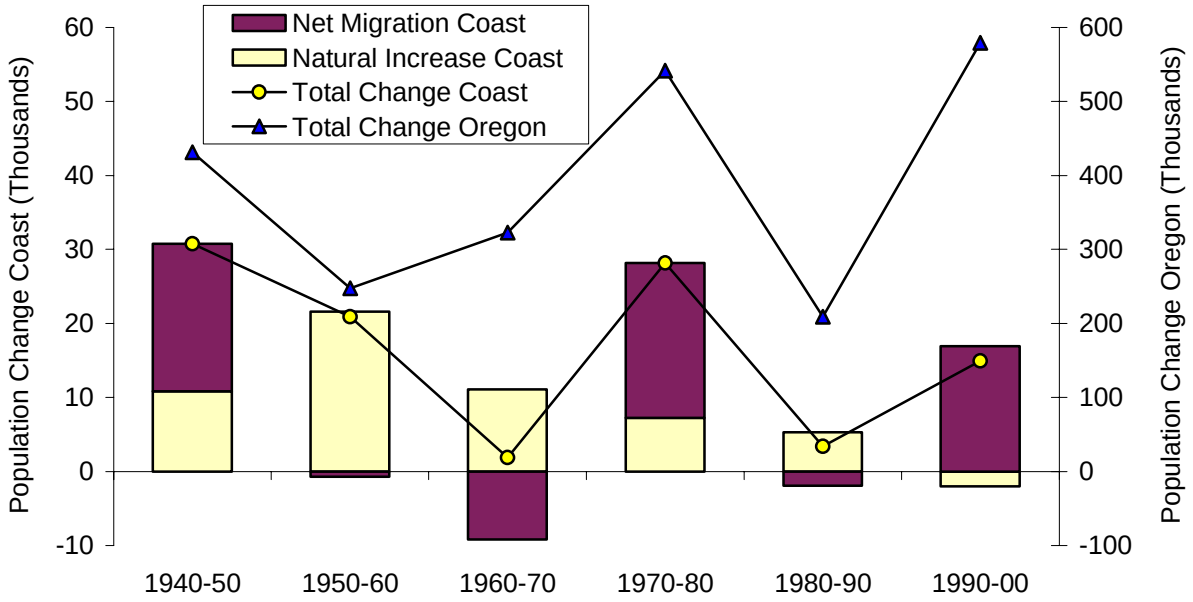


Net migration (individuals moving out minus those moving into an area) has oscillated between positive and negative in the shown intercensal periods (Figure ES.2). The growth in population due to natural increases (births minus deaths) has declined steadily since 1950, reaching a negative value between 1990 and 2000.

Geographic Density

The State and coastal counties have similar population densities at 35.6 and 27.6 persons per square mile, respectively. Since Oregon's land area includes vast unpopulated areas east of the Cascades, the coastal counties' density would indicate that density is very low. By comparison, the population density of the Portland Metropolitan Statistical Area (excludes land area and population of Clark County, Washington) is 357.4 in 2000.

Figure ES.2
Coast and Oregon Population Change by Component During Years 1940 to 2000



Notes: 1. Net migration equals in-migrants minus out-migrants.
2. Natural increase equals births minus deaths.
3. Coast does not include coastal Lane and coastal Douglas counties.

Housing Stock

The housing stock for the Oregon Coast is generally older than for the State. This is so despite the growth of second homes and condominiums.

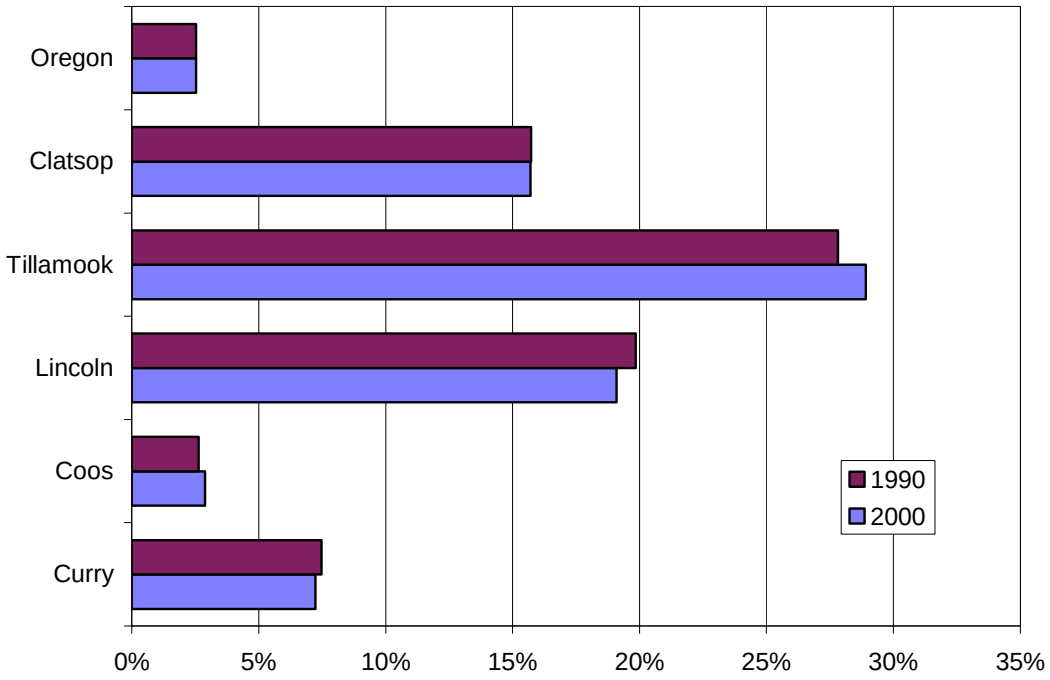
The usual statistic to measure housing availability is misleading for the Oregon Coast. Most counties' overall vacancy rates are substantially higher than the State's. This is because the census defined total vacancy rate includes vacant units market ready and vacant units which serve as a second home. Coastal counties' housing stock includes a much higher proportion of second homes than the State (Figure ES.3). Tillamook County has the highest percentage of second homes of all the coastal counties.

The median value of owner occupied homes is less than the State. But, the residential assessed value per capita is much higher. This demonstrates the presence of higher-valued second homes on the Coast than in the rest of the State.

Employment

Oregon's coastal areas have undergone significant economic and demographic transitions. Traditional resource-based industries like commercial fishing and wood products have declined in relative importance. Trade and service jobs associated with businesses serving tourism and retirees have increased. Because of the influence of the dairy industry in Tillamook County,

Figure ES.3
Second Homes as a Percent of Total Housing Units for Oregon and Coastal Counties in 1990 and 2000



agriculture has remained fairly constant. The major change, however, has been the increase of "other" industries in these counties, which reduced the relative importance of natural resource industries.

The flip side of employment is unemployment. There are some dramatic differences between the counties over time (Figure ES.4). In the past, Oregon's coastal counties were much more vulnerable to recessions, such as the downturn in the early 1980's. During those years, all Oregon's counties experienced worse unemployment. In the last decade, there have been fewer spikes in unemployment. And today, four of five coastal counties have less or about equal unemployment rates than the rest of the State.

Firm Size

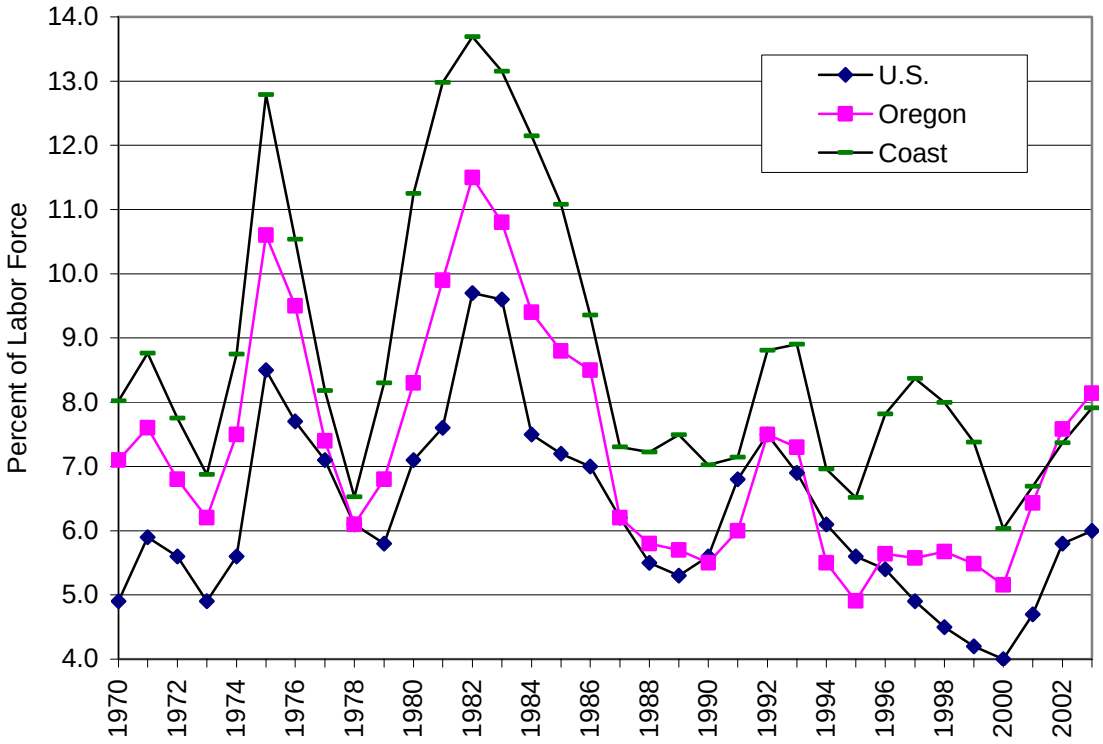
The Coast has a higher proportion of firms in the smallest size class than the State, though the proportion has been declining for both the Coast and the State. The percent of employment in

proprietorships is higher on the Coast than in the State and has stayed about the same over the last 30 years.

Labor Force Participation

The Coast's labor force participation is showing a growth rate which exceeds the rate of growth for the area's population. This differential in growth rates, which also took place at the State and

Figure ES.4
Unemployment Rate in 1970 to 2003



Notes: 1. Coastal counties are Clatsop, Tillamook, Lincoln, Coos, and Curry.
2. There was a change in measuring unemployment rate starting in 1990. A time series model was used rather than a handbook method.

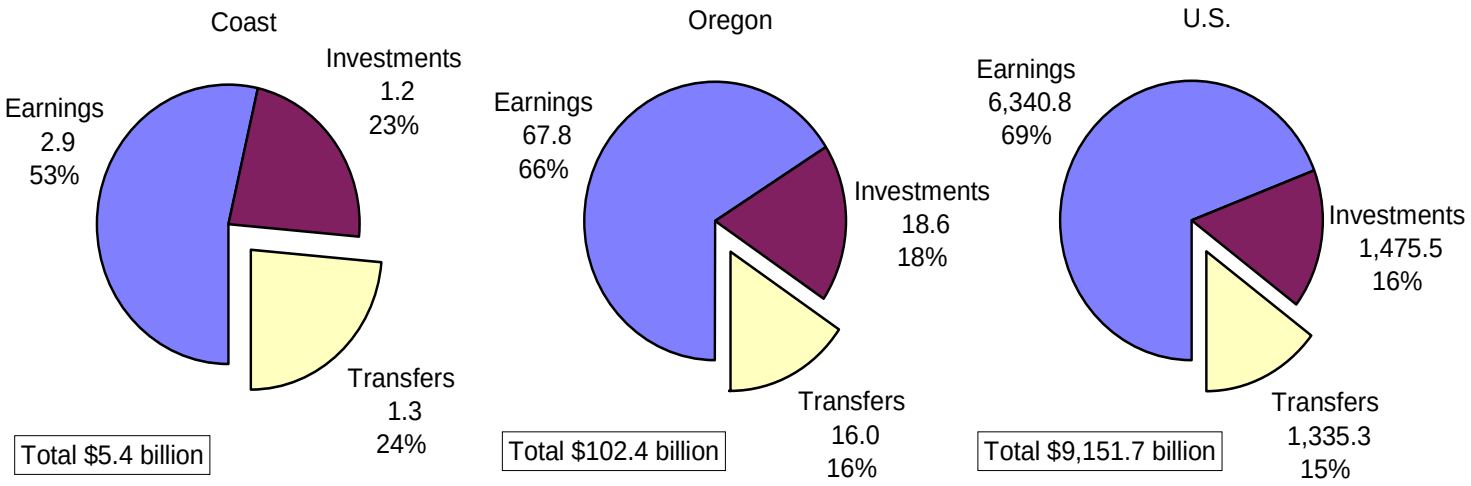
national level, can be attributed in large measure to the entry of proportionately more women into the labor force. In addition, the aging of the population, the entry of the baby boomers, early retirement for men, and overall population growth also played their parts.

Income

A revealing income trend over time is the dramatic increase in transfer payments as a percent of total household and individual personal income (Figure ES.5). This is partially a function of the increase in retirees collecting Social Security payments in these areas. While total personal income has increased, the share of total personal income that is earned (i.e., employee compensation and proprietor income) has remained about the same (Figure ES.6). This means a lot of spending on the Oregon Coast is not tied to salaries and wages from local businesses or industries.

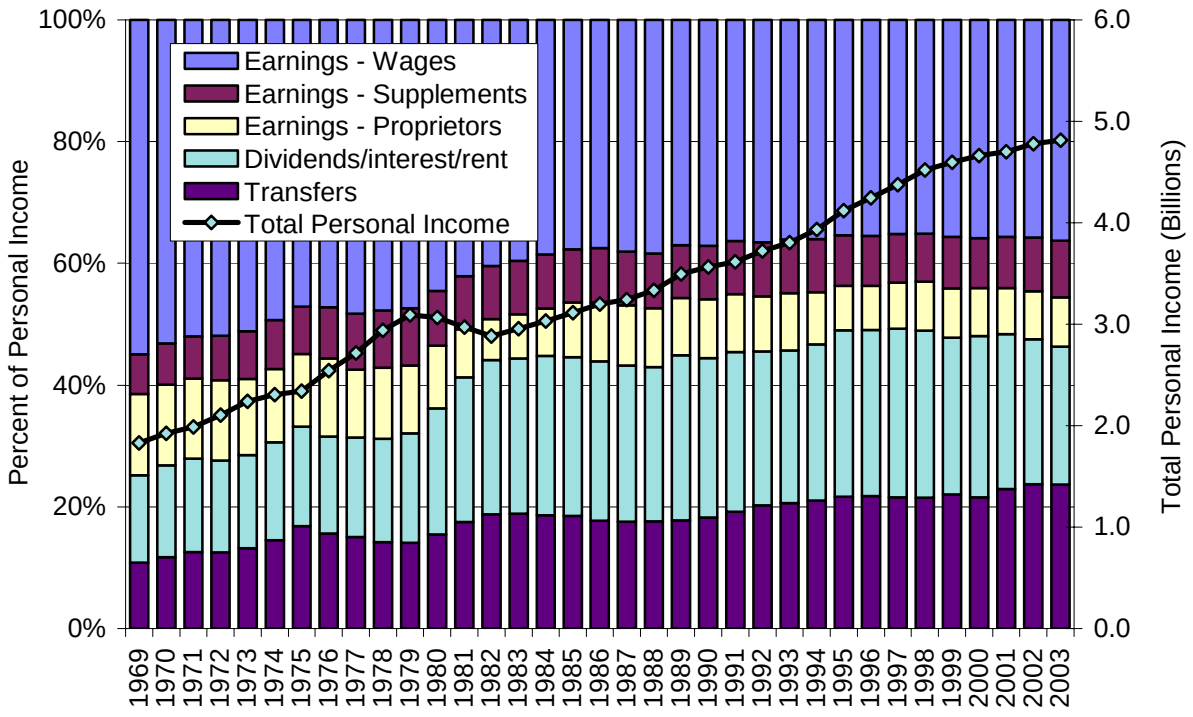
Per capita income is one of the most accurate indicators of economic well-being. It is the total of income from all sources - wages, interest earnings, dividends, business profits, and transfer payments like welfare, unemployment compensation, and retirement - divided by the total population. The per capita net earnings in the coastal counties are still well below per capita net

Figure ES.5
Sources of Personal Income to the Coast, Oregon, and U.S. in 2003



Notes: 1. Coast includes Clatsop, Tillamook, Lincoln, coastal portions of Lane and Douglas, Coos, and Curry counties.

Figure ES.6
Total and Shares in Sources of Total Personal Income for the Oregon Coast in 1969 to 2003



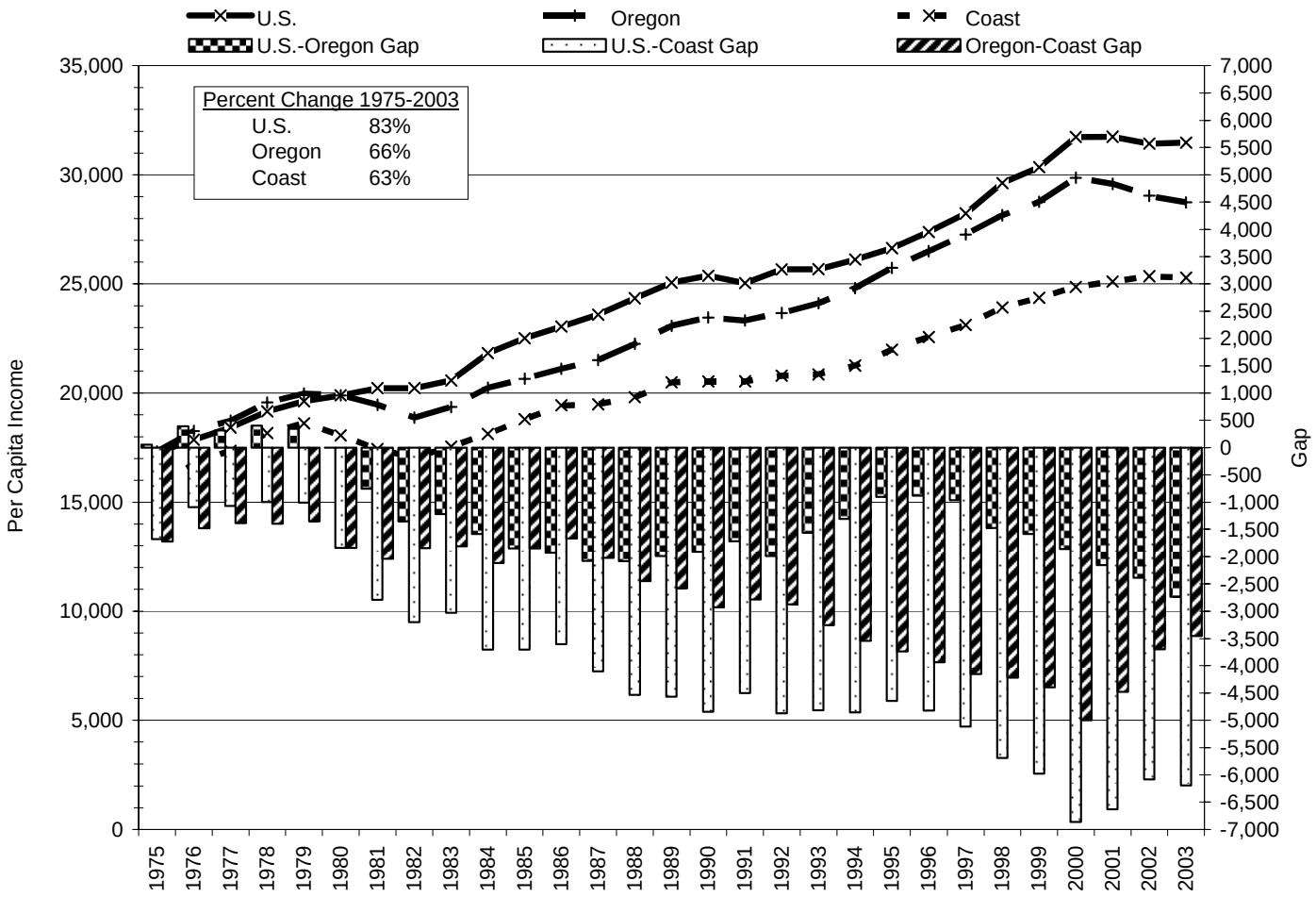
Notes:
1. Total personal income in billions adjusted to Year 2003 dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
2. Includes Clatsop, Tillamook, Lincoln, Coos, and Curry counties.
3. Components of earnings by place of residence estimated using components of earnings by place of work.

earnings at the State or national level. However, the gap has been decreasing in recent years (Figure ES.7).

The personal income component for wages, largely comprised of the amount the average worker earns, is less along the Coast and in Oregon. Measured in real 2000 dollars, the average Coast worker earned about $24,112; the average Oregon worker earned $32,776.

Income inequality statistics can be misleading when averages are used as indicators. A few households in very high income brackets can mask the effects of many households in lower income brackets. The income brackets by county are shown in Table ES.2 and Figure ES.8. All coastal counties have far fewer households in the highest income brackets than the State. Coos and Curry counties have the highest proportion of households in the lowest income bracket.

Figure ES.7
Coastal Counties Income Maintenance in 1975 to 2003

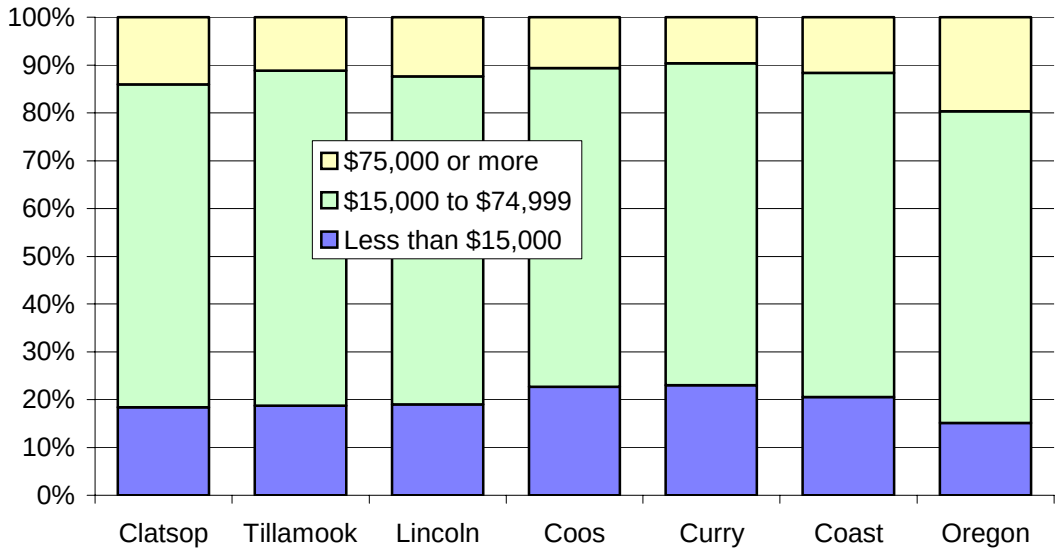


Notes:
1. Per capita income is average annual per capita personal income. This includes household income from all sources (net earnings, investments, and transfers) divided by population.
2. Dollars adjusted to 2003 using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
3. Coastal counties are Clatsop, Tillamook, Lincoln, Coos, and Curry.

Table ES.2
Household Income Distribution by County in 1999

Area Name	Median Household Income	Households	Income				Income Distribution			
			Less than $15,000	$15,000 to $74,999	$75,000 or more	$100,000 or more	Less than $15,000	$15,000 to $74,999	$75,000 or more	$100,000 or more
Clatsop	$36,301	14,741	2,709	9,959	2,073	946	18.4%	67.6%	14.1%	6.4%
Tillamook	$34,269	10,214	1,914	7,157	1,143	548	18.7%	70.1%	11.2%	5.4%
Lincoln	$32,769	19,352	3,675	13,285	2,392	1,071	19.0%	68.6%	12.4%	5.5%
Coos	$31,542	26,181	5,929	17,459	2,793	1,251	22.6%	66.7%	10.7%	4.8%
Curry	$30,117	9,554	2,198	6,438	918	466	23.0%	67.4%	9.6%	4.9%
Coast	$32,893	80,042	3,833	12,438	2,129	968	20.5%	67.8%	11.6%	5.3%
Oregon	$40,916	1,335,109	201,824	870,422	262,863	133,375	15.1%	65.2%	19.7%	10.0%

Figure ES.8
Household Income Distribution by County in 1999



Another indicator which shows coastal counties are skewed towards lower household incomes than the State is the proportion of people living below poverty level. The proportion in coastal counties is 13.6 percent, compared to the State's 11.6 percent in 2000.

Lagging wages contribute to the housing problem along much of the Coast. Many potential workers are unable to secure affordable housing as rising demand for coastal property has priced homes and rentals out of their reach. This lack of workforce housing in turn makes it more difficult for employers to attract and retain workers in occupations such as trade and service workers. This is especially true for businesses oriented towards the tourism industry.

Social Description

The Oregon Coast is distinguished by its health and well-being characteristics. Figure ES.9 shows statistics for educational attainment, access to health services, the poverty rate, the proportion of substandard housing and the crime rate for the Oregon Coast as compared to the State. All statistics show the Coast is quite different than the State.

Indicators of prosperity for coastal residents compared to the rest of the State are shown in Table ES.3. Bank deposits per capita are less on the Coast than for the State. The effective buying income (equivalent to the federal government's disposable personal income and a bulk measure of retail market potential) is less for the Coast than the State. Not surprisingly, retail sales per capita on the Coast is also less. A contributing factor is the sales leakages that occurs when coastal residents travel to large urban centers along the I-5 Corridor where price and product selection is better than on the Coast.

Economic Sector Summaries

Six major agglomerated industry sectors were used to explain the sources of the net earnings component of total personal income for county residents: commercial fishing, agriculture, timber, tourism, other identified export based industries, and other earned income. The first five of these sectors should be viewed as "basic" exporting sectors. The last sector is a residual calculation using total net earnings. It is assumed that all other goods and services industries are the result of either the six agglomerated sectors, or the non-earned sector comprised of transfer payments (retirement income for example) and investment (dividends, interest and rent for example) income. Because the coastal counties have larger than average income percentages coming from transfer payments and investment income, we also calculate a "retiree" effect. This effect may also be viewed as a basic "exporting" sector.

Tracing personal income sources in the coastal areas shows that natural resource based industries such as commercial fishing, agriculture, timber, and tourism continue to be important contributors to coastal communities. The contributions from these industries to each county's economy for the year 2003 is shown in Map ES.1 and Table ES.4. Fishing (including oyster culture) makes up as much as 11 percent of the total personal income of coastal residents in such areas as Clatsop County. Agriculture makes up as much as 13 percent in Tillamook County. The timber industry contributes five to 12 percent of personal income in the five counties on the Coast. Coos County has pulp and paper mills, marine transportation sectors, and sizable ship building sectors. These identified sectors contribute up to 11 percent to these counties. Tourism also is a significant contributor to coastal areas, contributing as much as eight percent of total personal income in Clatsop and Lincoln counties. The high security California State prison in northern California is a contributor for the estimated six percent to Curry County.

Since the 1980's, personal income generated by the timber and fishing industries has declined for various reasons. Some of these reasons are decreasing availability of natural resource for harvests, new demands to use natural resources for recreation and habitat preservation, and in the case of fish products, decreasing prices. The changing demographic of coastal areas has also led

Figure ES.9
Coast and Oregon Social Characteristics and Decadal Changes

Notes:
1. Data for Coast includes Clatsop, Tillamook, Lincoln, Coos, and Curry counties, except hospital beds per capita include the coastal portions of Lane and Douglas counties.
2. Hospital service area assumed to be inclusive of county area where hospital is located.
3. The index crime statistic was created by the FBI to provide a general measure of crime rates across jurisdictions and over time. Index crimes include the person crimes of murder and non-negligent manslaughter, forcible rape, robbery, and aggravated assault and the property crimes of burglary, larceny-theft, motor-vehicle theft, and arson.

Table ES.3
Coast and Oregon Prosperity Measures in 2003

	Coast	State
Property Value		
Assessed Value Per Capita		
Residential	$47,737	$30,518
Commercial/Industrial/Multi-housing	$15,796	$15,111
Utilities	$2,846	$3,248
Other	$15,994	$13,182
Total	$82,373	$62,059
Net Property Tax Rate	1.204%	1.533%
Wealth		
Bank Deposits Per Capita	$8,619	$11,791
Effective Buying Income (2002) Per Household	$35,657	$43,768
Retail Sales Per Household	$24,779	$33,946
Personal Bankruptcy Filing Rate (Per 1,000 Population)	6.01	6.67
Average Wage Per Worker	$26,000	$34,446
Housing Costs		
Median Monthly Housing Costs to Owners in 1999	$661	$914
Median Monthly Housing Costs to Renters in 1999	$537	$620
Median Value of Owner Occupied Homes (2000)	$130,228	$152,100

Notes: 1. Average wage per worker is for covered employment in 2003.

to a shift in income and employment opportunities. As the population of coastal counties has continued to age in the last 20 years, income from transfer payments has risen, and the percent of total personal income that is earned in the current generation (i.e., employee compensation and proprietor income) has fallen. The relative importance of natural resource based industries as a source of income has declined as other industries have increased.

Not identified is 19 to 44 percent of total personal income in these coastal counties. (The indirect and induced effects of investment income and transfer payments are included in this calculation.) For some coastal areas, many small manufacturing and service companies export their product. Such industries as plastic wedge manufacturers, plastic water tank manufacturers, computer hardware and software developers, writers, and artists sell products outside the coastal area and bring income back to regional economies for spending. Such small industries are important when summed together. However, they are too dispersed to be identified in this study.

Retirement Related Income Effects

Retirement income in coastal counties is related to income earned earlier by residents. It is either income of residents electing to stay during their retirement years or it is income that is transferred to the coastal areas by retiree aged people moving to the Coast. The in-migration of retirees has helped increase coastal counties' total personal income. It is difficult to identify the

Map ES.1
Coastal County Locations and Total Personal Income Sources

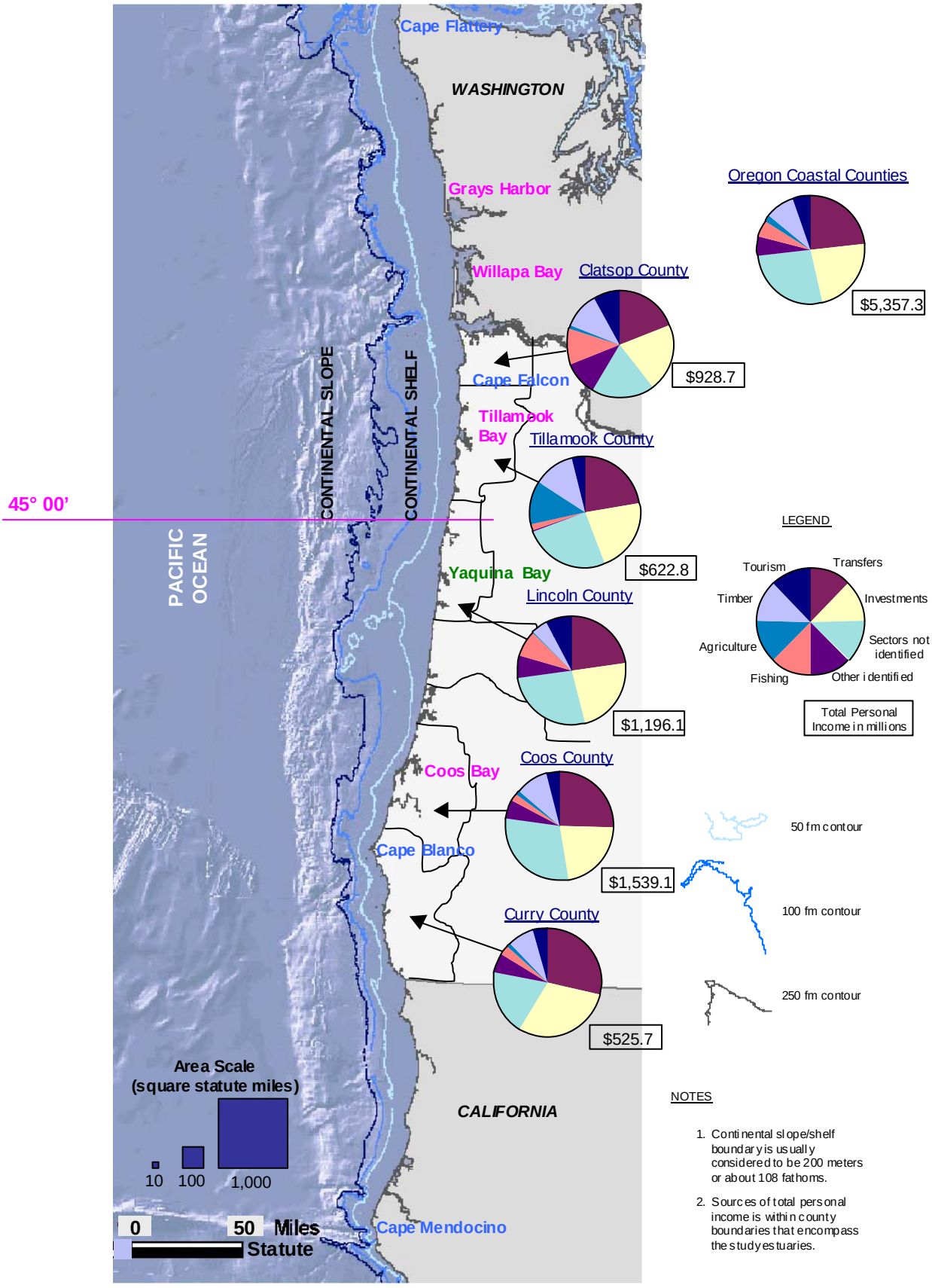


Table ES.4
Sources of Total Personal Income for Identified Sectors in 2003

	U.S.		Oregon		Clatsop		Tillamook		Lincoln		Coastal Lane		Coastal Douglas		Coos		Curry		Coastwide	
	Income	%	Income	%	Income	%	Income	%	Income	%	Income	%	Income	%	Income	%	Income	%	Income	%
Total Personal Income	9,151,694.0	100%	102,418.8	100%	928.7	100.0%	622.8	100.0%	1,196.1	100.0%	398.5	100.0%	145.1	100.0%	1,539.1	100.0%	525.7	100.0%	5,355.9	100.0%
Net Earnings	6,340,842.0	69%	67,825.2	66%	563.6	60.7%	348.0	55.9%	644.6	53.9%	214.7	53.9%	76.4	52.6%	810.3	52.6%	218.3	41.5%	2,875.9	53.7%
Commercial fishing; also					89.2	9.6%	6.1	1.0%	54.8	4.6%	1.1	0.3%	2.5	1.7%	28.0	1.8%	12.2	2.3%	194.0	3.6%
Distant water and fish meal					12.0	1.3%	1.2	0.2%	39.7	3.3%	1.5	0.4%	1.9	1.3%	2.1	0.1%	0.7	0.1%	59.1	1.1%
Aquaculture					0.0	0.0%	3.5	0.6%	0.8	0.1%	0.0	0.0%	0.1	0.1%	3.1	0.2%	0.0	0.0%	7.6	0.1%
Agriculture					6.1	0.7%	81.3	13.1%	2.2	0.2%	1.6	0.4%	1.0	0.7%	19.7	1.3%	7.7	1.5%	119.7	2.2%
Timber					106.4	11.5%	74.8	12.0%	60.1	5.0%	13.7	3.4%	12.8	8.8%	148.1	9.6%	40.6	7.7%	456.5	8.5%
Tourism					74.8	8.1%	23.5	3.8%	89.9	7.5%	19.2	4.8%	7.2	5.0%	59.3	3.9%	24.0	4.6%	298.0	5.6%
Other identified industries																				
Paper and paperboard mills					41.3	4.4%	0.0	0.0%	60.3	5.0%	0.0	0.0%	0.0	0.0%	25.3	1.6%	0.0	0.0%	126.9	2.4%
Water transportation and marine cargo					7.4	0.8%	0.0	0.0%	0.7	0.1%	0.0	0.0%	0.0	0.0%	50.9	3.3%	0.6	0.1%	59.6	1.1%
Ship building, steel fabric., other heavy constr.					43.7	4.7%	0.0	0.0%	0.8	0.1%	0.0	0.0%	5.3	3.6%	8.0	0.5%	0.1	0.0%	57.9	1.1%
Other identifiable (govt., research, comm., special ed., military)					6.9	0.7%	0.9	0.2%	17.9	1.5%	1.2	0.3%	2.3	1.6%	1.3	0.1%	30.2	5.8%	60.7	1.1%
Subtotal identified industries					387.7	41.7%	191.4	30.7%	327.4	27.4%	38.4	9.6%	33.1	22.8%	345.8	22.5%	116.1	22.1%	1,439.9	26.9%
Other not identified					176.0	18.9%	156.6	25.1%	317.2	26.5%	176.3	44.2%	43.3	29.8%	464.5	30.2%	102.2	19.4%	1,436.0	26.8%
Investments	1,475,529.0	16%	18,634.0	18%	188.3	20.3%	134.0	21.5%	274.5	23.0%	91.5	23.0%	31.6	21.8%	335.7	21.8%	155.3	29.5%	1,210.9	22.6%
Transfers	1,335,323.0	15%	15,959.6	16%	176.7	19.0%	140.9	22.6%	277.0	23.2%	92.3	23.2%	37.1	25.5%	393.1	25.5%	152.1	28.9%	1,269.2	23.7%
Total Employment	127,795,827		1,563,725		15,396		8,038		16,589						22,299		6,461			
Unemployment Rate	6.0		8.1		7.0		6.6		8.6						8.7		7.2			
Per Capita Personal Income	31,472		28,734		25,801		25,210		26,672		25,057		23,504		24,380		24,228			
Population	290,788,976		3,564,330		35,993		24,705		44,846		15,902		6,174		63,130		21,697		212,447	

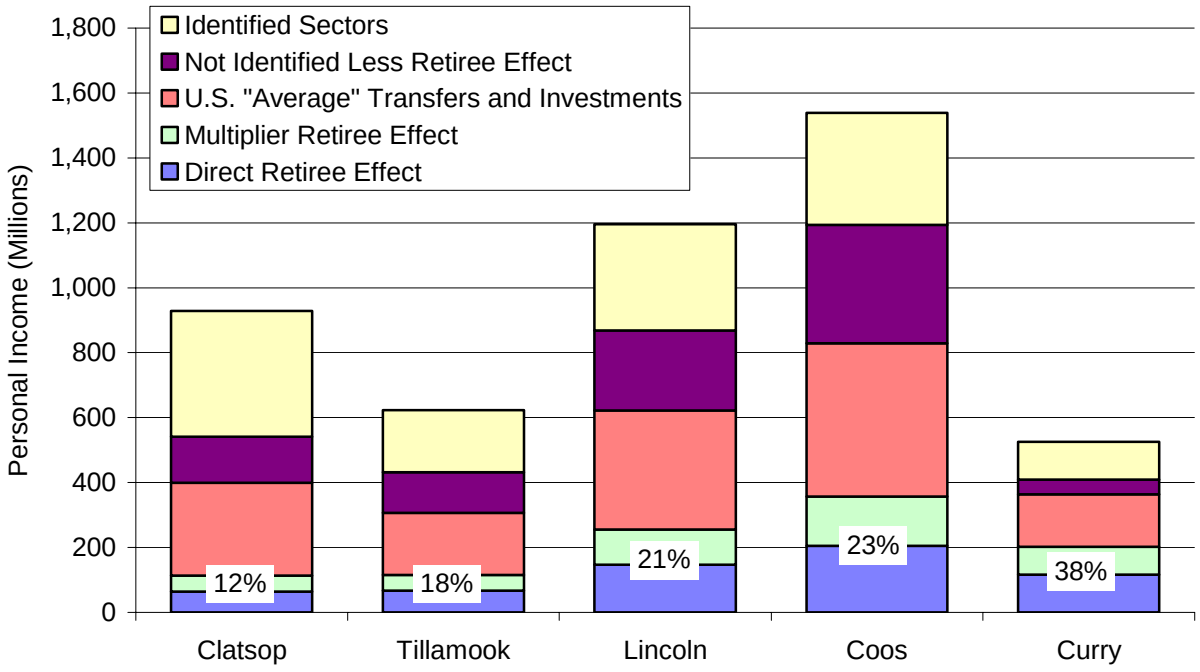
Notes:
1. Personal income in millions of 2003 dollars.
2. Personal income generated by identified sectors includes direct as well as indirect and induced income. The economic sectors dependent upon the identified sectors, such as retail and service businesses, are included in the identified sectors. This means the "multiplier effect" is included.
3. Investment and transfer personal income is only direct income, although research shows that the multiplier effect is approximately one for both of these sectors.
4. Population is from U.S. Bureau of Economic Analysis estimates.
5. Total employment includes covered payroll.
6. For coastal Lane and Douglas counties, the ratio of coastal county to county per capita personal income from census information in 2000 was applied to county per capita personal income from U.S. Bureau of Economic Analysis information in 2003 to determine coastal county per capita personal income in 2003. Coastal county total personal income in 2003 was based on population estimates developed using Census 2000 zip code data adjusted using the PSU rate of growth between 2000 and 2003 for the cities of Florence and Reedsport. The shares of earnings, investments, and transfers from adjacent counties are used as a proxy.

income amount using traditional data sources. It can be assumed that it is mostly from the non-earned BEA categories of transfer payments and investments, but households comprised of non-retirement aged people also have some income from these sources.

In 2003, transfers and investments ranged from nine percent to 28 percent higher for coastal areas than for the U.S. These higher percentages may be viewed as an indicator that the retiree effect is much higher on the Oregon Coast than in the U.S. For an analytical process, we have assumed the U.S. average share that is received as transfer and investment income is a basic amount (Figure ES.10). Then the percentage over and above the U.S. average multiplied by the consumption multiplier for that county is an estimate of the retiree effect. The retiree effect becomes a new portion of what was previously only the not identified sector income plus transfers and investments in excess of the U.S. average.

Residents in smaller communities do not spend all of their income in these communities. They are more likely to travel to other, larger areas for much of their personal needs, such as health care, food, and automobile purchases.

Figure ES.10
Retiree Effect Economic Contributions in 2003



Notes:
1. Retiree effect assumes half of purchases for selected personal need items are made out-of-area.
2. The shown share of total personal income includes direct and multiplier retirement effect.
3. Retiree effect is an index and does not represent total economic contribution from spending from retirement age residents.

These out-of-area purchases were modeled by including only half of the average local senior household expenditures for personal need items. When half of the major purchases for health care, transportation, and entertainment are assumed to take place out of the area by retirees, the local retiree effect ranges from 12 percent for Clatsop County to 38 percent for Curry County. The other not identified sector decreases from 27 percent to 21 percent in Lincoln County and 19 percent to nine percent in Curry County.

The growth of non-earned income, particularly from retirement programs, represents a major and increasing source of purchasing power in many coastal areas. Coastal areas that capture an increasing share of the retirement related income, which accompanies a net in-migration of retirees, can stimulate employment and incomes by increasing local spending. It may be that these year-round residents foster economic and employment stability.

Research of the consumption patterns in local coastal areas as well as demand for local services by age and income groups is needed to provide information on the business and local fiscal impact of this growing population. For economic development policy in coastal communities, the comparison needs to be made between the benefits of attracting this age cohort with the overall cost in public services, changes to land use demands, and other impacts.

Lessons Learned From Economic Dependence on Natural Resources

The economic growth of the American West was highly dependent on the availability of cheap or free natural resources. For most of the 19th century the emphasis on public land management was simply to move land from federal to private ownership. During this formative period, many Americans viewed federal lands as a vast resource to be settled and exploited. Driving economic interests were fur trading, transportation, homesteading, agriculture, mining, fishing, and forest use.

The West's once-important natural resource industries declined dramatically in terms of jobs and incomes. These industries - mining and metal processing, logging and lumber products, and agriculture - historically supported European settlement. They are still widely believed to be the economic lifeblood of the region's rural areas and small cities. Their decline still provokes deep anxiety. The fear is the region will become more depressed and more residents will be forced to leave.

Despite these fears, the changing industrial structure has not triggered an overall decline in jobs, income, or residents in the region. On the contrary, as industrial transformation proceeded, in-migration, employment, and aggregate real income have boomed.

Several public policy alternatives for economic development are recommended:

- Public policy makers should recognize that local government cannot manipulate local pay and income by subsidizing job creation.

- Local economic policy should focus first on enhancing the ability of existing residents to earn a decent living rather than recruiting new employers with tax breaks and other subsidies.
- Public policy makers should focus on the present and the future and try not to dwell on the past economy.
- Local economic policy should treat the community's site-specific characteristics, both public services and the quality of the natural and social environments, as important determinants of both citizen well-being and local economic vitality.

Challenges to Economic Growth in Coastal Communities

The challenges facing economic growth in coastal communities include dealing with its unique social and economic characteristics.

- Problems of distance and accessibility
- Narrower bases of economic activity, making it vulnerable to cyclical swings
- Lower levels of labor, skill sets, and education/training facilities
- Gaps in communication and transportation infrastructure
- Greater distance to producer's markets
- Lower population densities that deny "critical mass" levels for certain businesses, public services, and organizations
- Smaller tax bases, making the provision of public infrastructure and services more difficult to finance
- Less access to and local control over investment capital
- Dependence on a small circle of leaders who are often volunteers serving a variety of roles
- Higher quality of life (lower crime rates, cleaner environment, scenic views, and less congestion)

Policies to increase economic activity on the Oregon Coast should seek to smooth out the economic seasonal roller coaster of the coast. Infrastructure requirements designed for peak load are too expensive and not providing services at the peak level discourages sustainable investments.

In economic terms, an area may have a "comparative advantage" over another area for reasons of proximity to manufacturing inputs, product markets, labor availability, transportation, etc. Economic development efforts should promote these advantages. The Oregon Coast's comparative advantage is the natural amenities. Pricing is another tool for marketing goods or services that are in demand. Is it wise to provide and price goods and services that attract and overwhelm coastal areas for three months of the year? A review of public services should include these seasonal variation issues.

Oregon coastal communities in closer proximity to large metropolitan areas are faring better economically than the more remote communities. Natural resource extractive industries are still important in these areas, but the commodity value is no longer an automatic competitive

advantage for economic development. These areas have other advantages for economic growth: high quality of life being in a rural setting, sufficient medical, shopping, and other services, and comparably low land values. They also have transportation infrastructure and proximity that allows a convenient driving distance to higher levels of education, medical services, airports, etc. Economic development public policy in other coastal communities needs to recognize the success in these mentioned communities, and where possible, promote the same advantages.

Local government leaders should avoid trying to manipulate local pay and job creation through subsidization. Local economic policy should focus on enhancing the ability of existing residents to earn a decent living rather than seeking new employers with tax breaks or other subsidies. Local economic policy should treat the community's site-specific characteristics, both public services and the quality of the natural and social environments, as important determinants of both citizen well-being and local economic vitality. In turn, visitors will be attracted from metropolitan areas for ecological and cultural based tourism. This will make public goods an important part of the local economic base, and attract desired economic growth. Economic growth can occur from distinctive places with a high quality of life:

- A resource base is still important, but it no longer an automatic competitive advantage.
- Traditionally, more capital and more labor is what made economies grow.
- An extraordinary quality of life can attract and retain talented people.
- Knowledge businesses can occur anywhere, but adequate telecommunication infrastructure is required to take full advantage of these opportunities.
- Talented and skilled people are key to supporting a knowledge economy. Opportunities for educational enrichment are needed from kindergarten through life.

Large expanses of timberlands, water vistas, low density development, and footloose business opportunities (not tied to nearness of manufacturing input and market centers) will draw visitors and permanent residents. Knowledge based industries dependent on reliable and robust broadband services will be attracted to the quality of life amenities available to owners and workers in these coastal areas. The biggest challenge will be to maintain these amenities as the region experiences growth.

The following list of economic development practices is recommended:

- Plan for new economic and regulatory policies
- Plan for economic development at the correct scale
- Develop locally relevant economic information
- Promote community based conflict resolution
- Encourage sustainable enterprise financing
- Build local infrastructure
- Provide for community and environment initiatives

How will planning and policy making anticipate and take advantage of population growth patterns? There are two primary challenges to overcome. First, there needs to be ways to deal with scale. Cooperation in the operation of public facilities and services is needed between single communities that cannot afford on their own. Governments need to be imaginative in

trying to stimulate this kind of analogous scale in rural communities. An example is that it may be more cost effective for regional public facility authorities and service districts to provide services rather than traditional general purpose government. Second, the key for rural economies is going to be connectedness. That is, rural areas such as the Oregon Coast have to be able to communicate and transport. They need to be connected to Portland and other growth centers in the Willamette Valley.

Other challenges are to have an institutional structure that is informed about innovation and about rapid changes in the marketplace, technology, and finance. Rural areas need to gain access to information about and expertise in such areas as business planning and development and national and international competition. Government alliances for consolidation of public services should be explored whenever possible. A more educated work force must be provided. Revitalization efforts must address the problems of sustaining the environment, improving infrastructure, and capitalizing on the area's quality of life. An efficient and well maintained surface and air transportation system has to be provided.

I. INTRODUCTION

A. Background

A study completed for the Oregon Coastal Zone Management Association (OCZMA) in 1987 provided an economic snapshot of coastal communities in a report called *The Economic Landscape of the Oregon Coast.* Information in this report was partially updated to 1989 in a publication entitled *Observations on the 1989 Coastal Economy*. The analysis was updated again to data year 1991 in a publication called *A Demographic and Economic Description of the Oregon Coast*, published March 1994. Taken together, these three publications explained the basic industries that drive the coastal economy. The reports were well received and have been widely used for planning and policy deliberations. Recent work with federal and State initiatives, other local policy making activities, and the passage of time provided the justification to update this important information.

The reports provided a general economic and social description of coastal communities, but their heralded usefulness was in the analysis approach. Most descriptive studies are derived from available data for employment in standard industry and occupation categories. These categories cross over economic sectors commonly used to promote and plan for economic development, such as tourism and retirement. The usual approach to understanding the dimensions and trends of economic development sectors is to undertake special studies. However, the special studies do not compare and contrast one sector with another. In addition, because there are different measurements, it is difficult to compile results to determine how all sectors add up to show 100 percent of the driving forces behind economies.

The above mentioned studies completed for the OCZMA resolved this problem through a unique approach derived from "economic base" modeling. Economic base analysis used seven basic sectors to describe the economy: commercial fishing, timber, agriculture, tourism, "other identified export based industries," "other earned income," and "non-earned income." The other identified export based industries sector includes four subsectors: water transportation and marine cargo; paper and paperboard mills; ship building, steel fabrication, and other construction; and other identifiable such as government, research, communication, special education, and military. The other earned income sector contains other unique businesses found on the Oregon Coast which cannot be identified due to data confidentiality and/or data specification issues. The non-earned income is transfer payments and investment earnings. The economic base model was developed to generate estimates of the seven basic sectors' direct, indirect, and induced income at the county level. The model was derived from an economic input-output methodology using response coefficients from IMPLAN.[1] This new project to update the economic analysis uses Year 2000 census information and Year 2003 county level personal income released by the Bureau of Economic Analysis (BEA).

Policy makers and planners benefit by having demographic (age, housing, etc.) statistics, social well being (health, crime, etc.) statistics, and economic analysis (personal income, etc.) data combined in one document. Decision makers can concentrate on defining goals and objectives

1. The input-output model was originally developed by the U.S. Forest Service and is now maintained by the Minnesota IMPLAN Group Inc.

to direct and accommodate changes. Efforts will not have to be expended on generating background information for the planning and policy making. Findings, conclusions, and interpretive descriptions will be useful to comprehend the implications of change and define how proper planning can conserve and sustain coastal economies, coastal livability, and environmental resources.

B. Purpose

In the last decade there have been many significant changes in the national, State, and Oregon Coast's economy. In particular, shifts in federal and state natural resource and land management policies sparked dramatic changes to economies and the general population. Looking at demographics, the Coast's population is accelerating away from young families raising children and moving toward a population of retirees who have either stayed in or relocated to the region to enjoy the environment and quality of life. These social changes have had a profound impact on school and other local government services.

Coastal leaders and communities benefit by having a single, overarching study to document area-wide and local trends. Study results help in having a cost-effective approach for developing plans and policies to address the trends. In the absence of a single study, individual jurisdictions would be forced to prepare their own background and assessments (if they were prepared at all). Locally prepared assessments would not be consistent with neighboring jurisdictions, making region-wide comparisons among jurisdictions difficult or impractical.

C. Approach

This report offers updated descriptions as a result of (1) economic analysis tasks, (2) social analysis tasks, and (3) interpretive tasks.

(1) Economic Analysis Tasks

The economic analysis work has two parts: (a) economic base analysis, and (b) a special emphasis to determine the importance and opportunities from retirement and retirement related income.

Net Earnings Analysis Tasks

The economic base analysis updates the results described in the above mentioned OCZMA reports. IMPLAN response coefficients and industry information are used to describe economic structures and trends. Industry response coefficients use data year 1998 as the midpoint year in this report's trend analysis.

Retirement Income Analysis Tasks

Transfer payments and returns from investments have become a major source of income for most coastal communities. These sources made up 46 percent of total personal income coast-wide in 2003. This compares with about 34 percent for all of Oregon and 31 percent for the U.S. Spin-off jobs traced to these income sources may be lower wage consumer service oriented occupations similar to tourism generated employment. However, not enough is known about spending patterns to make generalizations. An investigation was needed to study households having these income sources to determine how changes are needed in public policy to better accommodate impacts.

(2) Social Analysis Tasks

Population information is from decennial census and other serial primary data collection programs. Social trends are itemized for demographic, housing, health and well being indicators, and wealth statistics at relevant temporal and spatial scales.

(3) Interpretive Analysis Tasks

The interpretive task overlaps the economic and social analysis. Study steering group meetings were held to define emerging issues, the influences and consequences of the issues, and how descriptive indicators can be used for policy and planning.

An often overlooked aspect of planning and public policy making is monitoring. Good planning and policy making is backed by a good understanding of how key factors have changed over time. As conditions change, monitoring will enable communities to adjust policies to best serve citizens. Indicators about economic and social conditions are needed to assess the ability to respond and adapt to change in positive, constructive ways.

D. Report Contents

The report first discusses social and economic setting in the study areas in Chapter II. Chapter III explains the economic analysis methods which provide estimates of the economic contribution from industries driving the local economies. Changes in personal income derived from the industries in the selected study areas are then summarized. Chapter IV discusses regional, national, and international forces affecting local social and economic developments. Chapter V provides an outlook of how these trends will impact the study areas.

II. SETTING

A. Data Used in This Report

Three types of statistics are used in the report to describe the existing situation of the population and economy and to compare and contrast the situation with Oregon and the U.S. *Demographic* statistics refer to population differences, such as age, gender, race, mobility, household size, etc. *Economic* statistics are used, not as a measure of individuals, but of the business activity in which they participate. The amount of business sales, the number of jobs, and the wages businesses generate are all used as measures. This activity has been translated to a common base defined as personal income. Personal income is a more reliable measure for comparative purposes than business activity, because personal income can be related to other income received in households, such as from retirement pay and investment dividends. *Social* statistics measure the well-being and activities of individuals. This definition does not necessarily delineate social statistics from demographic and economic statistics. But the definition does encompass a wide body of information that is clearly not demographic or economic. For example, health and welfare data is usually classified as a social accounting statistic.

The demographic information was largely based on Year 2000 decennial census information. The economic information was harvest and business activity based on information from many sources. Year 2003 is the most recent year in which total personal income information is available at the county level from the U.S. BEA. Some social accounting data was acquired from agency and serial publications other than the U.S. Bureau of Census. The selected data used in this report and its sources are shown in Appendix A. This appendix material also contains other data sources not used in this report. Tables showing detailed statistics for coastal counties and cities is contained in Appendix B.

Several possibilities for the geographic resolution of data were available for census based information. This not only includes areas within political boundaries for counties and cities, but also census defined boundaries for tracts and places. Census information is also reported for zip code areas. Unfortunately, a review of the census defined boundaries and zip code areas found their applicability to land use management questionable. There was little consistency between land use plan data derived urban and rural community growth boundaries and the census defined or zip code area boundaries.

County boundaries were adopted for data presentation and discussion for the following five coastal counties: Clatsop, Tillamook, Lincoln, Coos, and Curry. Where possible, data for coastal Lane and Douglas counties was used. The portions of Lane and Douglas counties adopted for study inclusion can be geographically described as being those portions west of the Coast Range summit.[1] In the case of Lane County, this includes the unincorporated communities of Swisshome, Deadwood, and Mapleton, and all areas west of these communities. For Douglas County, this includes the unincorporated community of Scottsburg and all areas west of it. For some data, it was necessary to use the growth rates and ratios found in Lincoln and Coos

1. These geographic areas were approximated by zip codes 97439, 97493, 97453, 97480, and 97430 for coastal Lane County and 97467, 97441, and 97473 for coastal Douglas County. Data at the zip code level used for coastal Lane and Douglas counties is from decennial census Summary File 3 tables.

counties for coastal Lane and coastal Douglas counties, respectively. When historical growth patterns were reviewed, the cities of Florence and Reedsport were used for coastal Lane and Douglas counties, respectively.

Many of the demographic, economic, and social statistics are expressed as averages or proportions for the Coast. Examples are unemployment rate and housing vacancy rate. In these cases, a weighted mean rather than arithmetic mean of coastal county rates is used for the calculation. The frequency used for the weighting is chosen to most closely be associated with the measurement. In the example of unemployment rate, the average across counties used total employment. In the example of vacancy rate, total housing units (occupied and unoccupied) was used. Whenever possible, absolute numbers were sought to calculate coast-wide averages and proportions. This way, the information would be self-weighted rather than estimated through a weighting technique.

B. Demographic Description

1. Population Characteristics

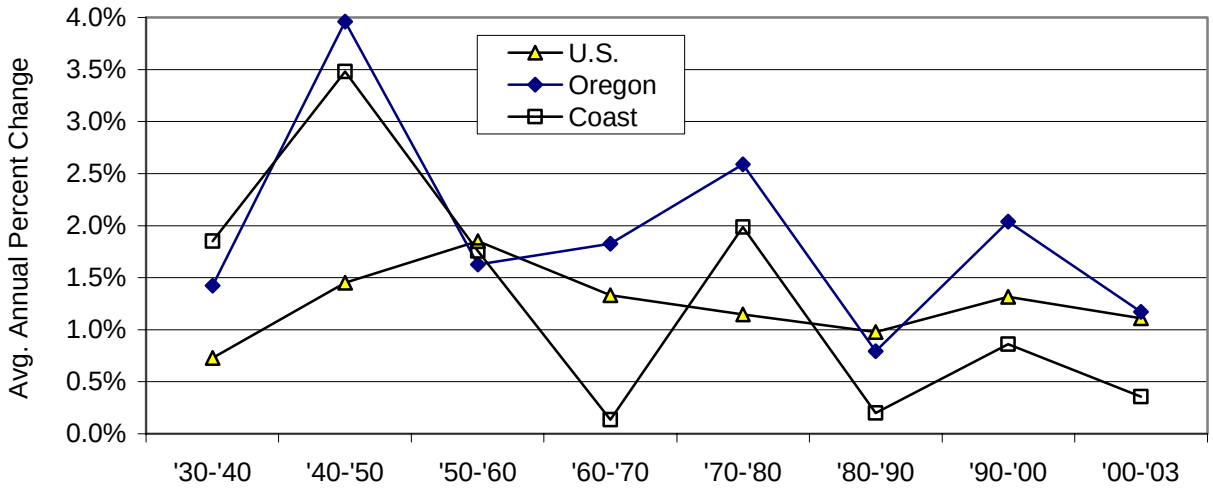
Since 1970, the population of Oregon has been growing much faster than the population of the United States (Table II.1 and Figure II.1). There has been overall growth in coastal counties, but at a slower pace than Oregon. The exceptions are Lincoln and Curry counties which have grown almost as fast as Oregon's population in the last two decades. The population of Coos County has been growing much slower than the Coast and the State. Generally, coastal counties have an overall out-migration of young adults who leave the region to find education and employment opportunities. With these migration patterns alone, coastal areas would experience significant shifts in their demographic structure. However, this trend is exacerbated by in-migration patterns. The national population is "aging" with large population

Table II.1
Population Percent Change During 1970 to 2000 for U.S., Oregon, and Coastal Counties

					Percent Change		
	1970	1980	1990	2000	1970-2000	1980-2000	1990-2000
Clatsop	28,473	32,489	33,301	35,630	25%	10%	7%
Tillamook	18,034	21,164	21,570	24,262	35%	15%	12%
Lincoln	25,755	35,264	38,889	44,479	73%	26%	14%
Coastal Lane	2,246	4,411	5,162	7,340	227%	66%	42%
Coastal Douglas	4,039	4,984	4,796	4,370	8%	-12%	-9%
Coos	56,515	64,047	60,273	62,779	11%	-2%	4%
Curry	13,006	16,992	19,327	21,137	63%	24%	9%
Coast	148,068	179,351	183,318	199,997	35%	12%	9%
Oregon	2,091,533	2,633,105	2,842,321	3,421,399	64%	30%	20%
U.S.	203,211,926	226,545,805	248,709,873	281,421,906	38%	24%	13%

Notes: 1. Cities of Florence and Reedsport represent coastal Lane and coastal Douglas counties, respectively.
Source: U.S. Census Bureau and Portland State University Population Research Center (PSU).

Figure II.1
Average Annual Population Growth in U.S., Oregon, and Coastal Counties in 1930 to 2003



Notes: 1. Coast includes Clatsop, Tillamook, Lincoln, Coos, and Curry counties.
Source: U.S. Census Bureau.

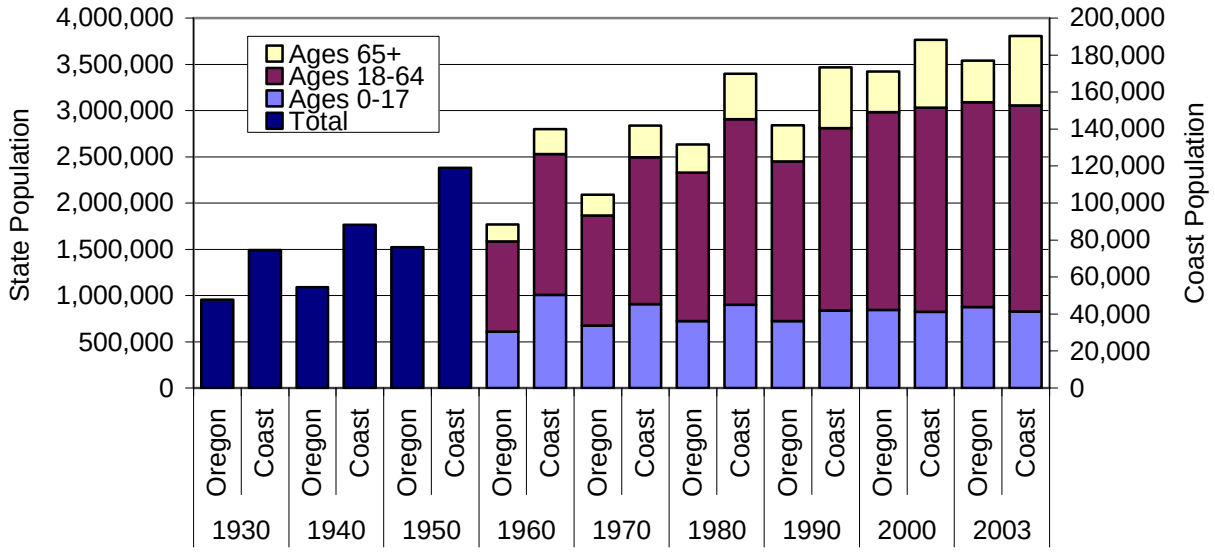
cohorts moving into middle and older age groups. The people in these retirement age cohorts are moving to the Coast.[1] The trend is the same for Oregon, but more so for the coastal counties (Figure II.2 and II.3). Among the coastal counties, Tillamook and Curry counties are attracting the most retirement age people.

The coastal portions of Lane and Douglas counties have interesting population trends. Using the populations of Florence and Reedsport cities, respectively, to approximate the coastal portions of Lane and Douglas counties reveals a disparate growth pattern. The Florence population increased 66 percent from 1980 to 2000. Reedsport lost 12 percent of their residents during the same period. In-migration of retirement age people fueled Florence's population growth. The median age in 2000 in Florence was 56, almost 20 years older than the rest of Oregon. A similar large influx of population in Reedsport has not replaced the out-migration of working age families.[2]

The Coast and Oregon's components of population change are shown in Table II.2 and Figure II.4. Net migration (individuals moving out minus those moving into an area) has oscillated between positive and negative in the shown intercensal periods. The growth in population due to

1. Retirement age specific net migration between 1990 and 2000 was calculated by subtracting the expected 55 and older age cohort in 2000 from the actual population. The expected cohort in 2000 was calculated by applying average mortality rates to the 45 and older population in 1990.
2. All large lumber mills and the International Paper Co.'s paperboard mill in western Douglas County shut down operations in recent years. There are still other strong local employers, principally in ship building and repair, steel fabrication, and communications. Such employer diversification bodes well for the area's future economic development.

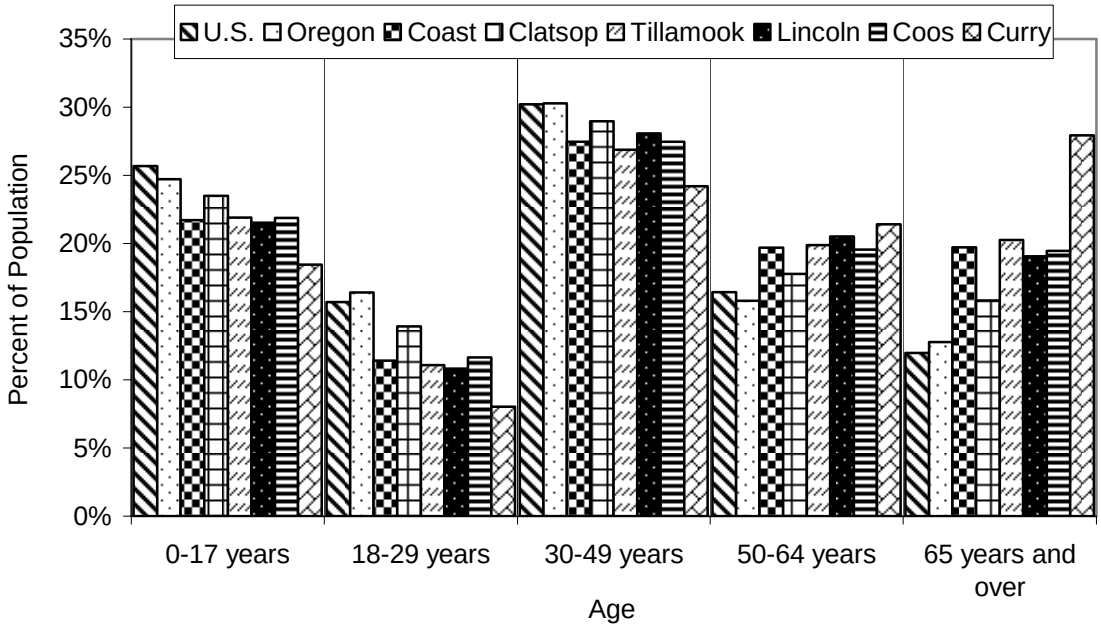
Figure II.2
Population by Age Cohort in Oregon and Coastal Counties in 1930 to 2003



Notes: 1. Coast includes Clatsop, Tillamook, Lincoln, Coos, and Curry counties.
2. Several age years in cohorts for early decennial years are estimated using ratios from more recent decennial years.

Source: U.S. Census Bureau.

Figure II.3
Study Area, State, and U.S. Age of Population in 2003



Source: U.S. Census Bureau and Portland State University Population Research Center.

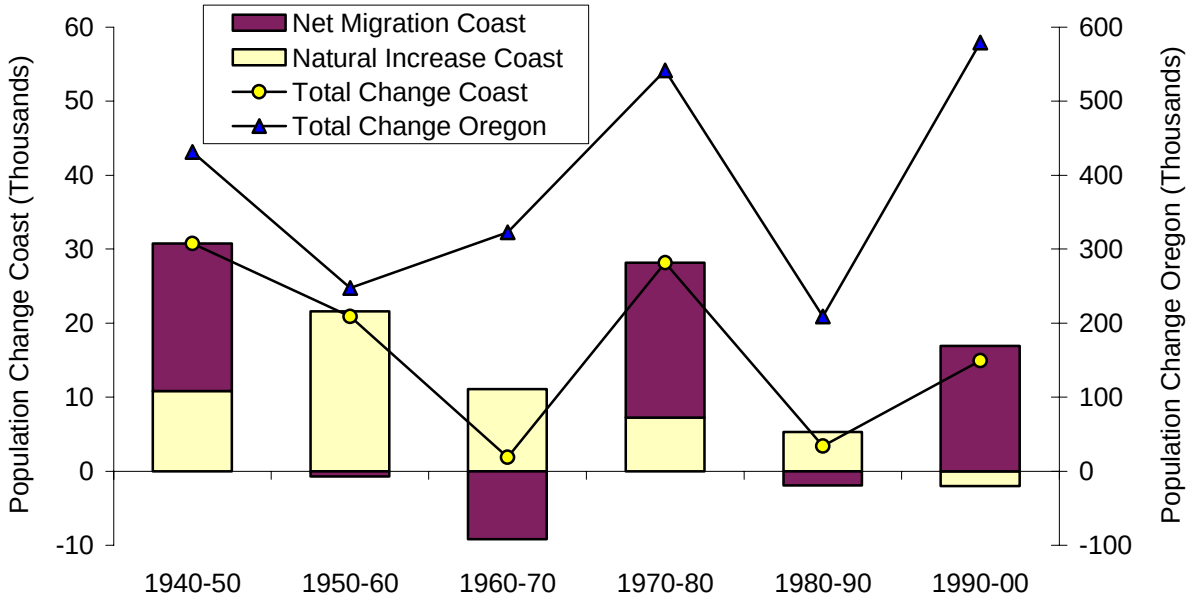
Table II.2
Coast and Oregon Population Change by Components During Years 1940 to 2000

	Years	Population	Total Change	Net Migration	Natural Increase
Coast	1940	88,276			
	1950	119,003	30,727	19,915	10,812
	1960	139,908	20,905	-700	21,605
	1970	141,783	1,875	-9,193	11,068
	1980	169,956	28,173	20,916	7,257
	1990	173,360	3,404	-1,913	5,317
	2000	188,287	14,927	16,929	-2,002
Oregon	1940	1,090,000			
	1950	1,521,341	431,341	293,478	137,863
	1960	1,768,687	247,346	18,501	228,845
	1970	2,091,385	322,698	160,346	162,352
	1980	2,633,156	541,771	396,157	145,614
	1990	2,842,321	209,165	35,766	173,399
	2000	3,421,399	579,078	421,452	157,626

Notes: 1. Net migration equals in-migrants minus out-migrants.
2. Natural increase equals births minus deaths.
3. Coast does not include coastal Lane and coastal Douglas counties.

Source: U.S. Census Bureau and Portland State University Population Research Center.

Figure II.4
Coast and Oregon Population Change by Component During Years 1940 to 2000



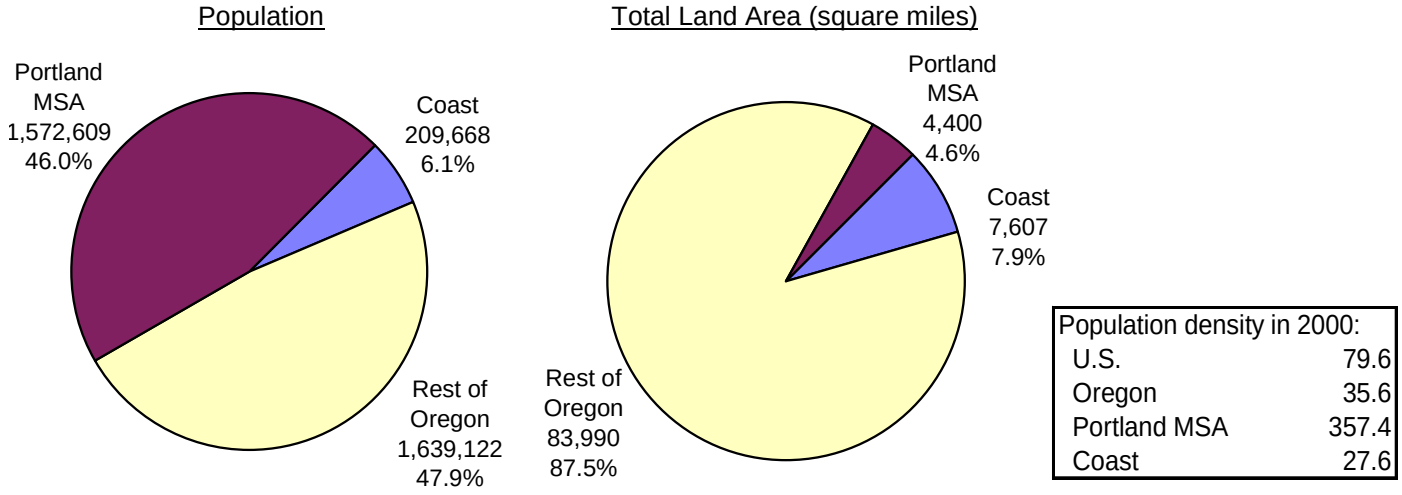
Source and notes, see Table II.2.

natural increases (births minus deaths) has declined steadily since 1950, reaching a negative value between 1990 and 2000.

2. Geographic Density

The State and coastal counties have similar population densities at 35.6 and 27.6 persons per square mile, respectively (Figure II.5). Since Oregon's land area includes vast unpopulated areas east of the Cascades, the coastal counties' density would indicate that density is very low. By comparison, the population density of the Portland Metropolitan Statistical Area (excludes land area and population of Clark County, Washington) is 357.4 in 2000.

Figure II.5
Share of Oregon Coastal Population and Land Area in 2000



Notes:
1. Coast includes the five coastal counties plus the coastal portions of Lane and Douglas counties.
2. Coastal Lane and Douglas land area is approximated by the land area of the port districts of Siuslaw and Umpqua. Coastal Lane and Douglas population is approximated by zip code areas.
3. The Portland Metropolitan Statistical Area counties are Multnomah, Clackamas, Washington, Yamhill, and Columbia. Clark County, Washington is not included in order to show Oregon's share of population and land area.

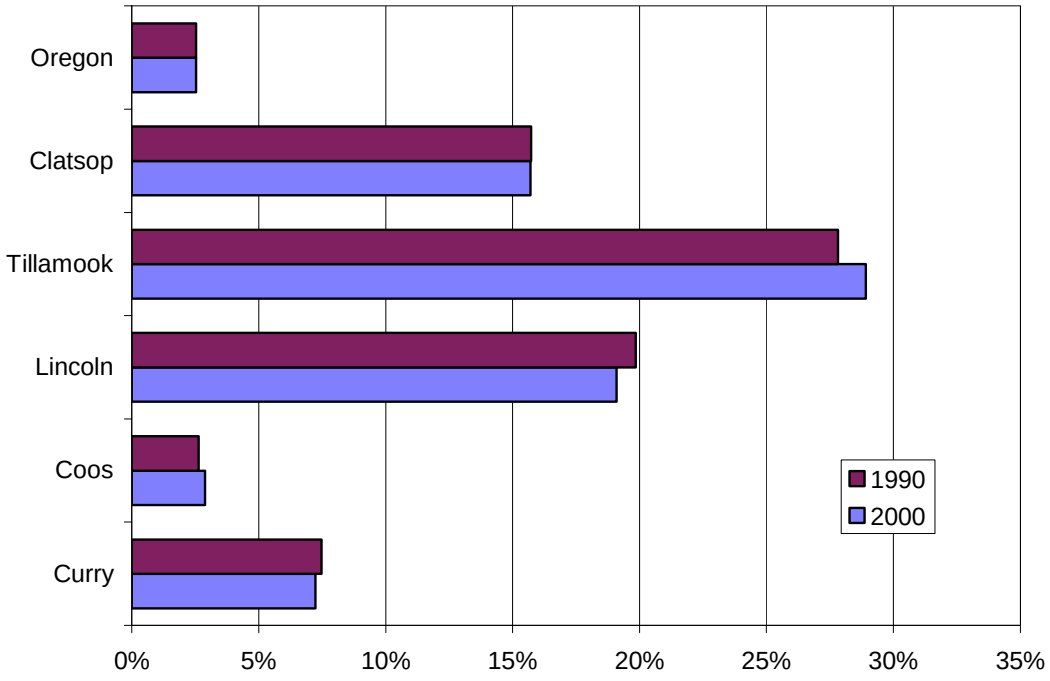
Source: U.S. Census Bureau.

3. Housing Stock

The housing stock for the Oregon Coast is generally older than for the State. This is so despite the growth of second homes and condominiums. For Clatsop and Coos counties in 2000, the median year that a house was built was 1963 and 1968, respectively, as compared to the State's 1973. Tillamook County's median year was also 1973, Lincoln County 1975, and Curry County 1978. Monthly housing costs as measured by rent, mortgage payments, and utility costs are lower than the State for both owners (median $661 vs. $914) and renters (median $537 vs. $620). Housing costs as a percentage of household income are generally lower than the State.

The usual statistic to measure housing availability is misleading for the Oregon Coast. Most counties' overall vacancy rates are substantially higher than the State's. This is because the census defined total vacancy rate includes vacant units market ready and vacant units which serve as a second home. Coastal counties' housing stock includes a much higher proportion of second homes than the State (Figure II.6). Tillamook County has the highest percentage of second homes of all the coastal counties.

Figure II.6
Second Homes as a Percent of Total Housing Units for Oregon and Coastal Counties in 1990 and 2000



Source: U.S. Census Bureau.

The median value of owner occupied homes is less than the State. But, the residential assessed value per capita is much higher. This demonstrates the presence of higher-valued second homes on the Coast than in the rest of the State.

4. Employment

Oregon's coastal areas have undergone significant economic and demographic transitions. Traditional resource-based industries like commercial fishing and wood products have declined in relative importance. Trade and service jobs associated with businesses serving tourism and retirees have increased. Because of the influence of the dairy industry in Tillamook County, agriculture has remained fairly constant. The major change, however, has been the increase of "other" industries in these counties, which reduced the relative importance of natural resource industries. Other industries in this report are defined to be businesses not associated with the just

mentioned sectors and other large employers that are readily known, like the Hatfield Marine Science Center in Lincoln County. Later chapters discuss this other industry category in depth.

The flip side of employment is unemployment. There are some dramatic differences between the counties over time (Figure II.7). In the past, Oregon's coastal counties were much more vulnerable to recessions, such as the downturn in the early 1980's. During those years, all Oregon's counties experienced worse unemployment. In the last decade, there have been fewer spikes in unemployment. And today, four of five coastal counties have less or about equal unemployment rates than the rest of the State.

The industry distribution of employment is shown on Table II.3 and Figure II.8. The industry groups follow an industrial structure described by Beyers (1991). Employment in the following Year 2000 decennial census classes are summed to represent the Beyers industry groups.[1]

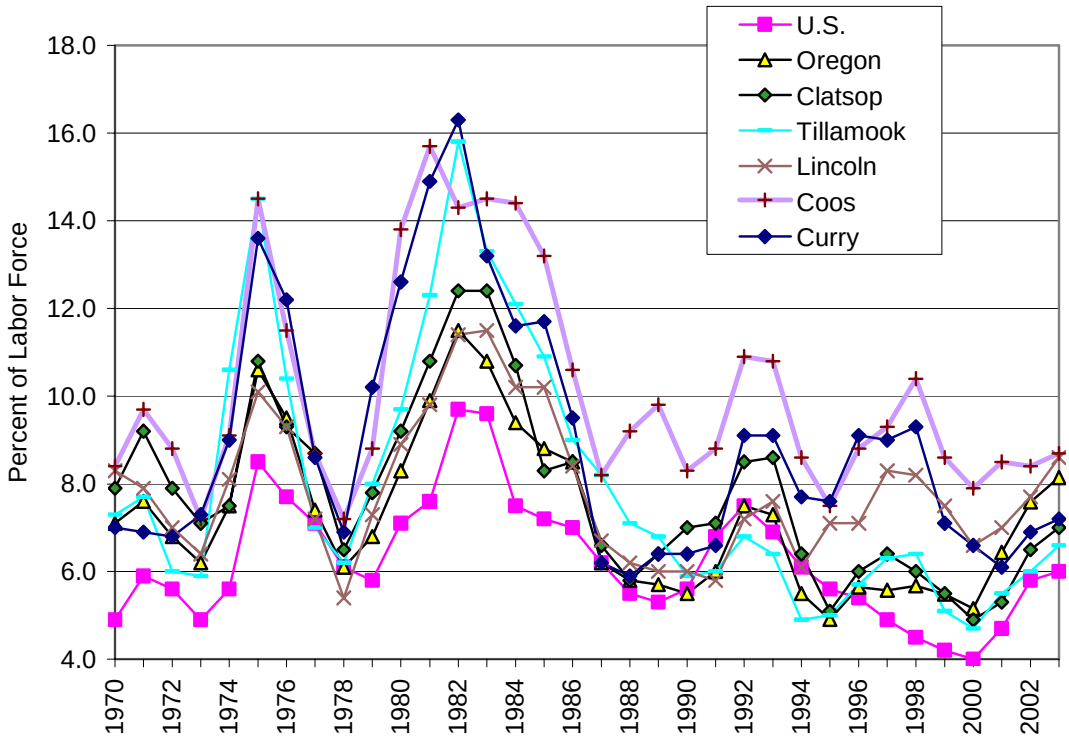
Beyers Groups	Decennial Census Industry Class
Transformative	Agriculture, forestry, fishing and hunting, mining, construction, and manufacturing
Distributive	Wholesale trade, transportation and warehousing, utilities, and information
Retail	Retail
Consumer services	Arts, entertainment, and recreation; accommodation and food services; other services
Producer services	Finance and insurance; real estate and rental and leasing; professional, scientific, and technical; management of companies; and administrative and support and waste management
Social service	Education, health care, and social assistance
Government	Military, local, state, and federal agencies

Coastal employment change lagged the State in all groups except consumer services and government. The resulting employment distribution as compared to the State in 1990 shows that there is a lesser proportion of jobs in the transformative, distributive, and producer services groupings on the Coast (Figure II.9). It is about equal in the social service groups. The employment distribution is greater in retail, consumer, and government groups. These industry transitions, and particularly the development of tourism, have led to a variety of changes with positive and negative social impacts.

One of the impacts of these industry transitions is a shift of occupations away from manufacturing to jobs in services and construction (Table II.4). The share of workers by summary occupation category does not vary significantly from the State. Among the major occupational divisions in which growth is anticipated, the largest numerical gains are projected to occur among service workers, sales related workers, professional and technical workers, and among persons holding clerical and administrative support jobs. The major sectors losing

1. Beyers industry groups are convenient for revealing summary level distributional changes over the years. However, care should be taken in comparing the groupings to traditional industry categories. For example, Beyers education employment is in the social service group while the same employment is in the industry category government as shown in Table II.4.

Figure II.7
Unemployment Rate in 1970 to 2003



Notes: 1. There was a change in measuring unemployment rate starting in 1990. A time series model was used rather than a handbook method.

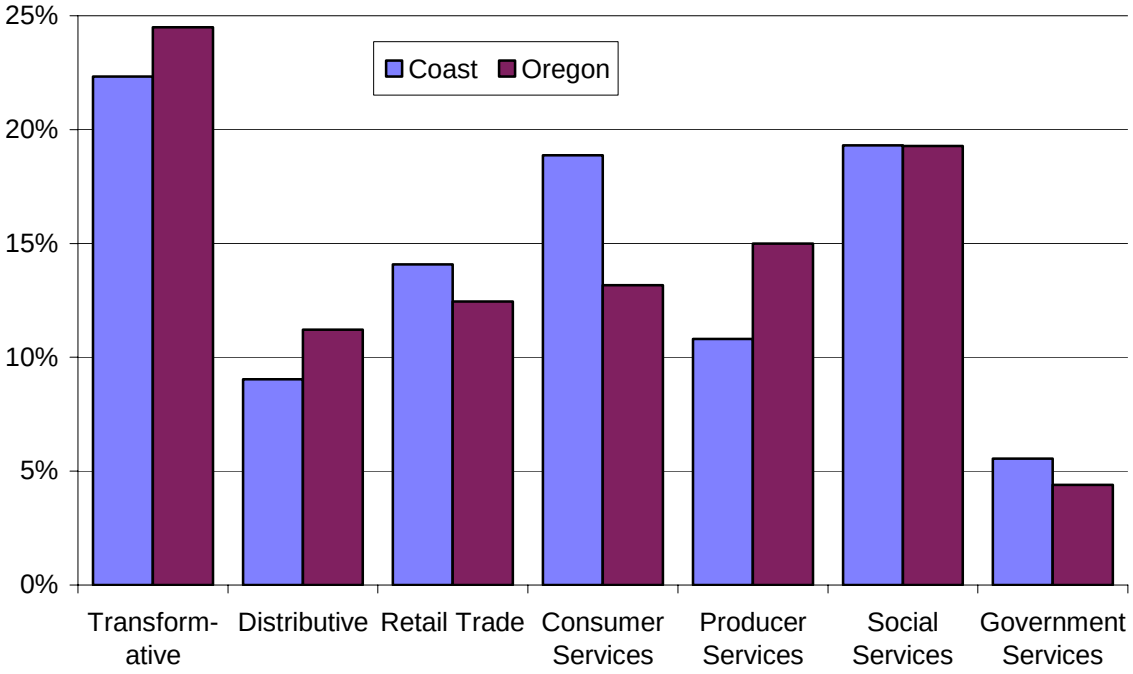
Source: Data years up to 1994 are from the Oregon Employment Department, and 1995 to present are from the U.S. Department of Labor, Bureau of Labor Statistics (BLS).

Table II.3
Coast and Oregon Employment by Industry Group in 1970 to 2000

	Percent Distribution					Percent Change					
	Coast				Oregon	Coast			Oregon		
Industry Group	1970	1980	1990	2000	2000	1970-1980	1980-1990	1990-2000	1970-1980	1980-1990	1990-2000
Transformative	42.0%	34.2%	28.7%	22.3%	24.5%	8.4%	-11.6%	-11.4%	36.7%	7.5%	5.8%
Distributive	9.4%	9.5%	9.3%	9.0%	11.2%	34.5%	3.7%	10.1%	40.2%	9.9%	23.2%
Retail Trade	17.1%	20.3%	21.8%	14.1%	12.5%	58.2%	13.0%	-26.5%	54.7%	17.6%	-15.2%
Consumer Services	6.3%	5.5%	7.0%	18.9%	13.2%	15.8%	34.0%	206.6%	10.4%	31.1%	266.7%
Producer Services	6.8%	8.9%	13.5%	10.8%	15.0%	74.5%	60.1%	-8.9%	69.2%	64.1%	7.1%
Social Services	14.5%	16.7%	14.5%	19.3%	19.3%	53.6%	-8.6%	51.4%	55.7%	2.9%	45.6%
Government	4.0%	5.0%	5.2%	5.6%	4.4%	66.5%	9.3%	21.9%	50.4%	-5.0%	32.2%
Total Employment	100.0%	100.0%	100.0%	100.0%	100.0%	33.2%	5.2%	13.8%	46.2%	15.9%	23.3%

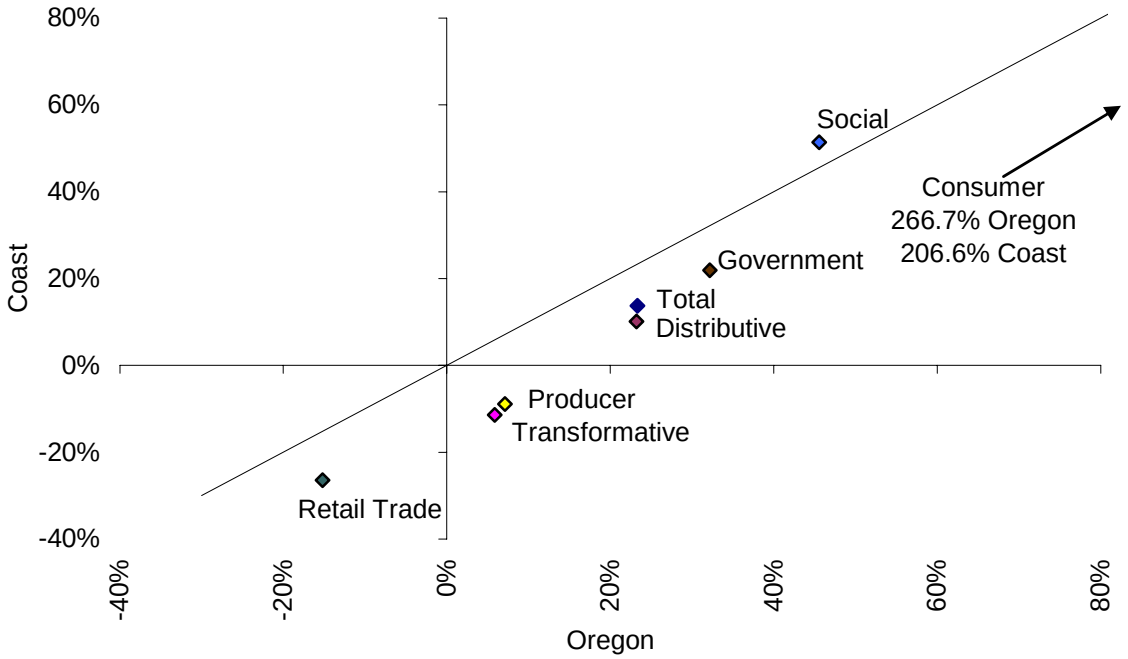
Source: U.S. Census Bureau and Study.

Figure II.8
Coast and Oregon Industry Group Employment by Percent Distribution in 2000



Source: U.S. Census Bureau and Study.

Figure II.9
Coast and Oregon Industry Group Employment Percent Change During 1990 to 2000



Notes: 1. The percent change above the diagonal line means the industry group employment at the Coast grew faster than in the State.
2. See text for a definition of industries that are included in groupings.

Source: U.S. Census Bureau and Study.

Table II.4
Coast and Oregon Occupation and Selective Industry Employment Trends in 1980 to 2000

	1980		1990		2000	
	Coast	Oregon	Coast	Oregon	Coast	Oregon
Management, professional, and related occupations	24.0%	26.7%	25.5%	29.4%	27.5%	33.1%
Service occupations	19.3%	15.1%	19.6%	15.3%	20.3%	15.3%
Sales and office occupations	22.5%	27.8%	25.2%	27.8%	24.8%	26.1%
Farming, fishing and forestry occupations	3.1%	1.7%	2.7%	1.7%	3.6%	1.7%
Construction, extraction, and maintenance occupations	11.1%	10.4%	9.9%	9.1%	10.5%	9.1%
Production, transportation, and material moving occupations	20.0%	18.4%	17.1%	16.8%	13.3%	14.7%
Total	66,721	1,138,425	70,220	1,319,960	79,884	1,627,769
Selected industries						
Agriculture, forestry, fishing and hunting	6.7%	4.6%	7.4%	5.1%	6.0%	3.1%
Manufacturing	20.8%	19.5%	15.0%	17.7%	8.3%	14.4%
Selected worker classes						
Government workers (local state, or federal)	17.6%	17.3%	17.3%	15.1%	16.6%	14.4%
Self-employed workers	13.6%	9.1%	13.1%	9.3%	12.4%	8.9%

	% Change 1980-1990		% Change 1980-2000		% Change 1990-2000	
	Coast	Oregon	Coast	Oregon	Coast	Oregon
Management, professional, and related occupations	11.9%	27.8%	37.4%	77.5%	22.8%	38.8%
Service occupations	6.5%	17.5%	25.5%	45.1%	17.9%	23.4%
Sales and office occupations	17.7%	16.0%	31.5%	34.5%	11.6%	15.9%
Farming, fishing and forestry occupations	-6.7%	15.2%	40.3%	46.2%	50.4%	26.9%
Construction, extraction, and maintenance occupations	-6.2%	1.7%	12.9%	25.3%	20.4%	23.1%
Production, transportation, and material moving occupations	-9.9%	5.4%	-20.0%	13.9%	-11.2%	8.1%
Total	5.2%	15.9%	19.7%	43.0%	13.8%	23.3%
Selected industries						
Agriculture, forestry, fishing and hunting	16.9%	27.6%	7.8%	-3.5%	-7.8%	-24.4%
Manufacturing	-23.9%	5.0%	-52.2%	5.6%	-37.1%	0.5%
Selected worker classes						
Government workers (local state, or federal)	3.6%	1.3%	13.4%	18.9%	9.4%	17.4%
Self-employed workers	0.9%	18.8%	8.6%	40.2%	7.6%	18.0%

Notes: 1. Totals include employed civilian population 16 years and over.
2. The 1980 and 1990 occupation categories were translated to 2000 titles using the U.S. Census Bureau's "1990-2000 Census Tabulation Crosswalk Template: Occupation, Level 1."

Source: U.S. Census Bureau.

employment include forestry and seafood workers; helpers and laborers; and machine setters and operators. Other occupations serving producer services, such as specialized management services, are an outgrowth of the complexities of a global economy, and essentially serve as an input in the production process. As a result, the distinction between production and service has become blurred. Other services play a more traditional secondary role in the economy. The fastest-growing among these are health services and occupations at eating and drinking places.

The shift to service sector employment and the rise of the information economy have modified the nation's as well as the Coast's occupational employment structure. Generally, blue-collar middle class jobs are disappearing. Those jobs are being replaced by either high paying professional and technical jobs or low paying service or clerical jobs. Information systems require skilled programmers and engineers, and low-skilled data entry positions. Legal services require both highly paid attorneys and low paid word processor operators. The rising number of women working outside of the home, due in part to falling family earnings, creates a strong demand for meals out of the home. So, restaurants have benefited. While the fastest growing occupations in the nation include engineers, computer analysts, and lawyers, the bulk of new jobs are low paying positions such as fast food workers, cashiers, and nurse's aides. With the loss of middle class jobs, the work force is becoming increasingly stratified by skill and wage.

Nationally, the large increase of new job seekers resulting from the jump in baby boomers reaching work age is over.[1] Fewer young people are entering the labor force today than in the 1980's (Fullerton 1999). This has resulted in labor shortages in many entry-level occupations which traditionally have been held by young people. Hispanics are largely filling these jobs (Moore and Vong 2004).

5. Firm Size

The Coast has a higher proportion of firms in the smallest size class than the State, though the proportion has been declining for both the Coast and the State (Table II.5). The percent of employment in proprietorships is higher on the Coast than in the State and has stayed about the same over the last 30 years.

6. Labor Force Participation

The Coast's labor force participation is showing a growth rate which exceeds the rate of growth for the area's population (see Table II.6).[2] This differential in growth rates, which also took place at the State and national level, can be attributed in large measure to the entry of proportionately more women into the labor force.[3] In addition, the aging of the population, the

1. Baby boomers are generally defined as persons born post-World War II. The years between 1945 and 1964 are used to calculate the population in this birth age cohort.
2. Labor force is defined to consist of all residents 16 and over who are either employed or jobless and looking for work.
3. In 1970, women made up 38 percent of the civilian labor force in the United States. By 1990, their proportion of the work force increased to 45 percent. Women made up 46 percent of the total civilian labor force and had a participation rate of about 58 percent in 2000. Men are showing a slight decline in participation rates and are 72 percent in 2000.

Table II.5
Coast and Oregon Firm Size and Type Distribution in Select Years

	Distribution of Firms by Size of Work Force				2003
	1977	1985	1994	2003	Firms
Coast	100.0%	100.0%	100.0%	100.0%	6,168
1-9 employees	83.1%	82.5%	80.5%	79.1%	4,881
10-49 employees	14.7%	15.7%	17.1%	18.8%	1,161
50+ employees	2.1%	1.8%	2.3%	2.0%	126
Oregon	100.0%	100.0%	100.0%	100.0%	103,064
1-9 employees	77.6%	78.0%	75.7%	74.8%	77,111
10-49 employees	18.6%	18.3%	20.1%	20.9%	21,535
50+ employees	3.8%	3.7%	4.1%	4.3%	4,418

	Distribution of Employment by Firm Type				2003
	1977	1985	1994	2003	Employment
Coast	100.0%	100.0%	100.0%	100.0%	102,723
Wage and salary jobs	77.9%	73.7%	74.4%	73.2%	75,199
Proprietors	22.1%	26.3%	25.6%	26.8%	27,524
Nonfarm	19.7%	23.5%	23.5%	24.9%	25,567
Farm	2.4%	2.8%	2.1%	1.9%	1,957
Oregon	100.0%	100.0%	100.0%	100.0%	2,094,696
Wage and salary jobs	82.2%	79.8%	80.5%	79.5%	1,666,262
Proprietors	17.8%	20.2%	19.5%	20.5%	428,434
Nonfarm	15.3%	17.4%	17.4%	18.6%	388,605
Farm	2.5%	2.8%	2.1%	1.9%	39,829

Notes: Employment includes full-time and part-time jobs.
Source: Census County Business Patterns and U.S. Bureau of Economic Analysis.

entry of the baby boomers, early retirement for men, and overall population growth also played their parts.

The movement of females into the labor force has come about for a variety of reasons. Many married women searched for jobs to provide a second income source for family budgets hard hit by inflation. Other women worked to support their families or to pursue individual economic goals. Social factors such as the rising divorce rate and the surge of single, educated women also bring many females into the labor force.

Table II.6
Coast, Oregon, and U.S. Labor Force Participation and Share by Gender in 1980, 1990, and 2000

	1980		1990		2000	
	Male	Female	Male	Female	Male	Female
Labor Force Participation						
Coast	66.9%	42.3%	64.5%	49.0%	62.7%	52.6%
Oregon	74.6%	50.2%	74.4%	56.7%	73.3%	59.2%
U.S.	77.4%	51.5%	75.5%	57.6%	72.2%	58.3%
Share of Labor Force						
Coast	59.9%	40.1%	55.0%	45.0%	52.5%	47.5%
Oregon	58.4%	41.6%	55.1%	44.9%	54.1%	45.9%
U.S.	57.6%	42.4%	54.3%	45.7%	53.2%	46.8%

Notes: 1. Labor force participation includes civilian non-institutional population 16 years and over, and share of labor force includes civilian labor force 16 years and over.
Source: U.S. Census Bureau.

C. Social Description

The Oregon Coast is distinguished by its health and well-being characteristics. Figure II.10 shows statistics for educational attainment, access to health services, the poverty rate, the proportion of substandard housing and the crime rate for the Oregon Coast as compared to the State. (Appendix A contains sources for other social accounting indicators.) All statistics show the Coast is quite different than the State.

1. Health and Well-Being Characteristics

The average education level in these counties is worth examining (Table II.7). These counties have fewer people with college or graduate degrees and more people with high school levels of education than the rest of the State.

The Oregon Coast has higher levels of staffed hospital beds per capita than the State when you use county boundaries to define proximity. The doctor count, however, is proportionally much lower than the State. Hospitals and health clinics along the Oregon Coast provide trauma and basic health services while specialized medical services are located in the major population centers of the State.

The crime rate for coastal counties is less along the Oregon Coast than the State. The trend over the last decade shows decreasing overall reported crimes for both the Coast and the State.

2. Income Characteristics

A revealing income trend over time is the dramatic increase in transfer payments as a percent of total household and individual personal income (Figure II.11 and II.12). This is partially a

Figure II.10
Coast and Oregon Social Characteristics and Decadal Changes

Notes: 1. Data for Coast includes Clatsop, Tillamook, Lincoln, Coos, and Curry counties, except hospital beds per capita include the coastal portions of Lane and Douglas counties.
2. Hospital service area assumed to be inclusive of county area where hospital is located.
3. The index crime statistic was created by the FBI to provide a general measure of crime rates across jurisdictions and over time. Index crimes include the person crimes of murder and non-negligent manslaughter, forcible rape, robbery, and aggravated assault and the property crimes of burglary, larceny-theft, motor-vehicle theft, and arson.

Source: Oregon Office of Rural Health, U.S. Census Bureau, and Oregon Criminal Justice Commission.

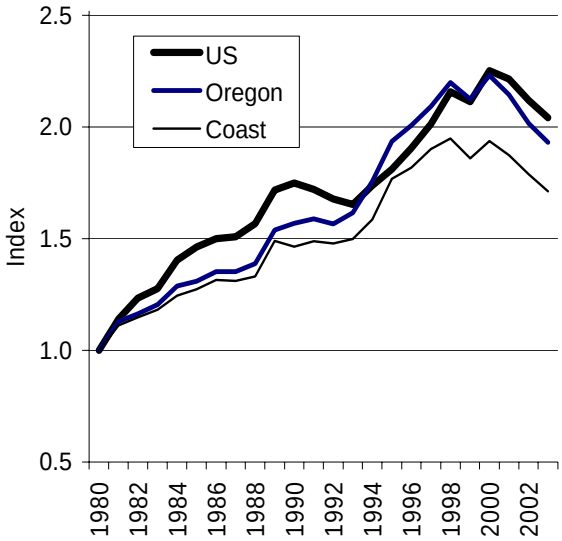
Table II.7
Social Indicators in 2000

	Coast %	Oregon %
Educational Attainment (25 years and older)		
High school graduate (includes equivalency)	83.4	85.1
Bachelor's degree	17.6	25.1
Marital Status (population 15 years and over)		
Never married	18.7	25.1
Now married	57.5	55.4
Separated	2.0	1.7
Widowed	8.4	6.1
Divorced	13.4	11.6
Residence in 1995 (population 5 years and over)		
Same house in 1995	50.8	46.8
Different house in the U.S. in 1995	47.9	50.6
Same county	23.8	27.0
Different county	24.1	23.6
Same state	10.6	11.1
Different state	13.4	12.5
Elsewhere in 1995	1.4	2.6
Race (population)		
One race	97.2	96.9
White	92.2	86.6
Black or African American	0.3	1.6
American Indian and Alaska Native	2.1	1.3
Other one race	2.5	7.4
Two or more races	2.8	3.1
Poverty (all ages, 1999)		
Below poverty level	13.6	11.6
Housing Characteristics		
Median year a house was built	1971	1973
Vacancy rate	22.5	8.2
Renters below median income spending more than 30% of income for housing (including utilities)	70.9	70.1
Owner occupied households below median income spending more than 30% of income for housing (including utilities)	40.6	40.1

Sources: U.S. Census Bureau and Oregon Progress Board (2005).

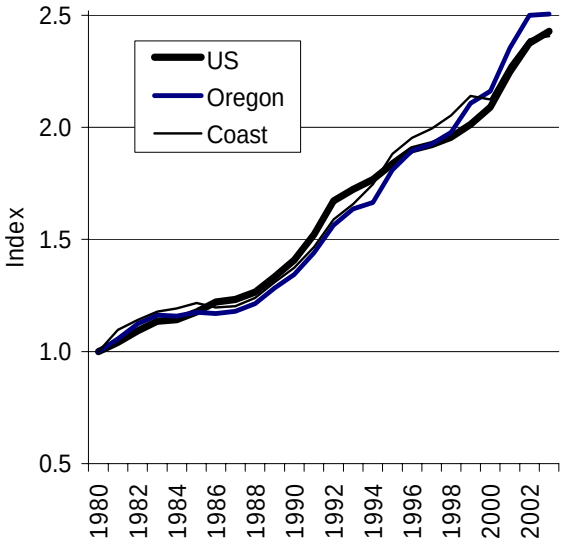
Figure II.11
Comparison of Oregon Coast Personal Income Trends With the State and Nation in 1980 to 2003

Investments



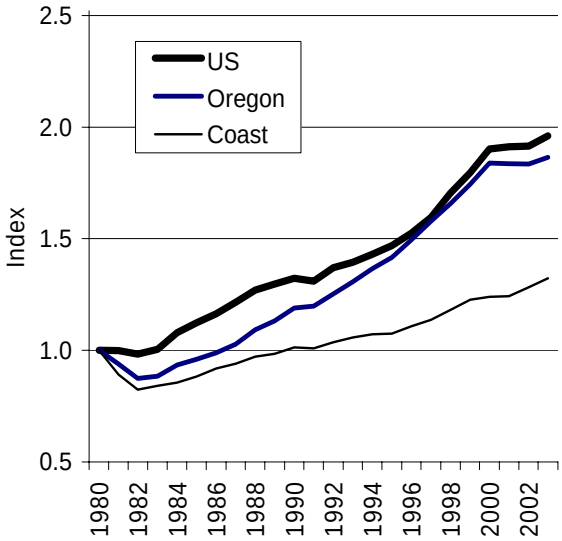
Notes: Investments include dividends, interests, and rent.

Transfers



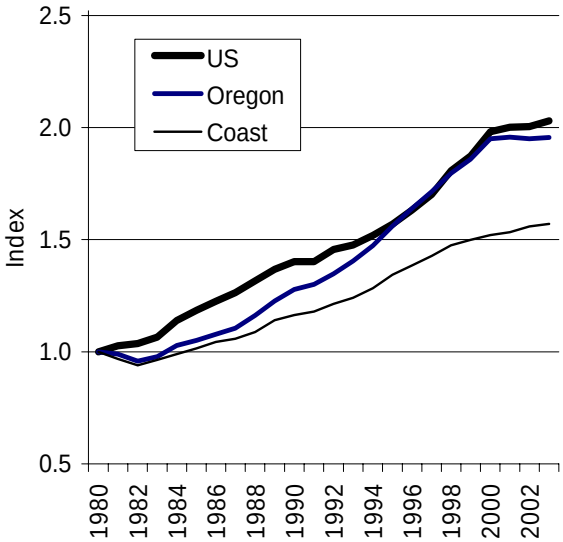
Notes: Transfers are payments to persons for which no current services are performed, and include such disbursements as retirement, disability insurance, unemployment insurance, veterans benefits, and student loans.

Earnings



Notes: Earnings are wages, salaries, and proprietor income by place of residence.

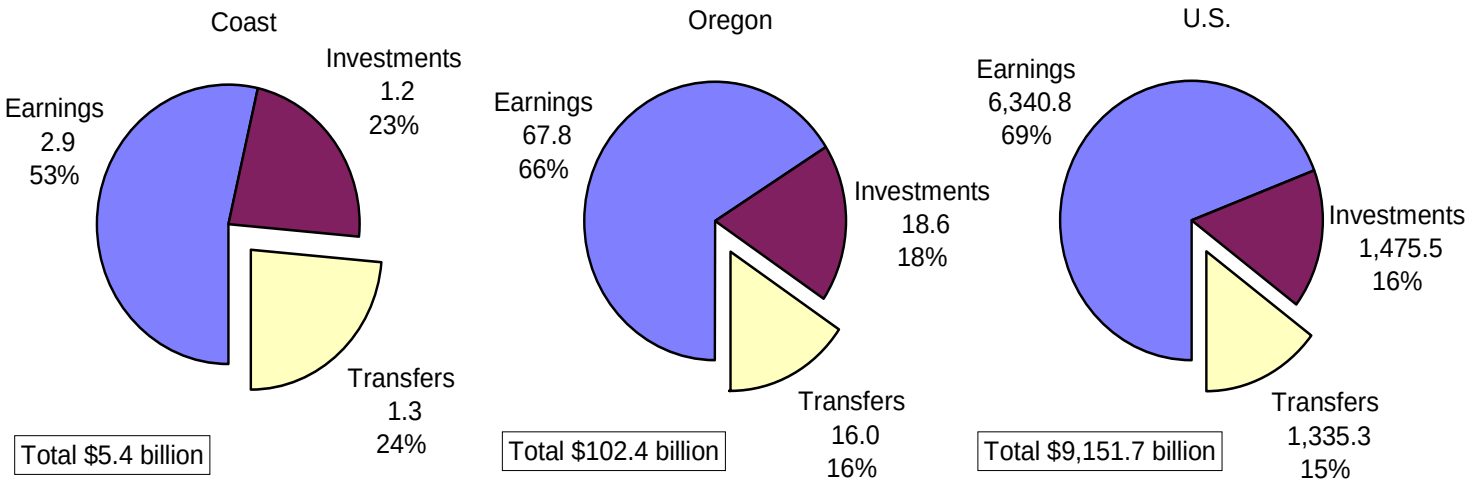
Total



Notes: Total personal income is the sum of investments, transfers, and earnings.

Notes: 1. Personal income adjusted to Year 2003 dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
2. Oregon Coast includes Clatsop, Tillamook, Lincoln, Coos, and Curry counties.
Source: U.S. Bureau of Economic Analysis.

Figure II.12
Sources of Personal Income to the Coast, Oregon, and U.S. in 2003



Notes: 1. Coast includes Clatsop, Tillamook, Lincoln, coastal portions of Lane and Douglas, Coos, and Curry counties.
Source: U.S. Bureau of Economic Analysis and Study.

function of the increase in retirees collecting Social Security payments in these areas. While total personal income has increased, the share of total personal income that is earned (i.e., employee compensation and proprietor income) has remained about the same (Figure II.13). This means a lot of spending on the Oregon Coast is not tied to salaries and wages from local businesses or industries.

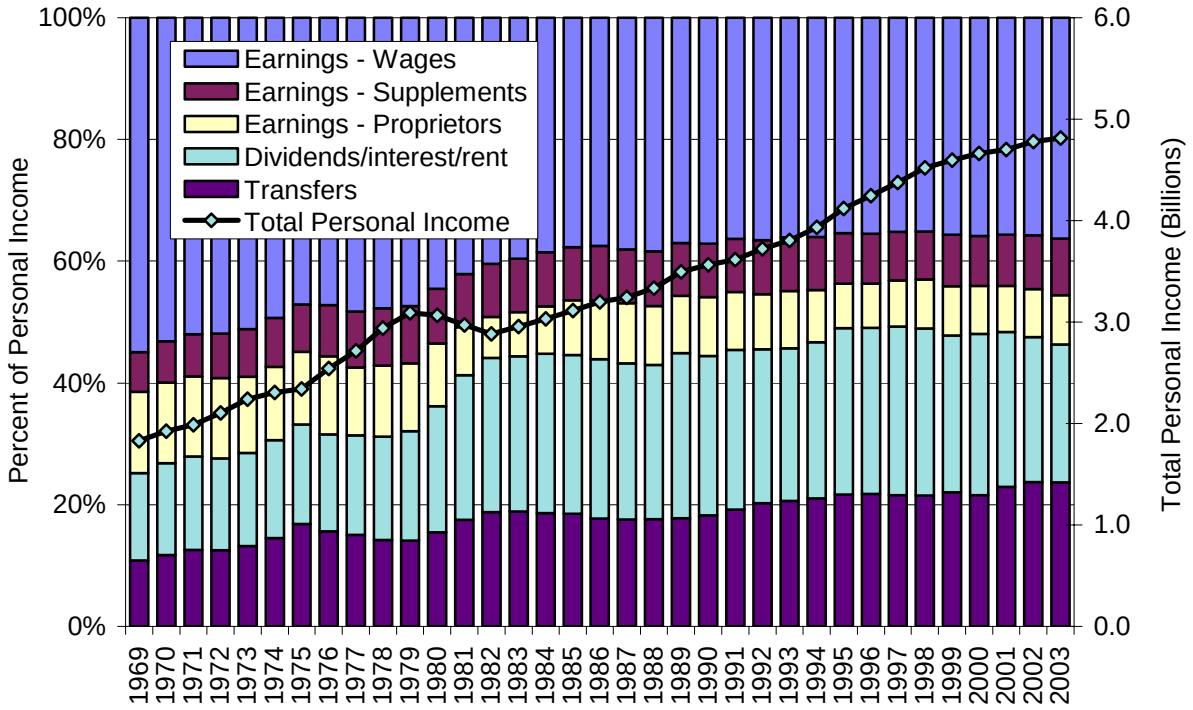
Per capita income is one of the most accurate indicators of economic well-being. It is the total of income from all sources - wages, interest earnings, dividends, business profits, and transfer payments like welfare, unemployment compensation, and retirement - divided by the total population. The per capita net earnings in the coastal counties are still well below per capita net earnings at the State or national level. However, the gap has been decreasing in recent years (Figure II.14).

The personal income component for wages, largely comprised of the amount the average worker earns, is less along the Coast and in Oregon.[1] Measured in real 2000 dollars, the average Coast worker earned about $24,112; the average Oregon worker earned $32,776.

1. Real wages are the average wages for all workers adjusted for inflation. The data for this calculation are drawn from payroll tax data collected by the Oregon Employment Department. The average wage is the sum of all wages for all covered workers divided by the average number of workers each year. Wages are adjusted for inflation by dividing the actual average wage for each year by the change in the cost of living as measured by the GNP implicit price deflator calculated by the U.S. Bureau of Economic Analysis. Neither the self-employed, agriculture, nor the fishing work force are specifically included in payroll income.

   The net earnings component of total personal income includes more than just wages and salaries. It also includes proprietor earnings. Wages and salaries typically are three quarters of net earnings, proprietor earnings are one fifth, and the balance is employer contribution to pensions. The share of net earnings that are proprietor earnings are generally higher at the Coast because there are more business units per employee than in the State.

Figure II.13
Total and Shares in Sources of Total Personal Income for the Oregon Coast in 1969 to 2003



Notes: 1. Total personal income in billions adjusted to Year 2003 dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
2. Includes Clatsop, Tillamook, Lincoln, Coos, and Curry counties.
3. Components of earnings by place of residence estimated using components of earnings by place of work.

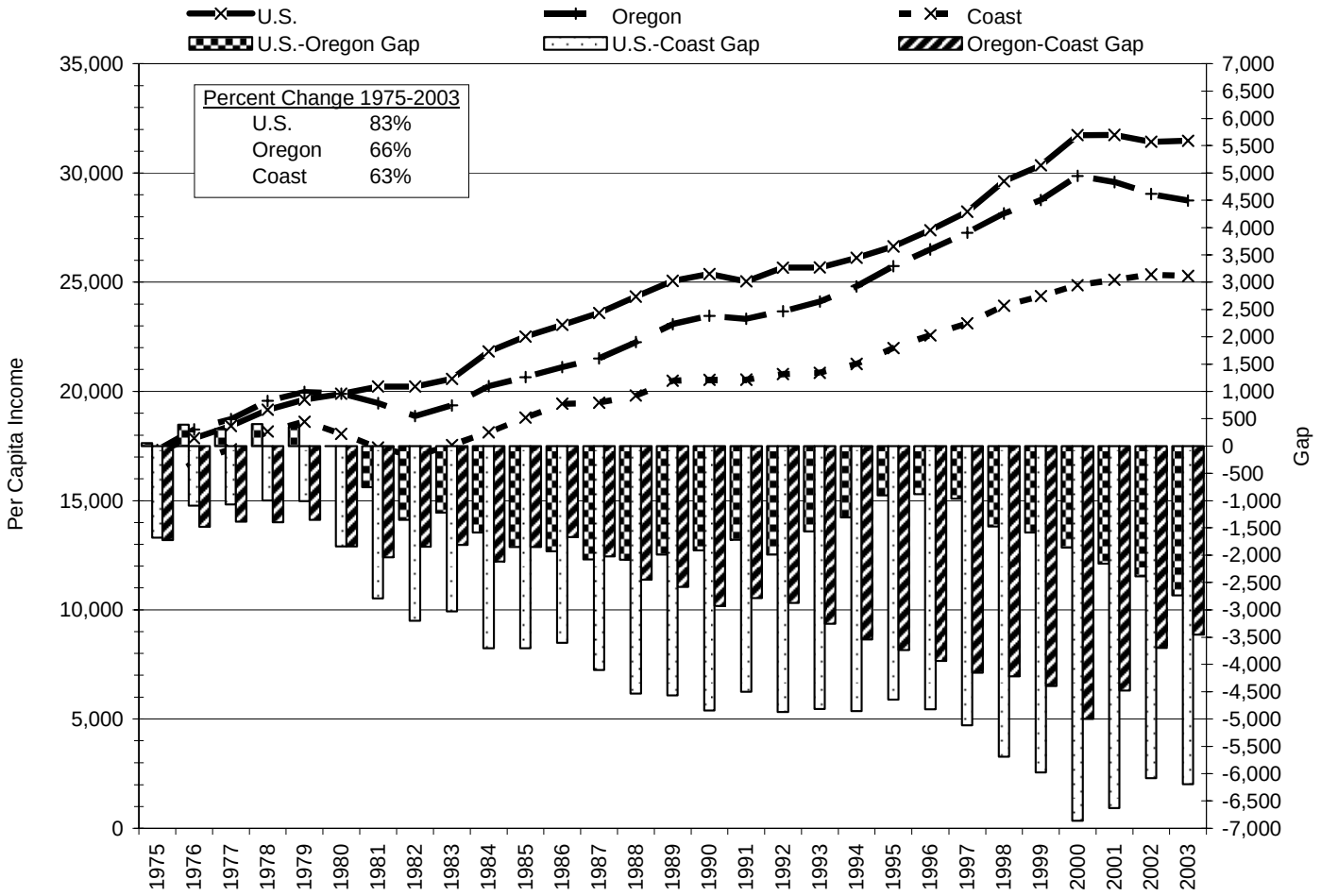
Source: U.S. Bureau of Economic Analysis.

A significant factor in the comparison of wages has been the rapid growth of jobs in the relatively low wage service sector occupations. A greater fraction of the population is earning wages now than in previous years. In other words, today there are more workers per capita than ten years ago. This increase in workers per capita has helped offset the decline in wages per worker.

Income inequality statistics can be misleading when averages are used as indicators. A few households in very high income brackets can mask the effects of many households in lower income brackets. The income brackets by county are shown in Table II.8 and Figure II.15. All coastal counties have far fewer households in the highest income brackets than the State. Coos and Curry counties have the highest proportion of households in the lowest income bracket.

Another indicator which shows coastal counties are skewed towards lower household incomes than the State is the proportion of people living below poverty level. The proportion in coastal counties is 13.6 percent, compared to the State's 11.6 percent in 2000. A comprehensive accounting of Oregon's poverty data, causes, and assistance programs can be found in Oregon Housing and Community Services (2004).

Figure II.14
Coastal Counties Income Maintenance in 1975 to 2003



Notes: 1. Per capita income is average annual per capita personal income. This includes household income from all sources (net earnings, investments, and transfers) divided by population.
2. Dollars adjusted to 2003 using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
3. Coastal counties are Clatsop, Tillamook, Lincoln, Coos, and Curry.

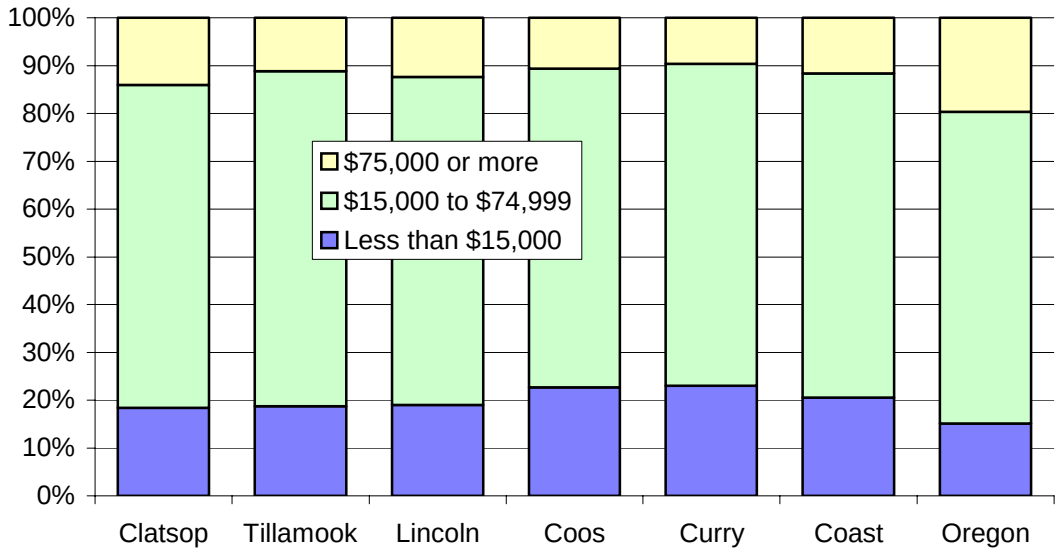
Source: U.S. Bureau of Economic Analysis data; data adapted for report by Study authors.

Table II.8
Household Income Distribution by County in 1999

	Median		Income				Income Distribution			
Area Name	Household Income	Households	Less than $15,000	$15,000 to $74,999	$75,000 or more	$100,000 or more	Less than $15,000	$15,000 to $74,999	$75,000 or more	$100,000 or more
Clatsop	$36,301	14,741	2,709	9,959	2,073	946	18.4%	67.6%	14.1%	6.4%
Tillamook	$34,269	10,214	1,914	7,157	1,143	548	18.7%	70.1%	11.2%	5.4%
Lincoln	$32,769	19,352	3,675	13,285	2,392	1,071	19.0%	68.6%	12.4%	5.5%
Coos	$31,542	26,181	5,929	17,459	2,793	1,251	22.6%	66.7%	10.7%	4.8%
Curry	$30,117	9,554	2,198	6,438	918	466	23.0%	67.4%	9.6%	4.9%
Coast	$32,893	80,042	3,833	12,438	2,129	968	20.5%	67.8%	11.6%	5.3%
Oregon	$40,916	1,335,109	201,824	870,422	262,863	133,375	15.1%	65.2%	19.7%	10.0%

Source: U.S. Census Bureau.

Figure II.15
Household Income Distribution by County in 1999



Source: U.S. Census Bureau.

Lagging wages contribute to the housing problem along much of the Coast. Many potential workers are unable to secure affordable housing as rising demand for coastal property has priced homes and rentals out of their reach. This lack of workforce housing in turn makes it more difficult for employers to attract and retain workers in occupations such as trade and service workers. This is especially true for businesses oriented towards the tourism industry.

3. Wealth Characteristics

Other indicators of prosperity for coastal residents compared to the rest of the State are shown in Table II.9. Bank deposits per capita are less on the Coast than for the State. The effective buying income (equivalent to the federal government's disposable personal income and a bulk measure of retail market potential) is less for the Coast than the State. Not surprisingly, retail sales per capita on the Coast is also less. A contributing factor is the sales leakages that occurs when coastal residents travel to large urban centers along the I-5 Corridor where price and product selection is better than on the Coast.

Table II.9
Coast and Oregon Prosperity Measures in 2003

	Coast	State
Property Value		
Assessed Value Per Capita		
Residential	$47,737	$30,518
Commercial/Industrial/Multi-housing	$15,796	$15,111
Utilities	$2,846	$3,248
Other	$15,994	$13,182
Total	$82,373	$62,059
Net Property Tax Rate	1.204%	1.533%
Wealth		
Bank Deposits Per Capita	$8,619	$11,791
Effective Buying Income (2002) Per Household	$35,657	$43,768
Retail Sales Per Household	$24,779	$33,946
Personal Bankruptcy Filing Rate (Per 1,000 Population)	6.01	6.67
Average Wage Per Worker	$26,000	$34,446
Housing Costs		
Median Monthly Housing Costs to Owners in 1999	$661	$914
Median Monthly Housing Costs to Renters in 1999	$537	$620
Median Value of Owner Occupied Homes (2000)	$130,228	$152,100

Notes: 1. Average wage per worker is for covered employment in 2003.
Source: Oregon Department of Revenue, Portland State University Population Research Center, Oregon Division of Finance and Corporate Securities, Claritas (undated), Oregon Employment Department, and U.S. Census Bureau.

III. ECONOMIC DESCRIPTION

A. Economic Contribution Methodology

One of the study's goals is to measure the relative and absolute economic contributions from seven pre-defined economic sectors. The measurement unit is personal income accruing to households and individuals. The sectors were chosen to be aligned with the original study so trend analysis could be accomplished. The original study used sectors that had high export qualities, i.e. brought "outside" money into the Coast. The major points for making the economic contribution calculation follow. Appendix F contains a more detailed description of the economic model used to make the calculations.

- The seven sectors are: commercial fishing, agriculture, timber, tourism, "other identified export based industries," "other earned income," and "non-earned income." The other identified export industry sector includes:

    - Paper and paperboard mills
    - Water transportation and marine cargo handling
    - Boat and ship building, steel fabrication, and other heavy construction
    - Other identifiable industries (State and federal government, research facilities, communication, special education, and military)

  Other earned income is a residual calculation after accounting for the other five earnings sectors multiplier effects. The non-earned sector includes transfer payments (Social Security etc.) and investment (dividend, interest, and rent) income.

- Each of the seven sectors, with the exception of non-earned income, involves the exchange of locally produced goods or services for income from sources outside of the regional or local economies. Transfer payments and investment income represent geographic movement of income that is not always attributable to goods or services provided at the time. It represents a payment for an inter-temporal transfer of services or money.

- Wages and profits are the *direct impacts;* purchases made with wages and profits are *indirect impacts*. As workers and owners receive wages, salaries, and profits from these expenditures, they spend money for a variety of goods and services in the general economy. The resulting consumer sector income amounts are the *induced impacts*. The sum of these impacts is the *total personal income impact*.

- An input/output model called IMPLAN was used to derive personal income response coefficients. The coefficients were applied to production measurements for the five earnings sectors. The non-earned income sector was assumed to have a 1:1 multiplier effect in order to account for total personal income.

- Total personal income for each county, provided by the U.S. BEA, is the standard to which each sector's contribution is compared.

- The Oregon coastal area includes coastal portions of Lane and Douglas counties. For Lane and Douglas counties, which include important coastal cities as well as inland areas, basic sector production in the coastal portions of the two counties is expanded using multipliers from Lincoln and Coos counties, respectively. These multipliers should more closely apportion income in the coastal areas, rather than the whole Lane and Douglas multipliers.

- A separate economic analysis was completed for "immigrant retiree effect." It was done to show the importance of non-earned income in the coastal economy attributed to the large proportion of retirement age settlement. The average U.S. transfer and investment income proportion of personal income was used as a base for this calculation.

Economic contribution measurements should not be confused with economic value measurements. Economic value attempts to measure the net benefits from using a resource and the value people place on the resource. Economic contribution measures how much money is "stirred up" in an economy by using or enjoying a resource.

While economic value and economic contributions are two distinct measures, each has usefulness for different purposes. Economic values are important if the goal is to allocate society's resources efficiently. Economic contributions are important in assessing the distributional impacts of different allocation possibilities. It may often be the case that society will choose to invest in a less valuable resource from a national perspective because the local area or economy that holds the resource needs economic development. Nevertheless, having the information on economic value will inform society how much it is sacrificing to achieve the redistribution of economic activity or development.

Sometimes personal income gain or employment in one area may be personal income loss to a different area. For example, the expenditures by the Bonneville Power Administration for hatchery funding may be a transfer from electricity paying consumers in Portland and Seattle to anglers and businesses in coastal communities. These allocation and equity issues are not addressed in this study.

B. Economic Sector Modeling

Six major agglomerated industry sectors were used to explain the sources of the net earnings component of total personal income for county residents: commercial fishing, agriculture, timber, tourism, other identified export based industries, and other earned income. The first five of these sectors should be viewed as "basic" exporting sectors. The last sector is a residual calculation using total net earnings. It is assumed that all other goods and services industries are the result of either the six agglomerated sectors, or the non-earned sector comprised of transfer payments (retirement income for example) and investment (dividends, interest and rent for example) income. Because the coastal counties have larger than average income percentages coming from transfer payments and investment income, we also calculate a "retiree" effect. This effect may also be viewed as a basic "exporting" sector. This chapter discusses in detail the application of the modeling to each of the sectors.

1. Commercial Fishing

a. Summary

The Oregon commercial fishing industry is made up of businesses and industries which harvest, process, and distribute finfish as well as shellfish. Fresh fish are distributed throughout the West, while frozen and processed fish are distributed throughout the U.S. and exported to the rest of the world.

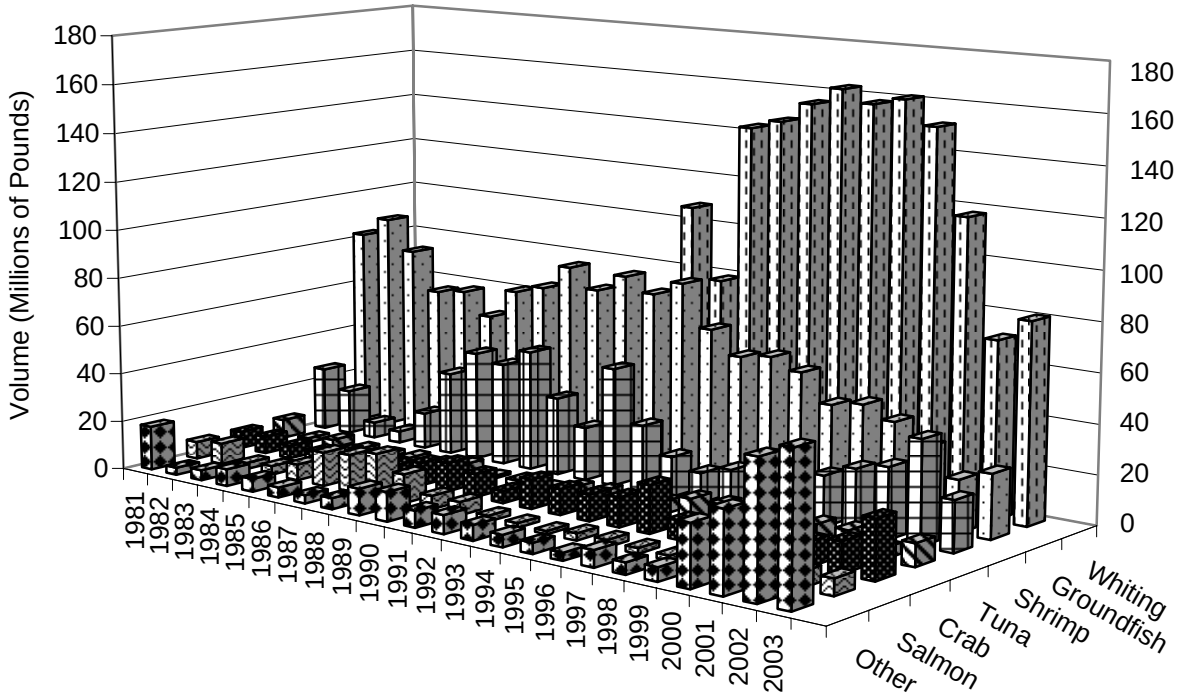
The commercial fishery has been an important part of coastal areas' economies in the Pacific Northwest. Oregon fishermen harvested and landed in Oregon 225.0 million pounds of fish in 2003, worth a total of $82.3 million (Figures III.1 and III.2). (Appendix C shows landing volume and value by port since 1981.)

The information displayed in Tables III.1 through III.3 and Figures III.2 and III.3 indicate a shift between 1970 and 2000 from salmon and tuna landings (in both pounds and dollars) toward shrimp and groundfish, and in the early 2000's sardines. In the late 1970's, the increase in fishery activity was due mainly to shrimp harvesting. As this resource declined, fishing activity shifted toward groundfish. This activity reached its peak in 1982 when 90.7 million pounds of groundfish ($34.4 million ex-vessel) were harvested in Oregon. The total groundfish landings (not including Pacific whiting) declined to 21.1 million pounds ($14.5 million ex-vessel) in 2002 and 25.7 million pounds ($17.5 million ex-vessel) in 2003.

Beginning in 1991, a major onshore processing of Pacific whiting developed in Newport and Astoria. This has helped increase the total landed value of groundfish (including Pacific whiting) to $43.8 million ex-vessel in 1995 (202.4 million pounds). Pacific whiting represented 73 percent of all groundfish landings and 62 percent of total landings in Oregon in 1995. However, Pacific whiting has a very low ex-vessel value per pound and represented only nine percent of the total value of seafood landed in 1995. Since 1995, the value of groundfish landed in Oregon has declined. However, because of 21 million pounds of sardines that were landed in Astoria, total landings (all marine resources) in 2000 reached a record level of 263.9 million pounds. The increase in sardine landings to 55.7 million pounds in 2003 did not offset the decrease in whiting and other groundfish landings. The landings in 2003 in Oregon totaled 225.0 million pounds valued at $82.3 million.

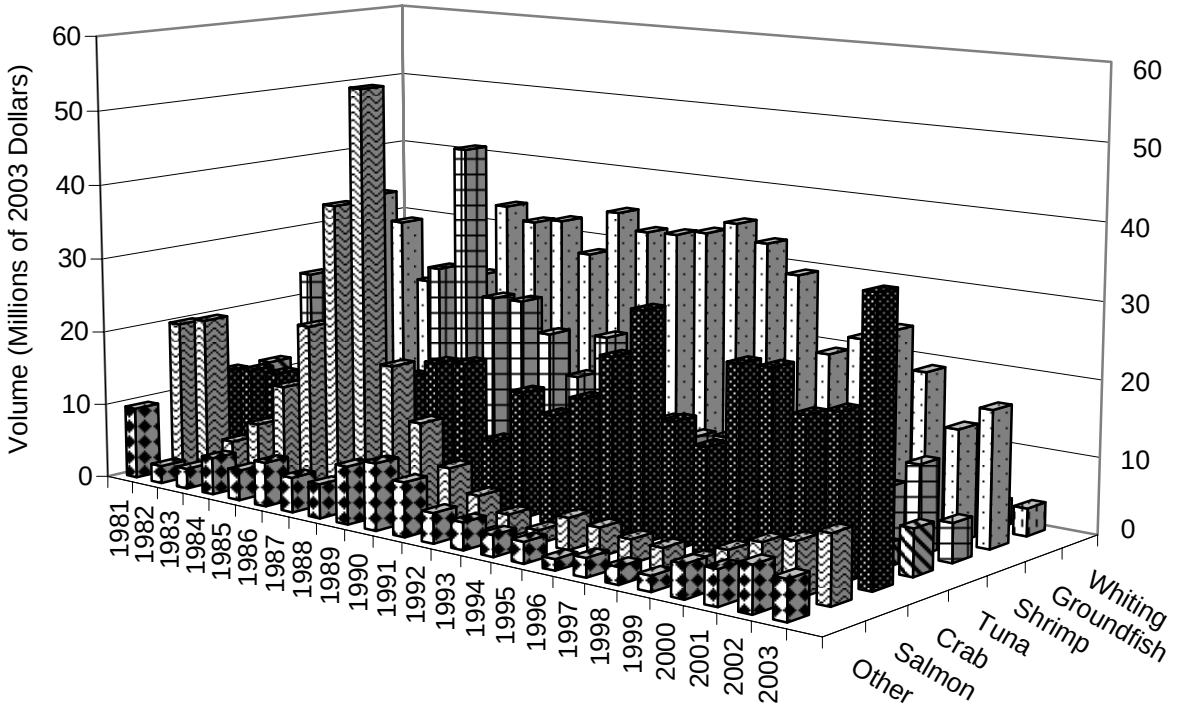
For ports that relied heavily upon salmon and tuna, the drop in fishing activity of these species produced greater negative impacts than for those which had a broader and expanding base of fishing activity. The Astoria area realized the greatest loss between the years 1981 and 1985. The unadjusted dollars in landings actually declined between 1970 and 1985. However, Astoria has increased its share in the early 2000's due to increased sardine landings, crab landings, and whiting production. Coos Bay has experienced growth in total landings up to 1981. However, because of the decrease in salmon and groundfish landings, and because this area did not develop a whiting or sardine processing capability, the share of total landings in this area has declined. The Newport area also expanded its harvesting sector in the early years of expansion. However, the decline in the years 1983 and 1985 is less dramatic. In 1985, the Newport area reported the largest volume and value of landings in Oregon. Shrimp landings increased dramatically in 1986

Figure III.1
Onshore Landed Volume by Species Groups in 1981 to 2003



Source: Oregon Department of Fish and Wildlife Table 4 and 42.

Figure III.2
Onshore Landed Value by Species Groups in 1981 to 2003



Notes: 1. Values in 2003 dollars adjusted using the GDP implicit price deflator developed by U.S. Bureau of Economic Analysis.
Source: Oregon Department of Fish and Wildlife Table 4 and 42.

Table III.1
Oregon Onshore Landed Volume by Species Groups in 1970 to 2003

Year	Salmon	Crab	Shrimp	Tuna	Groundfish	Whiting	Other	Total
1970	19,628	14,929	13,572	26,937	21,392	--	1,200	97,659
1971	17,268	14,876	9,075	13,092	22,040	--	1,036	77,387
1972	12,189	6,762	20,731	29,234	22,801	--	1,170	92,888
1973	17,385	2,350	24,517	24,425	21,944	--	917	91,538
1974	15,099	3,918	20,314	33,040	22,098	--	1,137	95,605
1975	12,390	4,027	24,084	23,584	21,024	--	937	86,046
1976	16,278	8,134	25,456	17,349	26,930	--	1,313	95,460
1977	10,774	19,902	48,580	9,899	23,366	--	1,835	114,357
1978	8,780	12,502	56,666	18,398	37,056	--	1,385	134,787
1979	11,129	15,634	29,587	8,821	64,430	--	2,267	131,868
1980	7,243	18,652	30,152	3,506	63,661	--	1,293	124,507
1981	7,041	6,984	25,924	7,727	82,502	--	18,047	148,224
1982	8,638	7,036	18,462	1,914	90,690	--	2,944	129,683
1983	2,673	5,368	6,547	3,411	78,152	--	4,211	100,361
1984	3,597	5,014	4,844	1,624	62,180	--	6,905	84,163
1985	6,577	7,518	14,855	1,525	63,872	--	5,258	99,606
1986	13,797	4,661	33,884	2,461	54,884	--	4,136	113,822
1987	15,093	5,991	44,589	2,288	67,374	--	3,380	138,716
1988	17,789	9,417	41,846	3,967	70,851	--	4,531	148,402
1989	11,724	11,676	49,129	1,080	81,232	--	10,784	165,624
1990	5,412	9,510	31,883	2,079	73,298	5,058	11,832	139,072
1991	5,344	4,924	21,711	1,259	80,843	29,109	6,843	150,033
1992	2,364	11,908	48,033	3,896	75,206	107,939	7,643	256,989
1993	1,848	10,456	26,923	4,754	81,297	78,970	6,166	210,415
1994	1,285	10,638	16,386	4,698	64,261	143,563	4,900	245,731
1995	2,862	11,954	12,106	5,034	55,037	147,355	4,348	238,695
1996	2,842	19,302	15,727	8,948	56,981	155,588	3,128	262,516
1997	2,245	7,777	19,560	9,168	52,691	162,782	6,738	260,960
1998	1,978	7,410	6,096	10,603	41,800	157,895	4,717	230,499
1999	1,560	12,347	20,451	4,553	44,112	160,965	5,532	249,520
2000	3,142	11,181	25,462	8,757	39,307	151,461	24,559	263,869
2001	5,266	9,690	28,482	8,957	31,543	117,673	32,163	233,773
2002	6,116	12,441	41,541	4,353	21,109	71,220	53,347	210,127
2003	6,657	23,483	20,546	9,126	25,743	80,648	58,759	224,962

Notes:
1. Landings are reported in thousands of round pounds.
2. Salmon includes landings of steelhead, which have come exclusively from the treaty Indian fisheries since 1975.
3. Crab includes only Dungeness crab; shrimp only pink shrimp; and tuna only albacore tuna. Tuna includes landings of albacore, yellowfin and skipjack tuna for 1970 to 1979. Essentially all tuna landings from 1980 on are albacore.
4. Groundfish includes landings of cods, rockfish (snapper), sablefish, soles, flounders, halibut (until 1983), and Pacific whiting (until 1990). Pacific whiting (also known as hake) did not emerge as a major fishery species until after 1990.
5. Other in the most recent year includes landings (thousands of round pounds) of sardines (55,683), sea urchins (144), halibut (341), clams (208), sturgeon (178), crayfish (64), shad (168), smelt (31), squid (27), and other species (1,915). Shellfish volume excludes private lands harvests.

Source: Oregon Department of Fish and Wildlife Table 4 and 42.

Table III.2
Oregon Onshore Landed Value by Species Groups in 1970 to 2003

	Price	Salmon		Dungeness Crab		Pink Shrimp		Albacore Tuna		Groundfish		Pacific Whiting		Other		Total	
Year	Index	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal	Real	Nominal
1970	25.9	35,302	9,144	14,408	3,732	6,289	1,629	26,731	6,924	6,196	1,605	--	--	788	204	89,713	23,238
1971	27.2	21,125	5,745	15,609	4,245	4,082	1,110	13,340	3,628	6,663	1,812	--	--	757	206	61,576	16,746
1972	28.4	22,598	6,412	10,101	2,866	10,115	2,870	32,199	9,136	7,634	2,166	--	--	733	208	83,380	23,658
1973	30.0	47,231	14,150	4,473	1,340	18,004	5,394	29,033	8,698	8,755	2,623	--	--	761	228	108,257	32,433
1974	32.7	32,232	10,531	8,450	2,761	13,528	4,420	38,475	12,571	9,898	3,234	--	--	603	197	103,186	33,714
1975	35.7	27,563	9,851	9,012	3,221	9,057	3,237	20,985	7,500	8,321	2,974	--	--	677	242	75,615	27,025
1976	37.8	51,198	19,358	13,986	5,288	13,465	5,091	14,972	5,661	11,378	4,302	--	--	1,238	468	106,236	40,168
1977	40.2	38,976	15,672	27,108	10,900	27,854	11,200	6,377	2,564	12,186	4,900	--	--	1,470	591	113,971	45,827
1978	43.0	27,218	11,711	22,309	9,599	34,639	14,904	23,985	10,320	18,654	8,026	--	--	967	416	127,772	54,976
1979	46.6	44,944	20,947	24,947	11,627	24,331	11,340	9,990	4,656	37,345	17,405	--	--	1,972	919	143,529	66,894
1980	50.8	20,717	10,533	24,340	12,375	32,813	16,683	5,401	2,746	22,818	11,601	--	--	1,223	622	107,313	54,560
1981	55.6	19,948	11,095	12,068	6,712	23,451	13,043	12,007	6,678	26,461	14,717	--	--	9,551	5,312	103,485	57,557
1982	59.0	21,039	12,415	12,796	7,551	15,742	9,289	2,145	1,266	34,430	20,317	--	--	2,325	1,372	88,477	52,210
1983	61.3	4,957	3,040	12,958	7,947	7,592	4,656	3,067	1,881	30,923	18,965	--	--	2,705	1,659	62,201	38,148
1984	63.6	8,039	5,116	12,167	7,743	3,376	2,148	1,358	864	23,067	14,679	--	--	4,900	3,119	52,907	33,670
1985	65.6	13,825	9,066	16,216	10,634	7,993	5,242	1,226	804	25,361	16,632	--	--	3,977	2,608	68,599	44,986
1986	67.0	22,675	15,198	9,830	6,589	27,047	18,129	2,050	1,374	25,087	16,815	--	--	5,789	3,880	92,478	61,984
1987	68.9	39,210	26,997	12,130	8,352	43,969	30,274	2,433	1,675	35,171	24,216	--	--	4,583	3,156	137,497	94,670
1988	71.2	54,882	39,076	15,844	11,281	24,086	17,150	4,673	3,327	33,459	23,823	--	--	4,476	3,187	137,421	97,845
1989	73.9	19,295	14,259	18,355	13,564	24,231	17,906	1,201	887	34,123	25,216	--	--	7,560	5,587	104,766	77,420
1990	76.8	12,487	9,585	18,962	14,555	20,361	15,629	2,175	1,670	30,131	23,128	286	220	8,741	6,709	93,144	71,494
1991	79.4	7,342	5,832	9,394	7,462	15,194	12,069	1,228	976	36,275	28,816	1,758	1,397	7,062	5,610	78,253	62,162
1992	81.3	4,538	3,688	16,475	13,388	21,150	17,187	4,884	3,969	32,906	26,740	6,236	5,067	5,198	4,224	91,386	74,263
1993	83.1	2,918	2,426	14,191	11,798	10,719	8,912	4,668	3,881	33,240	27,636	2,741	2,279	4,726	3,929	73,203	60,861
1994	84.9	1,719	1,460	17,034	14,463	11,338	9,626	4,416	3,750	33,880	28,767	5,051	4,289	4,026	3,418	77,464	65,772
1995	86.6	4,126	3,575	23,134	20,045	9,925	8,599	4,328	3,750	35,738	30,965	8,079	7,000	3,894	3,374	89,223	77,308
1996	88.3	3,726	3,289	29,653	26,180	10,604	9,362	8,415	7,430	33,945	29,969	4,697	4,147	2,308	2,038	93,348	82,414
1997	89.8	3,089	2,773	16,307	14,637	8,813	7,911	7,288	6,542	31,180	27,986	7,601	6,823	2,468	2,215	76,747	68,886
1998	90.8	2,855	2,591	13,796	12,520	3,514	3,189	6,876	6,240	21,461	19,477	4,139	3,756	2,220	2,014	54,860	49,787
1999	92.1	2,219	2,043	24,883	22,908	10,396	9,571	4,110	3,784	24,103	22,190	6,428	5,917	2,048	1,886	74,186	68,299
2000	94.1	4,285	4,031	25,098	23,611	10,835	10,192	7,322	6,888	25,790	24,261	6,456	6,073	4,309	4,054	84,095	79,110
2001	96.3	6,075	5,852	19,922	19,192	7,848	7,560	7,845	7,557	21,125	20,350	4,286	4,129	4,581	4,413	71,681	69,053
2002	98.0	7,071	6,931	21,073	20,654	11,570	11,340	2,999	2,939	14,518	14,229	3,285	3,220	5,955	5,837	66,470	65,150
2003	100.0	8,785	8,785	36,292	36,292	5,044	5,044	6,125	6,125	17,469	17,469	3,601	3,601	5,011	5,011	82,327	82,327

Notes:
1. Nominal value is the revenue received by fishermen/harvesters in the landing year. Real value is in thousands of 2003 dollars adjusted using the GDP implicit price deflator developed by U.S. Bureau of Economic Analysis.
2. Other in the most recent year includes (thousands) sardines ($2,856), halibut ($859), sea urchins ($61), sturgeon ($305), clams ($104), crayfish ($97), shad ($39), smelt ($10), squid ($5), and other species ($675). Shellfish value excludes private lands harvest.
3. Notes and sources from volume table concerning species composition also apply to this table.

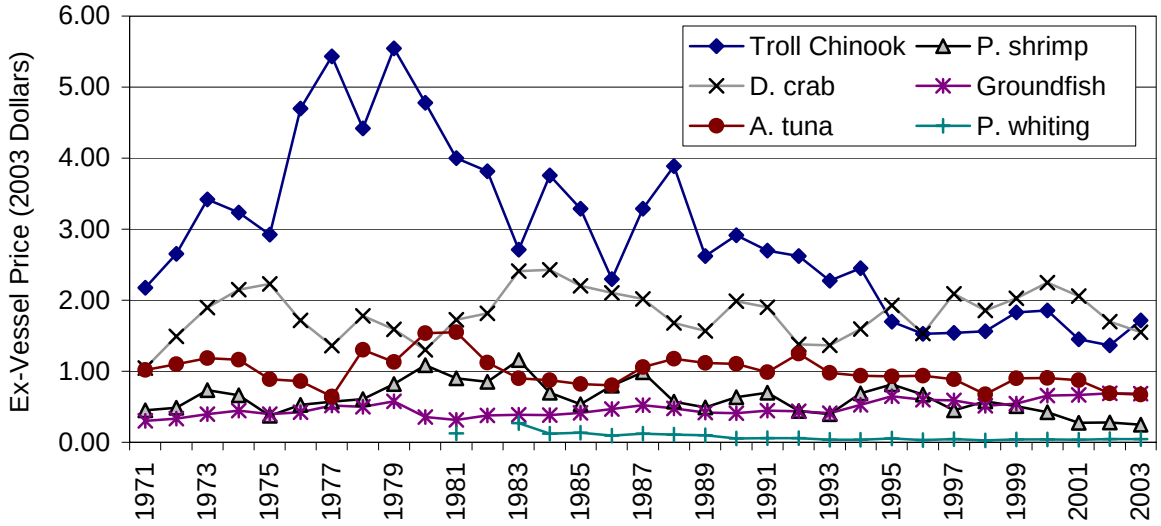
Table III.3
Oregon Annual Ex-Vessel Prices by Selected Species and Species Groups in 1971 to 2003

Species	1971	1973	1975	1977	1979	1981	1983	1985	1987	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Troll Chinook (ocean)	2.17	3.42	2.92	5.43	5.55	4.00	2.71	3.29	3.29	2.62	2.92	2.70	2.62	2.28	2.45	1.70	1.53	1.54	1.56	1.83	1.86	1.45	1.36	1.72
Troll coho (ocean)	1.33	2.61	2.17	3.34	4.87	2.60	1.35	1.99	2.17	1.25	1.81	1.08	1.14	1.18	-	-	-	-	-	0.97	0.98	0.71	0.67	0.74
Net Chinook (below Bonneville Dam)																			1.54	1.53	1.53	1.47	1.29	0.84
Spring																			2.85	3.07	2.95	2.91	3.24	2.75
Fall																			1.09	1.21	1.07	0.65	0.52	0.65
Net Chinook (above Bonneville Dam)																			0.53	0.58	0.68	0.42	0.30	0.26
Spring																			-	-	1.99	1.32	1.21	1.10
Fall																			0.54	0.62	0.67	0.25	0.18	0.19
Net coho (below Bonneville Dam)																			0.72	0.91	0.56	0.28	0.33	0.53
Net steelhead (above Bonneville Dam)																			0.26	0.45	0.30	0.16	0.10	0.08
Dungeness crab	1.05	1.90	2.23	1.36	1.59	1.72	2.41	2.20	2.02	1.57	1.99	1.90	1.38	1.36	1.60	1.93	1.53	2.09	1.86	2.03	2.25	2.06	1.70	1.55
Pink shrimp	0.45	0.73	0.37	0.57	0.82	0.90	1.16	0.54	0.98	0.49	0.64	0.70	0.44	0.40	0.69	0.82	0.67	0.45	0.57	0.51	0.42	0.27	0.28	0.25
Albacore tuna	1.02	1.19	0.89	0.64	1.13	1.55	0.90	0.82	1.06	1.12	1.10	0.98	1.25	0.98	0.94	0.93	0.94	0.89	0.68	0.90	0.91	0.87	0.69	0.67
Groundfish species group	0.30	0.40	0.39	0.52	0.58	0.32	0.39	0.42	0.52	0.42	0.41	0.45	0.44	0.41	0.53	0.65	0.60	0.59	0.51	0.54	0.66	0.67	0.69	0.68
Nearshore live fishery						-	-	-	-	-	-	-	-	-	-	-	-	1.59	2.11	2.92	3.48	3.20	3.24	2.94
Sablefish						0.37	0.36	0.45	0.64	0.60	0.56	0.75	0.80	0.66	1.01	1.53	1.63	1.77	1.31	1.28	1.57	1.45	1.43	1.54
Trawl gear						0.26	0.28	0.34	0.49	0.50	0.47	0.54	0.62	0.51	0.84	1.40	1.35	1.39	1.27	1.07	1.31	1.25	1.09	1.27
Fixed gear						0.51	0.47	0.58	0.78	0.79	0.77	1.11	1.13	0.92	1.17	1.71	2.13	2.38	1.38	1.54	1.87	1.74	1.84	1.93
Widow rockfish						-	-	0.38	0.46	0.35	0.34	0.34	0.32	0.32	0.37	0.38	0.34	0.33	0.38	0.41	0.46	0.42	0.42	0.44
Yellowtail rockfish						-	-	0.39	0.47	0.36	0.36	0.38	0.38	0.37	0.40	0.42	0.39	0.40	0.41	0.42	0.47	0.47	0.47	0.47
Thornyhead, longspine						-	-	-	-	-	-	-	-	-	-	1.10	0.92	0.80	0.66	0.77	0.90	0.91	0.86	0.64
Thornyhead, shortspine						-	-	-	-	-	-	-	-	-	-	1.28	1.15	0.93	0.81	0.97	1.08	1.03	1.01	0.79
Thornyhead, mixed						-	-	0.38	0.47	0.50	0.50	0.57	0.53	0.53	0.83	-	-	-	-	-	-	-	-	-
Pacific Ocean perch						0.29	0.35	0.37	0.46	0.34	0.34	0.37	0.34	0.33	0.32	0.34	0.32	0.30	0.36	0.37	0.46	0.43	0.45	0.44
Lingcod						0.40	0.40	0.40	0.55	0.45	0.44	0.41	0.45	0.44	0.47	0.49	0.49	0.52	0.78	0.82	1.18	1.19	1.17	1.07
Arrowtooth flounder						0.16	0.16	0.15	0.21	0.13	0.13	0.14	0.13	0.12	0.11	0.13	0.11	0.11	0.11	0.10	0.13	0.12	0.13	0.12
Dover sole						0.39	0.37	0.38	0.45	0.38	0.36	0.39	0.34	0.33	0.35	0.38	0.36	0.34	0.38	0.35	0.39	0.38	0.37	0.37
English sole						0.52	0.53	0.50	0.59	0.50	0.41	0.42	0.38	0.36	0.37	0.41	0.38	0.35	0.37	0.34	0.38	0.37	0.36	0.34
Petrale sole						0.95	1.13	1.12	1.19	1.13	1.07	1.03	0.98	0.92	0.96	1.11	1.09	1.03	1.04	1.03	1.07	1.02	0.92	1.01
Cod, Pacific						0.38	0.40	0.39	0.47	0.35	0.33	0.38	0.41	0.39	0.40	0.45	0.45	0.44	0.53	0.49	0.64	0.60	0.59	0.60
Whiting, Pacific						0.125	0.271	0.135	0.123	0.101	0.056	0.059	0.058	0.035	0.035	0.055	0.030	0.047	0.026	0.040	0.043	0.036	0.046	0.045
Sardines						-	-	-	-	-	-	-	-	-	-	-	-	-	0.384	0.054	0.058	0.059	0.057	0.053
Halibut, Pacific						1.91	1.77	1.49	2.25	1.91	2.33	2.36	1.41	1.56	2.21	1.99	2.56	2.05	1.50	2.14	2.24	1.97	1.95	2.52
Sturgeon, white						1.87	1.84	2.22	2.42	2.60	2.65	2.47	2.23	1.64	1.56	2.02	1.60	1.20	1.26	1.46	1.66	1.81	1.62	1.72
Sea urchin, red						-	-	-	0.36	0.47	0.67	0.96	0.95	1.05	0.90	0.93	0.59	0.60	0.49	0.61	0.74	0.66	0.44	0.42

Notes:
1. Annual prices are in 2003 dollars. Adjustment used GDP implicit price deflator developed by U.S. Bureau of Economic Analysis.
2. Prices are for onshore landings. There will be differences for the same species, such as Pacific whiting, when delivered offshore.
3. Prices are for round pound equivalents, except for troll Chinook and troll coho prior to 1981 which are based on dressed weight.
4. Prices where landings are less than $500 annually are shown with a dash.
5. Inriver salmon prices include Oregon and Washington side landings.
6. The nearshore live groundfish fishery includes seven indicator species that are typically landed live in Oregon. These include cabezon, lingcod, black and blue rockfish, greenling, and other unspecified rockfish (not uniquely identified on a fish ticket).

Source: Oregon Department of Fish and Wildlife for years prior to 1981. PacFIN November 2004, February 2005, and March 2005 extractions for 1981 onward. PFMC "Review of Ocean Salmon Fisheries" for inriver Chinook and coho.

Figure III.3
Oregon Species Group Annual Ex-Vessel Price Trends in 1971 to 2003



Notes: 1. Prices adjusted to real 2003 dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
2. Ex-vessel price is the amount paid to fishers at the time of fish delivery.
3. Groundfish price calculation does not include Pacific whiting.
4. Prices are annual and species averaged expressed in round weight, except for troll Chinook prior to 1981 which are based on dressed weight, and are for onshore landings only. Average prices for salmon include seasonal and size considerations.

Source: Oregon Department of Fish and Wildlife for years prior to 1981. PacFIN November 2004, February 2005, and March 2005 extractions for 1981 onward.

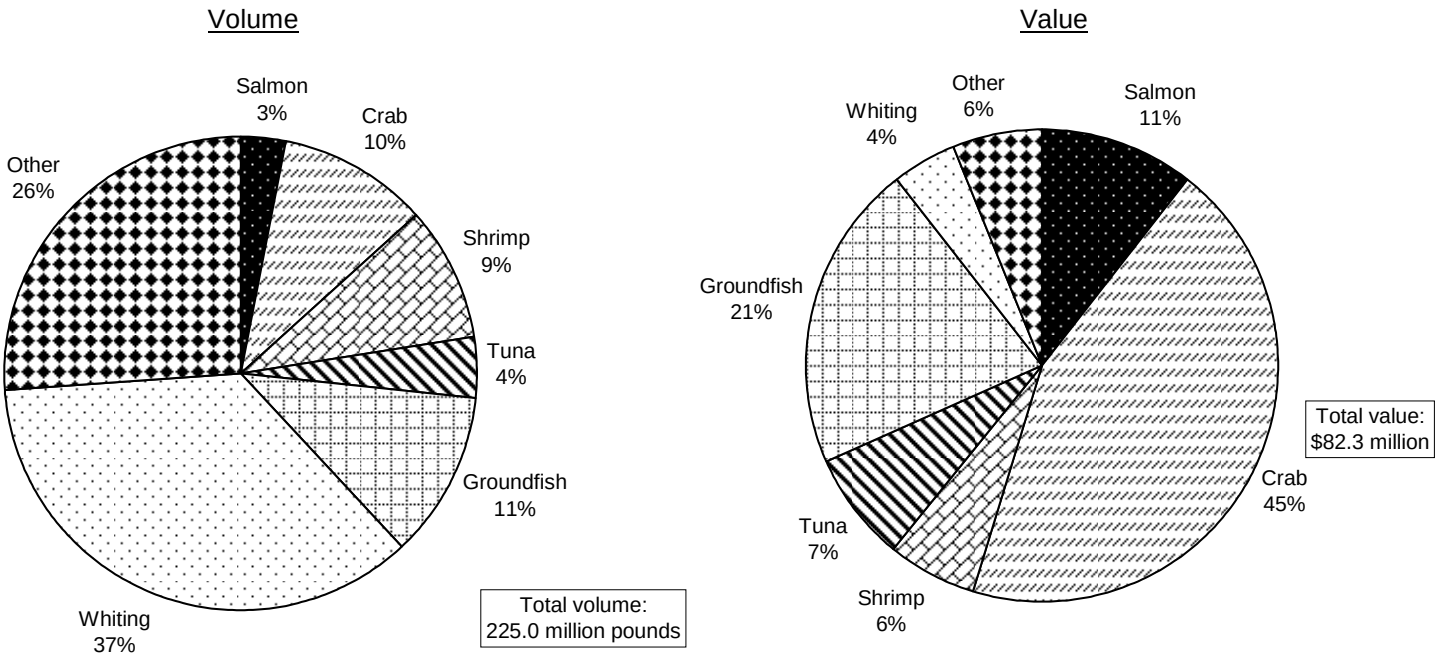
and again in 1987. Most ports saw an increase in landings and in ex-vessel values. Astoria has been the major beneficiary of the increases in recent years landings.

Because the products produced by the commercial fishing industry in Oregon are tied to worldwide markets, prices fluctuate depending on worldwide demand and resource conditions. In the late 1980's, strong prices for all fish products increased the value of the landings. This was especially true for the value of salmon landings. There have been fluctuations in prices of various species since then, but in general, when adjusted for inflation, most prices received by harvesters have decreased for those species that face competition from aquaculture (Figure III.3). Troll caught salmon were less than one fifth of the value (in real terms) per pound received in 1979. Pink shrimp prices increased to over $1.00 per pound in several periods, but have decreased to as low as $0.25 per pound in the early 2000's. There have been some increases in prices in recent years due to a variety of factors. The declining value of the dollar is a major contributor in this trend. The following six species groups are the important contributors to Oregon's commercial fisheries.

b. Commercial Species Harvested in Oregon by Species

Salmon. Salmon are harvested commercially by two major methods: troll (hook and line) and net (gillnet and purse seine). Due to unfavorable ocean conditions, inland habitat deterioration,

Figure III.4
Oregon Onshore Landed Volume and Value by Species Groups in 2003



Source: Oregon Department of Fish and Wildlife Table 4 and 42.

and multiple demands for the rights of the salmon resource, the availability of salmon for harvesting has declined steadily along the Pacific Northwest coast. The salmon harvest in Oregon dropped significantly during the 1990's, and increased somewhat in the early 2000's.

Tuna. Historically, tuna was one of the major fisheries off the Pacific Northwest's coast. Because of the movement of tuna canneries from the continental U.S., this fishery declined in the late 1970's but increased in the 1990's. An increasing amount of tuna currently harvested by trollers is destined for the specialized fresh or frozen market, however most of the albacore landed in coastal ports are shipped to southern California or overseas to be canned.

Groundfish. Most groundfish (this category includes a number of species such as cod, rockfish, soles, and flounders) are harvested by trawlers, which use midwater or bottom trawl nets. The bottom trawlers are often referred to as draggers. With the development of the onshore Pacific whiting fishery, about two thirds of all the volume and one half of all the value of the fish landed in Oregon are from groundfish. Sablefish (or black cod) and halibut are included in the groundfish category. Development of the Pacific whiting fishery during the 1990's increased the total volume landed in Oregon by over 150 million pounds. Offsetting this development in the whiting fishery has been the decline in the other groundfish landings.

Pink Shrimp. Even though shrimp nets and gear are specific to this fishery, many shrimpers also operate in the groundfish and crab fisheries as seasons and profitability dictate. The real prices

that fishermen received for shrimp declined from about $1.16 per pound in 1983 to about $0.25 per pound in 2003.

Dungeness Crab. Harvesting of crab is done with a variety of sizes and vessels from small trollers/crabbers to large trawler/crabbers. Because of limited entry programs in most other fisheries, more effort has gone into crabbing. The landings of Dungeness crab set a historical record both in volume and value in 2003.

Sardines. The sardine resource rebounded off the Oregon coast in he early 2000's. Sardine landings explain much of the overall landings volume increase for the "other" species categories in recent years.

c. Aquaculture and Mariculture

Aquaculture (salmon ranching and oyster farming) is usually not included in commercial fishery statistics because the product is usually not harvested by commercial fishing boats. These products, however, reach the consumer through the traditional seafood processor channels. Therefore, the economic analysis has included them with commercial fishing.

Salmon ranching grew substantially from 1981 when a total of 0.7 million pounds of salmon returned to Oregon. In 1986, the total increased to 3.2 million pounds but decreased to 0.3 million pounds in 1990 (Table III.4). Beginning in 1987, unfavorable natural and political conditions and declining prices decreased salmon ranching in Oregon. By 1991, there were no salmon ranches in Oregon (except a small chum operation in Tillamook Bay).

Until the early 1990's, most oysters were produced in bays and estuaries on State lands (Table III.4). Production from State lands ranges from 19 thousand gallons to 47 thousand gallons. Oyster production in Oregon from State lands peaked at 47,967 gallons of production in 1984 (Table III.5). Oyster production from State lands has increased substantially in the Coos Bay area from 1,576 gallons in 1975 to 6,155 gallons in 1994. By 2003, total production in the Coos Bay area from State lands decreased to 2,606 gallons. The State Department of Agriculture only reports production of oysters from State leased lands. Oyster production also takes place in the Coos Bay area on Port and County leased lands. Estimates of this production are included in Table III.6.

As the water quality has improved, oyster production in the Coos Bay area from port and county lands has increased dramatically. Present annual production from State as well as port and county lands in the Coos Bay area is estimated to include 1,525 leased acres, producing about $1.8 million ex-processor. The production from Tillamook Bay has decreased from a high of 30,916 gallons in 1984 to 12,151 in 2003. Oyster production in Yaquina Bay attained a record of 22,569 gallons in 2000.

d. Distant Water Fleet

Another important component of Oregon's commercial fishing economy is the "distant water fleet." In the late 1970's and 1980's, some of these boats also harvested in "joint venture" with

Table III.4
Oregon Oyster Production and Private Salmon Hatchery Returns in 1981 to 2003

Year		Oyster Production (Gallons)	Salmon (Round Pounds)
1981		33,864	719,648
1982		37,044	1,091,686
1983		30,892	575,349
1984		47,967	618,503
1985		37,417	1,987,967
1986		37,373	3,156,908
1987		40,706	1,190,862
1988	$22.75/gal	39,399	980,257
1989		40,005	423,438
1990	$27.00/gal	25,293	286,758
1991	$32.00/gal	23,180	N/A
1992		22,826	
1993		19,447	
1994	$34.00/gal	21,597	
1995	$34.00/gal	28,388	
1996	$34.00/gal	24,060	
1997		38,110	
1998		21,766	
1999		29,406	
2000	$35.00/gal	41,135	
2001		41,016	
2002		29,801	
2003		34,071	

Source: Oregon Department of Agriculture and Oregon Department of Fish and Wildlife.

foreign processor boats off the Alaskan as well as the Oregon coast. Many of these boats are now harvesting Pacific whiting for onshore processors as well as for domestic "motherships" processing whiting offshore. Also very important is the long-line fleet that harvests halibut and black cod and the gillnet fleet that fishes for salmon in Alaskan waters such as Bristol Bay. (There are also some Oregon fishermen that land salmon and other species off California and Washington and in the west Pacific. These revenues are not included because of lack of data.) The total revenue returned to the coastal communities in Oregon by these distant water fisheries for 2003 is estimated to be about $80 million per year.

e. Seafood Processing and Distribution

Value added, and therefore personal income, is added to seafood products at each step of harvesting and processing. The value-added amounts differ according to each step of harvesting and processing, and also among seafood products. Some fish products are exported fresh or frozen from Oregon with a minimal amount of processing. Such products include fresh salmon, tuna, and whole crab. Most of the fish products shipped out of Oregon include a fair amount of

Table III.5
State of Oregon Leased Lands Oyster Production Volume by Estuary in 1975 to 2003

Year	Tillamook Bay	Netarts Bay	Yaquina Bay	Coos Bay	Winchester Bay	Total
1975	15,926	9	6,245	1,576		23,756
1976	12,559	0	3,938	1,069		17,566
1977	20,678	20	5,725	1,384		27,807
1978	20,166	16	6,214	3,196		29,592
1979	15,665	0	8,104	3,985		27,754
1980	18,912	60	6,240	4,135	0	29,347
1981	22,575	40	6,582	4,667	0	33,864
1982	26,167	0	7,713	3,164	0	37,044
1983	21,330	0	6,423	3,139	0	30,892
1984	30,916	6	7,211	9,834	0	47,967
1985	21,202	40	10,911	5,264	0	37,417
1986	21,327	30	12,353	3,663	0	37,373
1987	23,930	36	12,798	3,942	0	40,706
1988	24,084	41	11,766	3,508	0	39,399
1989	26,052	216	9,622	4,115	0	40,005
1990	13,782	219	6,570	4,722	0	25,293
1991	6,150	2,618	10,350	4,062	0	23,180
1992	6,985	1,510	11,008	3,323	0	22,826
1993	6,231	1,937	6,634	4,645	0	19,447
1994	4,498	1,895	9,049	6,155	0	21,597
1995	4,069	2,950	15,602	5,767	0	28,388
1996	5,494	3,192	11,030	4,344	0	24,060
1997	9,650	2,781	16,372	3,826	5,481	38,110
1998	4,166	3,351	6,770	2,712	4,767	21,766
1999	2,911	5,428	15,494	2,202	3,371	29,406
2000	4,782	4,206	22,569	2,732	6,846	41,135
2001	13,296	2,877	17,488	4,547	2,808	41,016
2002	9,696	1,946	11,914	4,583	1,662	29,801
2003	12,151	919	16,243	2,606	2,152	34,071

Notes: 1. Amounts are in gallons. One bushel of Pacific oysters yields approximately one gallon of oyster meats.

2. The information is for State leased lands only. For the Coos Bay area, production from Port of Coos Bay and Coos County is contributing significant production. From an informal survey that included Port of Coos Bay staff and three local oyster growers (December 1998, January 1999, and again in May of 2005), the estimate is that approximately total 1,585 acres are in oyster production in this area. The total estimated annual production from the Coos Bay area in 2003 is estimated to be $1,788,703 instead of $91,210.

Source: Oregon Department of Agriculture.

Table III.6
Total Oregon Oyster Production in 2003

Estuary	Acres in Production	Gallons Shucked	Bushels Raw	Total Production	Production Value
Tillamook area	2,835	1,409	11,661	13,070	457,450
Yaquina Bay	519	16,208	35	16,243	568,505
Winchester Bay	60	2,152	0	2,152	75,320
Coos Bay area	1,525	8,677	92,813	101,490	1,788,703
Total	4,939	28,446	104,509	132,955	2,889,978

Notes: 1. Shucked meat value is assumed to be $35 per gallon. Value of bushels raw is assumed to be $16. Yaquina Bay production is mainly for local production, so the shucked meat value is used. Tillamook production is processed in Tillamook, so the shucked meat value is used for the locally grown oysters. About 90% of the Coos Bay production is shipped out as bagged bushels, either to the Portland, Oregon; San Francisco, California; or Tillamook area. About 40% of the Coos Bay production that is shipped out goes to the Tillamook area. So the mix of shucked meat and bushels raw shown in the table is used to determine production value for Coos Bay. The Tillamook area receives about another 80,000 raw bushels from the Willapa Bay area to be processed into shucked meat. The processing of Coos Bay and Willapa Bay area oysters is accounted for in the economic impact in the Tillamook area.

2. Each gallon of shucked oysters weighs 8.75 pounds. A bushel of oysters, unshucked, yields about one gallon of shucked oysters.

Source: Oregon Department of Agriculture, Oregon Department of Fish and Wildlife, and Study.

processing such as filleting. Very intensive processing such as smoking and canning is usually carried out by the smaller processors.

Some individual processors, at the peak of the harvest season, will employ up to 200 employees. There are about four large processors on the Oregon Coast and many small to medium firms that provide a variety of processing services.

f. Economic Contribution From Commercial Fisheries

Value added, and therefore personal income, is generated at each step of the harvesting and processing process. The value-added amounts differ according to each step of harvesting and processing, and also among seafood products. Some fish products are exported fresh or frozen from Oregon with a minimal amount of processing. Such products include fresh salmon, tuna, and whole crab. Most of the fish products shipped out of Oregon include a fair amount of processing such as filleting. Primary processing is included in the economic contribution calculations, because the "exported" product leaves the area as a processed product. The Fishery

Economic Assessment Model (FEAM) is used to calculate personal income from harvesting and primary processing in each of the four study areas.[1]

In 2003, the fishing industry in Oregon generated a total of $264 million in terms of total personal income for the Oregon Coast communities and another $29 million to the rest of the State, for a total of $293 million (see Table III.7 and Figure III.5). The Astoria area (Clatsop County) received the bulk of the landings in terms of pounds and value landed. The fishing industry generated a total of $101 million of income to this area. The Newport fishing industry and supporting businesses generated a total of $95 million in total personal income. The other major fishing port, Coos Bay, generated about $37 million. The total income generated by the fishing industry in Oregon in 2003 was the highest total since 1989, when salmon generated $103 million out of a total of $349 million. The shift between 1989 and 2003 has been away from salmon and groundfish and toward Dungeness crab, Pacific whiting, and sardines.

2. Agriculture

a. Background

Few areas can rival the diversity of crops and livestock, which can be grown in the coastal counties. This variety includes vegetable crops, livestock, hay, dairy cattle, cranberries, Christmas trees, holly, horticultural crops, and other forest products, such as mushrooms.

Agriculture was a common goal of pioneers during westward expansion. By 1852, the first dairy cattle arrived in Tillamook. Small dairies dotted the coastal valleys during the early 1900's. After World War II, improved transportation and marketing developments meant the end of many small dairy processing plants.

Agriculture on the Coast is part of a lifestyle and also contributes significantly to diversifying the economy. It also helps provide a buffer to the sometimes cyclical nature of the forest, fishing, and recreational industries.

Today the agricultural industry remains strong in Tillamook County. A recent development from the dairy industry is the growth of the sausage and meat processing industry in Tillamook County. A development is the expansion of the Tillamook Creamery to eastern Oregon and the purchase of Bandon Cheese factory and moving the production of the Bandon brand to the Tillamook site. This expansion out of the coastal region is due to increased markets also as a move to have operations closer to the feed supply.

Many vegetables, berries, and nursery crops grow very well in the mild climate of the coastal region. Cranberries produced on the Oregon Coast in Coos County are a deep red color and are

1. Fishery Economic Assessment Model (FEAM) was originally developed for the West Coast Fisheries Development Foundation by Hans Radtke and William Jensen in 1986. The FEAM model uses IMPLAN generated response coefficients to estimate specific expenditure income impact relationships. These coefficients are generated by disaggregating expenditures for specific year and species groupings. The resulting coefficients from these expenditure categories are then combined according to the overall revenue to expenditure flows of the harvester and processor groups. The IMPLAN response coefficients are based on 1998 data.

Table III.7
Oregon Study Areas Commercial Fishing and Aquaculture Volume, Value, and Economic Contribution in 2003

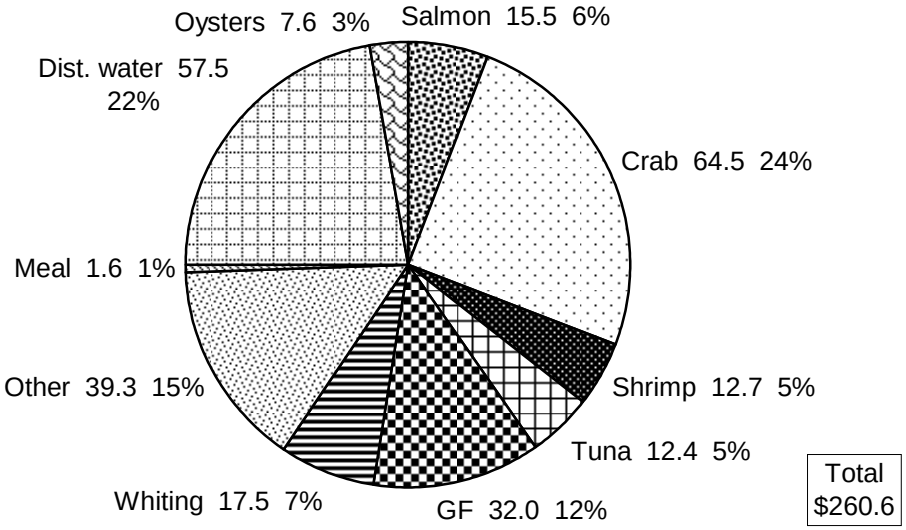
Landings	Clatsop County		Tillamook County		Lincoln County		Coastal Lane County		Coastal Douglas County		Coos County		Curry County		Statewide	
	Pounds (000's)	Value ($000's)	Pounds (000's)	Value ($000's)	Pounds (000's)	Value ($000's)	Pounds (000's)	Value ($000's)	Pounds (000's)	Value ($000's)	Pounds (000's)	Value ($000's)	Pounds (000's)	Value ($000's)	Pounds (000's)	Value ($000's)
Salmon	2,821	2,086	294	457	1,882	3,139	107	181	100	163	1,351	2,456	164	357	6,718	8,839
Crab	7,922	12,335	1,206	1,908	6,596	10,124	95	166	630	974	3,928	6,107	3,553	5,502	23,930	37,117
Shrimp, pink	5,667	1,351	2,477	628	6,067	1,509					5,818	1,416	518	147	20,546	5,051
Tuna	1,769	1,168	244	208	4,996	3,273	131	120	206	177	1,678	1,100	141	121	9,164	6,168
Groundfish	10,293	5,951	236	218	5,813	4,341	146	193	39	77	6,686	4,408	2,721	2,514	25,933	17,702
Pacific whiting	32,008	1,443	0	0	44,187	1,997					4,454	202	0	0	80,648	3,642
Other	56,820	3,712	218	141	590	548	9	24	42	39	900	427	108	74	58,687	4,967
Total Landed Fish	117,300	28,047	4,674	3,561	70,130	24,932	488	685	1,017	1,430	24,815	16,117	7,203	8,715	225,627	83,487
Fish Meal	39,607		0		34,999		0		0		0		0		74,607	
Distant Water		7,904		815		26,874		1,019		1,309		1,428		486		39,835
Landed and Distant	156,907	35,951	4,674	4,375	105,129	51,806	488	1,704	1,017	2,739	24,815	15,217	7,203	9,201	300,234	120,994
Oysters	0	0	114	457	142	569	0	0	19	75	888	1,789	0	0	1,163	2,890

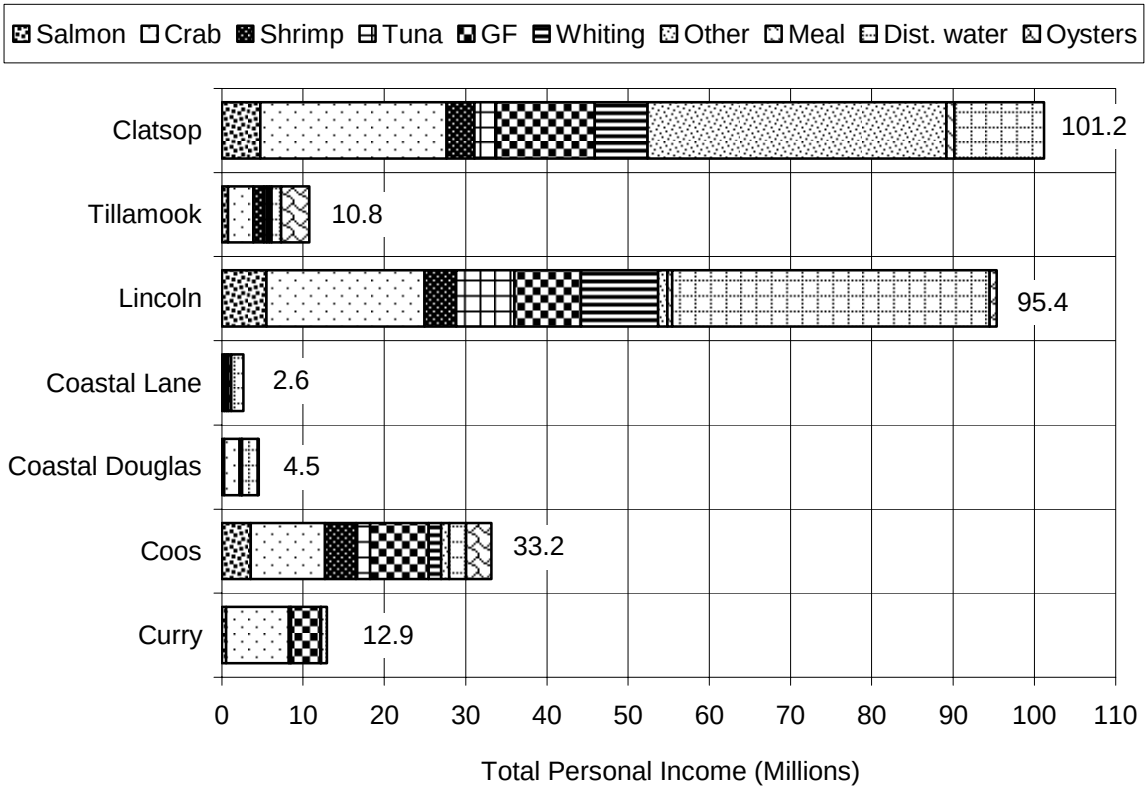
Total Personal Income	Clatsop County			Tillamook County			Lincoln County			Coastal Lane County			Coastal Douglas County			Coos County			Curry County			Statewide		
	Price	Income Per Round Pound	Income ($000's)	Price	Income Per Round Pound	Income ($000's)	Price	Income Per Round Pound	Income ($000's)	Price	Income Per Round Pound	Income ($000's)	Price	Income Per Round Pound	Income ($000's)	Price	Income Per Round Pound	Income ($000's)	Price	Income Per Round Pound	Income ($000's)	Price	Income Per Round Pound	Income ($000's)
Salmon	0.74	1.67	4,703	1.55	2.55	749	1.67	2.91	5,468	1.69	2.93	315	1.62	2.88	289	1.82	2.61	3,528	2.18	3.02	494	1.32	2.44	16,392
Crab	1.56	2.90	22,942	1.58	2.56	3,087	1.53	2.95	19,461	1.76	3.10	293	1.55	2.98	1,877	1.55	2.33	9,163	1.55	2.17	7,714	1.55	2.88	69,038
Shrimp, pink	0.24	0.61	3,438	0.25	0.54	1,336	0.25	0.64	3,890	--	--	0	--	--	0	0.24	0.66	3,834	0.28	0.38	197	0.25	0.64	13,060
Tuna	0.66	1.51	2,679	0.86	1.31	318	0.66	1.44	7,180	0.92	1.39	182	0.86	1.02	210	0.66	1.02	1,712	0.86	1.01	142	0.67	1.44	13,159
Groundfish	0.58	1.18	12,154	0.92	1.45	341	0.75	1.42	8,232	1.32	2.46	358	1.99	1.75	68	0.66	1.08	7,224	0.92	1.32	3,591	0.68	1.30	33,777
Pacific whiting	0.05	0.20	6,475	--	--	0	0.05	0.21	9,490	--	--	0	--	--	0	0.05	0.34	1,527	--	--	0	0.05	0.23	18,463
Other	0.07	0.65	36,806	0.65	1.29	280	0.93	1.88	1,107	2.61	0.11	1	0.92	1.07	45	0.48	1.09	984	0.69	0.91	99	0.08	0.68	39,742
Total Landed Fish			89,198			6,110			54,828			1,149			2,489			27,972			12,237			203,631
Fish Meal			966			0			621			0			0			0			0			1,992
Distant Water			11,021			1,173			39,067			1,481			1,913			2,103			709			80,125
Landed and Distant			101,185	Pounds		7,283	Pounds		94,516			2,630	Pounds		4,402	Pounds		33,712			12,947			285,748
Oysters	--		0	(000's)	Sector	3,494	(000's)	Sector	850			0	(000's)	Sector	113	(000's)	Sector	3,105	--		0	2.48		7,561
Growing				114	3.22	368	142	3.22	458				19	3.22	61	888	3.22	2,860						
Processing				1,134	2.76	3,126	142	2.76	392				19	2.76	52	89	2.76	245						

Note:
1. Price and value at ex-vessel level, and in the case of oysters at ex-farm gate level. The Oregon Department of Agriculture reports the oyster value at the ex-processor level ($35 per processed gallon; $16 per bushel). The per pound income estimates for oysters are at the shucked meat level.
2. Netarts Bay oyster production (919 bushels) is included in the Tillamook area.
3. Economic contribution measured by total personal income generated from these marine resources and includes direct income as well as indirect and induced income. This means economic contribution includes the "multiplier effect."
4. Per bushel economic impacts are estimated to be $28.18 from growing and $24.12 for primary processing. The economic impact will vary according to the estimates of percentage that is produced and processed in an area, e.g. the Tillamook area receives oysters from the Coos Bay (estimated 40% of the 90% unshucked production) and Willapa Bay (estimated 80,000 bushels) areas. The Pacific Group reports a total of 150,000 gallons of oysters shucked, presumably in Tillamook. The economic estimates are therefore greater for the Tillamook area than the Coos Bay area.

Source: Study.

Figure III.5
Fishing Industry 2003 Total Personal Income by Species





Notes: 1. Total personal income expressed in millions of dollars.
Source: Study.

used as an additive in the processing of many cranberry products. Over the last several years, special forest products, such as mushrooms, greens, and Christmas ornamentals have received added attention.

In Oregon, the value of agricultural production in 2003 was $3.5 billion (Table III.8). Of this, the five coastal counties in Oregon (Clatsop, Tillamook, Lincoln, Coos, and Curry) produced $183.6 million in sales (Table III.9). According to the Oregon State Agricultural Statistics, Tillamook County had the largest sales of about $90.3 million, followed by Coos County ($50.0 million), and Curry County ($24.8 million) (Figures III.6 to III.15. Lincoln and Clatsop counties had agricultural sales of about $9.7 million and $8.9 million, respectively. The data is from Oregon State University (OSU) Extension Economic Information Office and includes sales of timber from small woodlots.

Table III.8
Oregon Agriculture Production Value (Millions of 2003 Dollars) in 1981 to 2003

Year	Price Index	Grains	Hay & Forage	Seed Crops	Field Crops	Fruits & Nuts	Berry Crops	Veget-ables	Specialty Products	Other	Total Crops	Livestock & Products	State Total
1981	55.6	548	99	191	291	177	61	169	360	154	2,050	1,117	3,167
1982	59.0	480	119	175	247	168	77	104	328	155	1,853	1,125	2,978
1983	61.3	453	123	156	265	137	82	154	361	137	1,868	969	2,837
1984	63.6	440	123	150	275	134	65	155	394	141	1,876	1,008	2,884
1985	65.6	356	128	183	246	181	73	143	393	137	1,840	959	2,799
1986	67.0	273	112	225	250	160	103	190	465	130	1,910	1,002	2,911
1987	68.9	249	105	266	243	180	98	174	520	124	1,959	985	2,944
1988	71.2	351	109	327	272	202	94	173	635	137	2,300	984	3,284
1989	73.9	319	129	293	301	156	85	192	781	153	2,409	1,035	3,444
1990	76.8	229	134	282	289	181	90	181	777	146	2,310	1,060	3,370
1991	79.4	232	129	257	231	197	97	198	728	139	2,208	1,004	3,212
1992	81.3	243	107	229	272	203	101	211	925	149	2,441	976	3,417
1993	83.1	264	139	245	275	167	84	241	1,092	148	2,653	938	3,591
1994	84.9	297	134	261	287	170	112	228	1,011	137	2,638	907	3,545
1995	86.6	371	157	276	327	183	93	224	1,019	137	2,785	807	3,592
1996	88.3	330	169	358	283	187	107	220	979	164	2,798	790	3,588
1997	89.8	270	201	378	286	260	93	269	948	145	2,849	865	3,715
1998	90.8	196	184	365	232	209	91	276	892	173	2,617	842	3,459
1999	92.1	130	180	391	234	227	97	217	961	196	2,632	886	3,518
2000	94.1	174	179	352	223	182	86	257	976	219	2,647	924	3,572
2001	96.3	145	198	332	192	182	75	201	967	193	2,486	970	3,456
2002	98.0	156	207	283	169	184	81	151	958	244	2,433	904	3,337
2003	100.0	158	204	288	151	203	91	183	1,009	216	2,501	980	3,481

Notes: 1. Values adjusted to 2003 dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
2. Specialty products include forest products, Christmas trees, floriculture, nursery products, greenhouse products, other horticultural products, and mushrooms.

Source: OSU Extension Service (2006).

Table III.9
Oregon Study Areas Gross Farm Sales in 1976 to 2003

	Price	Clatsop County			Tillamook County			Lincoln County			Coos County			Curry County		
Year	Index	Crops	Livestock	Total	Crops	Livestock	Total	Crops	Livestock	Total	Crops	Livestock	Total	Crops	Livestock	Total
1976	37.8	1,645	6,414	8,059	1,640	59,341	60,981	3,269	3,602	6,871	9,564	34,078	43,642	5,152	7,223	12,375
1977	40.2	1,952	7,394	9,346	1,870	62,354	64,224	3,987	3,181	7,167	11,149	29,120	40,269	5,442	6,717	12,159
1978	43.0	3,619	8,123	11,742	4,042	66,573	70,614	5,399	4,035	9,434	14,010	33,721	47,731	6,143	7,189	13,331
1979	46.6	4,399	10,788	15,187	4,390	75,367	79,757	5,686	4,257	9,943	14,320	37,491	51,810	6,589	7,834	14,423
1980	50.8	4,144	9,805	13,949	3,593	75,347	78,941	4,715	3,295	8,009	13,554	32,658	46,212	5,912	6,188	12,100
1981	55.6	2,059	9,536	11,595	2,273	76,122	78,395	3,387	3,186	6,573	15,666	32,892	48,557	6,077	6,250	12,327
1982	59.0	1,893	9,187	11,080	1,569	78,796	80,365	4,042	2,920	6,962	11,576	31,566	43,142	6,579	5,701	12,279
1983	61.3	2,728	8,663	11,391	1,883	77,549	79,432	4,789	2,604	7,393	10,481	27,600	38,081	5,889	4,709	10,598
1984	63.6	4,155	8,625	12,780	2,322	72,331	74,653	4,959	2,896	7,855	11,259	27,631	38,889	6,025	5,255	11,279
1985	65.6	3,995	9,226	13,221	3,031	78,178	81,210	5,314	2,905	8,219	14,140	24,804	38,944	8,291	4,823	13,114
1986	67.0	5,774	10,982	16,756	5,119	77,312	82,431	6,332	2,744	9,076	20,838	25,895	46,733	7,803	4,747	12,550
1987	68.9	7,653	10,633	18,286	4,652	85,875	90,527	8,370	2,757	11,127	19,186	22,592	41,778	9,648	4,594	14,242
1988	71.2	9,654	11,253	20,907	4,371	79,764	84,135	10,963	2,244	13,208	26,453	21,660	48,113	9,527	4,496	14,022
1989	73.9	9,048	9,805	18,853	5,742	82,821	88,562	16,619	2,352	18,971	42,596	21,451	64,048	12,638	4,696	17,333
1990	76.8	5,543	10,489	16,032	3,141	89,813	92,954	14,324	2,684	17,008	37,621	22,166	59,787	12,420	4,208	16,628
1991	79.4	7,716	9,015	16,730	4,578	82,420	86,998	11,327	2,578	13,905	31,553	20,931	52,484	13,752	4,079	17,830
1992	81.3	7,727	8,303	16,030	6,448	86,793	93,241	18,758	2,678	21,435	48,747	21,739	70,486	23,434	4,098	27,532
1993	83.1	15,174	8,181	23,356	7,936	84,933	92,869	23,320	2,698	26,017	47,760	20,545	68,305	22,023	3,791	25,814
1994	84.9	12,259	7,539	19,798	7,739	85,967	93,707	18,884	2,406	21,290	48,453	21,908	70,361	22,542	4,817	27,360
1995	86.6	14,631	6,566	21,197	10,123	82,147	92,269	25,196	2,012	27,207	42,425	20,369	62,794	19,558	4,330	23,888
1996	88.3	13,618	6,396	20,014	9,527	84,408	93,934	13,261	1,753	15,015	42,422	22,362	64,784	20,165	3,921	24,086
1997	89.8	14,732	6,538	21,270	10,229	84,436	94,665	13,366	2,150	15,516	45,068	23,172	68,241	19,500	4,975	24,475
1998	90.8	4,698	6,805	11,504	4,571	80,276	84,847	9,331	1,802	11,132	27,896	21,988	49,884	13,647	4,160	17,807
1999	92.1	5,191	7,041	12,232	3,251	79,130	82,381	11,686	1,249	12,936	22,168	21,796	43,964	14,314	4,136	18,450
2000	94.1	6,573	6,475	13,047	4,543	87,510	92,053	9,657	1,616	11,273	24,806	14,881	39,687	17,116	4,383	21,498
2001	96.3	2,975	6,195	9,170	1,842	91,065	92,906	8,253	1,613	9,866	23,840	16,720	40,561	16,012	5,253	21,265
2002	98.0	2,802	5,960	8,762	2,812	92,255	95,067	7,726	1,617	9,343	29,454	16,852	46,306	19,454	5,154	24,608
2003	100.0	3,388	5,479	8,867	2,431	87,866	90,297	8,118	1,626	9,744	34,250	15,705	49,955	20,511	4,240	24,751

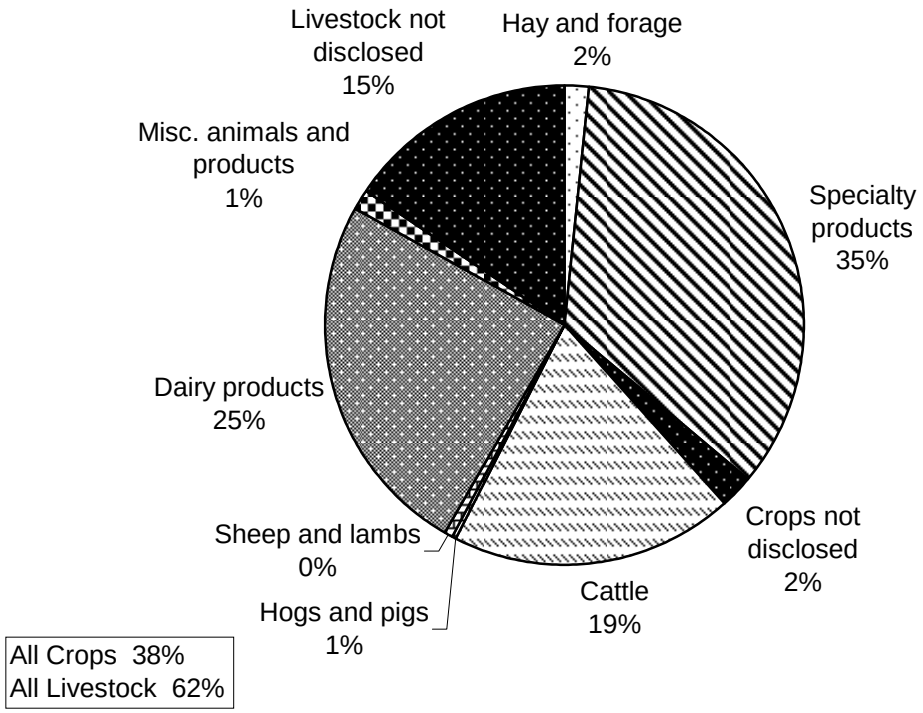
Note: Values in thousands adjusted to 2003 dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
Source: OSU Extension Service (2006).

b. Major Crops and Livestock Products

Some of the major crops and livestock products on the Oregon Coast are described in this section. Data is from OSU Extension Economic Information Office. Other products, such as mushrooms, are added to the agriculture production data.

The farm sales and those products that are processed in the coastal areas are multiplied by the appropriate I/O response coefficients to arrive at total personal income estimates generated by these agricultural activities. Included in these coefficients is primary processing of commodities when these facilities are present in the coastal areas. This is especially important for Tillamook County, where milk production from throughout the Pacific Northwest is processed into cheese and ice cream products. While small woodlands production is often counted in both agricultural and timber reports, it is included in the timber section of this report.

Figure III.6
Clatsop County Agricultural Commodity Sales in 2003



Sales by Commodity in 2003

Hay and forage	153
Specialty products	3,043
Not disclosed	192
All Crops	$3,388
Cattle	1,700
Hogs and pigs	45
Sheep and lambs	32
Dairy products	2,205
Misc. animals and products	128
Not disclosed	1,370
All Livestock	$5,479
All Crops and Livestock	$8,868

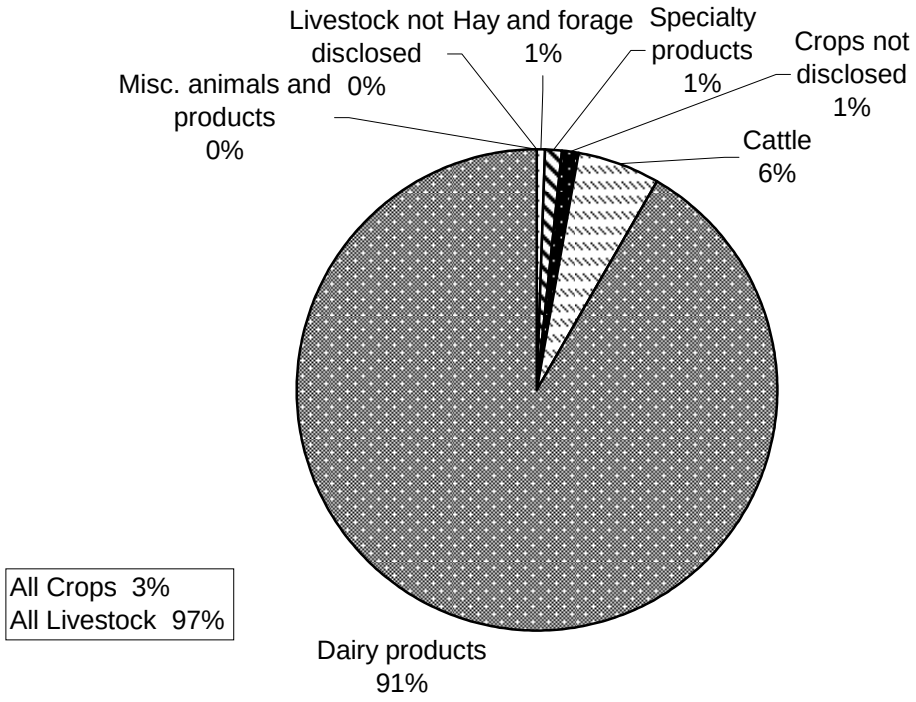
Agricultural Sales by Year

Year	Crops	Livestock	Total
1993	15,174	8,181	23,356
1994	12,259	7,539	19,798
1995	14,631	6,566	21,197
1996	13,618	6,396	20,014
1997	14,732	6,538	21,270
1998	4,698	6,805	11,504
1999	5,191	7,041	12,232
2000	6,573	6,475	13,047
2001	2,975	6,195	9,170
2002	2,802	5,960	8,762
2003	3,388	5,479	8,868

Notes: 1. Values in thousands adjusted to 2003 dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
2. Specialty products include forest products, Christmas trees, floriculture, nursery products, greenhouse products, other horticultural products, and mushrooms.

Source: OSU Extension Service (2006).

Figure III.7
Tillamook County Agricultural Commodity Sales in 2003



Sales by Commodity in 2003	
Hay and forage	460
Specialty products	1,121
Not disclosed	850
All Crops	$2,431
Cattle	5,200
Hogs and pigs	0
Sheep and lambs	0
Dairy products	82,590
Misc. animals and products	35
Not disclosed	41
All Livestock	$87,866
All Crops and Livestock	$90,298

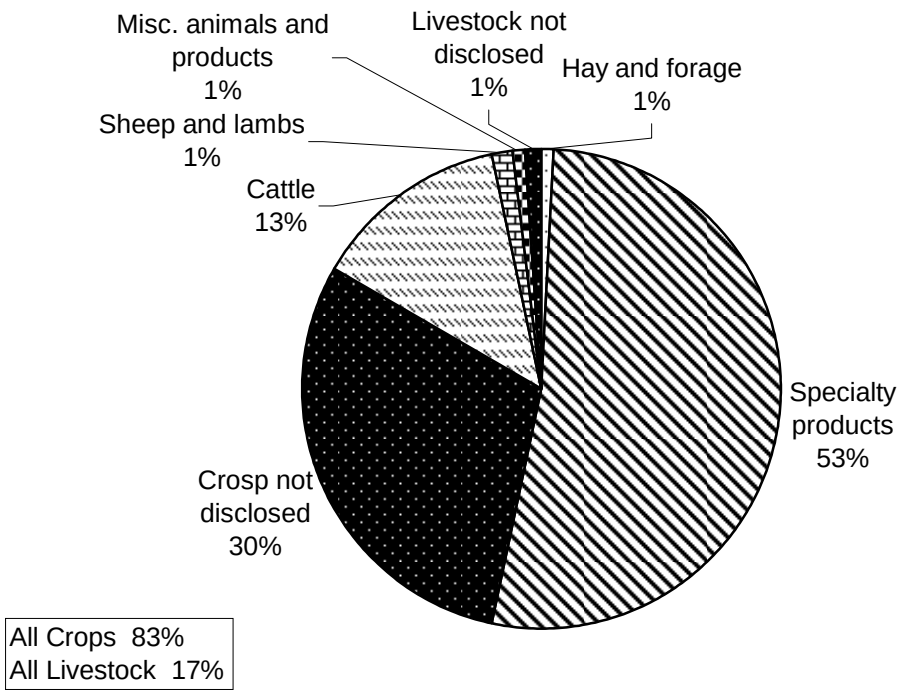
Agricultural Sales by Year

Year	Crops	Livestock	Total
1993	7,936	84,933	92,869
1994	7,739	85,967	93,707
1995	10,123	82,147	92,269
1996	9,527	84,408	93,934
1997	10,229	84,436	94,665
1998	4,571	80,276	84,847
1999	3,251	79,130	82,381
2000	4,543	87,510	92,053
2001	1,842	91,065	92,906
2002	2,812	92,255	95,067
2003	2,431	87,866	90,298

Notes: 1. Values in thousands adjusted to 2003 dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
2. Specialty products include forest products, Christmas trees, floriculture, nursery products, greenhouse products, other horticultural products, and mushrooms.

Source: OSU Extension Service (2006).

Figure III.8
Lincoln County Agricultural Commodity Sales in 2003



Sales by Commodity in 2003

Hay and forage	92
Specialty products	5,100
Not disclosed	2,926
All Crops	$8,118
Cattle	1,300
Hogs and pigs	0
Sheep and lambs	145
Dairy products	0
Misc. animals and products	64
Not disclosed	117
All Livestock	$1,626
All Crops and Livestock	$9,744

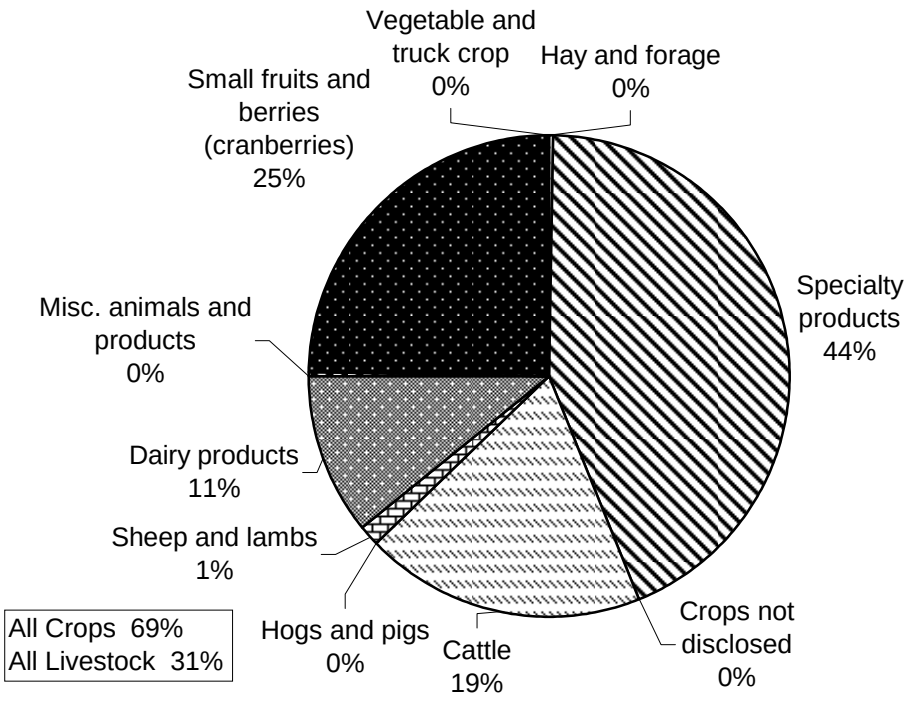
Agricultural Sales by Year

Year	Crops	Livestock	Total
1993	23,320	2,698	26,017
1994	18,884	2,406	21,290
1995	25,196	2,012	27,207
1996	13,261	1,753	15,015
1997	13,366	2,150	15,516
1998	9,331	1,802	11,132
1999	11,686	1,249	12,936
2000	9,657	1,616	11,273
2001	8,253	1,613	9,866
2002	7,726	1,617	9,343
2003	8,118	1,626	9,744

Notes: 1. Values in thousands adjusted to 2003 dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
2. Specialty products include forest products, Christmas trees, floriculture, nursery products, greenhouse products, other horticultural products, and mushrooms.

Source: OSU Extension Service (2006).

Figure III.9
Coos County Agricultural Commodity Sales in 2003



Sales by Commodity in 2003

Hay and forage	186
Small fruits and berries (cranberries)	12,265
Vegetable and truck crop	18
Specialty products	21,700
Not disclosed	81
All Crops	$34,250
Cattle	9,434
Hogs and pigs	28
Sheep and lambs	577
Dairy products	5,439
Misc. animals and products	227
All Livestock	$15,705
All Crops and Livestock	$49,955

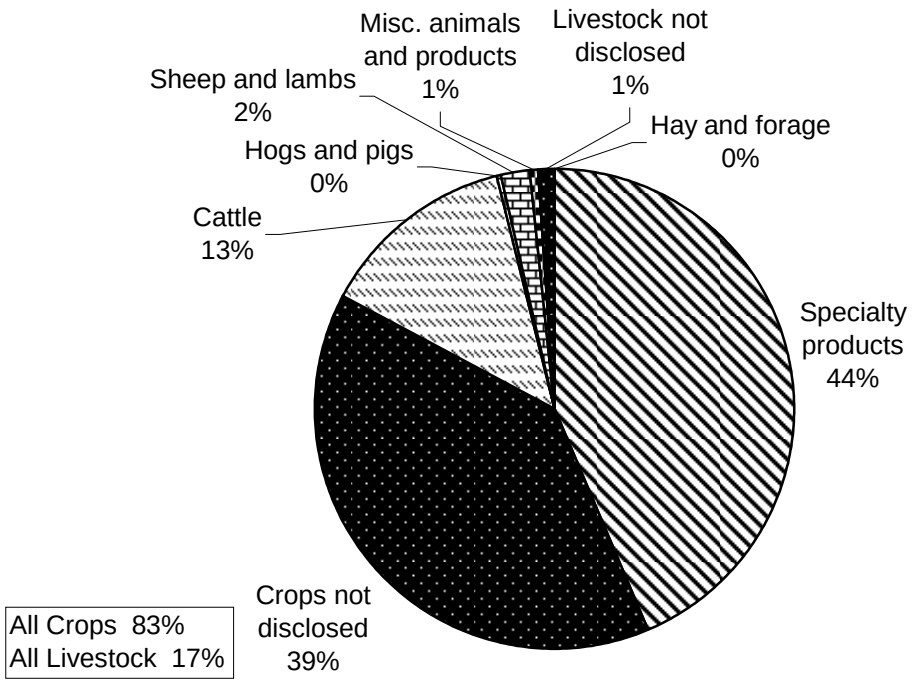
Agricultural Sales by Year

Year	Crops	Livestock	Total
1993	47,760	20,545	68,305
1994	48,453	21,908	70,361
1995	42,425	20,369	62,794
1996	42,422	22,362	64,784
1997	45,068	23,172	68,241
1998	27,896	21,988	49,884
1999	22,168	21,796	43,964
2000	24,806	14,881	39,687
2001	23,840	16,720	40,561
2002	29,454	16,852	46,306
2003	34,250	15,705	49,955

Notes: 1. Values in thousands adjusted to 2003 dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
2. Specialty products include forest products, Christmas trees, floriculture, nursery products, greenhouse products, other horticultural products, and mushrooms.

Source: OSU Extension Service (2006).

Figure III.10
Curry County Agricultural Commodity Sales in 2003



Sales by Commodity in 2003

Hay and forage	14
Specialty products	10,800
Not disclosed	9,697
All Crops	$20,511
Cattle	3,298
Hogs and pigs	19
Sheep and lambs	528
Dairy products	0
Misc. animals and products	125
Not disclosed	270
All Livestock	$4,240
All Crops and Livestock	$24,752

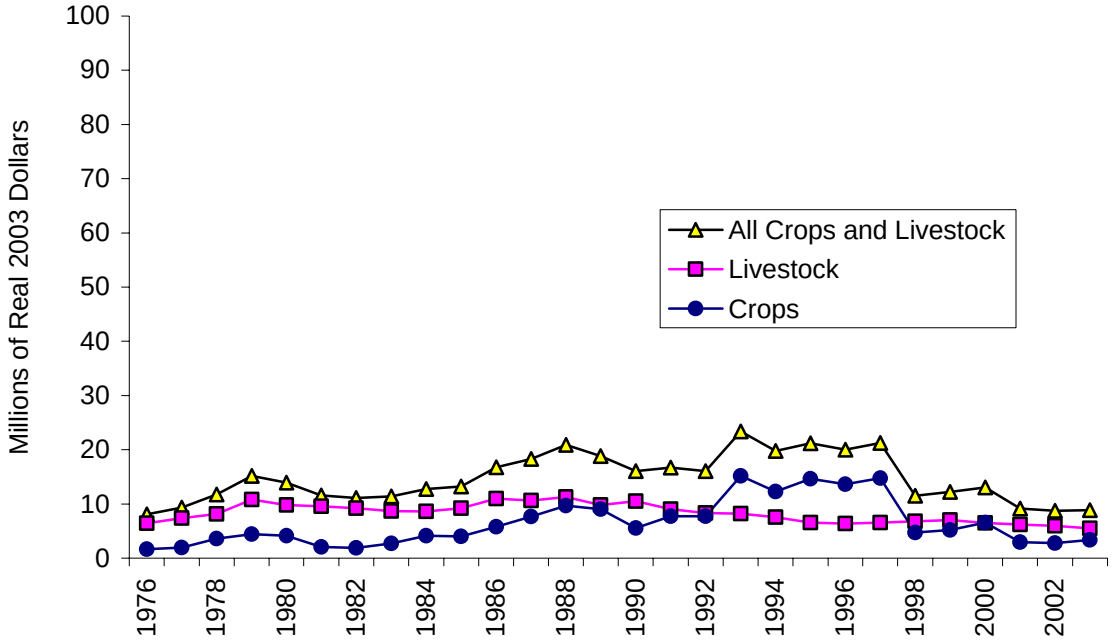
Agricultural Sales by Year

Year	Crops	Livestock	Total
1993	22,023	3,791	25,814
1994	22,542	4,817	27,360
1995	19,558	4,330	23,888
1996	20,165	3,921	24,086
1997	19,500	4,975	24,475
1998	13,647	4,160	17,807
1999	14,314	4,136	18,450
2000	17,116	4,383	21,498
2001	16,012	5,253	21,265
2002	19,454	5,154	24,608
2003	20,511	4,240	24,752

Notes: 1. Values in thousands adjusted to 2003 dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
2. Specialty products include forest products, Christmas trees, floriculture, nursery products, greenhouse products, other horticultural products, and mushrooms.

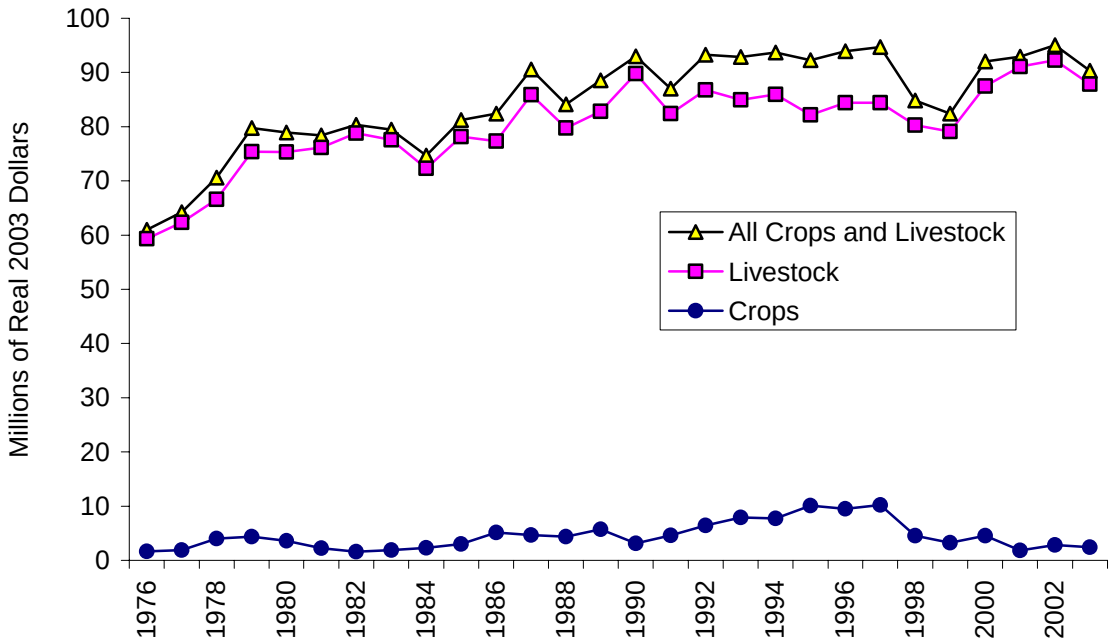
Source: OSU Extension Service (2006).

Figure III.11
Clatsop County Gross Farm Sales in 1976 to 2003



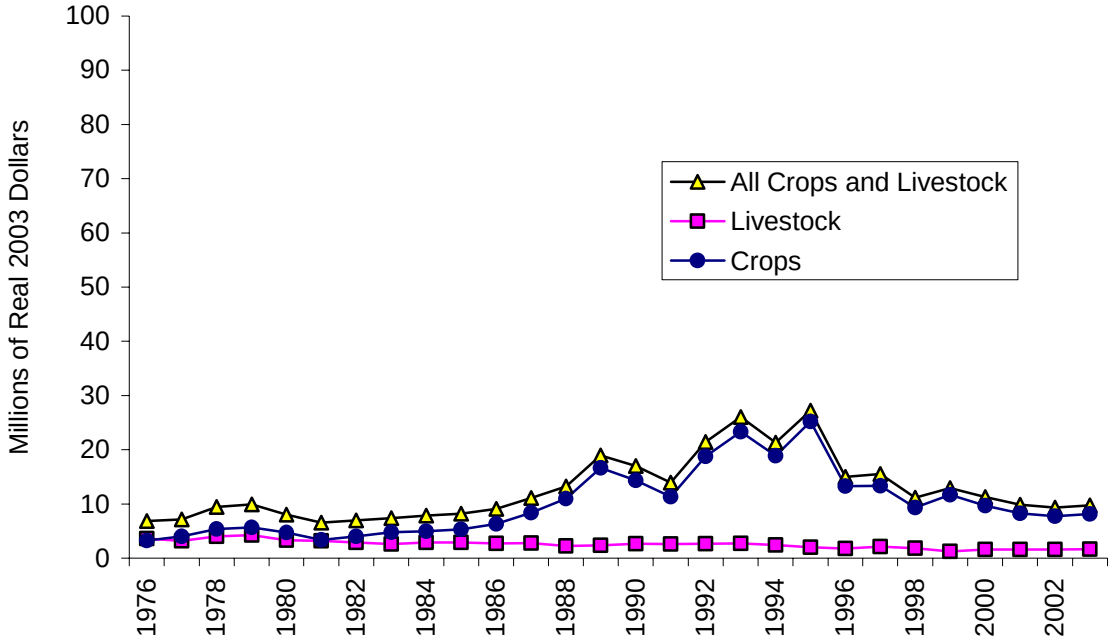
Notes: 1. Values in millions adjusted to 2003 dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
Source: OSU Extension Service (2006).

Figure III.12
Tillamook County Gross Farm Sales in 1976 to 2003



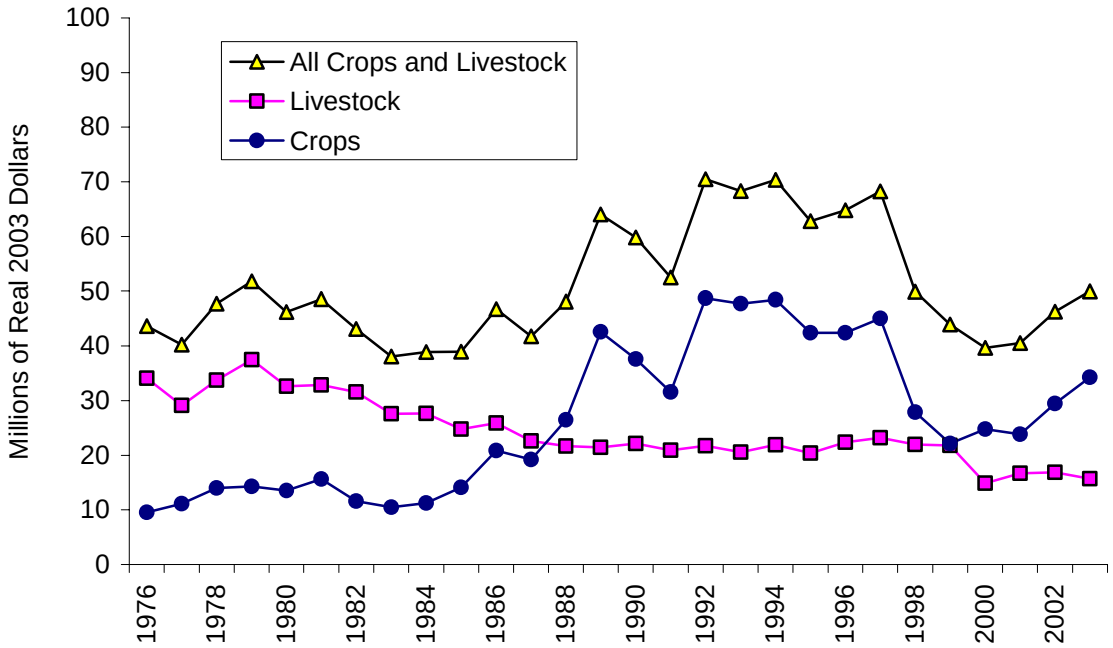
Notes: 1. Values in millions adjusted to 2003 dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
Source: OSU Extension Service (2006).

Figure III.13
Lincoln County Gross Farm Sales in 1976 to 2003



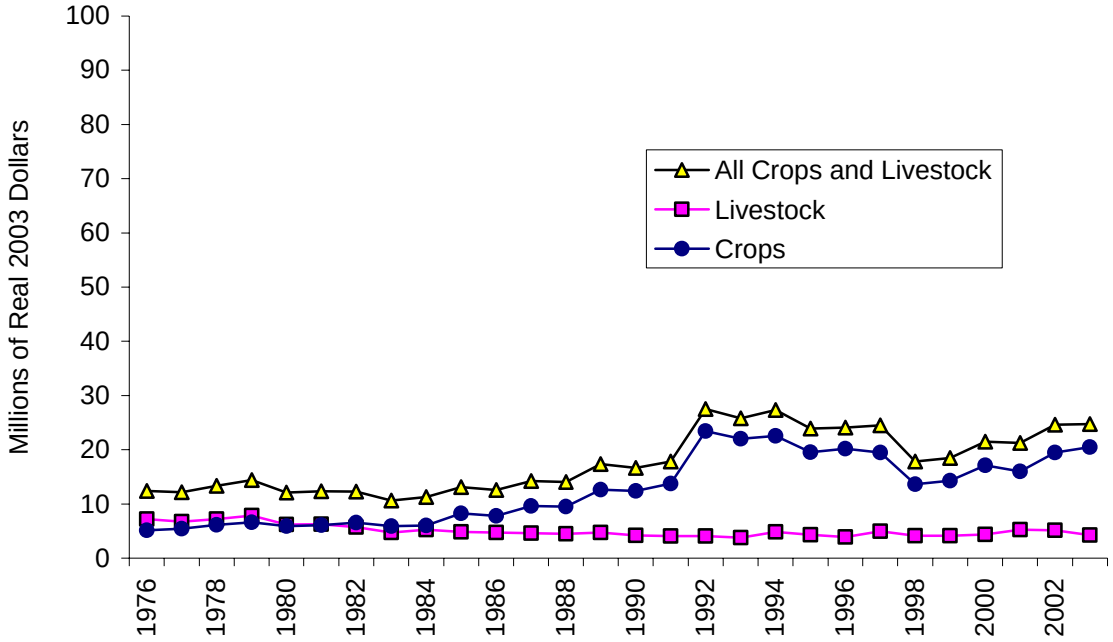
Notes: 1. Values in millions adjusted to 2003 dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
Source: OSU Extension Service (2006).

Figure III.14
Coos County Gross Farm Sales in 1976 to 2003



Notes: 1. Values in millions adjusted to 2003 dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
Source: OSU Extension Service (2006).

Figure III.15
Curry County Gross Farm Sales in 1976 to 2003



Notes: 1. Values in millions adjusted to 2003 dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
Source: OSU Extension Service (2006).

Dairy Products and Livestock. The Tillamook Creamery Association started in 1900 when private cheese makers operating six factories went broke and took them over on a cooperative share basis. Tillamook County produces more milk than any other county in the State. Much of the production goes to the Tillamook Creamery for manufacturing cheese. A sizable portion of their milk is consumed in Portland. Some of the surrounding counties also ship some of their milk production to Tillamook County. The other dairy producing area is the Bandon area in Coos County. Since the closure of the Bandon Cheese factory, much of the milk production is shipped to other areas to be processed into cheese, milk, and ice cream. In addition, in Coos County, many of the dairies switched to the production of organic milk.

In Tillamook County, gross sales of $355.1 million which includes livestock and crops, and the processing of cheese and other dairy products at the Tillamook Cheese factory, generated an estimated $81 million of total personal income in 2003. In Coos County, Oregon, gross sales of $49.7 million from livestock and crops generated an estimated $20 million of total personal income in 2003 (Table III.10). The higher impact for cattle sales and dairy products in the Tillamook area is due to the processing of smoked and dried meat products. The OSU county statistics on agricultural sales were adjusted in Tillamook and also to a minor degree in Coos County to account for meat and dairy processing.

Small Fruits and Berries. The Pacific coast produces seven to eight percent of the nation's cranberry crop. Approximately 90 growers in the Bandon area farm 1,750 acres of cranberry bogs. The productive bogs in the Bandon area may average 100 to 115 100-pound barrels per

Table III.10
Oregon Study Areas Agriculture: Gross Farm Sales and Economic Contribution in 2003

	Clatsop County			Tillamook County			Lincoln County		
	Gross Farm Sales ($000's)	Coefficient	Income ($000's)	Gross Farm or Processor Sales ($000's)	Coefficient	Income ($000's)	Gross Farm Sales ($000's)	Coefficient	Income ($000's)
Livestock									
Cattle & calves	1,700	0.28	476	80,000	0.23	18,400	1,300	0.24	312
Misc. animals	1,574	0.28	441	76	0.26	20	326	0.20	65
Dairy products	2,205	0.28	617	271,000	0.22	59,620			
Crops									
Forest products									
Specialty crops (nurseries and x-mas tree farms)	900	0.82	738	200	0.97	194			
Mushrooms	1,000	0.82	820	500	0.97	485	450	0.43	194
Other forest greenery	3,500	0.82	2,870	2,000	0.97	1,940	1,750	0.43	753
Miscellaneous									
Hay and forage	153	0.35	54	460	0.51	235	92	0.64	59
Vegetables		0.46							
Other	192	0.35	67	850	0.51	434	2,926	0.29	849
Small fruit and berries		0.49			0.51			0.31	
Total	11,224		6,083	355,086		81,327	6,844		2,231

	Coos County			Curry County			Total Coast	
	Gross Farm or Processor Sales ($000's)	Coefficient	Income ($000's)	Gross Farm Sales ($000's)	Coefficient	Income ($000's)	Gross Farm or Processor Sales ($000's)	Income ($000's)
Livestock								
Cattle & calves	9,434	0.26	2,453	3,298	0.26	857	95,732	22,498
Misc. animals	832	0.30	250	942	0.28	264	3,750	1,039
Dairy products	22,000	0.30	6,600				295,205	66,837
Crops								
Forest products								
Specialty crops (nurseries and x-mas tree farms)	3,720	0.84	3,125	2,000	0.86	1,720	6,820	5,777
Mushrooms	300	0.84	252	250	0.86	215	2,500	1,966
Other forest greenery	850	0.84	714	850	0.86	731	8,950	7,008
Miscellaneous								
Hay and forage	186	0.33	61	14	0.40	6	905	414
Vegetables	18	0.33	6				18	6
Other	81	0.33	27	9,697	0.40	3,879	13,746	5,255
Small fruit and berries	12,265	0.51	6,255		0.57		12,265	6,255
Total	49,686		19,742	17,051		7,672	439,891	117,054

Coastal Lane County	1,632
Coastal Douglas County	1,004
Total	119,690

Notes: (see next page)

Notes:
1. Total personal income generated by agriculture includes direct income as well as induced income. This is usually referred to as the "multiplier effect."
2. 2003 Oregon County and State Agricultural Estimates, Revised January 2005, OSU Extension Service. (Mushroom and other forest product estimates are from Jerry Larsen, Oregon Department of Agriculture, Salem, Oregon and from "Critical Aspects of the Production and Marketing of Special Forest Products" by William E. Schlosser and Keith A. Blatner. Prepared for the President's Forest Conference Committee, Portland, Oregon, May 3, 1993. Data by county for mushrooms and other products, such as moss and greenery from forests, is estimated by Radtke using the Schlosser report as a base.
3. Cattle and calves includes both cattle raising and other livestock as well as meat packing or sausage making where applicable, otherwise cattle and calves coefficient for IMPLAN Sector 11 (cattle ranching and farming) and IMPLAN Sector 68 (meat processed from carcasses) in Tillamook County. The ex-processor sales are taken from IMPLAN estimates.
4. Total income IMPLAN coefficient - Sector 13 (animal production). The livestock for Clatsop and Tillamook counties are mostly mink. The livestock products for Coos and Curry counties are mostly lambs and wool.
5. Dairy products includes dairy farm operations and dairy processing - IMPLAN Sector 64 (cheese, milk, ice cream, etc.) in Tillamook and Coos counties. Sales are ex-processing plant in these counties.
6. All timber products are accounted for in the timber industry sector.
7. Total income IMPLAN coefficient - Sector 6 (greenhouse and nursery production) (includes mushrooms and forest greenery).
8. Total income IMPLAN coefficient - Sector 10 (all other crop farming).
9. Total income IMPLAN coefficient - Sector 3 (vegetable and melon farming).
10. Total income IMPLAN coefficient - Sector 5 (fruit farming). (Coos, mostly cranberries, includes the value added of washing etc. for cranberries, which is a 20% markup.)

Source: Study.

acre. Most of the cranberries are washed and sent to Grayland, Washington to be processed. Because coastal cranberries have a "superior color," the majority are frozen and later used to improve the overall color of various cranberry fruit drinks. Other fruits and berries (such as raspberries, blueberries, and strawberries) are marketed fresh or sold through U-pick sales.

In 2003, small fruit and berries brought in $12.3 million of sales to Coos County growers. This amount generated an estimated $6 million in coastal community income in Coos County (Table III.10).

Specialty Crops, Nursery, Greenhouse, and Christmas Trees. The temperate climate on the coast is a major factor in the growth of nursery and greenhouse products. Nurseries and greenhouses in northern Coos produce a variety of plants such as flowering and shade trees, decorative shrubs (rhododendron), cut flowers, cut holly, and other florist greens. Christmas trees are mostly the Douglas fir variety. In 2003, the ex-farm gate value of these crops in Clatsop, Tillamook, Lincoln, Coos, and Curry counties was $6.8 million; the estimated personal income generated by these activities for these counties is $6 million (Table III.10). About half of this is generated in Coos County.

Mushrooms and Other Forest Greenery. The coastal forests grow more products than timber. The gathering of chanterelles and matsutake mushrooms in late autumn for the regional restaurant trade and for export; collection of sword fern, salal, and moss for the floral trade; and

summer collection of cascara bark used in the manufacture of laxatives illustrate the range of non-timber products from coastal forest lands for which markets already exist.

Over the past several years, the special forest products industry has become the subject of interest in the Pacific Northwest (Schlosser and Blatner 1993; Liegel, Pilz and Love 1998). Estimates of mushroom production and resulting personal income generated were made in 1987, 1989 and 1995. For 1989 and 1995, the estimates on mushrooms are based on information by Jerry Larson of the Oregon Department of Agriculture (Larson 1998) and a report prepared by Schlosser and Blatner (1993). These estimates were updated to 2003. The estimates made for the coastal counties should be viewed as preliminary. The special forest products included are:

- Floral greens (salal, evergreen, huckleberry, ferns, moss, etc.)
- Christmas ornamentals (noble fir branches, western red cedar branches, cones, holly, etc.)
- Wild edible mushrooms (chanterelles, matsutake, morels, etc.)

Not included are other products such as edible berries etc. and medicinals such as Pacific yew. Most of the harvesters of these products worked "part time" in this industry. Generally, harvesters move freely between industry segments harvesting Christmas ornamentals in the late fall and early winter, wild edible mushrooms and other edibles in the spring and fall, and floral greens in all but the spring growing season. The total mushroom and other forest greenery product value is estimated to be $11.5 million for Oregon coastal counties. The total personal income generated on the Coast from these products in 2003 is estimated to be $9 million (Table III.10). Clatsop County generated the largest amount ($3.7 million).

Other Products. There are a variety of other products produced on coastal farms. These are vegetables, hogs, sheep (in the southern counties), and mink (in the northern counties). Since 1987, sheep and lamb production and mink production have generally decreased in total output as well as in price per unit.

c. Economic Contribution From Agriculture

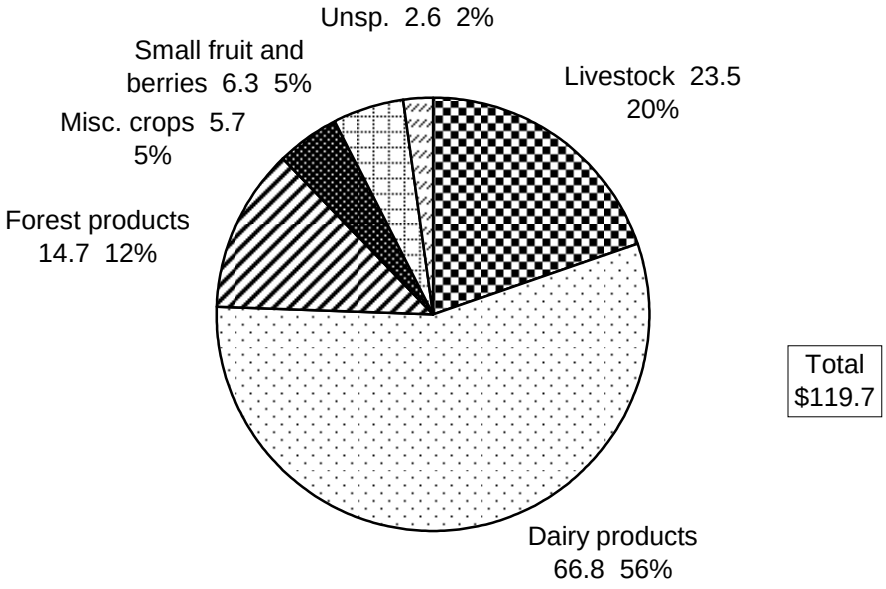
Agriculture production and primary processing in 2003 generated total personal income of $120 million in Oregon coastal communities. Tillamook County, which includes the Tillamook Creamery and several meat product producers, receives a total of $81 million in personal income from the agriculture sector. This is about four times as much as Coos County, where the growing of cranberries is the major agricultural crop (Figure III.16).

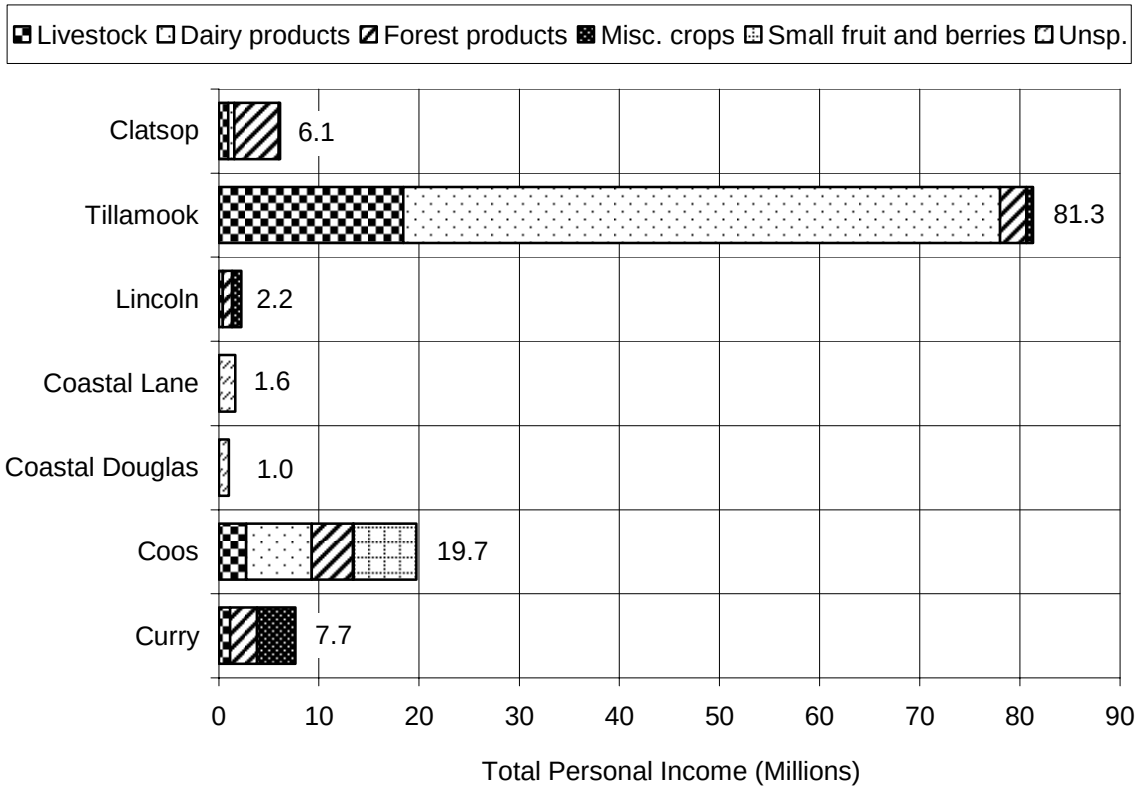
3. Commercial Timber

a. Background

Some of the nation's finest timber grows the coastal areas of the Pacific Northwest. The forests, a mixture of giant Sitka spruce, Douglas fir, hemlock, alder, and cedar, comprise 80 percent of the land area in the coastal counties. These forests depend on an annual rainfall of 60 to 130 inches for their growth.

Figure III.16
Agriculture Industry 2003 Total Personal Income by Commodity





Notes: 1. Total personal income expressed in millions of dollars.
Source: Study.

Lumber production on a commercial scale began on the Oregon Coast in the late 1880's, declined in the 1890's, and was revived in the first decade of the 20th century. In the accessible estuaries of the Oregon Coast, timber in streamside stands was felled directly into coastal rivers and floated to schooners anchored in protected harbors. Many logs were sent to San Francisco for use as harbor pilings and ship piers. During the latter decades of the 19th century, loggers used teams of oxen to haul logs to tidewater on "skid roads." Around 1900, steam power replaced bull teams; "steam donkeys" were used to haul logs great distances. World War I introduced new logging methods and truck transportation which made untouched forest lands accessible. Private timber companies constructed railroads up many sections of coastal valleys to reach timber stands distant from water. Coastal lumber helped fuel the ship building trade during World War I, and loggers for the U.S. Army's Spruce Division felled straight-grained spruce used to build the first generation of warplanes (Wolf 1993). A postwar housing boom kept demand for coastal lumber strong throughout the 1920's. However, the depression of the 1930's dramatically reduced the demand for lumber products. In addition, three disastrous fires in the 1930's and 40's, which ravaged southern Clatsop and one-third of the forested area of Tillamook County containing 8.7 billion board feet (bbf) of merchantable timber, dealt a staggering blow to northern coastal economies.

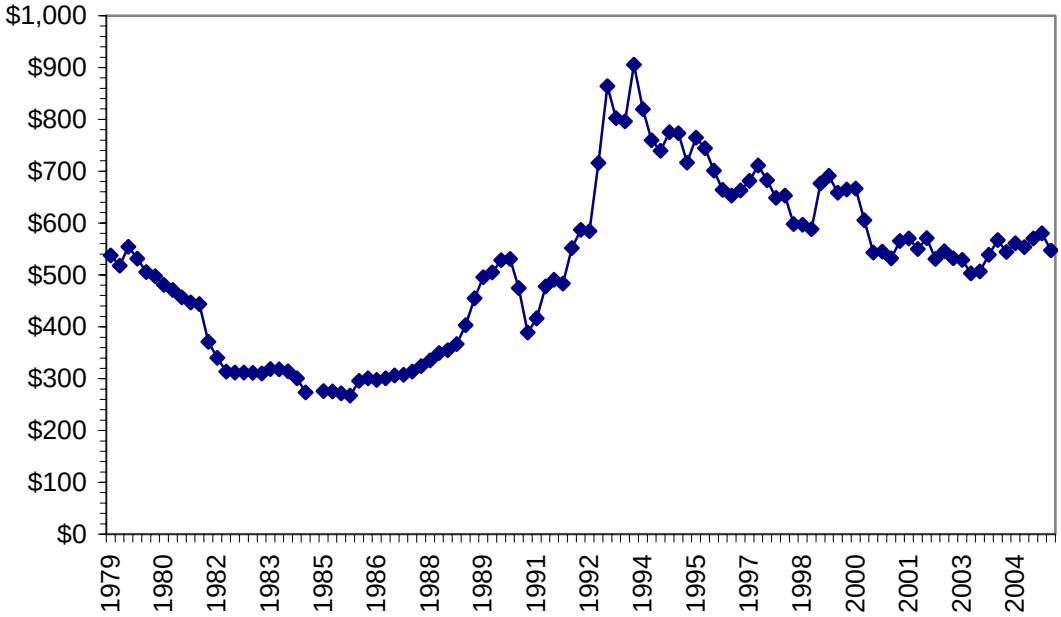
During this time, major timber companies, such as the Weyerhaeuser Company, began to consolidate large tracts of timberland. World War II and postwar prosperity revived demand for construction timber. The use of tractors and chainsaws and a network of logging roads opened remaining forest stands to truck logging.

Over the past 25 years, a series of forces changed the technological requirements for labor in logging and wood processing. Technological change diminished the labor input per unit of output. At the same time, it expanded total output by allowing more complete utilization of raw materials. Larger timber companies took advantage of new technologies, while many high-cost and often the more rural mills closed down because they could not reduce their costs.

Oregon lost some of its comparative advantage in lumber production as southern U.S. plywood production increased due to utilization of smaller dimension timber and lower labor cost. These added supplies decreased prices for timber in Oregon (Figure III.17). Throughout this 25-year period, decline in long-term harvest levels resulted as producers liquidated old-growth stands of timber at a rate in excess of the current growth rate. Added to these factors is a sensitivity of employment and output to cyclical changes in the national economy, particularly to interest rates and housing starts, as experienced in the early 1980's. Based on these factors (increased productivity and no real increase in timber supply), the long-term employment picture of commercial timber on the Pacific Northwest coast can be described as "up and down, but mostly down." The growth of timber harvest from 1849 to 2003 in Oregon is depicted in Figure III.18. It appears that the harvest for Oregon will trend to about four bbf each year.[1] These harvests may increase as industrial lands harvested in the 1960's and 1970's mature to the point they can support another round of harvest.

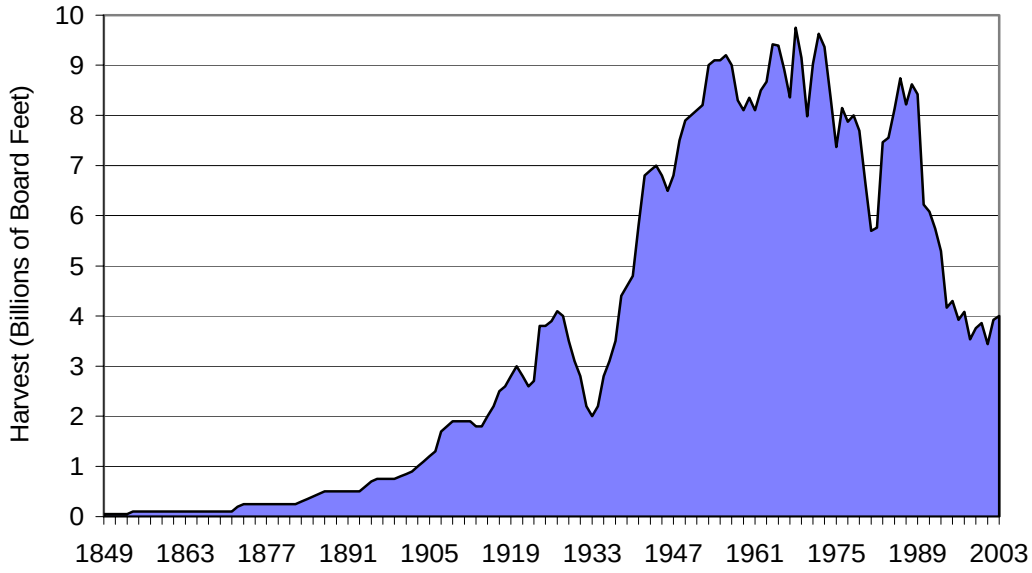
1. These data and the resulting lumber may not include the "improvements" made in recovery from log scale to lumber sold. For example, recovery has increased in Oregon for sawmills from about a factor of 1.7 to about 2.1. Part of this is due to better technology, but it may also be due to the "scale effect" of cutting smaller trees. The overall board feet equivalent is therefore closer to 5.0 billion per year.

Figure III.17
Quarterly Adjusted Softwood Prices 1979 to 2005



Notes: 1. Prices adjusted to 2003 dollars using the Producer Price Index developed by the U.S. Bureau of Labor Statistics.
Source: Lettman (2005).

Figure III.18
Oregon Timber Harvests in 1849 to 2003



Source: Oregon Department of Forestry (2005) and Lettman (1998).

b. Timber Harvests by Coastal Counties

The trend in timber harvests since 1970 for the five coastal counties of Clatsop, Tillamook, Lincoln, Coos, and Curry has been a decrease from a high rate of about 2.5 bbf to about 1.0 bbf in the early 2000's (Appendix D). All of these counties have experienced a steady decline (Figure III.19). The amount of timber removed increased somewhat for most coastal counties in the early 2000's. This increasing trend should hold as the State forest lands and private land forests mature to harvest (Table III.11).

In 2003, a total of 1,087 million board feet (MMBF) was removed from the Oregon coastal counties (Table III.12). National lands (National Forests and BLM managed lands) produced a total of 22 MMBF. Another 802 MMBF were harvested from forest industry lands. The rest came from other private, State, tribal, and other public lands (Table III.12).

As final product and stumpage prices increased, transportation costs have become a smaller part of final manufacturing costs. Mills are willing to expand their timbershed boundaries. This trend has caused a reduction in processing capability on the coast. Most timber is now shipped to the major processing centers of Roseburg, Eugene, or the Portland metropolitan area (Ward et al. 2000). There are small mills on the Coast that have survived these trends. These tend to be specialty mills for hardwood (alder) and cedar products (Ward et al. 2000).

c. Economic Contributions From Commercial Timber

The timber grown, harvested, and processed in the coastal counties generated an estimated $457 million in personal income (Table III.13). The largest amount is generated in Coos and Clatsop counties ($148 million and $106 million, respectively). The largest portion of this income and annual jobs is generated by logging and harvesting (Figure III.20 and III.21).

4. Tourism

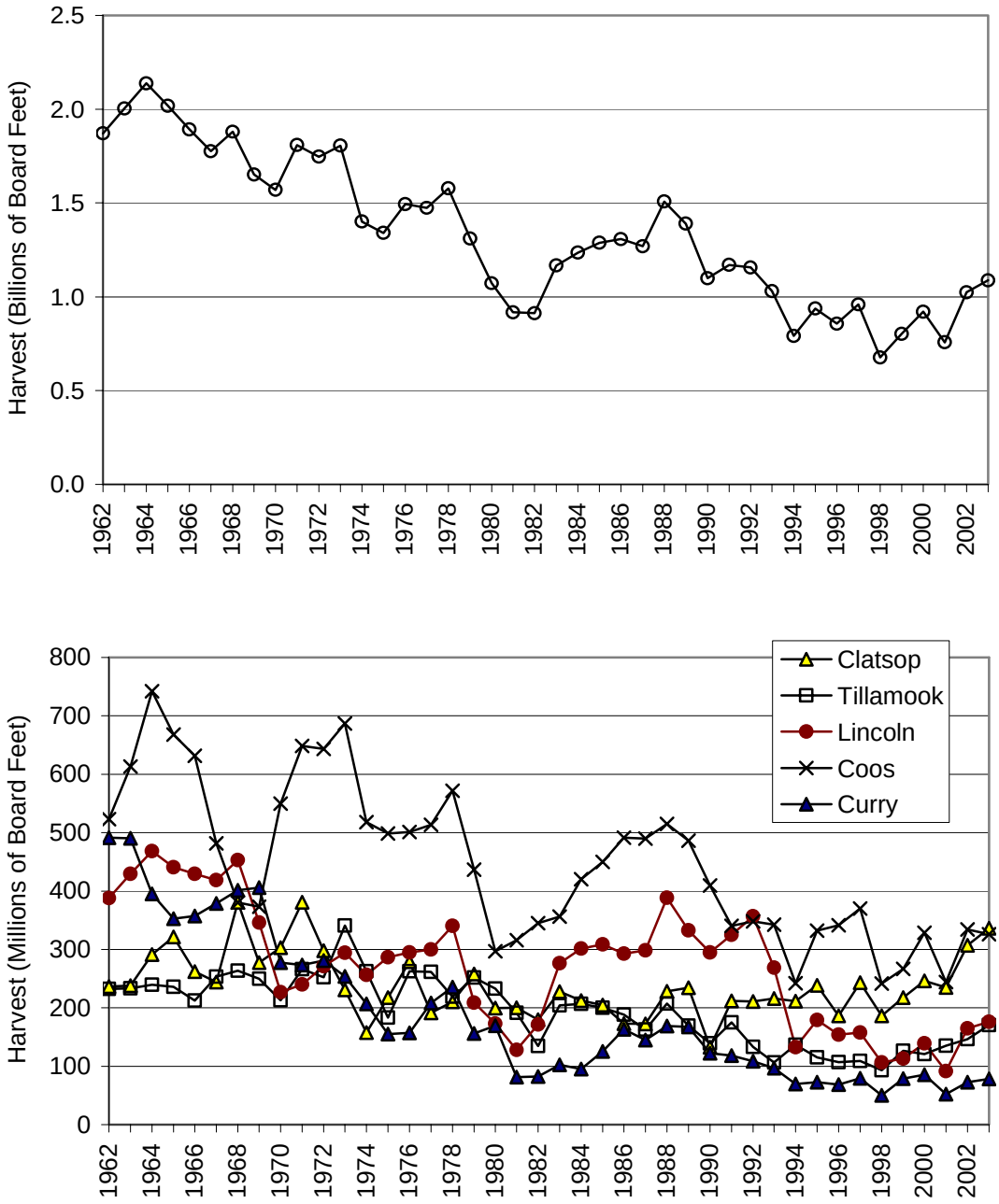
a. Background

The millions of visitors to the State parks and waysides with beach access are a testament to the priceless wilderness and natural beauty to be found along the Oregon Coast. Oregonians, other U.S. residents, and visitors from other countries contribute significantly to the local economy through spending on goods and services such as sleeping accommodations, recreational opportunities, gasoline, and food and beverages.

Tourism represents different things to different people: sightseeing, relaxation, exercise, education, and expansion of horizons. Sometimes these activities are categorized as heritage tourism, eco-tourism, and adventure tourism.[1] From a business perspective, tourism is an economic opportunity. For this study, tourism is defined as the action and activities of people

1. For parts of the Oregon Coast in recent years, this also includes visits to casinos. Traffic counts are one reliable source of visitor estimates. The only area that has significant increase in traffic is Oregon Highway 18. This provides access from the Portland area to the casino in Lincoln City (Appendix E). Other traffic counts are basically flat for recent years.

Figure III.19
Oregon Coastal County Timber Harvests in 1962 to 2003



Source: Oregon Department of Forestry (2005).

Table III.11
Study Areas Estimated Timberland Ownership

County	Ownership by Category: Federal	Other Public	Forest Industry/ Other Private
Clatsop	0.8%	10.6%	88.1%
Tillamook	20.3%	44.8%	35.8%
Lincoln	31.0%	6.7%	63.1%
Coos	23.7%	8.3%	70.3%
Curry	64.8%	1.3%	38.8%
Coast	32.0%	13.1%	57.0%
Oregon	51.9%	3.4%	45.2%

Source: Davis and Radtke (1994).

Table III.12
Coastal Counties Timber Harvest by Owner Class in 2003

	Forest Industry	Other Private	Tribal	State	National Forests	Other Public	Total
	Thousand Board Feet, Scribner Log Scale						
Clatsop	206,987	5,164	0	123,712	0	257	336,120
Tillamook	99,301	2,220	0	65,923	2,970	13	170,427
Lincoln	153,125	11,492	3,616	5,849	1,954	16	176,052
Coos	280,614	20,638	670	13,085	1,322	9,948	326,277
Curry	62,360	10,507	0	0	5,575	4	78,446
Total	802,387	50,021	4,286	208,569	11,821	10,238	1,087,322
	Percent of Timber Harvest from Each Owner Class						
Clatsop	61.6%	1.5%	0.0%	36.8%	0.0%	0.1%	100.0%
Tillamook	58.3%	1.3%	0.0%	38.7%	1.7%	0.0%	100.0%
Lincoln	87.0%	6.5%	2.1%	3.3%	1.1%	0.0%	100.0%
Coos	86.0%	6.3%	0.2%	4.0%	0.4%	3.0%	100.0%
Curry	79.5%	13.4%	0.0%	0.0%	7.1%	0.0%	100.0%
Total	73.8%	4.6%	0.4%	19.2%	1.1%	0.9%	100.0%

Source: Oregon Department of Forestry (2005).

Table III.13
Study Areas Timber Harvest Volume, Employment, and Economic Contribution in 2003

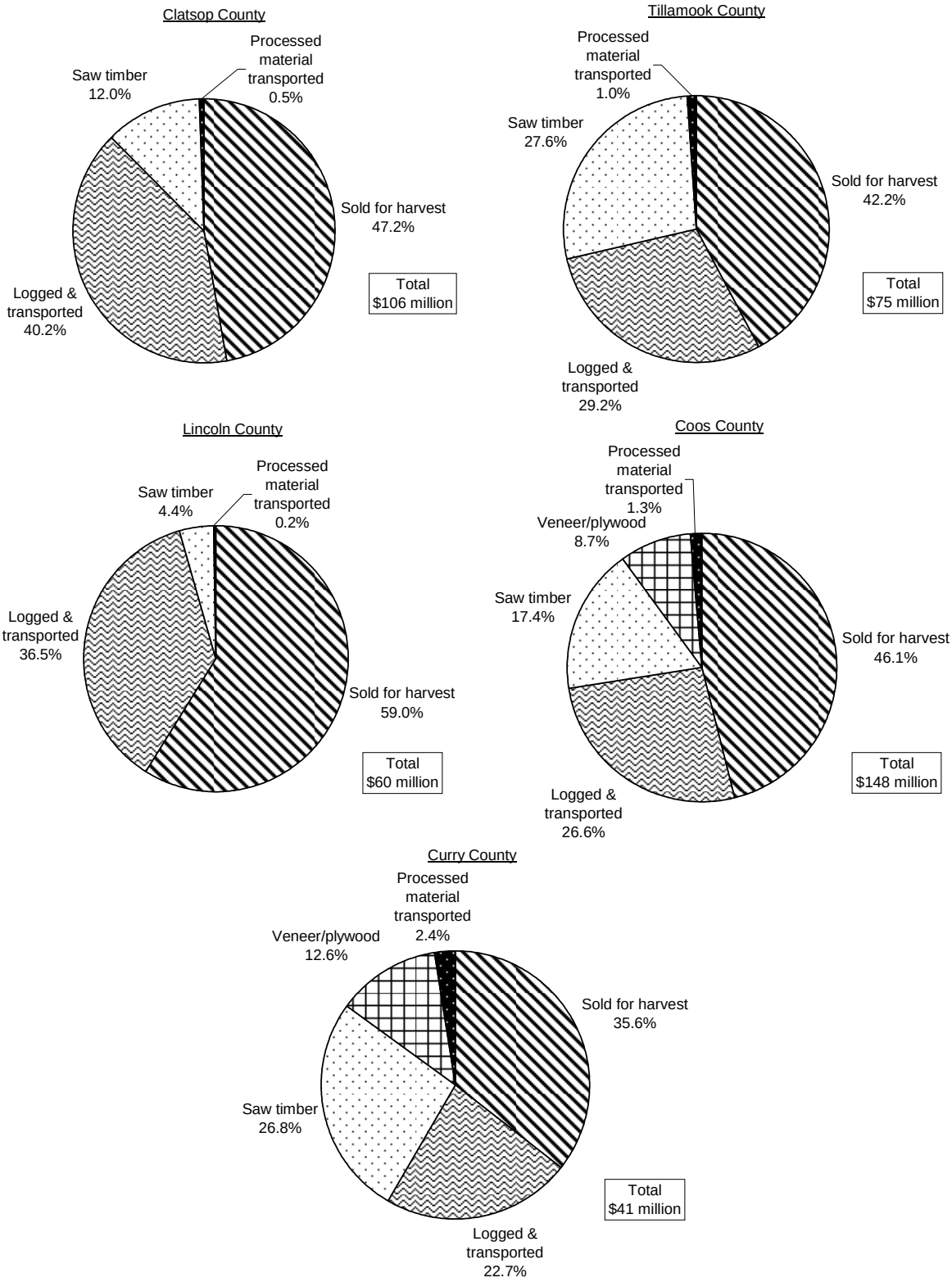
		Coefficients					Coefficients			
	MBF	Income in $/MBF	Employment per MMBF /10	Total Income in $	Total Employment	MBF	Income in $/MBF	Employment per MMBF /10	Total Income in $	Total Employment
	Clatsop County					Tillamook County				
Sold for Harvest /1,2,3	336,120	149.50	5.44	50,249,940	1,827	170,427	185.15	6.73	31,554,559	1,147
Logged & Transported /3,4,5	336,120	127.33	4.63	42,798,160	1,556	170,427	128.35	4.67	21,874,305	795
Timber Processed										
Saw Timber /6,7	49,400	259.18	9.42	12,803,492	466	82,400	250.25	9.10	20,620,600	750
Processed Material										
Transported Out of Area /9	49,400	11.15	0.41	550,810	20	82,400	9.18	0.33	756,432	28
Total				$106,402,402	3,869				$74,805,897	2,720
	Lincoln County					Coastal Lane County				
Sold for Harvest /1,2,3	176,052	201.25	7.32	35,430,465	1,288	NA	NA	NA	NA	NA
Logged & Transported /3,4,5	176,052	124.44	4.53	21,907,911	797	NA	NA	NA	NA	NA
Timber Processed										
Saw Timber /6,7	12,400	212.24	7.72	2,631,776	96	0	0.00	0.00	0	0
Processed Material										
Transported Out of Area /9	12,400	9.27	0.34	114,948	4	0	0.00	0.00	0	0
Total				$60,085,100	2,185				$13,727,307	499
	Coastal Douglas County					Coos County				
Sold for Harvest /1,2,3	NA	NA	NA	NA	NA	326,277	209.07	7.60	68,214,732	2,481
Logged & Transported /3,4,5	NA	NA	NA	NA	NA	326,277	120.53	4.38	39,326,167	1,430
Timber Processed										
Saw Timber /6,7	0	0.00	0.00	0	0	97,020	265.39	9.65	25,748,138	936
Timber Processed										
Veneer/Plywood /6,8,11	0	0.00	0.00	0	0	79,380	162.60	5.91	12,907,188	469
Processed Material										
Transported Out of Area /9	0	0.00	0.00	0	0	176,400	10.77	0.39	1,899,828	69
Total				$12,824,304	466				$148,096,053	5,385
	Curry County					Total Coast				
Sold for Harvest /1,2,3	78,446	184.00	6.69	14,434,064	525	1,087,322			199,883,760	7,269
Logged & Transported /3,4,5	78,446	117.30	4.27	9,201,716	335	1,087,322			135,108,259	4,913
Timber Processed										
Saw Timber /6,7	53,580	202.92	7.38	10,872,454	395	294,800			72,676,459	2,643
Timber Processed										
Veneer/Plywood /6,8,11	40,420	126.26	4.59	5,103,429	186	119,800			18,010,617	655
Processed Material										
Transported Out of Area /9	94,000	10.50	0.38	987,000	36	414,600			4,309,018	157
Total				$40,598,663	1,476				$456,539,725	16,601

Notes: (see next page)

Notes:
1. Total personal income generated by the timber industry includes direct income as well as indirect and induced income. This is usually referred to as the "multiplier effect."
2. Timber is usually sold on the stump and transported to the mill on a log scale basis (Scribner scale). The timber is converted to saw logs or veneer and plywood and is usually exported out of the area as finished products. Pulp and paper and other wood processing that is not dependent on local timber supply is not included in this sections. These industries depend more on other natural resources such as water and waste discharge capability than they do on local timber supply. These industries are included as part of "other" industries. Preparation for sale of timber is estimated to be $50 per MBF plus approximately $10 for site preparation and other costs, a total of $60 per MBF ($350 per acre). IMPLAN Sector 18. Stumpage value of $400 per MBF minus site preparation value of $60 per MBF leaves $340 to be allocated to the landowner. For this project, it is assumed that one half of this amount is returned to stockholders out of the area. The other half, $170 per MBF, is retained in the area as returns to landowners or as expenditures on the land. IMPLAN Sector 18. For areas such as Tillamook County, State lands provide about 50 percent of the timber harvests. About 50 percent of the revenues are returned to the State for bond repayment or management costs. This impact may overestimate the local impact as the percentage of State timber land revenues increase.
3. "Oregon Timber Harvest Report," Oregon State Department of Forestry, Salem, Oregon (annual reports). "Washington Timber Harvests," Washington State Department of Natural Resources, Olympia, Washington (annual report).
4. Estimated stumpage prices from several sources: Debra D. Warren, "Production Prices, Employment and Trade in Northwest Forest Industries (by quarters)," U.S. Forest Service Pacific Northwest Research Station Resource Bulletin PNW-RB-236. Oregon Department of Forestry, web site, Western Oregon Softwood Price Index. Estimated average mill pond price for 2003 is $400 per MBF.
5. Timber sold and logged in the county. Logging and transportation costs (delivered to the mill) are estimated to be $170 per MBF. Includes road building. IMPLAN Sector 14.
6. The amount of timber processed in the county is based on total employment in sawmills and veneer in the county. The relationship between employment and MBF processed is taken from James O. Howard and Franklin R. Ward, "Oregon's Forest Products Industry: 1988," U.S. Forest Service, Pacific Northwest Resource Station Resource Bulletin PNW-RB-183; and Franklin R. Ward, Gary J. Lettman, Bruce A. Hiserote, "Oregon's Forest Products Industry: 1998," Pacific Northwest Research Station, U.S. Forest Service, February 2001. Also included are relationships between total employment in wood products and total board feet logged at the State level.
7. Sawmill is estimated at 2.1 recovery rate. The stumpage value is $400; plus logging and hauling cost to a mill of $170. For a mill pond, average value of $570. The non-wood cost of structural saw wood processing is $245 per MBF logged ($116 per MBF mill basis). Total ex-mill price is $815 on a MBF log scale basis or $388 per MBF lumber basis. IMPLAN Sector 112.
8. Veneer and plywood is estimated at 3.8 recovery rate. The stumpage value is $400; plus logging and hauling cost to a mill of $170. The non-wood margin of veneer and plywood manufacturing is $298 per MBF log scale ($62.10 per 1,000 sq. ft. basis - 3/8 inch). Total ex-mill price is $895 on a log scale basis or $236 per 3/8 inch per 1,000 sq. ft. basis. IMPLAN Sector 115.
9. Transportation costs are estimated to be $30 per MBF (logged scale) for processed lumber. IMPLAN Sector 394. One half of these costs are estimated to be made out of the area.
10. Average annual payroll is estimated to be $27,500.
11. Coastal Lane County veneer/plywood is based on 35 direct employees.

Source: Study.

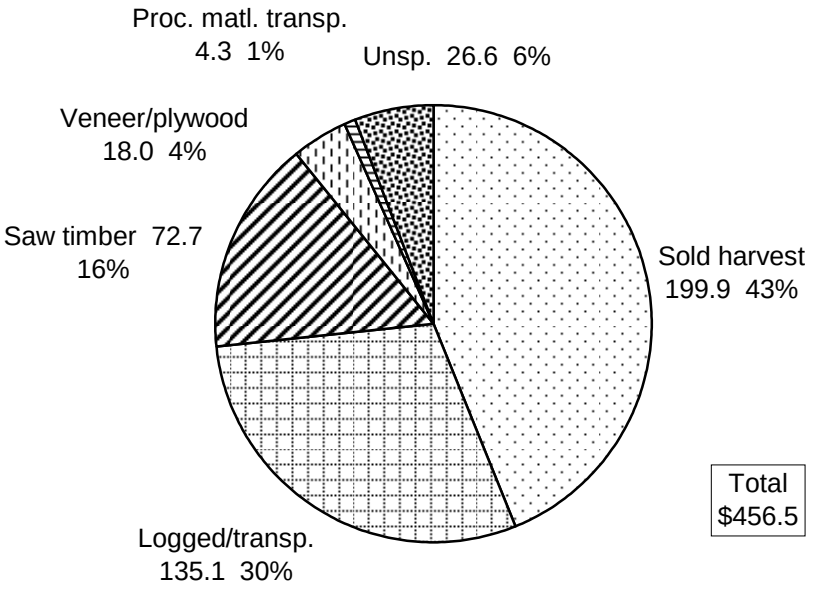
Figure III.20
Oregon Study Areas Timber Economic Contribution by Production Sector in 2003

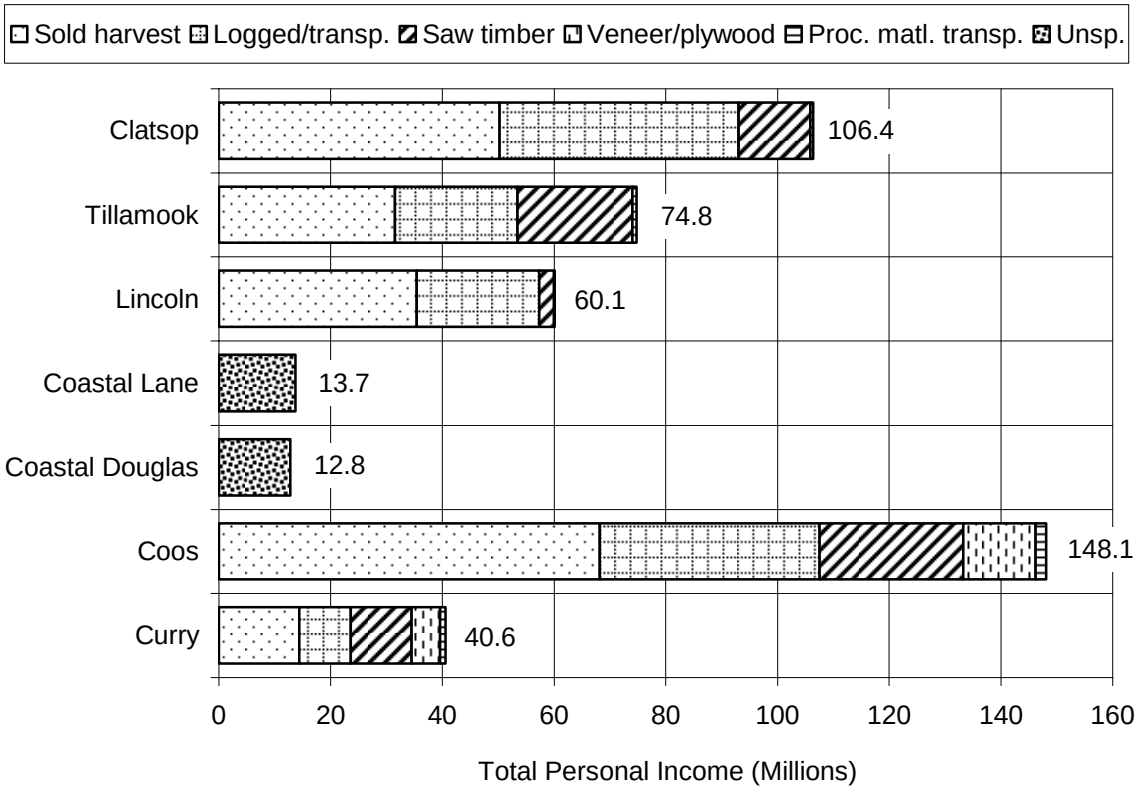


Note: 1. Total personal income generated by the timber industry includes direct income as well as indirect and induced income. This is usually referred to as the "multiplier effect."

Source: Study.

Figure III.21
Timber Industry 2003 Total Personal Income by Production Sector





Notes: 1. Total personal income expressed in millions of dollars.
Source: Study.

taking trips to a place or places outside their home communities. The expenditures of visitors in communities other than their own creates new income for coastal residents. This section analyzes the personal income impact of such non-local expenditures.[1]

Because "tourism" is not defined and reported as one sector, a variety of available reports add to the confusion for evaluating this industry. Oregon Travel Impacts (Dean Runyan Associates 2005) includes all travel related expenditures. So for instance, the yearly increase in tourism estimates does not always match up with other basic data (such as traffic counts). Standard procedures to evaluate the impacts of tourists to places such as the Oregon Coast should be developed. A guide to such efforts is the Tourism Fact Sheets developed by OSU.[2]

Since the tourism industry is not well-defined, the economic impacts of tourism are difficult to measure. This study uses data provided by the Oregon Employment Department and economic relationship estimates by OSU. This information is combined with the U.S. Forest Service's IMPLAN model to assess the economic impacts of tourism on the Oregon Coast.

For most other basic industries on the Pacific Northwest coast (fishing, agriculture, timber), statistics are available on the number of units that are produced (in terms of ex-vessel values, farm gate values, or timber harvest values) and "exported" out of the area. For tourism, because these expenditures affect a range of direct industries, there is no data on visitor days, related expenditures, and total sales. As a result, other methods are needed to estimate the scale of such expenditures.

The industries directly affected by visitor expenditures are hotels and lodging places, amusement and recreation services, eating and drinking places, retail establishments and automobile service stations. Covered payroll data is adjusted to account for proprietary and property type personal incomes in these industries. An OSU study collected primary data of businesses selling goods and services to tourists during the summer of 1984, through interviews of local coastal businesses (Johnson et al. 1989). Businesses in the tourist related industries were asked to provide estimates of sales to local and non-local households. These estimates are then used to define the percentage of total sales (and therefore payroll) generated by tourist related expenditures. The IMPLAN total personal income multipliers of the tourist related industries are then used to estimate the total direct, indirect, and induced impact of these expenditures on the coastal economies.

For the coastal areas of Lane and Douglas counties, no disaggregated data is available for the tourism industries. Employment data cannot always be used in small geographic areas because the headquarters (mailing address) may not be the address of the business. The estimate of personal income generated by the tourism sector is based on motel/hotel tax collections and by the number of motel (room) units available in the area. These estimates in ratio with other coastal counties were used to calculate total personal income generated.

1. Business related travel expenditures are not separated from pleasure related travel expenditures.
2. WREP 144 The Economic Impact of Visitors to Your Community; WREP 145 Measuring Visitor Expenditures and Their Impact on Local Income; WREP 146 Estimating Visitor Demand and Usage; and WREP 147 Cost-Benefit Analysis of Local Tourism Development.

b. Economic Contributions From Tourism

Wages and salaries in tourist related industries were significant in the coastal counties: $91.7 million in Clatsop County, $31.6 million in Tillamook County, $113.1 million in Lincoln County, $92.8 million in Coos County, and $34.7 million in Curry County (Table III.14 and IV.17). After correcting for sales to in-area residents and for proprietary income, the total estimated personal income generated by these tourist-oriented industries is $75 million in Clatsop, $24 million in Tillamook, $90 million in Lincoln, $59 million in Coos, and $24 million in Curry County (Table III.14 and III.15 and Figure III.22). The estimates for the coastal part of Lane and Douglas counties are $19 million and $7 million, respectively.

5. Other Identified Export Based Industries

Traditional sources of employment information (such as from the Oregon Employment Department) do not describe all of the employment or income contributed by the basic industries. Such a description has to be made by investigation of the data, such as provided in previous sections in this chapter. However, not all industries fall neatly into either "export" or maintenance industries. For example, some ship and boat repair is expected as a result of the fishery. Such activities are therefore already included in the multiplier estimates of the fishing industry. However, for some ports, such as Coos Bay and Newport, a larger than usual amount of employment is generated by boat and ship building. This resulting income is therefore included in the basic "exporting" industries.

Water and marine cargo handling is another basic industry that is important, especially for Coos and Clatsop counties. Paper and paperboard mills are also very important to some coastal areas. These industries were not included in the timber industry section because the availability of timber does not seem to be the crucial ingredient in the placement of such paper mills. Availability of water and waste discharge are the important factors. The employment estimate for paper mill workers in Clatsop County is based on the residence of workers.

There are several major industries located in coastal areas whose functions are not directly related to the activities of the natural resource based export industries. These include the Job Corps Centers in Astoria and Yachats, the marine biology research and teaching facilities in Coos Bay, and the Marine Science Center in Newport.

The California State prison north of Crescent City, California provides employment for a number of Curry County residents. These are included as an identified "exporting" industry for Curry County. For coastal Lane and Douglas counties, an informal survey was undertaken to identify businesses that produce goods and services to "export" out of the area. For Douglas County, ship building, a communication business, and the Dunes Visitor Center were included. The Florence area of Lane County contained only two specialized small businesses that were included in this list. They are machine and plastic manufacturers in the area.

There are other small industries and services on the coast that export goods and services and therefore generate income for coastal residents. They may include machine builders, hardware

Table III.14
Oregon Study Areas Tourism Payroll and Economic Contributions in 2003

		Clatsop County				Tillamook County				Lincoln County				Coastal Lane
		Wage & Salary	Outside Sales	Multi-plier*	Personal Income	Wage & Salary	Outside Sales	Multi-plier*	Personal Income	Wage & Salary	Outside Sales	Multi-plier*	Personal Income	Personal Income
Hotels and Lodging Places (NAICS 721)														
IMPLAN 479	2003	14,570,981	98%	1.30	21,904,847	3,355,436	98%	1.28	5,050,871	29,573,557	89%	1.31	40,686,176	5,681,700
	'01 P&P	18%				20%				18%				
State and Federal Parks (Survey)														
	2003	891,223	98%	1.30	1,135,419	1,035,576	98%	1.28	1,299,027	2,196,677	89%	1.31	2,561,106	1,626,616
	'01 P&P	0%				0%				0%				
Amusement and Recreation (NAICS 713)														
IMPLAN 478	2003	3,338,551	60%	1.37	3,210,818	1,008,613	60%	1.33	1,006,091	1,002,619	80%	1.38	1,383,614	
	'01 P&P	17%				25%				25%				
Eating/Drinking Places (NAICS 722)														
IMPLAN 481	2003	26,727,813	53%	1.49	26,172,623	8,147,286	53%	1.45	7,763,875	25,810,946	60%	1.45	28,069,404	
	'01 P&P	24%				24%				25%				
Tourism Related Retail														
	2003	35,203,526			14,444,886	13,744,169			5,819,729	44,144,752			11,761,501	
'87 Hardware (NAICS 444,451)	IMPLAN 404	5,148,844	26%	1.38	1,939,775	2,527,202	26%	1.33	917,602	6,400,605	17%	1.36	1,553,811	
	'01 P&P	5%				5%				5%				
'87 General Merch. (NAICS 452)	IMPLAN 410	10,804,862	26%	1.38	3,915,552	0	26%	1.34	0	10,678,388	17%	1.36	2,493,532	
	'01 P&P	1%				1%				1%				
'87 Food Stores (NAICS 445)	IMPLAN 405	8,237,412	26%	1.49	3,574,114	4,586,049	26%	1.44	1,888,718	12,895,742	17%	1.46	3,584,810	
	'01 P&P	12%				10%				12%				
'87 Appliances (NAICS 448.443)	IMPLAN 408	4,769,331	26%	1.40	1,822,838	194,249	26%	1.32	70,666	6,614,191	17%	1.39	1,625,451	
	'01 P&P	5%				6%				4%				
'87 Furniture (NAICS 442)	IMPLAN 402	2,041,719	26%	1.46	813,788	0	26%	1.35	0	2,175,756	17%	1.46	567,024	
	'01 P&P	5%				5%				5%				
'87 Misc. Retail (NAICS 446,453,454)	IMPLAN 411	4,201,358	26%	1.83	2,378,817	6,436,669	26%	1.57	2,942,742	5,380,070	17%	1.81	1,936,874	
	'01 P&P	19%				12%				17%				
Srvc. Stn., Auto Parts (NAICS 441,447)														
IMPLAN 407	2003	10,947,878	36%	1.67	7,898,237	4,262,735	36%	1.41	2,596,517	10,364,185	30%	1.47	5,484,727	
	'01 P&P	20%				20%				20%				
Total Personal Income		$91,679,972			$74,766,830	$31,553,815			$23,536,110	$113,092,736			$89,946,527	$19,232,411

Notes: 1. Total personal income generated by the tourism industry includes direct income as well as indirect and induced income. This is usually referred to as the "multiplier effect."
2. Covered payroll with adjustments for proprietary and property (P&P) income using a multiplier to estimate total personal income. Wage and salary are from 2003 Oregon Employment Department data. Proprietor income ratios are from IMPLAN - 2001.
3. State and Federal Parks Wage and Salary data is from a 1991 survey and is updated to 2003 using the CPI for all urban consumers.
4. *Type II multiplier for Employee Compensation from IMPLAN 2001.
5. Does not include casino for Florence. This employment is about 300 direct.

Source: Study.

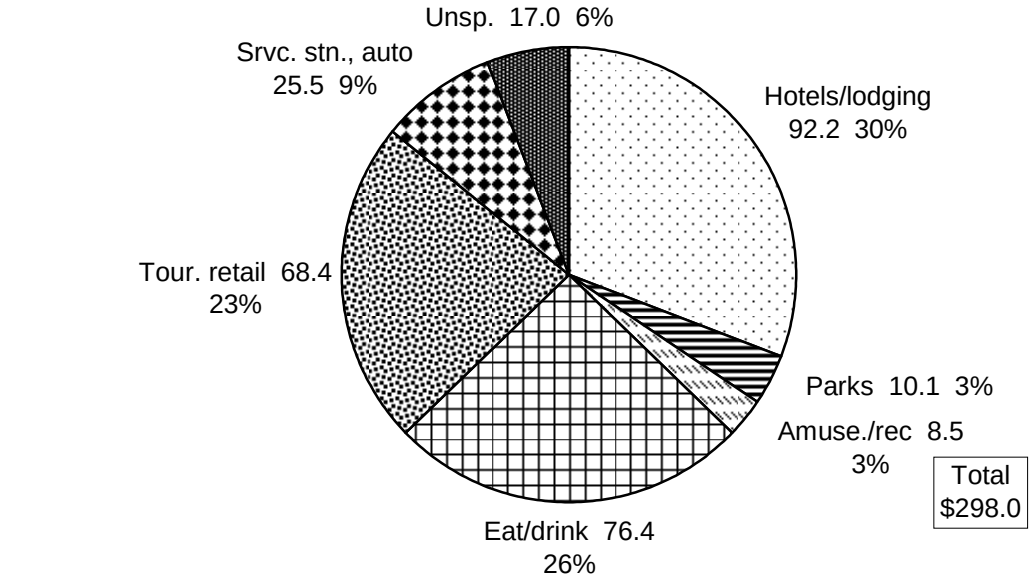
Table III.14 (cont.)

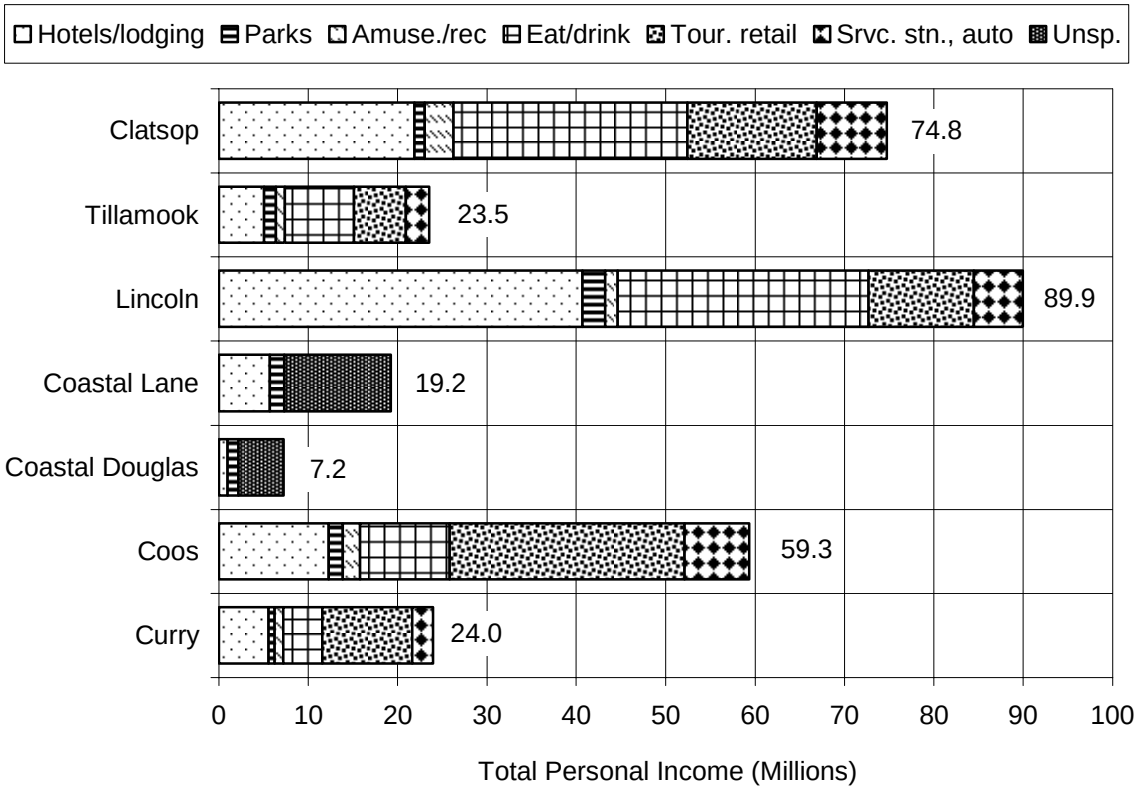
		Coastal Douglas	Coos County				Curry County				Total Coast	
		Personal Income	Wage & Salary	Outside Sales	Multi-plier*	Personal Income	Wage & Salary	Outside Sales	Multi-plier*	Personal Income	Wage & Salary	Personal Income
Hotels and Lodging Places (NAICS 721)												
IMPLAN 479	2003	979,767	10,035,829	80%	1.30	12,315,969	4,539,428	80%	1.28	5,531,565	62,075,231	92,150,895
	'01 P&P		18%				19%					
State and Federal Parks (Survey)												
	2003	1,185,202	1,506,293	80%	1.30	1,566,545	690,384	80%	1.28	706,953	6,320,154	10,080,867
	'01 P&P		0%				0%					
Amusement and Recreation (NAICS 713)												
IMPLAN 478	2003		1,691,433	66%	1.37	1,911,742	861,305	66%	1.33	945,067	7,902,521	8,457,333
	'01 P&P		25%				25%					
Eating/Drinking Places (NAICS 722)												
IMPLAN 481	2003		16,512,617	35%	1.41	10,023,241	7,134,355	35%	1.41	4,401,005	84,333,017	76,430,148
	'01 P&P		23%				25%					
Tourism Related Retail												
	2003		45,873,638			26,290,399	15,358,693			10,069,382	154,324,778	68,385,896
'87 Hardware (NAICS 444,451)	IMPLAN 404		5,393,805	36%	1.38	2,786,828	2,314,165	36%	1.37	1,198,413	21,784,621	8,396,430
	'01 P&P		4%				5%					
'87 General Merch. (NAICS 452)	IMPLAN 410		15,610,291	36%	1.38	7,832,744	0	36%	1.36	0	37,093,541	14,241,829
	'01 P&P		1%				1%					
'87 Food Stores (NAICS 445)	IMPLAN 405		13,820,571	36%	1.49	8,377,090	4,720,566	36%	1.50	2,854,998	44,260,340	20,279,731
	'01 P&P		13%				12%					
'87 Appliances (NAICS 448.443)	IMPLAN 408		2,093,803	36%	1.40	1,108,041	813,628	36%	1.42	440,882	14,485,202	5,067,878
	'01 P&P		5%				6%					
'87 Furniture (NAICS 442)	IMPLAN 402		2,911,048	36%	1.46	1,606,549	960,002	36%	1.45	521,166	8,088,525	3,508,527
	'01 P&P		5%				4%					
'87 Misc. Retail (NAICS 446,453,454)	IMPLAN 411		6,044,120	36%	1.83	4,579,146	6,550,332	36%	1.88	5,053,922	28,612,549	16,891,501
	'01 P&P		15%				14%					
Srvc. Stn., Auto Parts (NAICS 441,447)												
IMPLAN 407	2003		17,184,862	21%	1.67	7,232,077	6,115,972	21%	1.47	2,303,361	48,875,632	25,514,919
	'01 P&P		20%				22%					
Total Personal Income		$7,216,560	$92,804,672			$59,339,973	$34,700,137			$23,957,333	$363,831,333	$297,995,744

Notes: 1. Total personal income generated by the tourism industry includes direct income as well as indirect and induced income. This is usually referred to as the "multiplier effect."
2. Covered payroll with adjustments for proprietary and property (P&P) income using a multiplier to estimate total personal income. Wage and salary are from 2003 Oregon Employment Department data. Proprietor income ratios are from IMPLAN - 2001.
3. State and Federal Parks Wage and Salary data is from a 1991 survey and is updated to 2003 using the CPI for all urban consumers.
4. *Type II multiplier for Employee Compensation from IMPLAN 2001.
5. Does not include casino for Florence. This employment is about 300 direct.

Source: Study.

Figure III.22
Tourism Industry 2003 Total Personal Income by Purchase Sector





Notes: 1. Total personal income expressed in millions of dollars.
Source: Study.

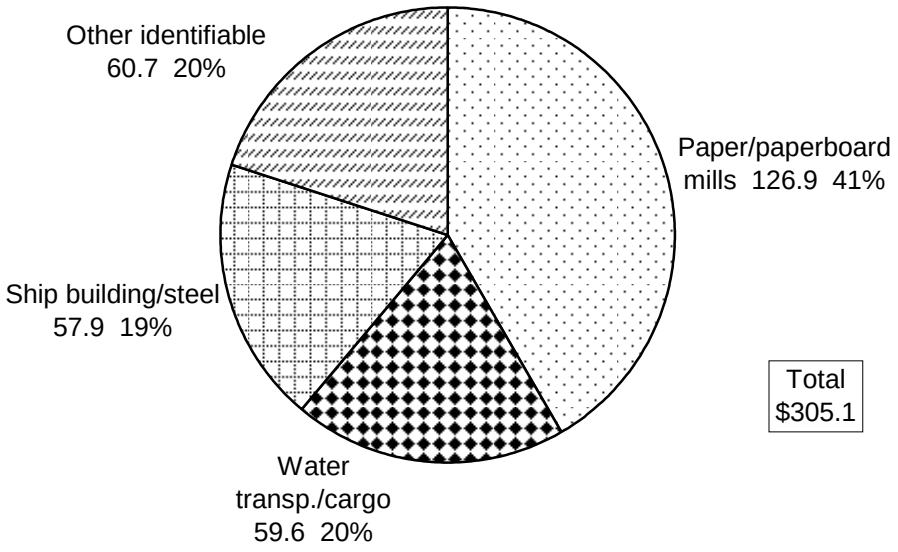
Table III.15
Study Areas Other Identified Industries Employment and Economic Contribution in 2003

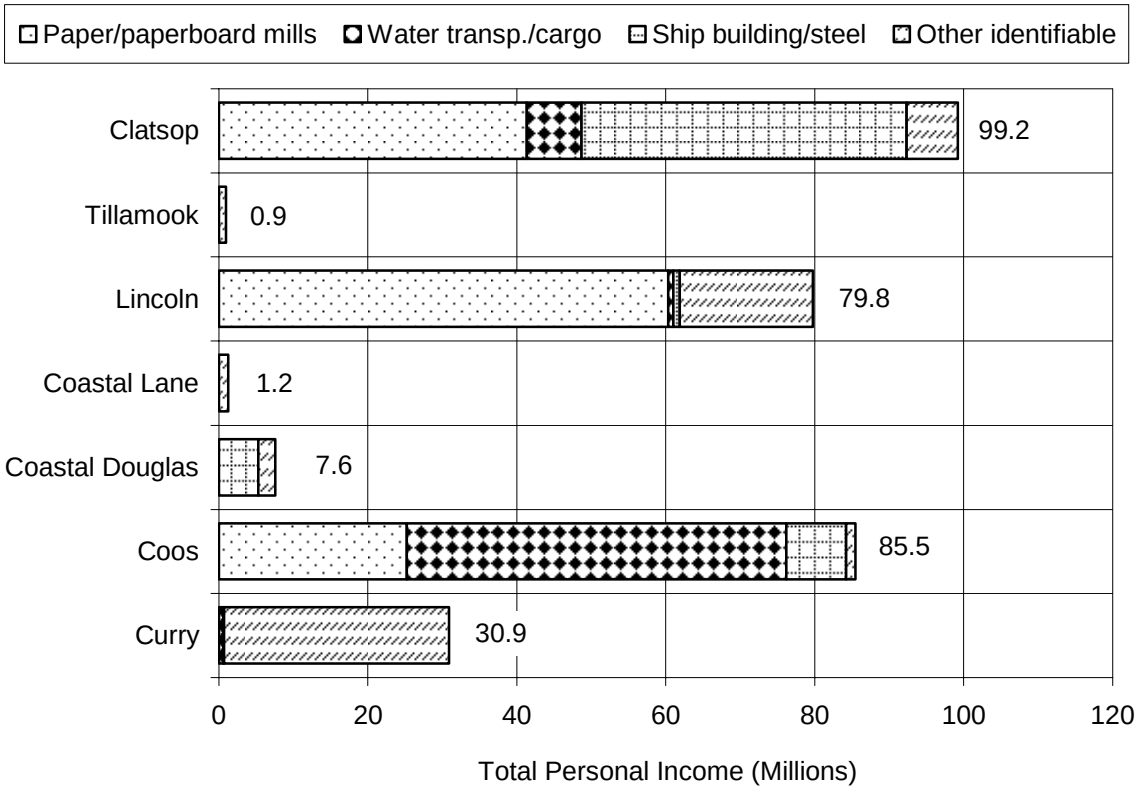
	Employ-ment	Payroll	IMPLAN Multiplier	Income	Employ-ment	Payroll	IMPLAN Multiplier	Income
	Clatsop County				Tillamook County			
Paper and paperboard mills IMPLAN Sectors 124 and 125	500	29,720,890	1.39	41,312,037				
Water transportation and marine cargo IMPLAN Sector 393	85	4,107,296	1.80	7,393,133				
Ship building, steel fabric., other constr. IMPLAN Sectors 357 and 358	215	32,344,000	1.35	43,664,400				
Other identifiable (govt., comm., sp. ed.) IMPLAN Sectors 506, 503 and 504 (Job Corps, Seafood Centers)	160	5,353,899	1.28	6,852,991	23	750,000	1.25	937,500
Total Personal Income				$99,222,561				$937,500
	Lincoln County				Coastal Lane County			
Paper and paperboard mills IMPLAN Sectors 124 and 125	664	40,217,835	1.50	60,326,753				
Water transportation and marine cargo IMPLAN Sector 393	27	472,875	1.53	723,499				
Ship building, steel fabric., other constr. IMPLAN Sectors 357 and 358	28	557,000	1.49	829,930				
Other identifiable (govt., comm., sp. ed.) IMPLAN Sectors 506, 503 and 504 (Marine Science Center, Aquarium)	435	14,182,440	1.26	17,869,874	35	875,000	1.40	1,225,000
Total Personal Income				$79,750,056				$1,225,000
Coastal Douglas County	Coastal Douglas County				Coos County			
Paper and paperboard mills IMPLAN Sectors 124 and 125					196	15,882,000	1.59	25,252,380
Water transportation and marine cargo IMPLAN Sector 393					419	26,386,000	1.93	50,924,980
Ship building, steel fabric., other constr. IMPLAN Sectors 357 and 358	130	3,510,000	1.50	5,265,000	125	5,284,000	1.52	8,031,680
Other identifiable (govt., comm., sp. ed.) IMPLAN Sectors 506, 503 and 504 (DNRA Visitor Center, Marine Biology Center, Job Corps)	55	1,570,000	1.46	2,293,250	32	1,000,000	1.26	1,260,000
Total Personal Income				$7,558,250				$85,469,040
Curry County	Curry County				Total Coast			
Paper and paperboard mills IMPLAN Sectors 124 and 125	0	0	0.00	0	1,360	85,820,725		126,891,170
Water transportation and marine cargo IMPLAN Sector 393	10	423,930	1.42	601,981	541	31,390,101		59,643,592
Ship building, steel fabric., other constr. IMPLAN Sectors 357 and 358	2	56,154	1.25	70,193	500	41,751,154		57,861,203
Other identifiable (govt., comm., sp. ed.) IMPLAN Sectors 506, 503 and 504 (California State Prison)	750	24,590,183	1.23	30,245,924	1,490	48,321,522		60,684,540
Total Personal Income				$30,918,098				$305,080,504

Notes: 1. Total personal income generated by these industries includes direct income as well as indirect and induced income. This is usually referred to as the "multiplier effect."
2. The total personal income generated is estimated by multiplying employment by the average annual payroll for each industry and then multiplying these results by the county specific total employee compensation multiplier for that industry. Information is taken from IMPLAN 2001; 2003 Oregon Covered Employment and Wages, Employment Department, State of Oregon; and other informal surveys.

Source: Study.

Figure III.23
Other Identified Industries 2003 Total Personal Income





Notes: 1. Total personal income expressed in millions of dollars.
Source: Study.

and software computer developers, writers, or manufacturers of small handicrafts. It is beyond the scope of this project to identify all these industries by area.

The largest of these identified industries is the pulp and paper mills in Coos and Clatsop counties, which employ an estimated 696 workers (Table III.15), and water transportation and marine cargo handling in the coastal counties that employ about 540 workers. The boat building industry employs about 500 workers. Other identifiable businesses and agencies, such as Job Corps, marine science centers at Charleston in Coos County and Newport in Lincoln County, and the northern California penitentiary, employ about 1,500 workers.

The employment in the pulp and paper mills generated an estimated $25 million of personal income in the Coos County economy and $41 million in the Clatsop County economy in 2003 (Table III.15). Water transportation and marine cargo generated another $51 million in Coos County and $7 million in Clatsop County. Ship building, steel fabrication, and other specialized exporting construction generated $44 million in Clatsop County, $5 million in coastal Douglas County, and $8 million in Coos County. The California State prison generates an estimated $30 million of personal income to Curry County. In total, these identifiable resource based industries generated $280 million of total personal income in the coastal counties of Oregon.

6. Investments and Transfers Income

Non-earned income can be considered as being derived from another area or in another time. Some of such income is a result of payments made from income derived from wages, salaries, and profits from past work. Other transfer payments, dividends, and rents may come from other geographic areas in the form of pure geographic transfers. Another source may be inter-temporal transfers from future generations, i.e. borrowing.

The growth of non-earned income, particularly from retirement, represents a major and increasing source of purchasing power. Table III.16 shows the difference in consumption patterns by age on a national basis. More research of these consumption patterns for Oregon's coastal areas needs to be done to provide information on the business impact of this growing population. Coastal areas that capture an increasing share of the retirement related income, which accompanies a net in-migration of retirees, can stimulate employment and incomes by increasing local spending. It may be that these year-round residents foster economic and employment stability.

a. Types of Investment Income

Investment income includes dividends, interest, and rents. Dividends are cash payments to stock holders by corporations organized for profit. Interest is the monetary and imputed interest income of persons from all sources. Rent includes the monetary income of persons from the rental of real property, except the income of persons primarily engaged in the real estate business. Rent also includes the imputed net rental income of owner/occupants of non-farm dwellings and the royalties received by persons from patents, copyrights, and rights to natural resources.

Table III.16
Average Annual National Consumer Expenditures by Age Cohort in 2003

	All	By Age of Reference Person				
	Consumer Units	Under 25 Years	25-64 Years	65 Years and Older	55-64 Years	75 Years and Older
Income before taxes	$51,128	$20,680	$60,007	$30,437	$58,672	$25,492
Average annual expenditures	$40,817	$22,396	$45,827	$29,376	$44,191	$25,016
Food at home	8%	8%	7%	9%	8%	9%
Food away from home	6%	10%	6%	5%	6%	4%
Housing	33%	32%	33%	33%	31%	35%
Transportation	19%	21%	19%	16%	20%	14%
Health care	6%	2%	5%	13%	7%	15%
Entertainment	5%	4%	5%	5%	5%	4%
Miscellaneous	10%	15%	10%	8%	9%	7%
Cash contributions	3%	2%	3%	7%	4%	9%
Personal insurance and pensions	10%	6%	11%	4%	11%	3%
Total	100%	100%	100%	100%	100%	100%

Notes: 1. Miscellaneous includes apparel, personal care, reading, education, tobacco, and other expenditures.
2. The Consumer Expenditure Survey data includes the expenditures and income of consumers by age of reference person for national geographical basis.

Source: U.S. Department of Labor and U.S. Bureau of Labor Statistics, June 2005.

An interesting trend over time is the dramatic increase in transfer payments as a percent of total personal income. This is at least partially a function of the increase in retirees collecting Social Security payments in these areas. As transfer payments have gone up, the percent of total personal income that is "earned" (i.e., employee compensation and proprietor income) has fallen (Figure III.24).

b. Types of Transfer Income

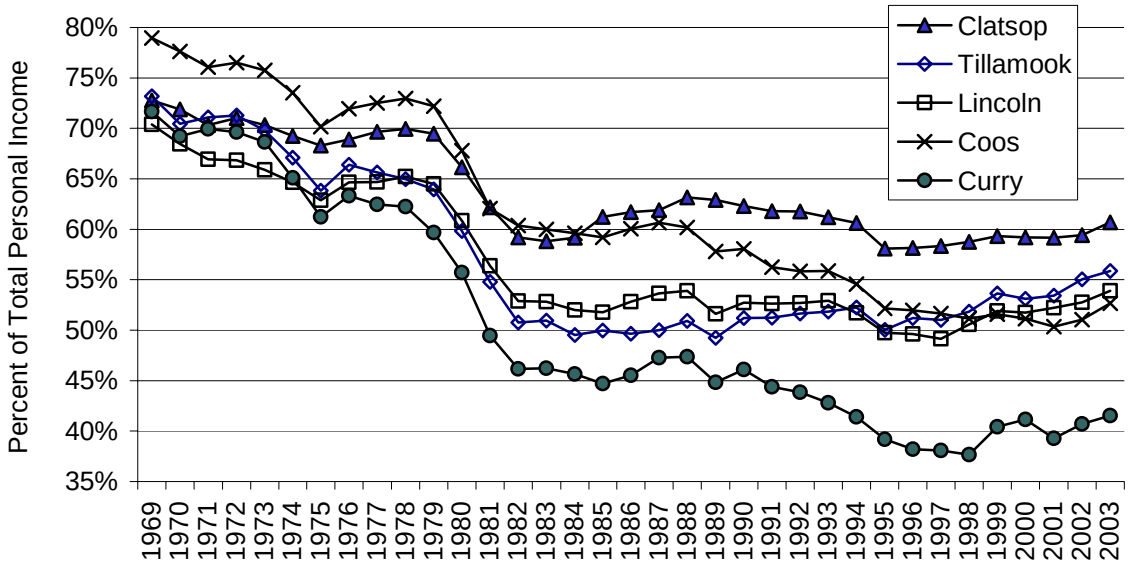
i. Retirement and Related Programs

These payments include Social Security, medical payments, and specific retirement programs for railroad workers, federal civilians, military personnel, and State and local government employees. Medical payments include Medicare, Medicaid and other vendor payments.

ii. Unemployment Insurance, Public Assistance, and Other Programs

These programs are paid to support people through times of economic misfortune. The unemployment insurance payments are funded through payroll taxes. Public assistance is generally paid by federal, state, or local appropriations. The miscellaneous programs include

Figure III.24
Study Areas Net Earnings as a Percent of Total Personal Income in 1969 to 2003



Source: U.S. Bureau of Economic Analysis, Regional Economic Information System.

other government payments to individuals such as federal education and training assistance payments. Farm program payments are not classified as government transfer payments. They are included in the personal income estimates as part of farm proprietor income.

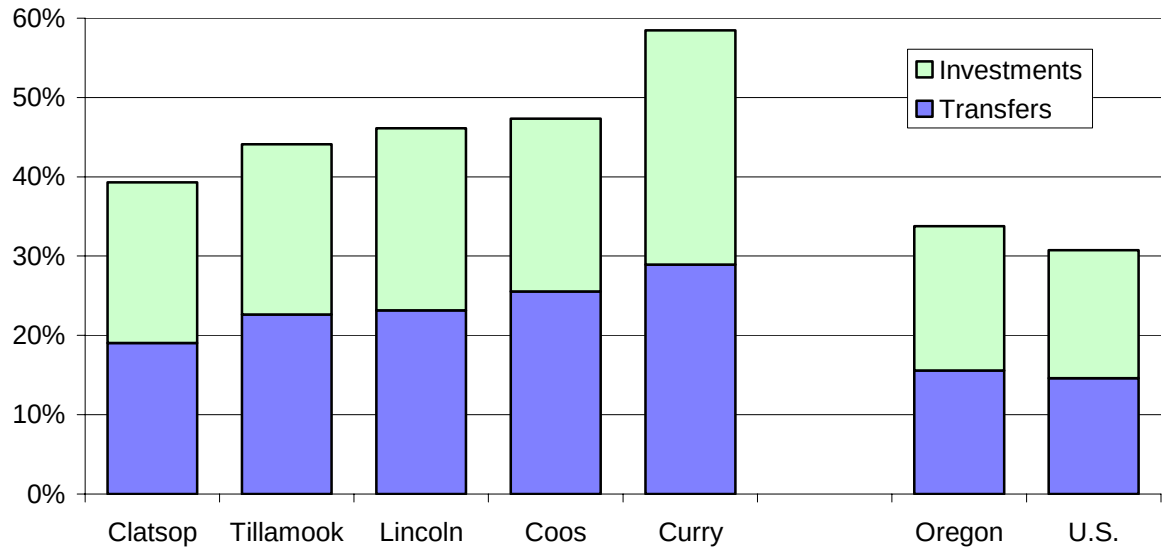
Transfer payments and returns from investments have become a major source of income for most coastal areas. Transfer payments and investment range between 39 and 58 percent of the total personal income in the coastal counties of Oregon. This compares to about 34 percent for Oregon and 31 percent for the U.S. (Figure III.25).

Much of these transfer payments are Social Security based. In some coastal areas, Tillamook for example, 47 percent of transfer payments are old age survival and disability payments compared to 38 percent for the State of Oregon. Curry County is 50 percent. This is compared to 38 percent for the State.

C. Retirement Related Income Effects

Retirement income in coastal counties is related to income earned earlier by residents. It is either income of residents electing to stay during their retirement years or it is income that is transferred to the coastal areas by retiree aged people moving to the Coast. The in-migration of retirees has helped increase coastal counties' total personal income. It is difficult to identify the income amount using traditional data sources. It can be assumed that it is mostly from the non-earned BEA categories of transfer payments and investments, but households comprised of non-retirement aged people also have some income from these sources.

Figure III.25
Oregon Coastal Areas Transfer Payments and Investment
Earnings as a Percent of Total Personal Income 2003



Source: Study and U.S. Bureau of Economic Analysis.

In 2003, transfers and investments ranged from nine percent to 28 percent higher for coastal areas than for the U.S. These higher percentages may be viewed as an indicator that the retiree effect is much higher on the Oregon Coast than in the U.S. We have attempted to calculate the retiree effect on coastal economies, i.e. answer the question of what share of an area's total personal income can be attributed to retiree's spending in that area. How to treat previously earned income presents an analytical problem. Some of this income may be part of past employment payments of long term residents and part may be new payments brought into the area by new immigrants. For an analytical process, we have assumed the U.S. average share that is received as transfer and investment income is a basic amount (Table III.17).[1] Then the percentage over and above the U.S. average multiplied by the consumption multiplier for that county is an estimate of the retiree effect. The retiree effect becomes a new portion of what was previously only the not identified sector income plus transfers and investments in excess of the U.S. average.[2]

When the multiplier for household consumption is applied to the direct retiree effect, the calculations raise the total personal income to over 100 percent for Curry County. An explanation for this over-estimate is that the consumption multiplier is derived from national expenditure patterns. Residents in smaller communities do not spend all of their income in these communities. They are more likely to travel to other, larger areas for much of their personal needs, such as health care, food, and automobile purchases.

1. The transfer and investment income multiplier is assumed to be 1.0 for this analysis.
2. The retirement effect in an index for personal income generated from non-earned income spending. The index does not include the total effects from spending by retirement age residents. The index usefulness is from comparing the relative contribution between coastal counties and other areas.

Table III.17
Retiree Effect With and Without Out-of-Area Purchase Adjustment in 2003

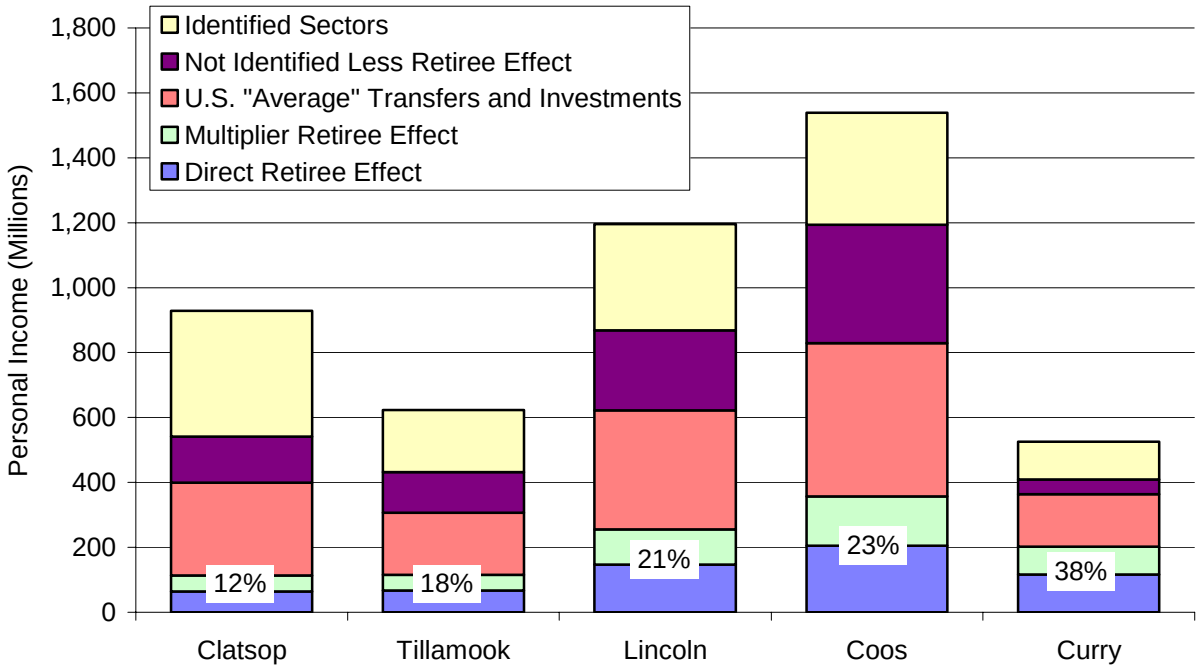
	United States	Oregon	Oregon Coast	Clatsop County	Tillamook County	Lincoln County	Coos County	Curry County
Total personal income	$9,151,694.0	$102,418.8	$5,357.3	$928.7	$622.8	$1,196.1	$1,539.1	$525.7
Transfer and investment	$2,810,852.0	$34,593.6	$2,480.7	$365.0	$274.9	$551.6	$728.8	$307.4
Percent	30.7%	33.8%	46.3%	39.3%	44.1%	46.1%	47.4%	58.5%
Difference from U.S. average			15.6%	8.6%	13.4%	15.4%	16.6%	27.8%
Identified Sector								
Commercial fishing and aquaculture			$260.6	$101.2	$10.8	$95.4	$33.2	$12.9
Agriculture			$119.7	$6.1	$81.3	$2.2	$19.7	$7.7
Timber			$456.5	$106.4	$74.8	$60.1	$148.1	$40.6
Tourism			$298.0	$74.8	$23.5	$89.9	$59.3	$24.0
Other identified			$305.1	$99.2	$0.9	$79.8	$85.5	$30.9
Subtotal			$1,439.9	$387.7	$191.4	$327.4	$345.8	$116.1
Percent			26.9%	41.7%	30.7%	27.4%	22.5%	22.1%
Other not identified sector without retiree effect considered			$1,436.7	$176.0	$156.6	$317.2	$464.5	$102.2
Percent			26.8%	18.9%	25.1%	26.5%	30.2%	19.4%
Without Out-of-Area Purchase Adjustment								
Transfer and investment personal income at the U.S. average rate of 30.7%			$1,645.4	$285.2	$191.3	$367.4	$472.7	$161.5
Direct retiree effect over the U.S. average			$835.3	$79.8	$83.6	$184.2	$256.1	$145.9
Multiplier retiree effect			$618.1	$62.2	$60.2	$134.5	$189.5	$106.5
Retiree effect (multiplier included)			$1,453.4	$142.0	$143.7	$318.6	$445.6	$252.5
Percent			27.1%	15.3%	23.1%	26.6%	28.9%	48.0%
Not identified less retiree effect			$818.6	$113.7	$96.4	$182.7	$275.0	-$4.4
Percent			15.3%	12.2%	15.5%	15.3%	17.9%	-0.8%
With Out-of-Area Purchase Adjustment								
Direct retiree effect			$668.2	$63.8	$66.8	$147.3	$204.9	$116.8
Multiplier retiree effect			$494.5	$49.8	$48.1	$107.6	$151.6	$85.2
Retiree effect (multiplier included)			$1,162.7	$113.6	$115.0	$254.9	$356.5	$202.0
Percent			21.7%	12.2%	18.5%	21.3%	23.2%	38.4%
Not identified less retiree effect			$1,109.3	$142.1	$125.2	$246.5	$364.1	$46.1
Percent			20.7%	15.3%	20.1%	20.6%	23.7%	8.8%
Household expenditure multiplier	2.27	1.91	1.74	1.78	1.72	1.73	1.74	1.73

Notes: 1. Personal income in millions of 2003 dollars.
2. Out-of-area purchase adjustment is estimated to be half of average local household for expenditures such as health care, transportation, and entertainment. This calculates to about 80% of the direct retiree effect without the adjustment.
3. Transfer and investment income multiplier is assumed to be 1.0.
4. Coastal Lane and Douglas counties' personal income is included in the Oregon Coast tabulation.

Source: Study.

These out-of-area purchases were modeled by including only half of the average local senior household expenditures for personal need items. When half of the major purchases for health care, transportation, and entertainment are assumed to take place out of the area by retirees, the local retiree effect ranges from 12 percent for Clatsop County to 38 percent for Curry County (Figure III.26). The other not identified sector decreases from 27 percent to 21 percent in Lincoln County and 19 percent to nine percent in Curry County. The retiree effect for the Oregon Coast is 22 percent (Figure III.27).

Figure III.26
Retiree Effect Economic Contributions in 2003



Notes: 1. Retiree effect assumes half of purchases for selected personal need items are made out-of-area.
2. The shown share of total personal income includes direct and multiplier retirement effect.
3. Retiree effect is an index and does not represent total economic contribution from retirement age residents' spending.

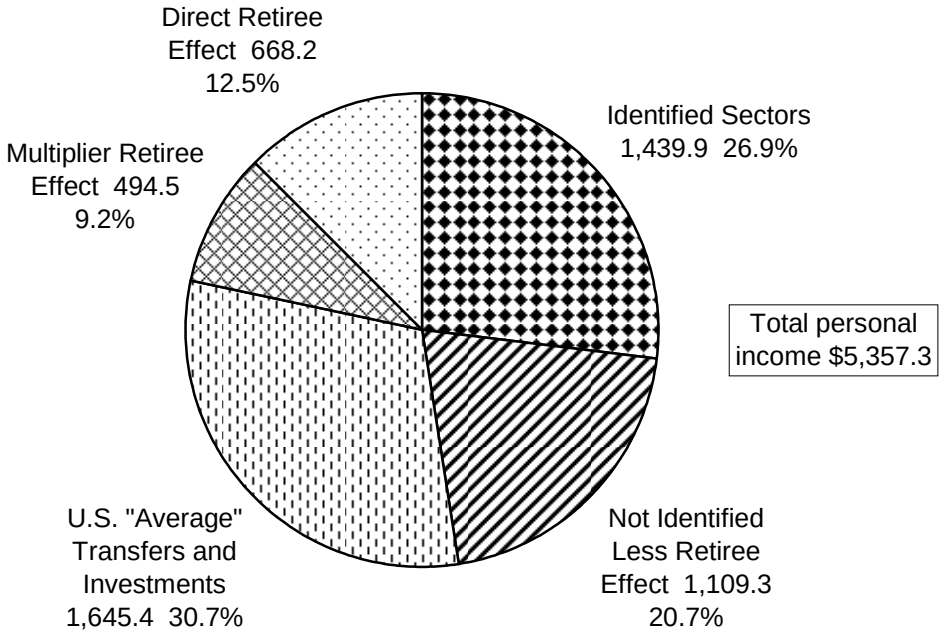
Source: Study.

In terms of jobs per retiree, the above discussion may lead to the conclusion that in large counties that have amenities such as adequate medical care, it takes about three retirees to generate enough income for one employee. In smaller counties with less infrastructure, it may require five retirees to generate one annual job in the local area.[1]

The growth of non-earned income, particularly from retirement programs, represents a major and increasing source of purchasing power in many coastal areas. Coastal areas that capture an

1. Calculated as follows: $20,000 as total personal income of a retiree, times an expected indirect and induced effect of 0.40 (this is taking the drift toward larger communities into consideration) = $8,000 of income. At an average annual payroll of $27,500, it would take 3.4 retirees to support one FTE.

Figure III.27
Share of Retiree Effect Economic Contribution for the Oregon Coast



Notes: 1. Personal income in millions of 2003 dollars.
2. Actual transfers and investment income is $2,480.7 million and not identified sector without retiree effect is estimated to be $1,436.7 million.

increasing share of the retirement related income, which accompanies a net in-migration of retirees, can stimulate employment and incomes by increasing local spending. It may be that these year-round residents foster economic and employment stability.

To properly identify the retiree effects, a survey of coastal residents' expenditure patterns is needed. National expenditure information may not be applicable to Oregon's coastal economies. How much of the expenditures are made within the local economies and how much is exported (i.e. to the Willamette Valley economies) is information critical to making definitive estimates of the retiree effect.

IV. ECONOMIC SECTOR DESCRIPTIONS AND TRENDS

A. Sector Summaries

Tracing personal income sources in the coastal areas shows that natural resource based industries such as commercial fishing, agriculture, timber, and tourism continue to be important contributors to coastal communities. The contributions from these industries to each county's economy for the year 2003 is shown in Table IV.1 and Figure IV.1. Fishing (including oyster culture) makes up as much as 11 percent of the total personal income of coastal residents in such areas as Clatsop County. Agriculture makes up as much as 13 percent in Tillamook County. The timber industry contributes five to 12 percent of personal income in the five counties on the Coast. Coos County has pulp and paper mills, marine transportation sectors, and sizable ship building sectors. These identified sectors contribute up to 11 percent to these counties. Tourism also is a significant contributor to coastal areas, contributing as much as eight percent of total personal income in Clatsop and Lincoln counties. The high security California State prison in northern California is a contributor for the estimated six percent to Curry County.

Since the 1980's, personal income generated by the timber and fishing industries has declined for various reasons. Some of these reasons are decreasing availability of natural resource for harvests, new demands to use natural resources for recreation and habitat preservation, and in the case of fish products, decreasing prices. The changing demographic of coastal areas has also led to a shift in income and employment opportunities. As the population of coastal counties has continued to age in the last 20 years, income from transfer payments has risen, and the percent of total personal income that is earned in the current generation (i.e., employee compensation and proprietor income) has fallen. The relative importance of natural resource based industries as a source of income has declined as other industries have increased.

1. Commercial Fishing Sector

For fisheries, three current developments are affecting the contribution this industry can make to the coastal areas. First, increasing global supplies on all fish products have decreased the real per pound ex-vessel price for salmon, shrimp, and crab during the years 1991 through 2003.

Second is the crisis facing the salmon industry, and more recently the groundfish industry. Because of unfavorable ocean conditions, inland habitat deterioration, and multiple demands for the harvest rights of the salmon resource, the availability of salmon for commercial ocean harvesting has declined steadily along the Oregon and Washington coast. Although there has been an increase in salmon prices, the water crisis and resulting low adult salmon returns to the Klamath River system are of special concern to the Oregon salmon industry. Some stocks may be becoming more abundant, however the management restrictions to protect Klamath River stocks may not allow "access" to the more abundant species. Threatened or endangered status listing or proposals for listings for salmon stocks from the Sacramento River in California to Puget Sound in Washington have been made. Resulting regulations have reduced the Oregon ocean troll harvest to a small share of historic levels. Because of reduced salmon harvests, Oregon coastal areas have experienced an annual personal income loss from averages of about $110 million per year (1976-1990 average) to less than $10 million in the early 2000's. This is a

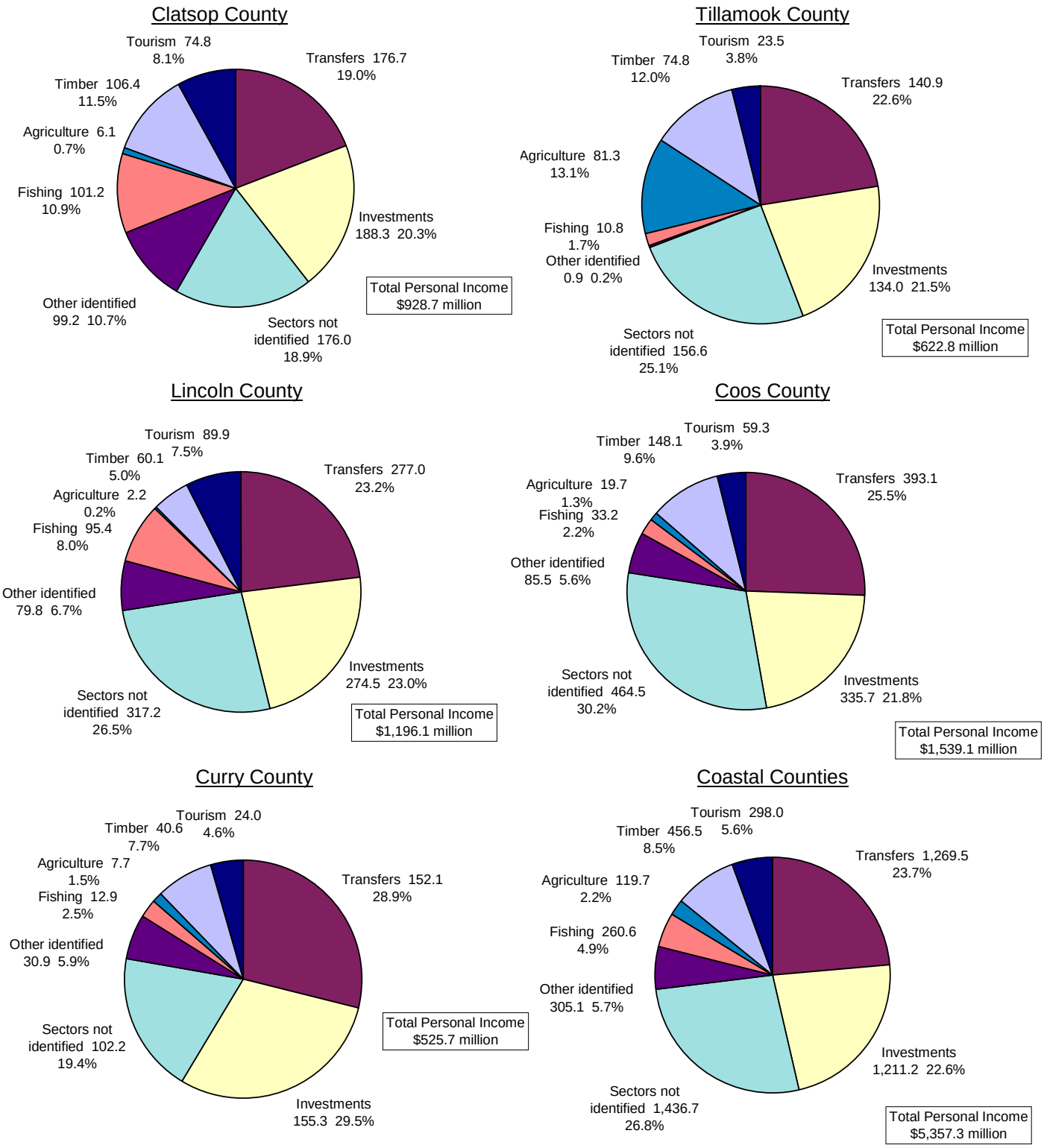
Table IV.1
Sources of Total Personal Income for Identified Sectors in 2003

	U.S.		Oregon		Clatsop		Tillamook		Lincoln		Coastal Lane		Coastal Douglas		Coos		Curry		Coastwide	
	Income	%	Income	%	Income	%	Income	%	Income	%	Income	%	Income	%	Income	%	Income	%	Income	%
Total Personal Income	9,151,694.0	100%	102,418.8	100%	928.7	100.0%	622.8	100.0%	1,196.1	100.0%	398.5	100.0%	145.1	100.0%	1,539.1	100.0%	525.7	100.0%	5,355.9	100.0%
Net Earnings	6,340,842.0	69%	67,825.2	66%	563.6	60.7%	348.0	55.9%	644.6	53.9%	214.7	53.9%	76.4	52.6%	810.3	52.6%	218.3	41.5%	2,875.9	53.7%
Commercial fishing; also					89.2	9.6%	6.1	1.0%	54.8	4.6%	1.1	0.3%	2.5	1.7%	28.0	1.8%	12.2	2.3%	194.0	3.6%
Distant water and fish meal					12.0	1.3%	1.2	0.2%	39.7	3.3%	1.5	0.4%	1.9	1.3%	2.1	0.1%	0.7	0.1%	59.1	1.1%
Aquaculture					0.0	0.0%	3.5	0.6%	0.8	0.1%	0.0	0.0%	0.1	0.1%	3.1	0.2%	0.0	0.0%	7.6	0.1%
Agriculture					6.1	0.7%	81.3	13.1%	2.2	0.2%	1.6	0.4%	1.0	0.7%	19.7	1.3%	7.7	1.5%	119.7	2.2%
Timber					106.4	11.5%	74.8	12.0%	60.1	5.0%	13.7	3.4%	12.8	8.8%	148.1	9.6%	40.6	7.7%	456.5	8.5%
Tourism					74.8	8.1%	23.5	3.8%	89.9	7.5%	19.2	4.8%	7.2	5.0%	59.3	3.9%	24.0	4.6%	298.0	5.6%
Other identified industries																				
Paper and paperboard mills					41.3	4.4%	0.0	0.0%	60.3	5.0%	0.0	0.0%	0.0	0.0%	25.3	1.6%	0.0	0.0%	126.9	2.4%
Water transportation and marine cargo					7.4	0.8%	0.0	0.0%	0.7	0.1%	0.0	0.0%	0.0	0.0%	50.9	3.3%	0.6	0.1%	59.6	1.1%
Ship building, steel fabric., other heavy constr.					43.7	4.7%	0.0	0.0%	0.8	0.1%	0.0	0.0%	5.3	3.6%	8.0	0.5%	0.1	0.0%	57.9	1.1%
Other identifiable (govt., research, comm., special ed., military)					6.9	0.7%	0.9	0.2%	17.9	1.5%	1.2	0.3%	2.3	1.6%	1.3	0.1%	30.2	5.8%	60.7	1.1%
Subtotal identified industries					387.7	41.7%	191.4	30.7%	327.4	27.4%	38.4	9.6%	33.1	22.8%	345.8	22.5%	116.1	22.1%	1,439.9	26.9%
Other not identified					176.0	18.9%	156.6	25.1%	317.2	26.5%	176.3	44.2%	43.3	29.8%	464.5	30.2%	102.2	19.4%	1,436.0	26.8%
Investments	1,475,529.0	16%	18,634.0	18%	188.3	20.3%	134.0	21.5%	274.5	23.0%	91.5	23.0%	31.6	21.8%	335.7	21.8%	155.3	29.5%	1,210.9	22.6%
Transfers	1,335,323.0	15%	15,959.6	16%	176.7	19.0%	140.9	22.6%	277.0	23.2%	92.3	23.2%	37.1	25.5%	393.1	25.5%	152.1	28.9%	1,269.2	23.7%
Total Employment	127,795,827		1,563,725		15,396		8,038		16,589						22,299		6,461			
Unemployment Rate	6.0		8.1		7.0		6.6		8.6						8.7		7.2			
Per Capita Personal Income	31,472		28,734		25,801		25,210		26,672		25,057		23,504		24,380		24,228			
Population	290,788,976		3,564,330		35,993		24,705		44,846		15,902		6,174		63,130		21,697		212,447	

Notes:
1. Personal income in millions of 2003 dollars.
2. Personal income generated by identified sectors includes direct as well as indirect and induced income. The economic sectors dependent upon the identified sectors, such as retail and service businesses, are included in the identified sectors. This means the "multiplier effect" is included.
3. Investment and transfer personal income is only direct income, although research shows that the multiplier effect is approximately one for both of these sectors.
4. Population is from U.S. Bureau of Economic Analysis estimates.
5. Total employment includes covered payroll.
6. For coastal Lane and Douglas counties, the ratio of coastal county to county per capita personal income from census information in 2000 was applied to county per capita personal income from U.S. Bureau of Economic Analysis information in 2003 to determine coastal county per capita personal income in 2003. Coastal county total personal income in 2003 was based on population estimates developed using Census 2000 zip code data adjusted using the PSU rate of growth between 2000 and 2003 for the cities of Florence and Reedsport. The shares of earnings, investments, and transfers from adjacent counties are used as a proxy.

Source: Study, U.S. Bureau of Economic Analysis, Bureau of Labor Statistics, Census Bureau, and Portland State University Population Research Center (PSU).

Figure IV.1
Share of Total Personal Income Sources for Identified Sectors by Coastal County in 2003



Notes: 1. Total personal income expressed in millions of dollars.
2. Graphs for coastal Lane and Douglas counties are not displayed, but analysis results are included in the coastal counties summation graph.

Source: Study.

reduction of about 90 percent in average fishing related personal income for coastal counties in 2000. Small ports along the coast have historically relied upon the salmon trolling industry to generate local income and to support vital services such as local marinas and have used the local fishing industry to justify dredging operations by the U.S. Army Corps of Engineers.

Several species of rockfish have been declared "overfished." This means that the allowable harvest of these fish is curtailed in order to rebuild these stocks. Harvest of groundfish in some ports along the West Coast is being reduced by over 50 percent. The challenge for the fishing industry is to minimize the harvest of those overfished species while targeting other species. The good news for seafood businesses is that per capita consumption of seafoods has reached a record of 16.3 pounds in 2003 (Sackton 2005). The bad news for captured seafood businesses is that much of this increased consumption is being supplied by aquaculture.

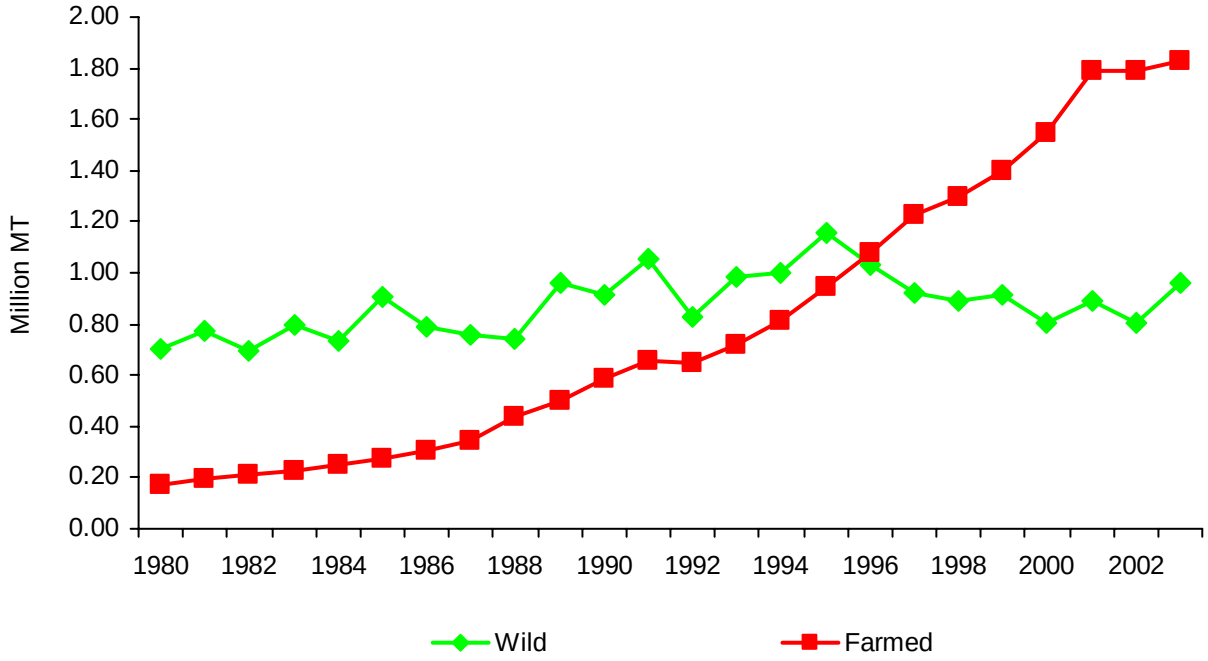
An important current issue is the expansion of aquaculture. Salmon farming has increased substantially, especially in Chile and Norway. Salmon farming currently determines the price for most salmon products (Figures IV.2 and IV.3). Salmon prices for troll caught Chinook have declined from $5.00 per pound in 1988 to about $1.50 in 2000. Some increase in price for wild caught salmon has taken place. Shrimp aquaculture produces shrimp of various sizes that directly and indirectly compete with pink shrimp. During the 1980's, the "real" price of pink shrimp was as high as $1.00 per pound. In 2000, the pink shrimp price averaged about $0.35. As the U.S. dollar lost its value compared to some currencies, the prices of several products have increased in 2003. This may continue, but aquaculture will continue to set the price for most seafood. Aquaculture is also being developed for several other species, such as halibut and black cod. And consideration is being given in Congress to expand aquaculture in U.S. open waters. Dr. Gilbert Sylvia of OSU suggests Oregon should keep its options open when considering policies to address this issue (Sylvia 2005). Many other people on the Oregon Coast strongly oppose fin-fish aquaculture off the Oregon Coast for environmental reasons. The expansion of fish aquaculture is expected to maintain downward pressure on prices (unless the limited supply of some Oregon seafood products can be marketed in specialty "niche" markets).

Species abundance available for harvest has probably peaked. There is an expected cyclical downturn in some of the "money" fisheries. New harvest management regimes like individual permit quota programs and continued processor ownership consolidation will cause unequal distributional impacts to coastal communities. There may be new markets for value added processed products, but plant location and hence employment does not have to be at existing regional fishing centers. World market price pressures will continue to dampen ex-vessel price increases except for troll caught salmon. There will be good opportunities for exclusive markets demanding quality.

2. Agricultural Sector

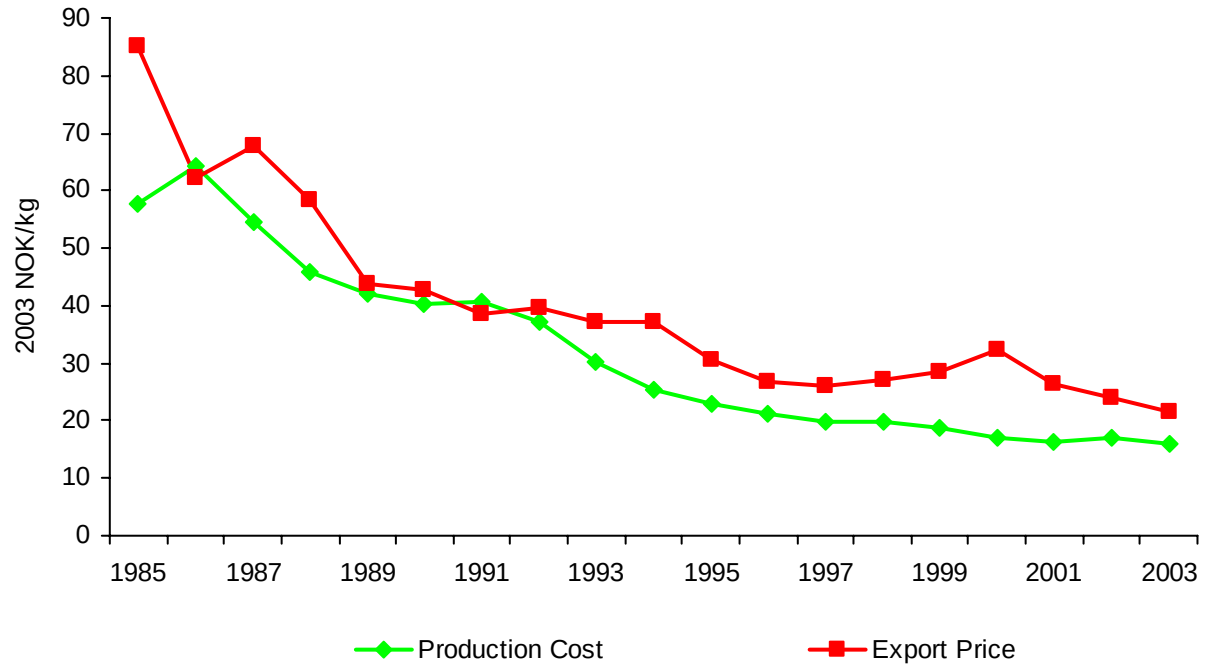
Agriculture in the coastal economies is part of a lifestyle and contributes diversity to the local economy. It also helps provide a buffer to the sometimes cyclical nature of the forest, fishing, and recreational industries. The mild coastal climate is ideal for vegetable, berry and nursery crops, and livestock production for meat and dairy are important sources of income for Tillamook, and to a lesser degree Coos and Curry counties. Tillamook county is the primary

Figure IV.2
World Salmon and Trout Wild Harvest vs. Mariculture



Notes: 1. World salmon aquaculture grew at an average annual rate of 11% between 1980 and 2003.
Source: Sylvia (2005).

Figure IV.3
Export Price and Production Cost of Norwegian Atlantic Salmon



Source: Sylvia (2005).

producer of milk in the State, and much of it is used in cheese manufacturing. The agricultural industry has remained consistently strong in Tillamook County, and is continuing to change and diversify. The Tillamook Creamery has purchased the Bandon Cheese factory operations and has expanded its dairy operation to eastern Oregon (Pacific Northwest Cheese Project 2005).

The value of agricultural production in Oregon in 2003 was $3.5 billion. Of this, Tillamook County produced $90.3 million in sales (2.6 percent of the State). Agriculture production and processing in 2003 generated total personal income of $81 million in Tillamook County.

There are no expectations that climate and scale will allow this industry to develop. There are nursery stock business opportunities that have not yet been capitalized by coastal businesses.

3. Timber Sector

The trend in timber harvests since 1970 for the coastal counties has been a gradual decrease in harvests from about 1.8 bbf in the 1970's to about one bbf in 2003. All coastal counties, especially Coos County, have experienced cyclical harvests, depending on national demand patterns for fiber and on local availability of timber. However, the harvest volumes in these areas have generally declined since the 1980's. Most of these counties' timberlands are in private ownership, except Tillamook, where over two thirds of the timberlands are in federal or State ownership.

Stumpage prices have increased as final product prices have increased; therefore, transportation costs have become a smaller part of final manufacturing costs. Mills are willing to expand their timbershed boundaries. This has resulted in a dramatic reduction in processing capability on the Coast. Most timber in Oregon is now shipped to the major processing centers of Roseburg, Eugene, Albany, or the Portland area.

The timber grown, harvested, and processed in the coastal counties of Oregon produced an estimated $457 million in total personal income; this is equivalent to about 16,600 annual jobs. The largest portion of this income and annual jobs is generated by logging and harvesting.

The third generation private property timber will be available. The question is where and how it is to be promised. A lot of second generation timber was shipped overseas as logs, but size and quality may not open that market. Small timber and wood fiber feed into many more products now and large processing facilities exist outside of coastal economies.

4. Tourism Sector

Tourism is experiencing a steady growth in coastal economies. The growth of tourism has served to diversify coastal counties' economic bases, but this industry is characterized by low wage rates and seasonal demand for jobs. These characteristics do not assist in ameliorating seasonality effects from the other natural resource based industries.

Wages and salaries in travel related industries totaled $363.8 million for the coastal counties in 2003. In terms of full time equivalent jobs (at $27,500 per year salary), this is equivalent to

13,200 annual jobs in the tourist industry. After correcting for sales to in-area residents, the total estimated personal income generated by the tourist-oriented industries is $298 million (or about 10,800 jobs).

5. Other Identified Export Based Industry Sector

Not identified is 19 to 44 percent of total personal income in these coastal counties. (The indirect and induced effects of investment income and transfer payments are included in this calculation.) For some coastal areas, many small manufacturing and service companies export their product. Such industries as plastic wedge manufacturers, plastic water tank manufacturers, computer hardware and software developers, writers, and artists sell products outside the coastal area and bring income back to regional economies for spending. Such small industries are important when summed together. However, they are too dispersed to be identified in this study.

Other observations about businesses represented in this sector deserve mention.

- Paper and Paperboard Mills. More than 60 percent of processed paper is from recycling supplies and the share is expected to grow. The locational advantages of the Coast is for offering pollution sites and not for offering wood fiber.

- Waterborne Commerce. There should be no expectations for a turn-around in industry needing Oregon Coast waterborne commerce facilities. For example, the recent interest for liquefied natural gas facilities in Astoria may be transparent. The forecast is for the nation to only need three or four new facilities and a couple of those are replacement for inadequate existing locations. Energy prices in the northwest are a disincentive for producing electricity using natural gas.

6. Investments and Transfers Income

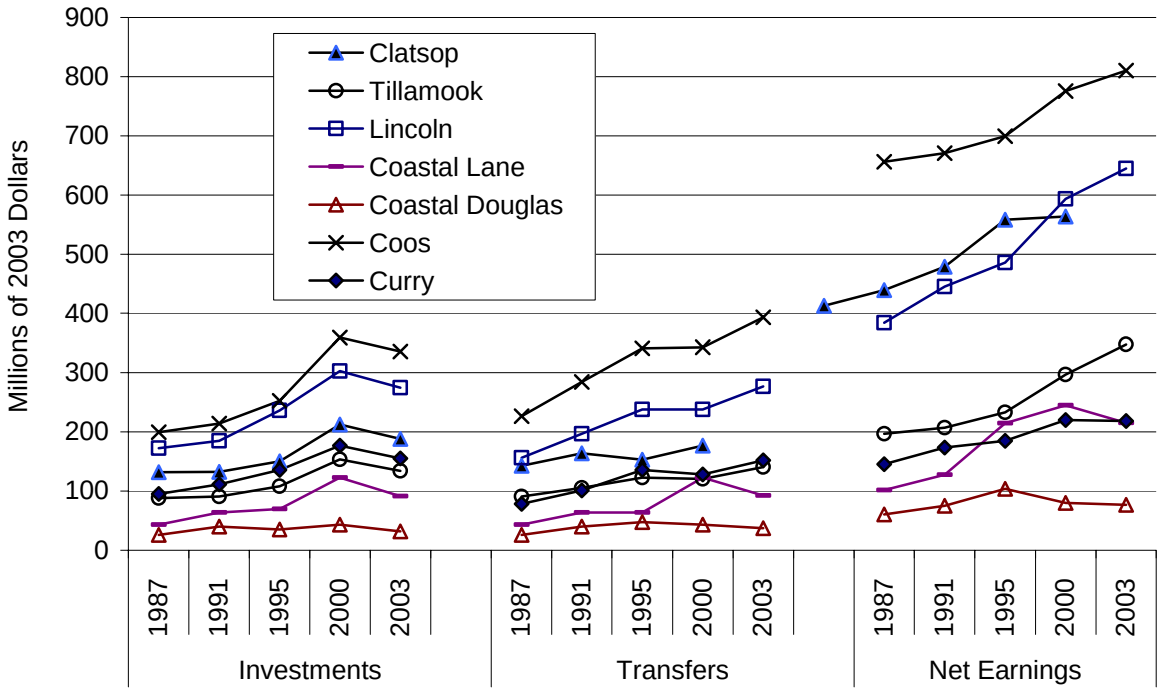
There has been a dramatic increase in transfer payments as a percent of total personal income. This is partially a function of the increase in retirees collecting Social Security payments. Transfer payments and returns from investments range from 39 to 58 percent of the total personal income in coastal counties of Oregon. This compares to about 31 percent for the U.S.

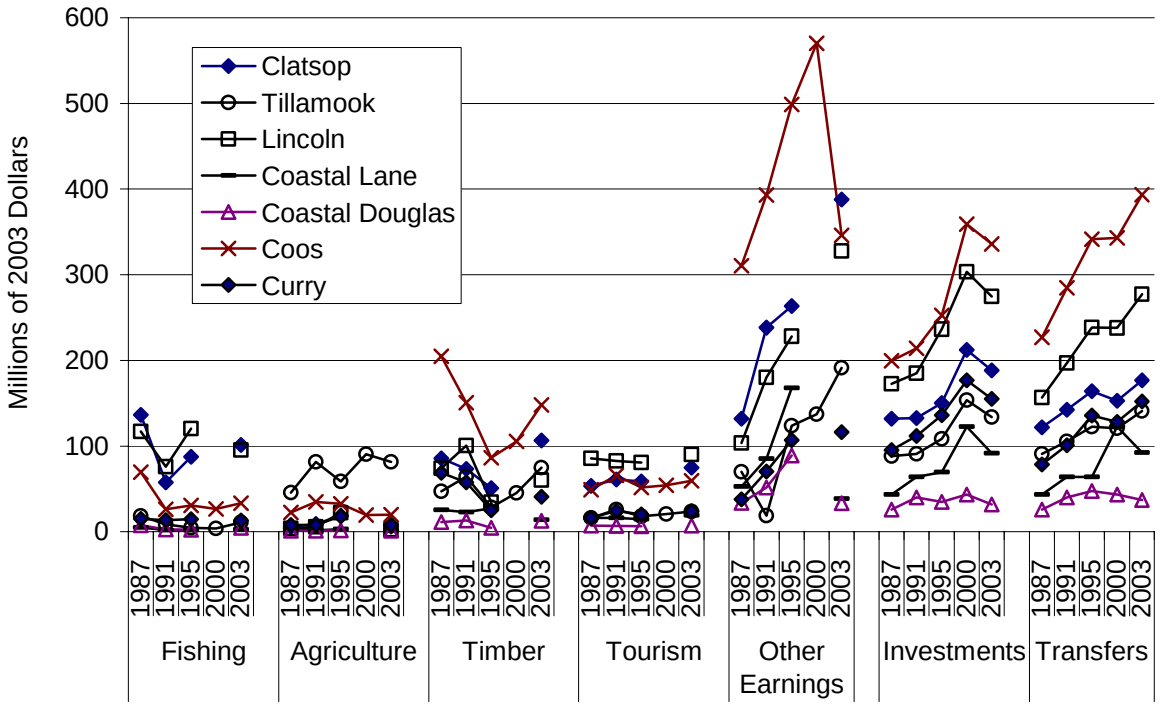
The growth of non-earned or previous generational income, particularly from retirement, represents a major source of purchasing power in rural areas. The in-migration of retirees to Pacific Northwest coastal areas has helped increase investment income and transfer payments to be from nine to 28 percent higher share in Oregon coastal counties than for the U.S. These higher percentages may be viewed as the "immigrant retiree effect."

B. Sector Trends

Economic analyses have been completed for Oregon coastal counties' export based industry sectors since 1987. The economic contribution trends are shown in Figure IV.4. Observations

Figure IV.4
Oregon Coast Trends in Personal Income From Net Earnings,
Industry Sectors, Investments, and Transfers in 1987 to 2003





Notes: 1. Personal income in millions adjusted to 2003 dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.
2. Other earnings includes the sectors for "other identified export based industries" and "other earned income."

Source: U.S. Bureau of Economic Analysis and Study.

about the trends for natural resource industries, tourism, other earned income, transfers and investment income, demographics, and overall personal income follow.

Natural Resources Industries

- Most of the natural resource based sectors declined during this period. The exception is agriculture, and specifically the dairy industry in Tillamook. The timber sector declined between 1987 and 1995, but increased slightly between 1995 and 2003. Commercial fishing economic contributions continue to be important to the overall coastal economy and certainly for a few communities, but are decreasing in relative proportion to the total economy. There are good and bad years in this sector, depending on cyclical abundances of crab and shrimp and how ocean conditions affect salmon returns.

Tourism

- The industries that are part of the tourism sector (lodging, eating and drinking places, some retail) show steady trend increases between 1987 and 2003. This may be a result of the way expenditure patterns of tourists are counted. The increased tourism trade that is sometimes noted by industry advocates is not resulting in increased employment in the sectors that make up the tourism sector.
- There is an extreme skew in this sector's income. Most jobs have wages at poverty level, but there are some proprietorships and professional jobs at high income levels.
- Many communities are already saturated during the summer and need to work on flattening the seasonal demand curve.
- There are high infrastructure costs related to this sector and the challenge is to extract rent from visitors to pay for it.

Other Earned Income

- Other earnings show an increase, especially for Coos County. This increase is from small other manufacturing. As the large, resource based industries declined, more jobs were contracted to self employed individuals. Also, the trend toward small businesses being established in rural areas continues. This is partly due to more accessible telecommunication opportunities.

Transfers and Investment Income

- Returns from investments generally increased for all study estuary counties between 1987 and 2003. The largest increase took place in the late 1990's.
- Transfer payments increased up to 1995, but the rate of change decreased in the late 1990's. This is most likely due to the growing economy and the reduction in income support programs resulting from strong overall economic growth.

V. PLANNING AND POLICY IMPLICATIONS

Coastal communities in Oregon and elsewhere are undergoing significant social and economic transition as traditional industries decline, new industries emerge, and population ages and expands with the flow of migrants from inland areas. Decreases in the overall supply of timber and short-term declines in demand for wood products has led to recent rapid downturns in the wood products industries. Likewise, the importance of commercial fishing has been reduced due to decreases in available fishery stocks' abundances and declining real prices. Industries benefiting from tourism and retirement have been expanding, leading to economic diversification in coastal communities. Many coastal communities have taken advantage of these trends by focusing on developing their tourism and other service industries as traditional natural resource based industries decline.

The following is a discussion of some global, national, and regional trends that may affect coastal communities' social and economic growth. The discussion references several important studies and quotes are liberally repeated. Care was taken to ensure the quotes are within the context of authors' conclusions. The discussion is included to provide a larger view of social and economic forces that affect coastal communities.

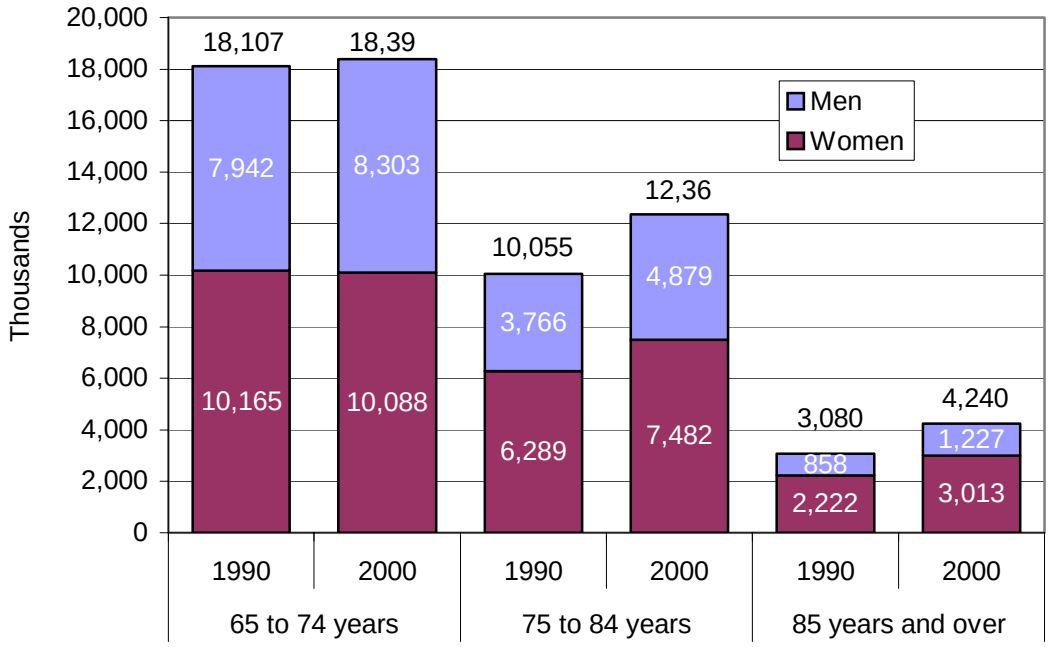
A. Social Trends

Parts of the global population are growing at or close to three percent per annum. In other settings, population growth is either flat or increasing at a low rate. Most of the larger growth rates are taking place in underdeveloped or developing countries. The countries with low growth rates tend to be the economically developed areas. This creates a dilemma for world trade. The effective demand for natural resource commodities will not increase with population increase. Also, the shift toward lower growth rates and older population in the developed countries will also reduce the demand of commodity goods and increase the demands for specialty goods, free time goods and other services.

In 2000, 35 million people 65 years of age and over were counted in the United States. This represents a 12 percent increase since 1990, when 31.2 million older people were counted (Figure V.1) (U.S. Census Bureau 2001). The change in Oregon mirrored the national trend. Oregon went from 391,324 (13.8 percent total) to 438,177 (12.8 percent total) or 12.0 percent increase.

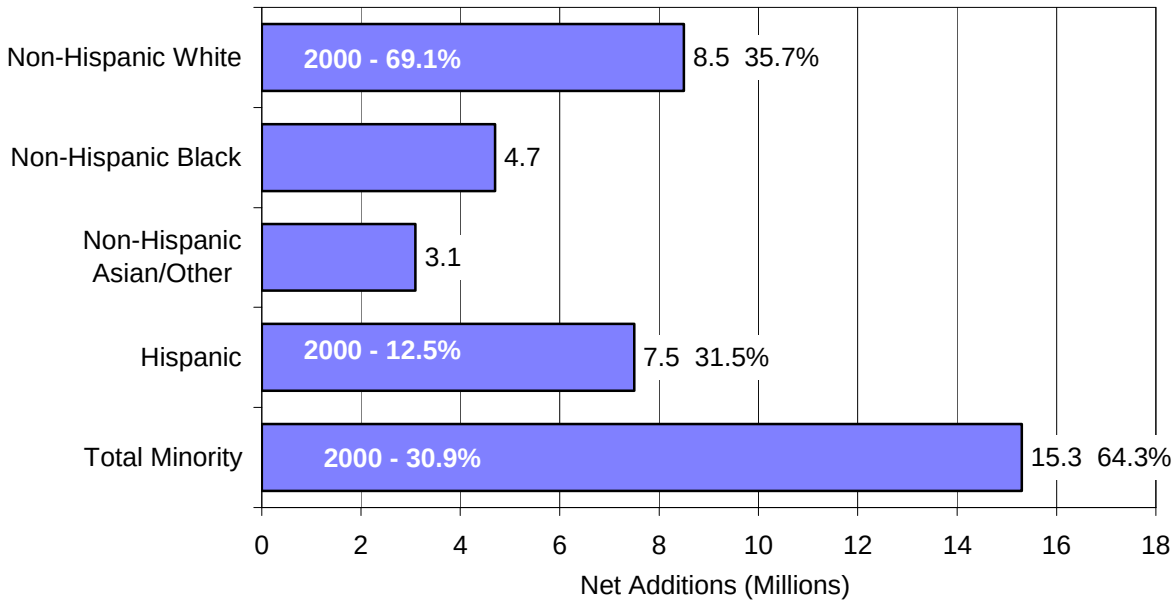
Minority households will increase much more dramatically than the non-minority population (Masnick and Di 2003). It is expected that Hispanic households will likely increase by 32 percent between 2000 and 2020 nationwide (Figure V.2 and Table V.1). Total minority households will increase by 64 percent compared to non-Hispanic Caucasian households at 36 percent. Implications for these social changes are considerable. The fertility rate of Hispanic families is much higher than the general population. Oregon's household size for Hispanics was 70 percent higher than the State as a whole.

Figure V.1
U.S. Population 65 Years and Over by Age and Sex in 1990 and 2000



Source: U.S. Census Bureau (2001).

Figure V.2
U.S. Projected Household Growth in 2000 to 2020 by Race/Hispanic Origin



Source: Masnick and Di (2003).

Table V.1
Oregon Population and Households by Ethnicity and Household Size in 2000

	Population		Households		Persons Per
	Number	Percent	Number	Percent	Household
Not Hispanic or Latino	3,146,085	92.0%	1,270,016	95.2%	2.48
Hispanic or Latino	275,314	8.0%	63,707	4.8%	4.32
Total	3,421,399		1,333,723		2.57

Source: U.S. Census Bureau.

The changing population base (global, U.S., and statewide) will influence every aspect of the coastal communities. It will affect such areas as the composition and quality of the work force, social and health care needs, education, and housing.

The Pacific Northwest rural population has fluctuated in response to business cycles. There was significant increase in population in the 1970's and again in the 1990's. However, during the natural resource recession of the 1980's, there was a loss of population. The sudden downturn in the economy of 2001 and 2002 did not translate into negative population growth rates (Oregon Department of Administrative Services 2002).

For the next 10 years, the elderly population will continue to increase steadily, but not dramatically. The older members of the baby boom will be nearing 60, and the youngest members will just have passed age 40. Then, from the years 2010 through 2030, growth will virtually halt for any age group other than the elderly. By the Year 2020, the U.S. will have nearly as many people over 60 as under 20 years of age. Furthermore, the size of the elderly population will be at least two and a half times the size of the elderly population in 1980 (Hanus 1988).

The principal cause of the aging of the American population is the decline in fertility. Many demographers believe fertility levels will remain low and could drop further. The entrance of large numbers of women into the work force, together with modern contraceptives, has afforded women the choice to be more financially independent and to control their fertility.

The labor force will be shaped primarily by three factors: the aging of the baby boomers, the shortage of entry-level workers due to the low birth rates, and the influx of women into the work force. Due to the scarcity of educated entry-level workers, employers will face increased costs of upgrading prospective hires through training and development, and producing compensation and career development packages to attract the best talent. Basic educational competency and literacy will become increasingly important. For children, this may mean much greater emphasis on early childhood education. Among early entrants into the job market and for the existing work force, it will mean lifelong training and retraining.

A greater proportion of women in the work force will mean that programs geared toward assisting their needs will be required. Child care, flexible work rules, pensions that

accommodate absences for pregnancy leave, job sharing, and special training will be considered. Adult day care will become necessary since fewer women will be home to care for aging parents.

B. Natural Resources Use Trends

The world experienced some substantial economic growth during the last 25 years due to a relatively peaceful period and integration of technologies in most economies. This has brought about integration of the economies of developed and developing countries. The result of this integration is better markets for some products and increased competition for others, especially natural resource commodities. Increased supply and aquaculture substitutes for natural resource commodities (products from agriculture, timber, and marine based industries) have created downward price pressure on products that are the mainstay of developing countries.

As the world economy slowed, additional demand pressures are affecting these commodities. Following the unusual high growth in 2000 of 4.7 percent, world economic output started contracting significantly after late 2000 (FAO 2002). The global economic slowdown negatively affected international trade and commodity markets. International commodity prices, which were already weak, suffered further downward pressures caused by the economic downturn. Non-fuel primary commodities suffered an overall decline of an estimated five to six percent in 2001.

Natural resource extractions have provided fairly steady employment in periods of strong U.S. economic growth. However, declines in natural resources available for harvests and declines in prices have reduced the total employment of these sectors. Global supply/demand changes have decreased the real prices offered for these commodities. Shifting demographic factors are increasing the demand for service jobs that support the tourist and retiree industries. The following contains a summary description of the expected changes in Oregon's natural resource industries due to the global and national influences.

It's tempting to take short-term occurrences and predict long-term trends. However, both the long-term increase in supply due to increase in technology and productivity, and the slow increase in effective demand points to no expectation of real price increases for natural resource commodities. The following is a brief discussion of expectations for prices for the major natural resources produced in Oregon coastal economies.

1. Commercial Fishing

For the two decades following 1950, world marine and inland capture fisheries production increased on average by as much as six percent per year, trebling from 18 million metric tons in 1950 to 56 million metric tons in 1969 (FAO 2000). During the 1970's and 1980's, the average rate of increase declined to two percent per year, falling to almost zero in the 1990's.

This leveling off of the total catch follows the general trend of most of the world's fishing areas, which have apparently reached their maximum potential for capture fisheries production, with the majority of stocks being fully exploited. Therefore, it is unlikely that substantial increases in

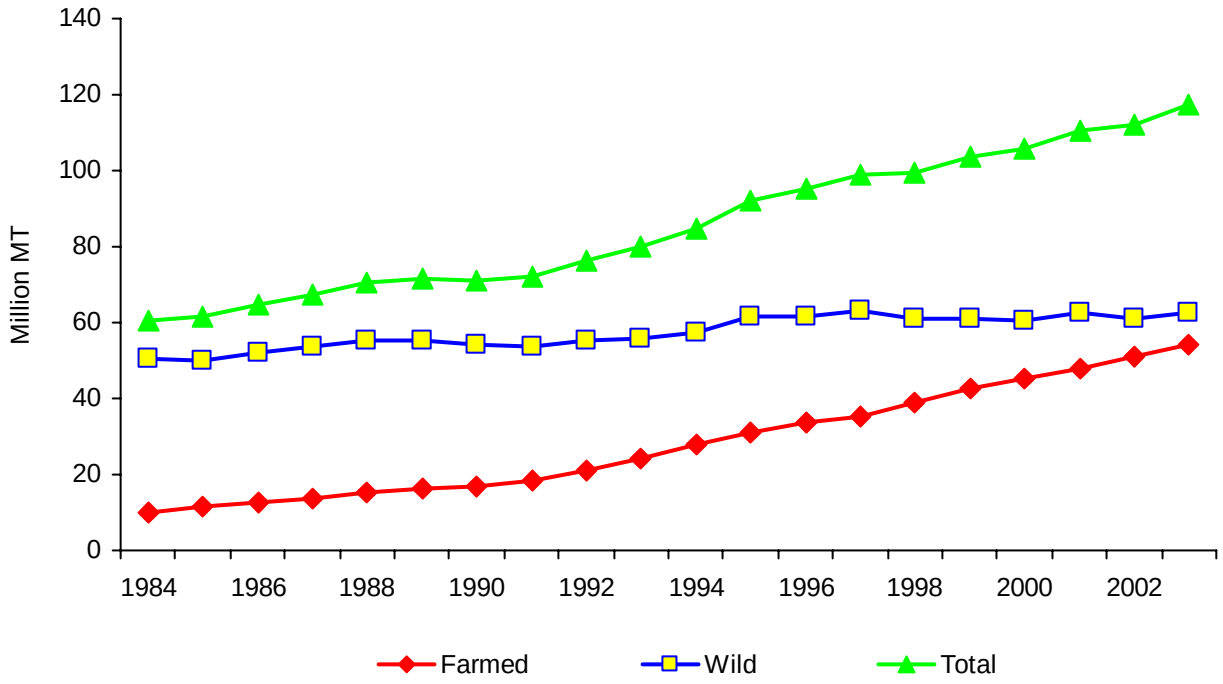
total catch will be obtained. In contrast, growth in aquaculture production has shown the opposite tendency. Starting from an insignificant total production, inland and marine aquaculture production grew by about five percent per year between 1950 and 1969 and by about eight percent per year during the 1970's and 1980's, and it has increased further to 10 percent per year since 1990 (Figure V.3).

The global patterns of fish production owe much to the activities of China, which reports production in weight that accounts for 32 percent of the world total. Other major producer countries are Japan, India, the United States, the Russian Federation, and Indonesia (FAO 2000).

Total aquaculture production reveals the enormous potential of this source of food towards food security and poverty alleviation, if the environmental impacts and other issues of sustainability relating to aquaculture facilities and to aquaculture production receive sufficient attention.

For captured fish, the number of underexploited and moderately exploited fisheries resources continues to decline slightly and, as fishing pressure increases, the number of fully exploited stocks remains relatively stable, while the number of overexploited, depleted, and recovering stocks is increasing slightly. Indices that were developed to monitor changes on marine ecosystems suggest that ecosystems may be shifting away from the underexploited state, giving cause for concern that continued heavy fishing may lead to more widespread changes.

Figure V.3
World Production of "Food" Fish



Notes: 1. Aquaculture accounted for 46% in 2003. Aquaculture accounted for only 17% in 1984.
Source: Sylvia (2005).

Rivers, lakes, and wetlands account for less than one percent of the global surface area, but yield at least eight percent of global fisheries production. However, these productive ecosystems are under pressure from the needs of a growing human population. The World Resources Institute reported that half of the world's wetlands were lost in the last century and that dams, diversions, and canals fragmented almost 60 percent of the world's largest rivers. Per capita water consumption increased by 50 percent between 1950 and 1990, and human use of available water resources is expected to increase from its current level of about 54 percent to more than 70 percent by 2025.

Even though there is a concern about the long-term sustainability of capture fisheries and water demands of aquaculture, the short to medium term expectations are that increased production will sustain downward pressures on seafood production. From a production point of view, there are dozens of promising species being farmed or under development. Tilapia, catfish, cod, halibut, red drum, cobia, black cod, and various species of bass, bream, and snapper all have attributes that make them candidates (Forster 2002).

The decline of available fish and fish prices has been well documented. The Magnuson-Stevens Act of 1976 provided for expansion of the American fishing fleet and the "fishing down to maximum sustainable yield" has been accomplished, although there has been a recent increase in commercial seafood landings due to recurrence of sardine availability and the unexpected continuation of strong Dungeness crab landings. The long-term viability of Oregon's commercial fishing industry will be dependent on the ability to make more with less. Competing directly with fish produced in other countries or by aquaculture does not provide an opportunity for a stable coastal fishing fleet. Any seafood development projects will have to include "niche" marketing that sells the cultural and environmental values provided by the Pacific Ocean waters.

Developing "niche" markets are for selected species, such as Chinook salmon and Dungeness crab. The U.S. dollar is expected to decline further. This trend, coupled with an increase in consumer desire to purchase "non-commodity" items such as wild harvested Chinook and whole Dungeness crab, provides some opportunities for expansion for Oregon seafood products (Sackton November 2005).

2. Agriculture

In 1918, the German chemist Fritz Haber won a Nobel Prize for the process of turning air into nitrogen fertilizer (National Public Radio 2002). Without this innovation, the Earth would not have been able to support its increasing population. Today, fertilizer factories pour out 100 million tons of nitrogen each year, and an estimated two billion people depend on the process to help grow the food they eat. This process, coupled with other technologies and marketing strategies helped some regions experience strong increases in output.

Viewed in the longer-term context, annual agricultural production growth over the last five years averaged 1.7 percent, compared with 2.1 percent over the preceding five-year period and 2.5 percent in the 1980's. The declining trend in agricultural output growth in Asia is largely attributable to China, where the growth rates are tapering off. In eastern Europe, a strong increase of 11 percent in grain production helped depress prices of wheat and other commodities.

The developed countries are faced with large subsidies for agricultural producers, while the developing countries face low subsidized world agricultural prices as they are searching to join world markets with their agricultural production (Klug 2005). The prospect for agriculture is at best constant prices. For specialized agriculture, adaptation to changing markets is the key to survival. "Essentially, farmers are targeting a market, then finding what they have to do to make those consumers happy, rather than simply growing a product and hoping it will sell. ... Having niche markets is the only way that farmers are going to be able to stay in the game." (Lee 2000).

Professor emeritus Desmond O'Rourke presents a bleak future for the Pacific Northwest's agriculture. His analysis was developed historically based on constrained world markets, federal subsidies, and cheap land and water. He predicts reduction in production in most agricultural commodities in the Pacific Northwest. The only significant expansion may be specialized markets such as berries and wine grapes (O'Rourke 2004).

The coastal communities produce a diversity of crops and livestock. This includes vegetables, livestock, hay, dairy cattle, cranberries, Christmas trees, holly, wild mushrooms, and nursery and horticultural crops such as lilies. The Tillamook area has been very successful in marketing premium products. The success of this marketing effort continues. However, because about 80 percent of feed for the dairy herd is imported, and because environmental regulations have made disposal of dairy waste costly, an expansion of the dairy herd for the Tillamook Creamery has moved to eastern Oregon.

Cranberries provided substantial income for farms in the Coos Bay area as well as in Pacific County. Due to very high prices for cranberries in the 1990's (as high as $50 per barrel), expansion in the U.S., and investments in other parts of the world (Chile and the Baltics), production increased and prices have declined to as much as $10 per barrel in 2000. The growth potential in agriculture in coastal areas is for some specialty crops and nursery (horticultural) crops.

3. Timber

Timber supply and demand are determined by interactions of global, national, regional, and local consumers, producers, and land owners. International trade in forest products increased during the periods of global trade expansion. For example, global production of solid wood products (which includes sawnwood and wood based panel) increased during 2000, rising by 1.7 percent to a level of 610 million cubic meters. The increase in production was attributable to the developed countries, where production increased by 2.6 percent. Overall, global output of pulp and paper products continued to show strong growth, with an increase of 3.2 percent during 2000.

The most important change in timber production is in the composition of product consumption. In the U.S., for example, per capita consumption of solid wood products has fallen, while per capita fiber consumption has increased 45 percent throughout the past four decades. Recent research suggests that per capita wood product consumption will decline over the next 50 years. There will be less reliance on solid wood products manufactured from logs and greater reliance on engineered and reconstituted products for structural applications (Haynes and Horne 1997). Greater use of recycled fiber will also decrease the demand for timber.

As the plantation production of the 1950's and 1960's in areas such as South America and New Zealand begins to emerge into the global market, the most optimistic assumption is that in the long-term prices will stabilize. The more pessimistic forecasts call for a decrease in forest product prices in the medium term.

The economies of many Pacific Northwest coastal communities were constructed on harvesting historical inventory of timber (mostly Douglas fir). Inventory harvesting gave way to plantation management. Falling prices for timber and plantation management costs are affecting decisions for harvests. At investment requirements of about seven percent, timber will provide prudent returns if harvesting takes place under 40 years of age. Or, as was anticipated for many years, the real price of timber increases by one to three percent per year. The outlook for lumber and fiber products at the global level does not support these price projections. In addition, the plantation style forests in coastal communities are facing diseases, such as Swiss needle cast, and a possibly devastating "Sudden Oak Death" disease (Cole 2002).

Timber that is harvested tends to be processed in several central manufacturing centers distant from the harvesting sites that have been upgraded and retooled for plantation logs. Milling used to occur close to cutting, but transportation costs as compared to milling capital costs have declined. Many factories cannot afford to have stranded investments and will haul logs long distances for processing. Consequently, lumber and wood products employment has declined much more dramatically due to productivity increases and the geographical concentration of milling centers. There is some possibility that growth in specialty species such as cedar and lumber grade alder may provide niche markets for growth in timber-based jobs in coastal communities.

Oregon's timber industry potential is linked to a strong "forestry services" sector. "Long-term innovation and vitality of Oregon's forest sector is integrally linked to the competitive edge of the critical service infrastructure." (E.D. Hovee and Company 2004). "Oregon State University has created a new Wood Innovation Center to help the State's forest products companies create new products, research new markets, and improve their efficiency." (Rivera 2005). This may address the need for increased forest management services.

4. Tourism

Demand for natural resource based recreation is based on available time and disposable income. The trend in developed countries is slower population growth and a shift toward older and wealthier populations. In the U.S., for example, population is expected to continue to grow, albeit at a declining rate, over the next 50 years. The population will become older, more affluent, more educated, and more racially and culturally diverse. The gross national product is expected to grow at an average rate of 2.7 percent over the next half century, and growth in per capita disposable income is expected to increase in line with general aging.

Population growth and the proportion of that population having a degree of affluence are the most significant factors to increase in recreation activity. The significant population increases expected for the Pacific Northwest and the rest of the U.S. over the next 50 years are a harbinger that major increases in recreation outdoor activity will occur.

Age structure influences recreation activity in that older people tend to travel farther for recreation, stay in developed campgrounds, and stay longer than young people. Older age groups will tend to be more educated than people in those age groups today, suggesting their participation rates in active outdoor recreation will be higher. As more people travel to the Pacific Northwest for vacations, recreation will become an increasingly important export of economies.

5. Attracting Retirees

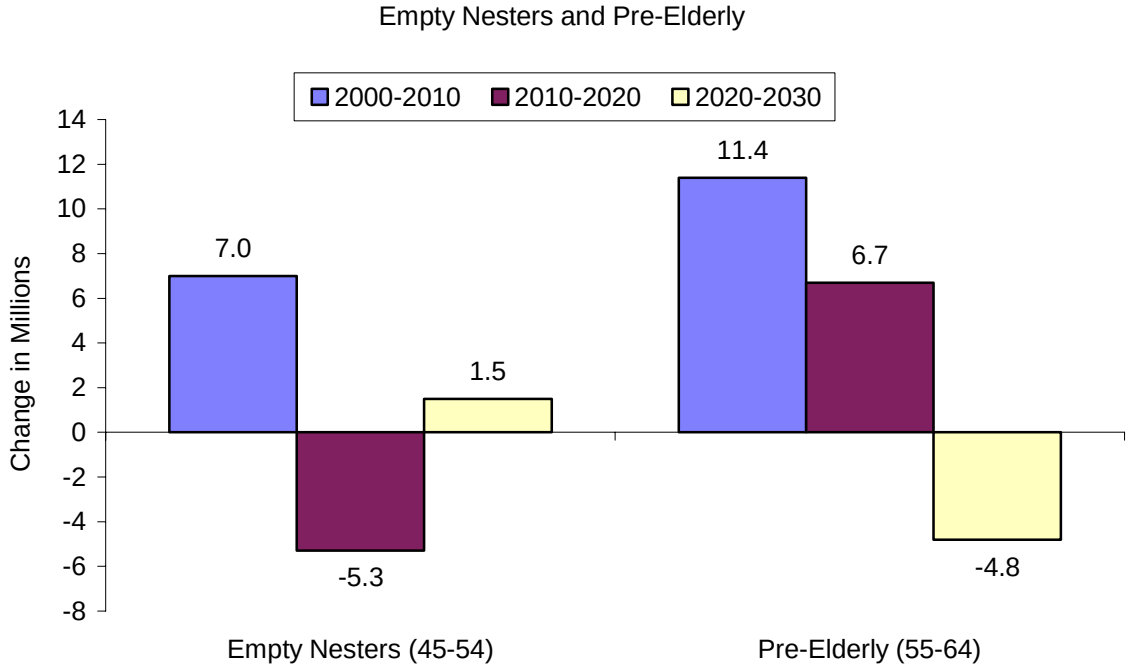
As the population ages, the bountiful coastal natural resources and temperate climate attract tourists as well as retiree settlement. Attracting retirees may be a policy that fits into some coastal communities' economic objectives. It is important to understand that the aged are not a homogenous group, and should not be treated as such. An often overlooked group is residents who grow older in their long-term home communities. Their characteristics and needs are different from in-migrating elderly and they require a different set of services and policies.

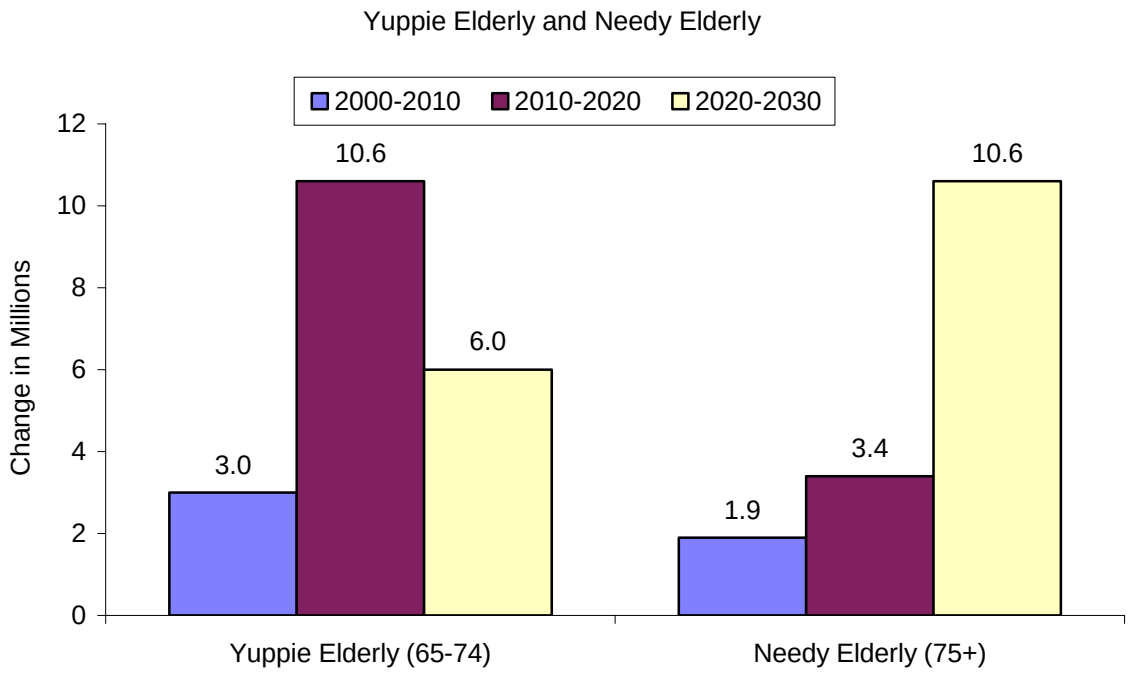
Frey (2000) distinguishes four age cohorts for their spending patterns and demands for services. Figure V.4 depicts graphically the dominance of the baby boomers over the next 30 years. The 45 to 54 year old empty nester consumer market will change between 2010 and 2020 from a growing to a declining market as the smaller "Generation X" population advances into that age group. The pre-elderly, 55 to 64 year old group will remain large for the next two decades as both halves of the boomer generation pass through it (Frey 2000). In assessing the boomers' effect on the post-65 age groups, it is important to make a distinction between the "yuppie elderly" and the "needy elderly." The yuppie elderly are most prevalent in the 65 to 74 age group. More than half of them are married. They are generally in good health and have high disposable incomes. The needy elderly are typically older than 75. A large portion are widows and dependent on the assistance of their families and social institutions (Frey 2000). In the second and third decades of the new century, the baby boomers will inflate dramatically the ranks of the elderly population. Early on, they will be part of one of the most sought-after markets for retirement communities and other consumer items. However, based upon their circumstances in earlier years, they will exhibit sharp disparities in their ability to afford a comfortable lifestyle - and as time passes, some will increase the size of the needy elderly population group (Frey 2000).

One study (Shields et al. 2002) of older movers finds that those who move for amenity or retirement reasons tend to be younger, wealthier, and more highly educated. These same studies also show that there are significant differences in income characteristics and spending habits between household types and these differences can be used to assess differences in economic and fiscal impacts. This age group also will invest in housing construction and upgrades, which impacts the construction sectors fiscal impacts similar to other age groups fueling community growth. The retiree age group does not have the same demand profile for public services like schools and health facilities; they will impact water, sewer, roads, and other infrastructure.

Income for retirees may include items different from the general population. Many retirees will own their own home and receive pensions, annuities, and other benefits that are not included in the usual definition of household income (Aizcorbe et al. 2003). Households of retirees are

Figure V.4
Population Changes in the Next Three Decades





Source: Milken Institute, U.S. Census Bureau.

usually smaller than the average. Comparing household income will thereby distort the income as well as the expenditure descriptions.

The low income elderly spend approximately $13,000 annually while the high income elderly spend $40,000. There are also notable differences in average household size (1.5 people for low income versus 2.3 people for high income). For the low income elderly households, Shields et al. (2002) suggest that 500 new households will create 100 initial jobs and a total of 156 jobs or 0.2 jobs for every person in the household. This compares with 600 initial jobs for higher income elderly with a total employment impact of 810 jobs or 0.7 jobs for every person in the household. For the Oregon Coast where purchases tend toward larger urban areas, these ratios may be much lower. The primary cause of the larger employment impact for the higher income households comes from greater levels of local purchases.

Research of the consumption patterns in local coastal areas as well as demand for local services by age and income groups is needed to provide information on the business and local fiscal impact of this growing population. For economic development policy in coastal communities, the comparison needs to be made between the benefits of attracting this age cohort with the overall cost in public services, changes to land use demands, and other impacts.

C. Effects of Natural Resource Use Trends on Coastal Communities

Increased technological input in natural resource production is increasing output of traditional natural resource commodities. Chemical fertilizers have changed the capacity of limited land and water resources to produce agricultural commodities. Engineering advances are increasing the capability to harvest timber in areas that were formerly inaccessible. At the same time, the growth of plantation forests is producing fiber that is utilized in engineered wood products, and increased recycling and electronic communication is decreasing the demand for low quality pulp wood. In fisheries, as new harvesting technologies are used to fully utilize most fisheries, a growing number of fish stocks are placed in the overfished status. The high prices of some species in the late 1980's encouraged aquaculture in species such as salmon and shrimp. Aquaculture produced output is now the determining factor in prices of fishery products.

In the short to medium term the technological advances have increased world production and reduced real prices for most natural resource commodities. In the longer term, the byproducts of this increased production will have some predictable consequences. Increased nitrogen run-off will result in higher ecosystem costs, such as algae clogged waters. Increased plantation timber production will affect diversity of timber areas. Water resources are the most likely to be most affected by increased aquaculture production. Additional pollution and the threat of chemical and disease contamination will have to be addressed. The coastal areas are an attractant for future residents and visitors, because of the relative abundance of natural resources. These are a comparative advantage at present to draw visitors and will become a greater attractant as other areas in the world and in the U.S. become more developed. The challenge will be for the coastal areas to protect this comparative advantage while at the same time keeping pace in economic development.

D. Lessons Learned From Economic Dependence on Natural Resources

The economic growth of the American West was highly dependent on the availability of cheap or free natural resources. For most of the 19th century the emphasis on public land management was simply to move land from federal to private ownership. During this formative period, many Americans viewed federal lands as a vast resource to be settled and exploited. Driving economic interests were fur trading, transportation, homesteading, agriculture, mining, fishing, and forest use (Lynch and Larrabee 1992).

For example, the post-World War II housing boom, predictions of long-term demand for timber and shortage of private timber resulted in federal policies that authorized twice as much federal timber to be cut between 1950 and 1966 as had been cut in the 45 years before the war. Since the 1960's, demands for sustainable use of natural resources, particularly federal forest lands, led to federal laws such as the Multiple Use Sustained-Yield Act of 1960.

Wilderness enthusiasts and others sought to place recreation on equal footing with extractive uses. At the same time, traditional users -- timber operators, ranchers, and miners -- argued for greater allocation. As extractive uses were curtailed, many communities sought a resumption of traditional use for the economic benefits. There are studies, however, which cast light on the economy during this natural resource dependent era. These studies suggest the era was not as prosperous as some remember it to be. A socio-economic study of the Columbia Basin summarized that, "New evidence suggests many of these rural communities - and particularly those which still rely primarily on natural resources - are falling farther behind their urban counterparts." (Columbia Basin Consultants 2000). Southwick Associates (2000) found in Oregon that the presence of roadless or protected areas did not correlate with slower income or employment growth.

Power and Barrett (2001) describes the changes in the West as once-important natural resource industries declined dramatically in terms of jobs and incomes. These industries - mining and metal processing, logging and lumber products, and agriculture - historically supported European settlement. They are still widely believed to be the economic lifeblood of the region's rural areas and small cities. Their decline still provokes deep anxiety. The fear is the region will become more depressed and more residents will be forced to leave.

Despite these fears, the changing industrial structure has not triggered an overall decline in jobs, income, or residents in the region. On the contrary, as industrial transformation proceeded, in-migration, employment, and aggregate real income have boomed. During the last half of the twentieth century, the Mountain West was the fastest growing multi-state region of the United States. During this period, only the Pacific Northwest, seriously challenged this lead. The Mountain West grew twice as fast as this region. Power and Barrett conclude that environmental protection supports the economic vitality the Mountain West enjoys.

In this difficult transition, as total personal income grew, per capita income may not have increased at the same rate. This may be a result of national demographic and lifestyle trends more than an indicator of local or regional economic well-being. Although falling pay per job signals an erosion of earning opportunities, it tends to overstate how badly workers and their

families are doing. This is true for a variety of reasons. As more of the population joins the work force, the decline in pay per job may be the result of a growing preference among workers for part-time employment. And, by holding more than one job, workers can increase their earnings as individuals, even if each job pays less. In addition, income per capita rose steadily because non-employment income rose. The increase in the number of part-time workers during the 1980's and 1990's should not necessarily be seen as a sign of deteriorating job market. Approximately nine of every ten workers working part-time say they do so by choice.

Power and Barrett conclude by recommending several public policy alternatives for economic development. These are:

- Public policy makers should recognize that local government cannot manipulate local pay and income by subsidizing job creation.
- Local economic policy should focus first on enhancing the ability of existing residents to earn a decent living rather than recruiting new employers with tax breaks and other subsidies.
- Public policy makers should focus on the present and the future and try not to dwell on the past economy.
- Local economic policy should treat the community's site-specific characteristics, both public services and the quality of the natural and social environments, as important determinants of both citizen well-being and local economic vitality.

A study by ECO Northwest (1999) found that "the sky did not fall." Harvests in Oregon and Washington declined from a peak level of 15.7 bbf in 1988 to 8.3 bbf in 1996. The reduction in logging triggered a widespread fear of economic catastrophe. While some painful local dislocations happened, these dire predictions did not materialize. Instead of collapsing, the region's economy expanded. While timber harvests fell 86 percent on federal lands and 47 percent overall from their peak 1988 to 1996, employment in the lumber and wood products industry only fell 22 percent. In contrast, total employment in the region rose 27 percent.

ECO Northwest cites several reasons for the diminishing importance of logging in the region's economy. Some of these are:

- Lumber and wood products employment had been steadily decreasing in the Pacific Northwest.
- The lumber and wood products industry represents a small component, about 1.9 percent of total employment in 1996, of the Pacific Northwest economy.
- Analysts have known for several decades that the timber industry has been liquidating the stock of timber at such elevated rates that the logging levels had to eventually decrease.
- Before 1991 the timber industry exported more than three bbf of logs annually, or about one-fourth of all logs cut in the region. As the Asian economies cooled, log exports dropped by half and the industry diverted logs to domestic mills.
- Although most trees grow in rural areas, the bulk of the lumber and wood products industry is located in or near the metropolitan areas, where the timber industry plays a relatively small role.

ECO Northwest then concludes that unlogged forests have become more important to the economy. The vitality of the region's economy depends in no small part on the health and vitality of its forests. Many firms locate in the Pacific Northwest because the region has a good workforce and many workers. These workers are drawn to the region because they cherish the quality of life. Residents of the region derive numerous services from healthy forests. The services constitute, in effect, a "second paycheck" which complements the "first paycheck" derived from their place of employment and pension programs.

Several policy implications for economic development are advanced by this study. They are:

- States with the best economic performance typically have the highest environmental quality.
- States with the most stringent actions to protect threatened and endangered species typically have the best economic performance.
- Counties with scenic and natural resource amenities typically exhibit stronger economic performance, in terms of jobs and incomes, than counties with high concentrations of extractive industries and less scenic qualities.
- Counties adjacent to wilderness typically exhibit stronger economic performance, measured in jobs and incomes, than other counties.

However, taken together, the ECO study concludes that logging reductions on federal lands in the Pacific Northwest are an integral part of, and not an impediment to, the region's economic evolution.

Thinning and forest fire protection measures on forest lands is needed to promote forest health. Such operations on public lands can provide a major source of income and employment on the Oregon Coast. Traditional management of private timber lands will continue to make an important contribution to the region's economy.

Cogan Owens Cogan (2005a and 2005b) addressed how Oregon can replace jobs lost to the downturns in natural resource extraction activities. The study examined how American natural resource industries have shifted from growing and harvesting raw materials to producing and exporting value-added, engineered products. This shift towards value-added natural resource products is particularly important for economic development in rural communities. In particular, the study addressed how Oregon can leverage its assets and opportunities to commercialize research, transfer technology, and create "traded-sector" jobs in sustainable industries related to:[1]

- Green building, community infrastructure and value-added wood products
- Water and water management systems
- Renewable energy production and management

Rural communities can take advantage of new opportunities in renewable energy, such as wind, solar, hydro, geothermal and biomass. When sited correctly, these new energy sources can

1. Traded-sector jobs are those resulting from the export of products or services. Traded-sector jobs increase wealth locally by importing it from outside the exporting state or region.

coexist with existing agricultural and forest use practices and provide supplemental income for farmers and forest landowners. Surrounding communities can benefit from having new residents employed at equipment maintenance and facility operations jobs, as well as causing an increase to the property tax base.

E. Challenges to Economic Growth in Coastal Communities

The challenges facing economic growth in coastal communities include dealing with its unique social and economic characteristics.[1]

- Problems of distance and accessibility
- Narrower bases of economic activity, making it vulnerable to cyclical swings
- Lower levels of labor, skill sets, and education/training facilities
- Gaps in communication and transportation infrastructure
- Greater distance to producer's markets
- Lower population densities that deny "critical mass" levels for certain businesses, public services, and organizations
- Smaller tax bases, making the provision of public infrastructure and services more difficult to finance
- Less access to and local control over investment capital
- Dependence on a small circle of leaders who are often volunteers serving a variety of roles
- Higher quality of life (lower crime rates, cleaner environment, scenic views, and less congestion)

The coastal economy is heavily influenced by seasonal industries; these include forest products, fishing, and sectors dependent on tourism, such as those in trade and services. During the winter months, when rains and wind make outdoor activity difficult and visitor levels are down, major layoffs in these seasonal industries raise unemployment through much of the region (ODA June 2002). In the summer, the situation is reversed. Local unemployment levels generally reach their annual low point. In fact, many coastal employers dependent upon tourism report difficulty in securing an adequate supply of workers during the busy summer months.

Policies to increase economic activity on the Oregon Coast should seek to smooth out the economic seasonal roller coaster of the coast. Infrastructure requirements designed for peak load are too expensive and not providing services at the peak level discourages sustainable investments.[2]

The transportation system, which mixes chip trucks, logging trucks, in-a-hurry tourists, and RV's driven by retirees at 30 mph, presents major challenges. Efforts should be made to encourage

1. Factors are adapted from NGACPR (1990).
2. Traffic patterns on coastal routes vary a great deal between summer and winter months (Appendix E). Such variance requires roads to be constructed for high flow times, and/or results in slow traffic and unsafe driving.

truck traffic to take an east-west route to major markets inland to preserve the capacity of coastal highways to serve visitors and residents.

In economic terms, an area may have a "comparative advantage" over another area for reasons of proximity to manufacturing inputs, product markets, labor availability, transportation, etc. Economic development efforts should promote these advantages. The Oregon Coast's comparative advantage is the natural amenities. Pricing is another tool for marketing goods or services that are in demand. Is it wise to provide and price goods and services that attract and overwhelm coastal areas for three months of the year? A review of public services should include these seasonal variation issues.

Oregon coastal communities in closer proximity to large metropolitan areas are faring better economically than the more remote communities. Natural resource extractive industries are still important in these areas, but the commodity value is no longer an automatic competitive advantage for economic development. These areas have other advantages for economic growth: high quality of life being in a rural setting, sufficient medical, shopping, and other services, and comparably low land values. They also have transportation infrastructure and proximity that allows a convenient driving distance to higher levels of education, medical services, airports, etc. Economic development public policy in other coastal communities needs to recognize the success in these mentioned communities, and where possible, promote the same advantages.

Local government leaders should avoid trying to manipulate local pay and job creation through subsidization (Cortright 2002). Local economic policy should focus on enhancing the ability of existing residents to earn a decent living rather than seeking new employers with tax breaks or other subsidies. Local economic policy should treat the community's site-specific characteristics, both public services and the quality of the natural and social environments, as important determinants of both citizen well-being and local economic vitality. In turn, visitors will be attracted from metropolitan areas for ecological and cultural based tourism. This will make public goods an important part of the local economic base, and attract desired economic growth. Cortright found economic growth can occur from distinctive places with a high quality of life:

- A resource base is still important, but it no longer an automatic competitive advantage.
- Traditionally, more capital and more labor is what made economies grow.
- An extraordinary quality of life can attract and retain talented people.
- Knowledge businesses can occur anywhere, but adequate telecommunication infrastructure is required to take full advantage of these opportunities.
- Talented and skilled people are key to supporting a knowledge economy. Opportunities for educational enrichment are needed from kindergarten through life.

Large expanses of timberlands, water vistas, low density development, and footloose business opportunities (not tied to nearness of manufacturing input and market centers) will draw visitors and permanent residents. Knowledge based industries dependent on reliable and robust broadband services will be attracted to the quality of life amenities available to owners and workers in these coastal areas (OCZMA 2005). The biggest challenge will be to maintain these amenities as the region experiences growth.

Oregon's land use planning encourages protection of rural lands committed to agriculture and timber use. It also protects lands of unique qualities and promotes keeping open spaces. As such, unchecked and low-density sprawl is not a problem in Oregon (Northwest Environment Watch 2004). Economic growth can occur without the despoiling of the very reasons businesses and workers may be attracted to a region.

A study to determine the adequacy of sufficient supply of industrial and commercial lands to encourage economic development was completed (Oregon Industrial Conversion Study Committee 2004). The study had a statewide perspective, but there are results applicable to the Oregon Coast. In short, there is a lack of specific project-ready industrial lands in certain areas of the State and there should be a balance when considering changing zoning from one proposed use to another. The study provides a useful checklist to communities for protecting and readying lands for economic development.

At a congressional hearing in 2005, Fluharty (2005) highlighted the rural development problems and possible solutions. "First of all, we must acknowledge that what has worked in the past will no longer suffice. We live in a global economy, which requires understanding and acceptance of a new economic geography. The old rural economy, based on commodity production, will no longer sustain us. Globalization advantages the lowest cost producer, forcing rural commodity producers, be they in agriculture, minerals, timber, or manufacturing, to compete in a global system where even our advancing economies of scale may not enable U.S. producers to compete with those in nations with lower land, labor, and input costs."

There are ways that community-based initiatives that encourage development of sustainable communities can effectively deal with these issues. Oregon Coast community specific practices were determined and reported in an Oregon Transportation and Growth Management Program (TGM) sponsored by the Oregon Department of Transportation and the Department of Land Conservation and Development. The TGM produced significant information about growth management objectives and practices. Publications and information about funding opportunities can be found at the Program's website listed in Appendix A.

The following list of economic development practices was adapted from Johnson (1993) and Wilderness Society (1992).

- Plan for new economic and regulatory policies

  Community based initiatives are vulnerable to economic forces and resource policies far beyond their control. Resolving timber management controversies is only one action that would provide greater certainty to these efforts. New economic incentives and more flexible means to achieve economic development are necessary to minimize adverse natural resource management effects and smooth the transition of communities.

- Plan for economic development at the correct scale

  Individual rural communities are not well equipped to address the multiple obstacles to economic development and diversification. Conversely, when small communities in a

geographic area begin to work together, a number of important benefits accrue. Several communities can develop a coordinated plan for marketing the area's distinctive assets and features. Staff and volunteer resources can be pooled to organize and sustain the planning effort. Responsibility for physical, educational, and social service infrastructure needs can be shared. Furthermore, public and private funders can support rural development without having to work on a piecemeal basis with each community.

Communities need to make choices to minimize economic development obstacles. A fundamental rule is to base economic development plans on the strengths and values of an area. For rural, forest-based communities, natural resources can be the foundation for economic diversification. Where reductions in timber harvest or processing employment have occurred, communities may find ways in which the forest can provide other economic benefits. For instance, recreation and tourism plans should highlight the features of their forested lands.

An alternative approach is to mimic what other successful communities have done. There are lessons to be learned from other communities, but there should be caution too. The fundamental reasons a community may be thriving are probably related to unique features that make the place special. So the lessons learned may not be transferable or acceptable to other communities.

Historically, many economic development plans have not succeeded. It is difficult to translate dreams into reality. The planning process itself can contribute to these difficulties. To succeed, the planning process must be thorough, detailed, and anchored in reality. Perhaps most important, the means to carry out a plan must exist. Community leaders must be patient, because economic development takes time.

- Develop locally relevant economic information

  Economic information that is directly related to their areas is crucial for successful economic development planning. While many people are aware of general international, national, and regional economic trends, there are many questions about how those trends relate to local situations.

  Locally relevant economic information provides communities with a means to project the benefits of their economic development plans. This is important in analyzing potential projects and in attempting to "sell" the projects to funding sources, especially private funders such as banks.

  Shortage of information about the attempts of other rural areas to diversify their economies can be a problem. This can be as seemingly simple as finding the staff time to learn about and then prepare applications for various funding programs that are available at the state and federal levels. Rural communities need information about how other communities are responding to economic development challenges, which approaches are working, which are failing, and why. Any group of people or organizations with a common interest has a need for shared information; the degree to which that need is not

met, however, seems to be larger for rural communities. Their small size, the distances between them, and scarce financial resources make it difficult to create opportunities to build networks.

- Promote community based conflict resolution

  Facilitation and other conflict resolution techniques can help communities and environmental organizations resolve disputes and begin working together to achieve common goals. However, many communities lack adequate funds to bring all "stakeholders" to the table on an equal basis. Efforts need to be made to encourage "bottom up" economic development planning that involves a broad cross-section of the community.

- Encourage sustainable enterprise financing

  Rural development efforts traditionally have suffered from a lack of access to capital. The problem is even more severe when exploring the new territory of sustainability. Policy makers should work with rural development practitioners, small business owners, and nontraditional lenders to fund new options, but businesses to benefit from these options should be within industries with growth opportunities.

- Build local infrastructure

  Rural areas are nearly always short on infrastructure of all types. Initiatives to promote these areas as thriving communities in which to live and work will require investments in infrastructure.

  Transportation links to urban areas are essential. Communities will benefit from good road access to the State's population centers. Reestablishment of commercial air service will assist economic development. Communication linkages are also important, especially for remote areas where improved transportation routes are unlikely in the short term.

  Local planning must provide land which is appropriately located for commercial and industrial development and has all of the necessary urban services. Areas with substantial amounts of environmentally sensitive lands such as wetlands must find a way to make permitting of development projects practical or move the commercial and industrially zoned land away from the sensitive areas. No one benefits from zoning land for development that is effectively undevelopable because of regulatory constraints.

  The region's educational system and medical services must be sound. In deciding whether to locate in a rural area, prospective employers will want to know their employees' families will be well educated and cared for. Availability of adequate medical facilities is also an important consideration for retirees moving to a rural community.

- Provide for community and environment initiatives

  Many communities and local environmental organizations have more dreams and energy than they have resources. Additional efforts need to be made to direct national and state funding programs to unleash the creative energies of local participants. Such policy efforts will ensure governments and residents are developing growth strategies and management objectives that incorporate the witnessed trends in social and resource use impacts.

How will planning and policy making anticipate and take advantage of population growth patterns? Deavers (1992) points out there are two primary challenges to overcome. First, there needs to be ways to deal with scale. Cooperation in the operation of public facilities and services is needed between single communities that cannot afford on their own. Governments need to be imaginative in trying to stimulate this kind of analogous scale in rural communities. An example is that it may be more cost effective for regional public facility authorities and service districts to provide services rather than traditional general purpose government. Second, the key for rural economies is going to be connectedness. That is, rural areas such as the Oregon Coast have to be able to communicate and transport. They need to be connected to Portland and other growth centers in the Willamette Valley.

Other challenges are to have an institutional structure that is informed about innovation and about rapid changes in the marketplace, technology, and finance. Rural areas need to gain access to information about and expertise in such areas as business planning and development and national and international competition. Government alliances for consolidation of public services should be explored whenever possible. A more educated work force must be provided. Revitalization efforts must address the problems of sustaining the environment, improving infrastructure, and capitalizing on the area's quality of life. An efficient and well maintained surface and air transportation system has to be provided.

VI. BIBLIOGRAPHY

Aizcorbe, Ana M., Arthur B. Kennickell, and Kevin B. Moore, Division of Research and Statistics. "Recent Changes in U.S. Family Finances: Evidence from the 1998 and 2001 Survey of Consumer Finances." *Federal Reserve Bulletin.* January 2003.

Beyers, William B. "Trends in Service Employment in Pacific Northwest Counties: 1974-1986." *Growth and Change.* Fall 1991.

Claritas. Demographics USA, County Edition, 2003. Undated.

Cogan Owens Cogan. Key Market and Technology Trends in Natural Resources and Sustainable Development. Prepared for Oregon Economic and Community Development Department. http://www.econ.state.or.us/NatResTrends.pdf. June 30, 2005(a).

Cogan Owens Cogan. Strategic Assessment and Action Plan for Natural Resources and Sustainable Development. Prepared for Oregon Economic and Community Development Department. http://www.econ.state.or.us/NatResAction.pdf. June 30, 2005(b).

Cole, Michelle. "Researchers Trying to Save Oregon Douglas Fir From Sudden Oak Death Fate." *The Oregonian.* September 16, 2002.

Columbia Basin Consultants. Columbia Basin Socio-Economic Assessment. Oregon Economic and Community Development Dept.; Idaho Rural Partnership; Montana Dept. of Commerce; and Washington Dept. of Community, Trade, and Economic Development. June 2000.

Cortright, Joseph. 21st Century Economic Strategy: Prospering in a Knowledge-Based Economy. Prepared for the Oregon Business Council. 2002.

Davis, Shannon W. and Hans Radtke. A Demographic and Economic Description of the Oregon Coast. Prepared for the Oregon Coastal Zone Management Association. March 1994.

Dean Runyan Associates. Oregon Travel Impacts Reports: State Impacts and County Level Impacts. Prepared for the Oregon Tourism Commission. February 2005.

Deavers, Kenneth L. "The Role of Rural America in the U.S. Economy and the National Policy Debate." in Rural Development: Rural America Faces Many Challenges, General Accounting Office, GAO/RCED-93-95. November 1992.

E.D. Hovee and Company. Oregon Forest Sector Contributions and Potential. Oregon Forest Resources Institute. June 2004.

ECO Northwest. The Sky Did Not Fall: The Pacific Northwest's Response to Logging Reductions. Prepared for Earthlife Canada Foundation and Sierra Club of British Columbia. April 1999.

Fluharty, Charles W. Written statement before the Subcommittee on Economic Development, Public Buildings, and Emergency Management, U.S. House of Representatives. March 17, 2005.

Food and Agriculture Organization of the United Nations (FAO). The State of World Fisheries and Aquaculture 2000. via Internet: http://www.fao.org/DOCREP/003/X8002E/X8002E00.HTM. 2000.

Food and Agriculture Organization of the United Nations (FAO). The State of Food and Agriculture, Agriculture and Global Public Goods Ten Years After the Earth Summit. 2002.

Forster, John. "Aquaculture's Next Move?" *Pacific Fishing.* October 2002.

Frey, William H. and Ross C. Derol. America's Demography in the New Century: Aging Baby Boomers and New Immigrants as Major Players. Milken Institute. Santa Monica, California. March 2000.

Fullerton, Howard N. Jr. "Labor Force Projections to 2008: Steady Growth and Changing Composition" in *Monthly Labor Review* No. 31. November 1999.

Hanus, Ann. Looking to the Future: The Implications of Demographic Trends for the State of Oregon. Office of Economic Analysis. July 12, 1988.

Haynes, Richard W. and Amy L. Horne. "Economic Assessment of the Basin." Chapter 6, Volume IV in An Assessment of the Ecosystem Components in the Interior Columbia Basin. Pacific Northwest Research Station, Portland, Oregon. June 1997.

Johnson, R.L., B. Shelby, and E. Moore. Chetco River User Study. Final report to Chetco River Ranger District, USDA Forest Service, Brookings, OR. 1989.

Johnson, Rebecca and David Ervin. Analysis of Transition in Oregon Coastal Communities and Identification of Options for Managing Future Development. Oregon State University Department of Forest Resources. 1993.

Klug, Foster, The Associated Press. "WTO Nations Strike Deal, But It's Less Than Hoped For." *The Oregonian.* December 19, 2005.

Larson, Jerry. Oregon Department of Agriculture. Personal communication. December 1998.

Lee, Mike, staff writer. "Losing Ground, Part 5: Adapting to Market Key to Survival." Via Internet: http://archive.tri-cityherald.com/losingground/part5.html. Tri-City Herald. April 20, 2000.

Lettman, Gary. Timber Harvesting Behavior on Private Timberland in Oregon. May 27, 1998.

Lettman, Gary, Oregon Department of Forestry. Personal communication. November 2005.

Liegel, Leon, David Pilz, and Tom Love. "The MAB Mushroom Study: Background and Concerns." *AMBID* (a Journal of the Human Environment). Special Report No. 9. September 1998.

Lynch, D.L. and S. Larrabee. Private Lands Within National Forests: Origins, Problems, and Opportunities. p 198-216 in Steen (1992). 1992.

Masnick, George S. and Zhu Xiao Di. "Projections of U.S. Households By Race/Hispanic Origin, Age, Family, Type, and Tenure to 2020: A Sensitivity Analysis," in *Issue Papers on Demographic Trends Important to Housing.* Urban Institute Final Report to the U.S. Department of Housing and Urban Development, Washington, D.C. February 2003.

Minnesota IMPLAN Group, Inc. (MIG, Inc.). IMPLAN Professional User's Guide, Analysis Guide, Data Guide. Stillwater, Minnesota. Third edition. February 2004.

Moore, Eric and Johnny Vong. Labor Force Participation Rates -- What are They and Why Should I Care. Oregon Labor Force Trends. September 3, 2004.

National Governor's Association Center for Policy Research, et. al. A Look at Economical Social Trends Affecting Rural Oregon. October 1990.

National Public Radio (NPR). Fritz Haber and the Nitrogen Cycle. via Internet: http://www.npr.org/programs/morning/features/2002/jul/fritzhaber/index.html. 2002.

O'Rourke, Desmond. "Playing Ag Survivors: Will the Pacific Northwest be Voted Off the Island?" Pacific Northwest Regional Economic Conference. May 2004.

Oregon Coastal Zone Management Association (OCZMA). Oregon Coast Telecommunications Economic Development Strategy. Economic Development Administration and Oregon Economic and Community Development Department. September 2005.

Oregon Department of Administrative Services (ODA), Office of Economic Analysis. Oregon Economic and Revenue Forecast. Quarterly report, Volume XXII, No. 2. June 2002.

Oregon Department of Forestry. Oregon's Timber Harvests: 1849-2004. 2005.

Oregon Department of Forestry. Annual Timber Harvest Reports. Via Internet http://www.odf.state.or.us/DIVISIONS/resource_policy/resource_planning/Annual_Reports/default.asp?id=401010205. 2005.

Oregon Department of Transportation. Traffic Volume Tables. Via Internet: http://egov.oregon.gov/ODOT/TD/TDATA/tsm/tvt.shtml#Traffic_Volume_Tables. Annual report.

Oregon Housing and Community Services. Report on Poverty 2004. 2004.

Oregon Industrial Conversion Study Committee and Department of Land Conservation and Development. Promoting Prosperity: Protecting Prime Industrial Land for Job Growth. Report to Governor Kulongoski. November 2004.

Oregon Progress Board. Oregon Benchmarks, County Data Book. November 2005.

Oregon State University Extension Service, Oregon Agricultural Information Network. Via Internet http://oregonstate.edu/oain/Database/signin.asp. 2006.

Mapes, Jeff, Alex Pulaski, and Gail Kinsey Hill. "The Nine States of Oregon." *The Oregonian.* http://www.oregonlive.com/special/ninestates/. November 2, 2003.

Northwest Environment Watch. The Portland Exception, A Comparison of Sprawl, Smart Growth, and Rural Land Loss in 15 U.S. Cities. October 25, 2004.

Pacific Northwest Cheese Project. "Tillamook Closes Bandon Retail Store." Via Internet: http://pnwcheese.typepad.com/cheese/2005/10/tillamook_close.html. 2005.

Power, Thomas Michael, and Richard N. Barrett. Post-Cowboy Economics: Pay and Prosperity in the New American West. Island Press. 2001.

Radtke, Hans D. and Shannon W. Davis. Some Estimates of the Asset Value of the Columbia River Gillnet Fishery Based on Present Value Calculations and Gillnetters' Perceptions. Salmon For All, Astoria, Oregon. August 1994.

Rivera, Dylan. "New OSU Wood Center Out to Aid State Industry." *The Oregonian.* December 21, 2005.

Sackton, John, President, Seafood.com. "Outlook for U.S. Seafood Market in 2005." Presentation. 2005.

Sackton, John. "Report on Crab Markets 2005-2006." Presented at Dungeness Preliminary Price Negotiation Meeting, hosted by Oregon Dungeness Crab Commission, Newport, Oregon. November 2, 2005.

Schlosser, William E. and Keith A. Blatner. "Critical Aspects of the Production and Marketing of Special Forest Products." Prepared for the President's Forest Conference Committee, Portland, Oregon. May 3, 1993.

Shields, Martin, Judith I. Stallmann, and Steven C. Deller. "Does Retiree Household Income Matter? Comparing the Economic and Fiscal Impacts of Low and High Income Retirees in Rural Wisconsin." *Community Economics*. Center for Community Economic Development; Community, Natural Resource, and Economic Development Programs; and University of Wisconsin-Extension, Cooperative Extension Service. Newsletter No. 306. April 2002.

Siegel, Jacob. A Generation of Change. New York: Russel Sage. 1993.

Southwick Associates. Historical Economic Performance of Oregon and Western Counties Associated With Roadless and Wilderness Areas. Prepared for the Oregon Natural Resources Council and the World Wildlife Fund. August 15, 2000.

Sylvia, Gil, Marine Resource Economist, Coastal Oregon Marine Experiment Station. "The Possibilities and Risks of Open Ocean Aquaculture." Presentation. 2005.

U.S. Census Bureau. The 65 Years and Over Population: 2000. Census 2000 Brief. October 2001.

Ward, Franklin R., Gary J. Lettman, and Bruce A. Hiserote. Oregon's Forest Products Industry: 1998. U.S. Forest Service, Pacific Northwest Research Station, and Oregon Department of Forestry. February 2000.

Wilderness Society. From Dreams to Realities. Northwest Area Foundation. 1992.

Wolf, Edward C. A Tidewater Place: Portrait of the Willapa Ecosystem. The Willapa Alliance. 1993.

APPENDIX A

INTERNET INFORMATION SOURCES

Table A.1
Selected Descriptive Indicators

Information	Source	Publication or Content	World Wide Web Internet Address
Community and county profiles	Oregon Economic and Community Development Department	Basic information about incorporated communities	http://info.econ.state.or.us:591/profile.htm
		County economic indicators	http://www.econ.state.or.us/stats.htm
Personal income total and by industry category	U.S. Bureau of Economic Analysis	Regional Economic Information System	http://www.bea.doc.gov/bea/regional/reis/
Employment, payrolls, number of firms by county, by industry category	Research and Statistics Section, Oregon Employment Department	Oregon Labor Market Information System	http://www.olmis.org/
Unemployment rate	U.S. Department of Labor, Bureau of Labor Statistics	Local Area Unemployment Statistics Program	http://www.bls.gov/
Input/output model by county by major industry sectors	U.S. Forest Service IMPLAN Model	IMPLAN Analysis Guide	http://www.implan.com/
Traffic volumes	Transportation Research Section, Oregon Department of Transportation	Oregon State Highway Transportation Volume Tables	http://egov.oregon.gov/ODOT/TD/TDATA/tsm/tvt.shtml#Traffic_Volume_Tables
	Bureau of Transportation Statistics	Geographic Information Services	http://www.bts.gov/programs/geographic_information_services/
Commercial fishing landed pounds and recreational catch and effort	National Marine Fisheries Service, Fisheries Statistics Division	Fisheries statistics	http://www.st.nmfs.gov/st1/
Timber harvests by county	Oregon Department of Forestry	Annual Timber Harvest Report	http://oregon.gov/ODF/PUBS/publications.shtml
Farm sales by commodity by county	Oregon State University Extension Service	Oregon Agricultural Information Network	http://oregonstate.edu/oain/
Demographic and housing characteristics	U.S. Census Bureau	Census of Population and Housing, particular indicators available in different	http://www.census.gov/main/www/cen2000.html http://factfinder.census.gov/servlet/SAFFFacts?_sse=on
Population forecasts	PSU Center for Population Research and Census	Demographic and economic forecasts	http://www.pdx.edu/prc/
Consumer finances	Federal Reserve and Bureau of Labor Statistics	Survey information on finances and buying habits	http://www.federalreserve.gov/pubs/oss/oss2/scfindex.html http://www.bls.gov/cex/home.htm
Bank deposits	Federal Deposit Insurance Corporation	Summary of Deposits	http://www2.fdic.gov/sod/sodSummary.asp?barItem=3
Health and well being	Health Division, Oregon Department of Human Services	Public health systems	http://oregon.gov/DHS/ph/
		Health analysis reports	http://www.dhs.state.or.us/publications/
	Oregon Board of Medical Examiners	Numbers of physicians	http://www.bme.state.or.us/TotalsByCountyAndType.html

Table A.1 (cont.)

Information	Source	Publication or Content	World Wide Web Internet Address
	Office for Oregon Health Policy and Research	Numbers of hospitals	http://www.oregon.gov/DAS/OHPPR/RSCH/databank.shtml
Crime rate	Statistical Analysis Center, Oregon Criminal Justice Commission	Reports of criminal offenses and arrests	http://www.ocjc.state.or.us/CrimeData/Crimestatsindex.htm
Social disruption indicators	National Center for Health Statistics, Centers for Disease Control and Prevention	Birth, mortality, divorce, and other health statistics	http://www.cdc.gov/nchs/datawh.htm
Assessed property value and tax rate and property tax parcel base maps	Oregon Department of Revenue	Oregon Property Tax Statistics The Oregon Map	http://egov.oregon.gov/DOR/ http://www.ormap.org/index.cfm?opt=home
Economic census	U.S. Census Bureau	Economic Census Reports	http://www.census.gov/econ/census02/
Performance measures	Oregon Progress Board	Achieving the Oregon Shines Vision Oregon Benchmarks	http://egov.oregon.gov/DAS/OPB/ http://www.oregon.gov/DAS/OPB/docs/CoData/05CoData/FinalBook.pdf
Effective buying income	Sales & Marketing Management Magazine	Annual Survey of Buying Power	http://www.salesandmarketing.com
Land resources	University of Oregon Department of Geography	Atlas of Oregon	http://geography.uoregon.edu/
	Oregon Ocean-Coastal Management Program, Oregon State University Geosciences, and Ecotrust	Oregon Coastal Atlas	http://www.coastalatlas.net/index.asp
Housing starts	Construction Monitor U.S. Census Bureau	Weekly Building Permits Annual data on housing units authorized by building permits	http://www.constructionmonitor.com/ http://www.census.gov/const/www/permitsindex.html
Economic analysis tools	Washington State University Extension	Northwest Income Indicators Project	http://niip.wsu.edu/default.htm
	Sonoran Institute	Economic Profile Systems	http://www.sonoran.org/
	USDA Natural Resources Inventory and Analysis Institute	NRCS economic models/tools	http://www.nriai.nrcs.usda.gov/technical/economics.html
	U.S. Census Bureau	The Data Web	http://dataferrett.census.gov/
	Fannie Mae Foundation	Maps and community descriptions	http://www.dataplace.org
	USDA Natural Resources Conservation Service and NOAA	Dollar-based and non-monetary measures of ecosystem assets	http://www.ecosystemvaluation.org/index.html
Environmental quality, human health, social, demographic and economic statistics	U.S. Environmental Protection Agency	Dynamic choropleth maps	http://www.turboperl.com/dcmaps.html
	NOAA's National Ocean Service	Spatial Trends in Coastal Socioeconomics	http://marineeconomics.noaa.gov/socioeconomics/

Table A.1 (cont.)

Information	Source	Publication or Content	World Wide Web Internet Address
Demographic thematic mapping	U.S. Census Bureau	Online mapping resources	http://www.census.gov/geo/www/maps/CP_OnLineMapping.htm
Geographic Information System for coastal areas	Oregon Department of Land Conservation and Development, Ocean-Coastal Management Program	Coastal Access Inventory and Geographic Information System Project	http://159.121.112.22/coast/specialprojects/coastalaccess.html
	Oregon Geospatial Enterprise Office	Oregon geospatial data	http://www.gis.state.or.us
	Inforain	GIS data layers	http://www.inforain.org/dataresources/datalayers.cfm
	Geospatial Center	Northwest Forest Plan GIS data	http://www.reo.gov/gis/
	USGS Oregon Water Science Center	Water resources of Oregon	http://or.water.usgs.gov/
	USDI National Spatial Data Infrastructure	Geospatial One-Stop	http://www.geodata.gov/gos
Topographic maps and aerial photography	TopoZone	Shaded relief maps, 1-meter aerial photos, detailed street maps	http://www.topozone.com
	University of Oregon Libraries	Map & Aerial Photography Collection	http://libweb.uoregon.edu/map/
Clearinghouses for references	Andrew Reamer & Associates and Impresa, Inc.	Socioeconomic data sources, arranged by subject and provider	http://www.econdata.net/
	University of Oregon Libraries	Local area data for Oregon	http://libweb.uoregon.edu/dlc/
	EPA National Center for Environmental Economics	Links to web sites about environmental economics	http://yosemite.epa.gov/ee/epa/eed.nsf/pages/InternetLinks.html
	Oregon Coastal Futures Project	Resource links by topic	http://www.coastalfutures.org/resources.html
	Professor Steven C. Hackett, Humboldt State University	Steve Hackett's Internet Resources for Economists	http://sorrel.humboldt.edu/~envecon/internet.html
	Oregon Blue Book	The Oregon Topics directory	http://bluebook.state.or.us/topic/topichome.htm
Emerging issues	U.S. Census Bureau	Information and Communication Technology: 2003	http://www.census.gov/prod/2005pubs/ict-03.pdf
	Trinity University, Department of Sociology and Anthropology	Retiree age effects	http://www.trinity.edu/~mkearl/index.html#in
	Brookings Institution	Using subsidies to accomplish economic development	http://www.brookings.edu
	Washington State Labor Council		http://www.wslc.org/legis/corpsubs.htm
	Good Jobs First		http://www.goodjobsfirst.org/
	The Heartland Institute		http://www.heartland.org/Index.cfm
	Cleveland State University, Center for Economic Development		http://urban.csuohio.edu/economicdevelopment/knight
Planning and policy tools	Oregon Department of Transportation and the Department of Land Conservation and Development	Transportation and Growth Management Program	http://www.oregon.gov/LCD/TGM/about_us.shtml
	U.S. Department of Energy	Using land use planning for sustainable development	http://www.sustainable.doe.gov/welcome.shtml
	Oregon Business Council	Policy recommendations	http://www.orbusinesscouncil.org
	Smart Growth Online	Community design	http://www.smartgrowthonline.org/
	Oregon Coastal Zone Management Association	Coastal news	http://www.oczma.org/

APPENDIX B

POPULATION, HOUSING, GEOGRAPHIC, HEALTH, AND SOCIAL CHARACTERISTICS BY STATE, COAST, COASTAL COUNTY, AND CITY

Table B.1
Population, Housing, Geographic, Health, and Social Characteristics

	Clatsop	Tillamook	Lincoln	Coastal Lane	Coastal Douglas	Coos	Curry	Coast	Oregon
Housing Characteristics in 2000									
Housing units	19,685	15,906	26,889	8,523	3,370	29,247	11,406	103,133	1,452,709
Occupied	14,703	10,200	19,296	6,973	2,869	26,213	9,543	79,955	1,333,723
Occupied by renter	26.8%	18.1%	24.6%	21.4%	27.0%	28.5%	22.6%	24.9%	32.8%
Vacant	4,982	5,706	7,593	1,550	501	3,034	1,863	23,178	118,986
Vacant for second home	15.7%	28.9%	19.1%	10.9%	4.9%	2.9%	7.2%	14.1%	2.5%
Median year built	1963	1973	1975	1979	1970	1968	1978	1971	1973
Population Characteristics in 2000									
Population	35,630	24,262	44,479	15,003	6,378	62,779	21,137	209,668	3,421,399
By age									
Under 18	23.7%	22.2%	21.4%	17.0%	20.0%	21.9%	19.2%	21.5%	24.7%
Age 18-64	60.7%	58.0%	59.1%	51.3%	54.5%	59.0%	54.2%	58.0%	62.5%
65 and over	15.6%	19.8%	19.5%	31.7%	25.5%	19.1%	26.6%	20.5%	12.8%
Median age	40.0	43.5	44.1	52.6	46.8	43.1	48.8	44.2	36.3
By race									
White alone	92.5%	94.4%	90.3%	95.2%	94.2%	91.5%	93.0%	92.3%	86.4%
Components of population change									
Total change, 1990-2000	2,329	2,692	5,590	-	-	2,506	1,810	14,927	579,078
Net migration	1,959	2,971	6,096	-	-	3,327	2,576	16,929	421,452
Natural increase	370	-279	-506	-	-	-821	-766	-2,002	157,626
Population Characteristics in 1990									
Population	33,301	21,570	38,889	-	-	60,273	19,327	173,360	2,842,321
By race									
White alone	96.5%	97.4%	96.0%	96.7%	96.4%	95.6%	96.1%	96.2%	92.8%
Components of population change									
Total change, 1980-1990	812	406	3,625	-	-	-3,774	2,335	3,404	209,165
Net migration	-548	-29	2,905	-	-	-6,267	2,026	-1,913	35,766
Natural increase	1,360	435	720	-	-	2,493	309	5,317	173,399
Population Characteristics in 1980									
Population	32,489	21,164	35,264	-	-	64,047	16,992	169,956	2,633,156
By race									
White alone	96.5%	98.0%	97.3%	-	-	96.4%	97.1%	96.9%	94.6%
Components of population change									
Total change, 1970-1980	4,016	3,130	9,509	-	-	7,532	3,986	28,173	541,771
Net migration	3,076	2,511	8,938	-	-	3,096	3,295	20,916	396,157
Natural increase	940	619	571	-	-	4,436	691	7,257	145,614

Table B.1 (cont.)

	Clatsop	Tillamook	Lincoln	Coastal Lane	Coastal Douglas	Coos	Curry	Coast	Oregon
Income Characteristics									
Renters below median income spending more than 30% of income for housing (including utilities)	69.2%	59.4%	72.2%	-	-	75.8%	69.1%	70.9%	70.1%
Owner occupied households below median income spending more than 30% of income for housing (including utilities)	41.1%	35.2%	46.3%	-	-	38.9%	36.0%	40.6%	40.1%
Median monthly housing costs to owners in 1999 ($)	745	615	748	-	-	591	602	661	914
Median monthly housing costs to renters in 1999 ($)	543	532	575	-	-	499	550	537	620
Median value of owner occupied homes ($)	143,400	143,900	148,800	131,809	99,499	98,900	148,000	130,228	152,100
Per capita income (1999)	19,515	19,052	18,692	18,724	16,006	17,547	18,138	18,395	20,940
Persons in poverty (1999)	13.2%	11.4%	13.9%	14.1%	16.2%	15.0%	12.2%	13.6%	11.6%
Median gross rent ($)	543	532	575	544	386	499	550	530	620
Gross rent as a percentage of household income (1999) greater than 30 percent rate	42.3%	37.2%	44.6%	45.8%	30.7%	44.7%	41.2%	42.9%	42.3%
Median gross rent as a percentage of household income (1999)	26.6%	25.4%	28.0%	29.3%	24.9%	27.7%	26.2%	27.2%	26.9%
Median selected monthly owner costs ($) for specified owner-occupied housing units	745	615	748	585	559	591	602	652	914
Median selected monthly owner costs as a percentage of household income (1999)	19.2%	17.3%	20.0%	17.8%	17.2%	18.3%	18.2%	18.6%	20.2%
Educational Attainment									
Persons over 25 with high school education (2000)	85.6%	84.1%	84.9%	85.8%	80.7%	81.6%	81.7%	83.4%	85.1%
Persons over 25 with bachelors education (2000)	19.1%	17.6%	20.8%	16.9%	13.6%	15.0%	16.4%	17.6%	25.1%
Household Size	2.35	2.33	2.27	2.15	2.22	2.34	2.19	2.29	2.51
Effective Buying Income in 2003									
EBI (2002) per household	38,565	37,008	36,716	-	-	33,743	32,982	35,657	43,768
Retail sales per household	31,534	21,176	29,008	-	-	21,756	18,402	24,779	33,946
Average wage per worker	26,814	26,510	25,153	-	-	26,513	23,826	26,000	34,446
Labor Force Characteristics in 2000									
Participation rate	63.9%	59.8%	58.7%	-	-	54.9%	49.5%	57.5%	66.1%
Male	69.2%	66.4%	64.4%	-	-	59.9%	52.7%	62.7%	73.3%
Female	58.9%	53.5%	53.6%	-	-	50.3%	46.4%	52.6%	59.2%
Employment	16,497	10,956	19,263	4,995	2,116	25,187	7,981	79,884	1,627,769
By occupation									
Management, professional, and related	26.6%	27.3%	27.3%	24.6%	24.2%	28.5%	26.9%	27.5%	33.1%
Service	21.4%	17.4%	21.9%	24.7%	23.0%	19.6%	20.1%	20.3%	15.3%

Table B.1 (cont.)

	Clatsop	Tillamook	Lincoln	Coastal Lane	Coastal Douglas	Coos	Curry	Coast	Oregon
Sales and office	24.8%	21.8%	27.5%	22.7%	22.6%	23.9%	24.8%	24.8%	26.1%
Farming, fishing and forestry	3.0%	6.5%	2.9%	1.9%	6.1%	3.4%	3.5%	3.6%	1.7%
Construction, extraction, and maintenance	10.9%	9.8%	10.4%	13.0%	12.2%	10.5%	10.6%	10.5%	9.1%
Production, transportation, and material moving	13.3%	17.2%	9.9%	13.1%	11.8%	14.1%	14.0%	13.3%	14.7%
By industry									
Transformative	21.9%	32.3%	18.8%	-	-	21.2%	21.7%	22.3%	24.5%
Distributive	8.7%	9.4%	8.5%	-	-	9.8%	8.3%	9.0%	11.2%
Retail Trade	15.2%	12.4%	14.9%	-	-	13.1%	15.0%	14.1%	12.5%
Consumer Services	20.4%	14.9%	24.8%	-	-	15.1%	18.7%	18.9%	13.2%
Producer Services	9.5%	10.1%	11.6%	-	-	11.1%	11.8%	10.8%	15.0%
Social Services	19.2%	16.1%	16.1%	-	-	23.7%	17.5%	19.3%	19.3%
Government Services	5.1%	4.8%	5.4%	-	-	5.9%	7.1%	5.6%	4.4%
By class of worker									
Private wage and salary workers	73.3%	70.9%	69.7%	68.8%	72.2%	70.8%	64.2%	70.4%	76.3%
Government workers	15.4%	14.5%	17.0%	14.6%	17.4%	17.3%	19.2%	16.6%	14.4%
Self-employed workers in own not inc. business	10.9%	14.1%	12.6%	16.1%	10.1%	11.3%	15.8%	12.4%	8.9%
Unpaid family workers	0.4%	0.5%	0.7%	0.5%	0.3%	0.7%	0.9%	0.6%	0.4%
Geographic Characteristics in 2000									
Area (square miles)	827	1,102	980	720	750	1,600	1,627	7,607	95,997
Density (persons per square mile)	43.1	22.0	45.4	20.8	8.5	39.2	13.0	27.6	35.6
Commute Patterns									
Did not work at home									
< 10 min.	31.8%	30.7%	29.9%	37.7%	42.8%	29.8%	44.9%	32.4%	17.9%
10-29 min.	50.9%	49.6%	48.4%	44.8%	29.3%	49.8%	41.9%	48.2%	54.7%
30+ min.	17.4%	19.7%	21.7%	17.5%	27.8%	20.4%	13.1%	19.4%	27.4%
Worked at home	5.0%	6.5%	6.1%	6.9%	4.6%	5.2%	7.4%	5.8%	5.0%
Land Ownership (1975)									
Federal	0.8%	20.3%	31.0%	-	-	23.7%	64.8%	32.0%	51.9%
BLM	0.1%	6.7%	3.8%	-	-	16.0%	6.5%	7.7%	25.3%
USFS	0.0%	12.7%	26.4%	-	-	5.4%	53.4%	22.0%	24.1%
BIA	0.0%	0.0%	0.0%	-	-	0.0%	0.0%	0.0%	1.2%
Other	1.2%	0.0%	0.0%	-	-	0.0%	0.0%	0.2%	1.1%
State	9.8%	44.1%	3.6%	-	-	6.2%	1.1%	11.8%	2.5%
County	0.8%	0.7%	3.1%	-	-	2.1%	0.2%	1.3%	0.9%
Private	88.1%	35.8%	63.1%	-	-	70.3%	38.8%	57.0%	45.2%
Assessed property value per capita in 2003									
Residential	51,575	72,635	60,854	-	-	27,086	45,441	47,737	30,518
Commercial/industrial/multi-housing	20,423	11,046	21,892	-	-	10,722	15,591	15,796	15,111

Table B.1 (cont.)

	Clatsop	Tillamook	Lincoln	Coastal Lane	Coastal Douglas	Coos	Curry	Coast	Oregon
Utilities	3,376	3,328	3,281	-	-	2,529	1,381	2,846	3,248
Other	20,026	17,950	17,714	-	-	10,124	20,602	15,994	13,182
Total	95,401	104,958	103,741	-	-	50,461	83,015	82,373	62,059
Net property tax rate	1.245%	1.037%	1.332%	-	-	1.299%	0.889%	1.204%	1.533%
Health and Social Characteristics									
Staffed hospital beds per 1,000 persons (2003)	2.26	1.20	1.62	2.70	11.58	2.48	1.14	2.15	1.75
Physicians per 1,000 persons (2003)	1.52	1.12	1.33	-	-	2.02	1.14	1.55	2.65
Index crime per 10,000 persons (2003)	494	340	765	-	-	327	251	456	526
Bank deposits per capita ($) (2003)	9,047	6,428	11,340	-	-	7,264	8,714	8,619	11,791
Personal bankruptcy filings per 1,000 persons (2003)	6.17	5.65	7.68	-	-	5.28	4.81	6.01	6.67
Housing with inadequate plumbing (2000)	0.9%	0.4%	0.7%	-	-	0.9%	0.9%	0.8%	0.5%

Notes: a. Coast is a geographic region comprised of 5 whole counties (Clatsop, Tillamook, Lincoln, Coos, and Curry) and 2 partial counties (coastal Lane and coastal Douglas). Coastal Lane County is approximated by zip codes 97430, 97439, 97453, 97480, and 97493 and coastal Douglas County is approximated by zip codes 97441, 97467, and 97473. Data at the zip code level used for coastal Lane and Douglas counties is from decennial census Summary File 3 tables. Where a dash is shown, the area defined as Coast excludes effects from coastal Lane and coastal Douglas counties.

b. Net migration equals in-migrants minus out-migrants. Natural increase equals births minus deaths.

c. Assessed value is reduced by amounts of exempt properties.

Source: Sources by subject are contained in Appendix A, except for land ownership. Land ownership is from:

Federal Lands:

BLM Facts: Oregon and Washington, 1974-75.

Summary of National Forest Acreages as of June 30, 1975 (Information Sheet 5400).

Various publications, U.S. Fish and Wildlife Service.

Additional information supplied by the Bureau of Indian Affairs and the National Park Service, Portland.

State Lands:

Biennial Report of the State Forester, 1972-1974. Oregon State Board of Forestry.

Biennial Report 1972-1974. State Land Board, Division of State Lands.

State Park Acreages. Oregon State Parks and Recreation Department (to June 30, 1975).

Various Publications, Oregon Department of Fish and Wildlife, 1975.

County Lands:

Information supplied by counties and by the Association of Oregon Counties, May 1976.

Private Land:

Figures determined by subtraction of the federal, state, and county lands from the county area.

Table B.2
City Population and Housing Characteristics

	Population Characteristics										Housing Characteristics				
	2000 Population	Under 18	18-64	65 and over	White Alone Rate	Education 25+ H.S.	Median Age	Average Household Size	Poverty Rate	Median household income in 1999	Housing Units	Occupied Rate	Vacant Rate	Renter Occupied Rate	Vacant Second Home Rate
Oregon	3,421,399	24.7%	62.5%	12.8%	86.4%	85.1%	36.3	2.51	11.6%	40,916	1,452,709	91.8%	8.2%	35.7%	2.5%
Clatsop	35,630	23.6%	61.0%	15.5%	92.5%	85.6%	40.0	2.35	13.2%	36,301	19,685	74.7%	25.3%	35.8%	15.7%
Astoria	9,807	23.5%	60.8%	15.7%	89.6%	85.7%	38.3	2.26	15.9%	33,011	4,858	87.2%	12.8%	48.7%	1.9%
Cannon Beach	1,600	17.3%	67.7%	15.1%	92.9%	92.0%	43.7	2.11	12.0%	39,271	1,641	43.3%	56.7%	39.0%	50.5%
Gearhart	948	19.9%	63.0%	17.1%	96.9%	91.2%	46.7	2.21	6.4%	43,047	1,055	42.7%	57.3%	23.3%	53.6%
Seaside	5,822	20.2%	59.6%	20.2%	93.7%	82.6%	41.3	2.17	15.6%	31,074	4,078	65.1%	34.9%	52.1%	18.7%
Warrenton	4,082	26.7%	60.7%	12.6%	92.0%	82.2%	36.6	2.49	14.2%	33,472	1,799	90.1%	9.9%	34.7%	2.9%
Tillamook	24,262	22.2%	58.2%	19.6%	94.4%	84.1%	43.5	2.33	11.4%	34,269	15,906	64.1%	35.9%	28.2%	28.9%
Bay City	1,128	22.5%	58.4%	19.1%	91.2%	85.9%	42.7	2.33	12.4%	33,375	579	85.1%	14.9%	26.8%	8.5%
Garibaldi	904	17.5%	55.6%	26.9%	92.3%	79.2%	49.2	2.04	11.6%	28,945	584	74.7%	25.3%	27.1%	17.5%
Manzanita	501	11.0%	54.9%	34.1%	97.0%	93.4%	57.2	1.84	7.2%	38,750	1,078	28.5%	71.5%	26.4%	67.1%
Nehalem	261	34.9%	52.5%	12.6%	98.5%	86.7%	42.1	2.42	7.7%	40,250	121	69.4%	30.6%	27.4%	19.8%
Rockaway Beach	1,280	17.3%	54.8%	28.0%	96.5%	82.7%	52.5	1.99	10.8%	28,798	1,573	40.4%	59.6%	32.8%	51.0%
Tillamook	4,374	26.6%	56.8%	16.6%	93.6%	85.8%	33.3	2.46	15.4%	29,875	1,898	92.6%	7.4%	49.3%	0.7%
Wheeler	425	20.5%	54.4%	25.2%	95.3%	79.6%	50.1	1.98	16.2%	29,000	244	72.1%	27.9%	38.6%	21.3%
Lincoln	44,479	21.4%	59.2%	19.4%	90.3%	84.9%	44.1	2.27	13.9%	32,769	26,889	71.8%	28.2%	34.3%	19.1%
Depoe Bay	1,188	14.4%	57.7%	27.9%	92.2%	87.9%	49.8	2.01	8.0%	35,417	911	64.1%	35.9%	33.9%	23.5%
Lincoln City	7,307	21.7%	59.0%	19.3%	86.9%	84.7%	41.8	2.18	16.1%	24,959	4,990	67.6%	32.4%	54.4%	22.7%
Newport	9,493	21.9%	60.5%	17.6%	89.2%	84.6%	40.9	2.25	14.4%	31,996	5,034	81.7%	18.3%	48.1%	8.7%
Siletz	1,174	29.0%	58.4%	12.6%	72.5%	79.3%	36.1	2.70	15.4%	38,542	468	89.7%	10.3%	29.8%	2.4%
Toledo	3,438	31.0%	60.8%	8.1%	91.3%	80.3%	34.3	2.65	19.3%	34,503	1,474	89.0%	11.0%	35.2%	0.5%
Waldport	2,054	24.1%	54.2%	21.8%	89.6%	83.7%	44.6	2.24	17.3%	33,301	1,099	82.7%	17.3%	35.5%	8.0%
Yachats	644	15.8%	55.9%	28.3%	97.0%	94.0%	55.7	1.85	14.1%	32,308	619	53.8%	46.2%	27.3%	38.0%
Coastal Lane	14,374	17.5%	50.7%	31.8%	95.2%	85.8%	52.6	2.15	14.1%	31,627	8,523	81.8%	18.2%	26.1%	10.9%
Dunes City	1,282	17.8%	56.5%	25.7%	96.0%	91.7%	53.1	2.22	10.6%	39,100	705	79.1%	20.9%	13.6%	13.9%
Florence	7,318	15.9%	45.9%	38.2%	95.9%	85.2%	55.8	2.02	14.4%	30,505	4,174	85.4%	14.6%	32.5%	7.2%
Coastal Douglas	7,007	20.4%	54.2%	25.4%	94.2%	80.7%	46.8	2.22	16.2%	26,944	3,370	85.1%	14.9%	31.8%	4.9%
Reedsport	4,270	20.1%	51.3%	28.6%	94.1%	80.9%	47.1	2.19	16.0%	26,054	2,178	90.8%	9.2%	33.1%	1.5%
Coos	62,779	21.8%	59.1%	19.1%	91.5%	81.6%	43.1	2.34	15.0%	31,542	29,247	89.6%	10.4%	31.9%	2.9%
Bandon	2,880	18.2%	49.3%	32.5%	92.1%	87.8%	49.3	2.09	16.0%	29,492	1,535	83.8%	16.2%	39.9%	7.8%
Coos Bay	15,443	21.9%	60.0%	18.1%	89.9%	80.8%	40.1	2.29	16.5%	31,212	7,094	91.6%	8.4%	40.3%	1.0%
Coquille	4,345	23.9%	58.8%	17.3%	91.9%	77.5%	41.5	2.35	10.6%	29,931	1,850	91.1%	8.9%	33.6%	0.6%
Lakeside	1,391	15.4%	58.2%	26.4%	92.7%	79.2%	53.3	2.11	15.2%	25,781	764	84.9%	15.1%	21.1%	5.5%
Myrtle Point	2,510	25.6%	55.3%	19.0%	91.7%	75.1%	40.9	2.43	19.8%	27,536	1,110	89.0%	11.0%	32.6%	0.2%
North Bend	9,571	24.6%	58.7%	16.6%	91.9%	86.0%	39.6	2.35	14.8%	33,333	4,291	92.5%	7.5%	40.5%	0.4%
Powers	737	23.1%	53.1%	23.9%	83.6%	80.1%	44.7	2.20	23.5%	21,615	403	82.9%	17.1%	32.3%	3.0%
Curry	21,137	19.0%	54.1%	26.9%	93.0%	81.7%	48.8	2.19	12.2%	30,117	11,406	83.7%	16.3%	27.0%	7.2%
Brookings	5,363	23.9%	51.7%	24.4%	91.1%	84.7%	43.1	2.30	11.5%	31,656	2,614	88.3%	11.7%	43.1%	4.6%
Gold Beach	1,864	21.9%	61.7%	16.4%	95.9%	76.7%	44.8	2.19	12.4%	30,243	987	84.0%	16.0%	33.7%	6.0%
Port Orford	1,153	17.3%	56.3%	26.5%	92.9%	85.1%	50.5	2.02	17.8%	23,289	662	86.3%	13.7%	29.4%	4.7%

Applicable notes and sources from Table B.1 apply to this table.

APPENDIX C

OREGON COASTAL AREAS LANDING VOLUME AND VALUE IN 1981 TO 2003

Table C.1
Oregon Coastal Areas Landing Volume (Thousands of Round Pounds) in 1981 to 2003

Year	Salmon	Dungeness Crab	Pink Shrimp	Albacore Tuna	Groundfish	Pacific Whiting	Other	Total
				Astoria Area				
1981	1,484	911	8,041	3,994	25,593	360	6,893	47,276
1982	3,189	1,037	6,232	723	22,526	3	680	34,390
1983	751	1,285	3,142	1,938	21,484	41	1,189	29,830
1984	2,952	1,070	1,625	751	18,325	26	1,624	26,372
1985	3,648	1,257	4,199	660	18,356	157	1,670	29,947
1986	7,921	898	12,815	1,424	20,754	113	1,929	45,853
1987	6,981	1,474	19,185	476	24,601	37	1,493	54,246
1988	8,964	2,929	11,447	547	27,295	17	1,122	52,321
1989	5,536	4,438	10,232	444	33,295	11	1,316	55,272
1990	2,285	3,169	9,246	827	27,199	70	1,250	44,047
1991	2,982	1,393	5,955	258	33,544	2,713	761	47,606
1992	858	3,692	8,392	877	29,227	23,505	1,630	68,181
1993	978	3,434	8,878	1,295	31,274	22,598	1,600	70,058
1994	955	3,056	2,450	603	25,181	46,777	1,222	80,243
1995	635	4,331	2,768	1,807	22,106	58,079	1,233	90,959
1996	647	7,811	2,112	2,256	23,284	70,002	1,043	107,156
1997	469	2,780	3,179	3,967	20,653	82,508	2,234	115,790
1998	363	1,887	1,378	6,793	18,450	57,843	1,868	88,583
1999	741	3,821	5,791	1,814	19,327	84,446	3,461	119,401
2000	1,536	2,869	9,047	4,011	17,079	75,165	22,058	131,765
2001	2,002	4,232	11,250	1,842	14,221	41,888	29,662	105,098
2002	2,477	5,307	12,469	1,313	9,013	26,834	51,117	108,530
2003	2,821	7,922	5,667	1,769	10,293	32,008	56,820	117,300
				Tillamook Area				
1981	941	355	1,312	58	178		84	2,929
1982	654	247	928	10	1,291		15	3,144
1983	284	201	462	46	1,943	6	138	3,081
1984	41	173	281	12	1,236		1,152	2,894
1985	117	341	1,960	24	2,198	1	325	4,965
1986	620	297	4,412		938		156	6,423
1987	936	299	3,942	21	1,367	1	107	6,673
1988	1,273	421	3,541	22	3,363	67	127	8,813
1989	998	585	2,241	0	3,788		149	7,762
1990	473	300	2,796	18	2,596		195	6,378
1991	625	250	1,956		3,341		154	6,326
1992	163	420	2,874	102	2,087	3	103	5,752
1993	100	446	3,001	115	3,205		204	7,070
1994	34	321	414	441	1,979		251	3,440
1995	111	458	956	114	808		187	2,634
1996	144	784	1,206	75	1,441		116	3,766
1997	37	292	984	261	333	3	133	2,043
1998	76	155	568	195	218		109	1,321
1999	38	542	798	151	213		122	1,863
2000	113	544	499	193	313		160	1,822
2001	257	414	389	171	335		165	1,732
2002	322	749	2,159	177	340		197	3,944
2003	294	1,206	2,477	244	236		218	4,674

Table C.1 (cont.)

Year	Salmon	Dungeness Crab	Pink Shrimp	Albacore Tuna	Groundfish	Pacific Whiting	Other	Total
				Newport Area				
1981	1,659	1,765	7,000	1,410	34,115		1,090	47,040
1982	1,125	1,834	4,409	313	39,155		1,019	47,854
1983	688	1,582	1,499	847	23,586	18	2,730	30,950
1984	210	1,344	1,276	465	19,296	12	3,544	26,148
1985	566	3,008	5,778	444	17,643	1	2,884	30,325
1986	1,880	1,509	7,765	474	14,778	415	580	27,401
1987	1,759	1,898	11,496	1,242	18,705	302	800	36,201
1988	3,002	3,037	13,400	2,274	17,578	436	643	40,370
1989	1,573	2,736	18,364	266	19,432	184	1,000	43,555
1990	530	1,995	9,444	866	15,569	4,851	1,535	34,789
1991	815	1,470	5,075	699	17,829	25,480	1,121	52,489
1992	904	2,684	12,299	2,288	19,596	84,410	2,350	124,531
1993	529	2,661	5,366	2,237	20,519	56,292	1,952	89,557
1994	189	3,480	3,180	2,696	16,162	95,910	1,049	122,667
1995	1,530	3,515	2,904	2,787	12,107	89,145	1,068	113,055
1996	1,404	4,583	3,693	4,881	14,508	85,466	705	115,241
1997	1,218	2,042	4,676	3,935	12,524	80,041	3,428	107,865
1998	1,104	2,123	2,283	2,174	8,020	99,922	2,142	117,768
1999	225	3,535	6,163	2,111	9,787	69,907	853	92,580
2000	614	3,757	8,657	3,800	9,009	76,020	676	102,533
2001	1,938	2,734	7,225	4,607	6,760	69,161	1,218	93,642
2002	1,660	3,446	11,535	1,980	4,590	40,902	529	64,643
2003	1,882	6,596	6,067	4,996	5,813	44,187	590	70,130
				Florence Area				
1981	159	22		25	1		8	214
1982	179	35		7	0		10	231
1983	35	18		9	3		8	72
1984	19	19		7	0		6	52
1985	112	74		0	17		12	215
1986	240	104		7	546	6	8	911
1987	504	238		13	492	2	3	1,251
1988	532	391		30	654	2	15	1,624
1989	254	255		6	520		3	1,038
1990	122	211		18	404		3	759
1991	152	176		2	259		3	591
1992	149	257	13	22	293		8	742
1993	73	237	16	49	738	1	11	1,123
1994	13	214	13	62	550		6	858
1995	127	228	1	8	269	3	7	642
1996	93	184		29	276		12	594
1997	101	187	3	30	281		13	614
1998	84	347	0	71	49		13	565
1999	37	222	91	40	322	0	11	723
2000	70	229		52	259		9	618
2001	163	146	3	91	174	1	18	597
2002	114	92		40	97		23	365
2003	107	95		131	146		9	488

Table C.1 (cont.)

Year	Salmon	Dungeness Crab	Pink Shrimp	Albacore Tuna	Groundfish	Pacific Whiting	Other	Total
				Winchester Bay Area				
1981	380	564	348	283	803		363	2,741
1982	713	695	331	16	1,501		350	3,606
1983	208	375	85	108	864		165	1,805
1984	40	457	0	18	769		198	1,483
1985	301	571	5	74	963		39	1,954
1986	310	465	6	63	659	1	52	1,558
1987	617	482	29	74	785	7	66	2,059
1988	640	687	38	127	483		100	2,074
1989	589	644	76	90	187		120	1,706
1990	293	580	148	99	76		67	1,263
1991	262	439	48	42	90		70	952
1992	77	531	14	150	180		56	1,009
1993	31	386	7	108	75		43	649
1994	11	362		57	27		37	493
1995	99	519		47	37		25	727
1996	71	533		65	16		23	708
1997	30	337		82	83		15	546
1998	41	210		105	42		27	425
1999	58	543		71	91		16	779
2000	97	682		76	86		10	951
2001	79	188		93	25		20	405
2002	131	408		123	39		35	735
2003	100	630		206	39		42	1,017
				Coos Bay Area				
1981	1,057	1,300	8,131	1,783	16,817		9,260	38,347
1982	1,739	1,732	5,534	787	19,513	0	725	30,030
1983	393	789	1,230	364	23,136	76	290	26,278
1984	98	731	1,554	313	16,447	706	192	20,042
1985	1,748	829	2,737	268	18,242	1,756	74	25,653
1986	2,191	524	7,375	429	13,563	391	89	24,561
1987	3,417	739	7,765	394	17,619	54	63	30,052
1988	2,606	781	10,399	952	16,813	22	247	31,821
1989	2,183	1,376	13,283	245	17,987	1	49	35,124
1990	1,481	1,357	6,911	192	21,533	138	286	31,899
1991	456	719	4,715	207	22,205	916	463	29,681
1992	74	1,320	15,998	344	20,106	22	639	38,503
1993	105	1,237	5,648	811	20,402	79	585	28,868
1994	28	1,585	5,526	549	14,949	876	550	24,063
1995	297	1,314	4,276	224	15,200	129	340	21,779
1996	318	1,778	4,637	1,521	13,772	120	303	22,449
1997	307	765	5,307	648	14,008	229	326	21,590
1998	250	792	1,173	1,119	11,014	130	145	14,622
1999	370	1,382	5,862	346	10,716	6,608	740	26,024
2000	580	1,587	6,487	547	9,290	246	539	19,275
2001	651	1,250	8,669	1,997	7,351	6,623	281	26,823
2002	1,163	1,842	13,022	682	5,071	3,483	577	25,841
2003	1,351	3,928	5,818	1,678	6,686	4,454	900	24,815

Table C.1 (cont.)

Year	Salmon	Dungeness Crab	Pink Shrimp	Albacore Tuna	Groundfish	Pacific Whiting	Other	Total
				Brookings Area				
1981	1,330	2,063	1,071	141	4,328		66	8,998
1982	973	1,439	996		6,099	0	16	9,523
1983	311	1,082	113	86	6,352		12	7,955
1984	235	1,205	108	28	5,236	1	41	6,854
1985	79	1,278	161	48	4,500	36	85	6,186
1986	630	860	1,511	64	3,644	1	100	6,811
1987	870	859	1,880	69	3,561		156	7,395
1988	772	1,170	3,021	15	4,309		1,815	11,101
1989	590	1,641	4,933	19	5,816		2,354	15,354
1990	228	1,896	3,337	41	5,865		3,488	14,855
1991	29	476	3,942	50	3,502		4,052	12,051
1992	8	2,993	8,361	104	3,694		2,503	17,663
1993	32	2,055	4,007	139	5,090		1,645	12,969
1994	54	1,621	4,803	291	5,418		1,651	13,838
1995	63	1,590	1,201	45	4,539		1,336	8,774
1996	164	3,628	4,079	121	3,705		824	12,521
1997	83	1,374	5,412	246	4,820		491	12,425
1998	60	1,896	693	146	4,007		305	7,107
1999	92	2,303	1,746	20	3,662	4	238	8,066
2000	131	1,513	773	75	3,303	31	671	6,497
2001	175	725	945	146	2,779		530	5,300
2002	250	600	2,398	46	1,952		771	6,018
2003	164	3,553	518	141	2,721		108	7,203
				Oregon Statewide				
1981	7,009	6,981	25,904	7,693	81,835	360	17,764	147,546
1982	8,572	7,020	18,429	1,855	90,084	3	2,816	128,779
1983	2,669	5,332	6,532	3,397	77,369	143	4,531	99,972
1984	3,595	4,999	4,844	1,594	61,309	746	6,757	83,844
1985	6,570	7,358	14,840	1,518	61,920	1,950	5,089	99,245
1986	13,792	4,658	33,884	2,461	54,883	927	2,913	113,517
1987	15,082	5,990	44,298	2,288	67,129	403	2,688	137,878
1988	17,789	9,417	41,846	3,967	70,495	543	4,068	148,126
1989	11,723	11,675	49,129	1,072	81,025	196	4,990	159,810
1990	5,411	9,508	31,883	2,062	73,242	5,058	6,824	133,989
1991	5,322	4,923	21,691	1,258	80,768	29,109	6,624	149,695
1992	2,232	11,897	47,951	3,889	75,183	107,939	7,289	256,381
1993	1,848	10,456	26,923	4,754	81,303	78,970	6,040	210,294
1994	1,285	10,638	16,386	4,698	64,265	143,563	4,766	245,602
1995	2,862	11,954	12,106	5,034	55,066	147,355	4,194	238,571
1996	2,842	19,302	15,727	8,948	57,001	155,588	3,025	262,433
1997	2,245	7,777	19,560	9,168	52,703	162,782	6,640	260,873
1998	1,978	7,410	6,096	10,603	41,800	157,895	4,609	230,391
1999	1,560	12,347	20,451	4,553	44,119	160,965	5,442	249,436
2000	3,142	11,181	25,462	8,756	39,338	151,461	24,122	263,462
2001	5,266	9,690	28,482	8,948	31,644	117,673	31,894	233,597
2002	6,116	12,443	41,584	4,362	21,102	71,220	53,250	210,076
2003	6,718	23,930	20,546	9,164	25,933	80,648	58,687	225,627

Source: PacFIN November 2004 and February 2005 extractions.

Table C.2
Oregon Coastal Areas Landing Value (Thousands of 2003 Dollars) in 1981 to 2003

Year	Price Index	Salmon	Dungeness Crab	Pink Shrimp	Albacore Tuna	Groundfish	Pacific Whiting	Other	Total
					Astoria Area				
1981	55.8	3,522	1,599	7,094	6,183	8,637	45	3,935	31,015
1982	59.2	5,397	1,752	5,282	822	8,918	0	889	23,060
1983	61.5	1,438	2,998	3,752	1,743	8,594	28	1,485	20,038
1984	63.8	5,660	2,660	1,064	607	7,440	3	2,079	19,513
1985	65.8	5,368	2,733	2,237	523	7,527	15	1,881	20,285
1986	67.2	11,110	1,834	10,129	1,122	9,554	12	3,513	37,273
1987	69.1	15,091	2,773	18,826	514	12,428	5	2,694	52,331
1988	71.4	24,570	4,455	6,330	651	12,321	2	1,691	50,020
1989	74.1	6,023	6,179	4,994	484	13,094	1	2,308	33,083
1990	77.0	4,056	5,907	5,862	869	10,067	6	2,050	28,816
1991	79.7	3,498	2,690	4,139	258	13,575	206	1,501	25,866
1992	81.5	1,053	5,047	3,582	1,117	11,687	1,386	1,098	24,971
1993	83.4	932	4,580	3,416	1,334	12,444	632	1,239	24,576
1994	85.2	905	4,579	1,664	587	12,630	1,517	1,238	23,120
1995	86.9	337	8,900	2,318	1,656	13,089	3,061	1,565	30,926
1996	88.5	356	11,732	1,434	2,137	12,403	2,156	895	31,112
1997	90.0	343	5,699	1,410	3,559	10,338	3,806	1,163	26,319
1998	91.0	323	3,678	794	4,609	8,231	1,767	1,195	20,597
1999	92.3	710	7,745	2,850	1,588	8,762	3,433	1,150	26,237
2000	94.3	1,302	6,443	3,766	3,710	10,017	3,210	2,719	31,166
2001	96.6	1,332	8,430	3,098	1,746	7,999	1,489	2,733	26,827
2002	98.2	2,027	9,063	3,431	846	5,207	1,230	4,469	26,272
2003	100.0	2,086	12,335	1,351	1,168	5,950	1,443	3,713	28,047
					Tillamook Area				
1981	55.8	2,464	637	1,204	90	62		36	4,494
1982	59.2	1,483	448	800	11	445		10	3,195
1983	61.5	436	476	566	42	689	1	178	2,387
1984	63.8	126	424	207	13	468		636	1,874
1985	65.8	257	771	1,062	24	816	0	451	3,381
1986	67.2	963	636	3,477		482		242	5,799
1987	69.1	2,477	622	3,871	24	731	0	136	7,862
1988	71.4	4,011	695	1,991	26	1,434	7	203	8,367
1989	74.1	1,769	881	1,139	0	1,518		197	5,504
1990	77.0	1,028	621	1,806	22	1,058		175	4,711
1991	79.7	888	519	1,355		1,366		182	4,311
1992	81.5	403	633	1,299	127	855	0	128	3,445
1993	83.4	237	624	1,146	125	1,146		300	3,579
1994	85.2	92	513	286	416	789		315	2,411
1995	86.9	203	927	789	108	458		196	2,681
1996	88.5	242	1,245	819	84	702		131	3,223
1997	90.0	68	665	468	247	186	1	175	1,810
1998	91.0	130	347	327	172	119		129	1,224
1999	92.3	78	1,138	387	158	132		110	2,003
2000	94.3	198	1,257	219	186	197		147	2,202
2001	96.6	350	897	91	163	262		122	1,885
2002	98.2	410	1,299	607	140	282		125	2,863
2003	100.0	457	1,908	628	208	218		141	3,561

Table C.2 (cont.)

Year	Price Index	Salmon	Dungeness Crab	Pink Shrimp	Albacore Tuna	Groundfish	Pacific Whiting	Other	Total
					Newport Area				
1981	55.8	4,703	3,161	6,327	2,188	9,850		597	26,824
1982	59.2	2,982	3,416	3,726	356	13,287		558	24,325
1983	61.5	1,229	3,893	1,679	747	8,488	2	1,502	17,540
1984	63.8	774	3,383	928	417	7,065	1	1,833	14,400
1985	65.8	1,711	6,626	3,112	392	7,532	0	1,620	20,993
1986	67.2	3,424	3,205	6,169	389	7,016	40	730	20,973
1987	69.1	5,003	3,819	11,357	1,305	9,966	37	1,022	32,509
1988	71.4	10,095	5,273	7,790	2,644	8,667	47	864	35,379
1989	74.1	3,156	4,544	9,062	327	8,094	18	811	26,011
1990	77.0	1,453	4,030	6,076	968	6,480	270	1,052	20,329
1991	79.7	1,337	2,759	3,570	654	8,279	1,453	976	19,028
1992	81.5	2,134	3,689	5,396	2,829	8,861	4,843	792	28,544
1993	83.4	1,187	3,729	2,106	2,053	8,544	2,108	770	20,499
1994	85.2	445	5,665	2,269	2,518	8,016	3,497	427	22,837
1995	86.9	2,578	6,461	2,369	2,565	7,501	4,987	474	26,936
1996	88.5	2,118	7,192	2,529	4,542	8,683	2,521	483	28,069
1997	90.0	1,828	4,327	2,134	3,437	7,738	3,763	446	23,673
1998	91.0	1,680	3,960	1,329	1,387	4,624	2,356	415	15,751
1999	92.3	438	7,100	3,171	1,880	5,911	2,754	243	21,497
2000	94.3	1,170	8,363	3,710	3,312	6,352	3,224	401	26,533
2001	96.6	2,682	5,555	1,953	3,914	4,957	2,546	861	22,467
2002	98.2	2,293	5,790	3,145	1,306	3,200	1,887	585	18,205
2003	100.0	3,139	10,124	1,509	3,273	4,342	1,997	547	24,932
					Florence Area				
1981	55.8	465	54		38	0		3	561
1982	59.2	486	79		11	0		7	583
1983	61.5	68	49		10	1		4	131
1984	63.8	72	51		11	0		2	136
1985	65.8	319	157		0	8		6	490
1986	67.2	531	221		8	305	1	10	1,077
1987	69.1	1,542	494		15	384	0	5	2,441
1988	71.4	1,753	700		38	575	0	11	3,077
1989	74.1	508	439		6	388		2	1,343
1990	77.0	319	489		23	278		5	1,115
1991	79.7	275	343		2	249		7	876
1992	81.5	334	371	6	32	159		14	917
1993	83.4	160	358	7	58	407	0	20	1,010
1994	85.2	32	352	8	58	398		13	861
1995	86.9	210	424	1	9	322	0	15	981
1996	88.5	148	328		28	309		26	839
1997	90.0	155	446	1	29	235		26	891
1998	91.0	131	534	0	41	38		27	770
1999	92.3	70	494	42	37	426	0	25	1,093
2000	94.3	131	564		55	428		23	1,201
2001	96.6	254	365	1	76	227	0	35	957
2002	98.2	151	212		47	77		46	533
2003	100.0	181	166		120	193		24	685

Table C.2 (cont.)

Year	Price Index	Salmon	Dungeness Crab	Pink Shrimp	Albacore Tuna	Groundfish	Pacific Whiting	Other	Total
					Winchester Bay Area				
1981	55.8	1,031	975	325	448	283		201	3,263
1982	59.2	1,786	1,336	238	21	657		261	4,299
1983	61.5	350	934	96	113	454		106	2,053
1984	63.8	150	1,091	0	22	315		95	1,673
1985	65.8	877	1,307	3	63	523		44	2,816
1986	67.2	708	1,041	7	56	365	0	66	2,243
1987	69.1	1,841	1,076	25	84	595	1	93	3,716
1988	71.4	2,098	1,204	25	163	439		132	4,061
1989	74.1	1,237	1,079	36	110	149		148	2,759
1990	77.0	807	1,225	99	119	49		55	2,354
1991	79.7	399	798	34	49	79		46	1,406
1992	81.5	185	767	5	197	176		20	1,349
1993	83.4	75	568	3	126	51		25	848
1994	85.2	26	601		64	21		19	731
1995	86.9	173	1,043		55	56		20	1,347
1996	88.5	102	890		75	22		18	1,107
1997	90.0	45	795		93	198		25	1,157
1998	91.0	64	397		105	61		32	659
1999	92.3	104	1,124		76	141		7	1,452
2000	94.3	171	1,545		91	163		16	1,987
2001	96.6	117	456		98	38		21	730
2002	98.2	161	725		118	72		27	1,103
2003	100.0	163	974		177	77		39	1,430
					Coos Bay Area				
1981	55.8	3,053	2,222	7,428	2,769	5,510		4,823	25,805
1982	59.2	5,344	3,078	4,770	859	8,136	0	375	22,562
1983	61.5	713	1,927	1,347	330	8,988	8	218	13,531
1984	63.8	372	1,729	1,097	295	6,239	87	158	9,977
1985	65.8	4,980	1,826	1,462	208	7,364	243	86	16,170
1986	67.2	4,511	1,150	5,879	346	6,282	37	137	18,343
1987	69.1	10,112	1,538	7,644	412	9,124	6	113	28,949
1988	71.4	9,269	1,388	6,007	1,120	8,182	2	196	26,165
1989	74.1	5,020	2,381	6,481	243	8,130	0	73	22,328
1990	77.0	4,108	2,818	4,361	226	9,335	9	162	21,019
1991	79.7	824	1,335	3,285	209	10,345	65	368	16,431
1992	81.5	181	1,832	7,048	415	8,970	2	290	18,738
1993	83.4	241	1,754	2,316	805	8,193	5	318	13,633
1994	85.2	68	2,614	3,768	511	8,427	34	308	15,729
1995	86.9	496	2,454	3,431	217	10,260	7	174	17,040
1996	88.5	458	2,763	3,032	1,411	8,847	6	133	16,650
1997	90.0	485	1,624	2,358	588	8,312	9	169	13,544
1998	91.0	391	1,460	644	763	5,720	4	125	9,107
1999	92.3	588	2,758	3,015	336	5,705	221	240	12,863
2000	94.3	1,026	3,667	2,767	498	5,879	10	179	14,026
2001	96.6	1,029	2,579	2,414	1,673	4,934	242	230	13,101
2002	98.2	1,643	3,034	3,698	511	3,400	161	136	12,583
2003	100.0	2,456	6,107	1,416	1,100	4,408	202	427	16,117

Table C.2 (cont.)

Year	Price Index	Salmon	Dungeness Crab	Pink Shrimp	Albacore Tuna	Groundfish	Pacific Whiting	Other	Total
					Brookings Area				
1981	55.8	4,568	3,379	990	219	1,646		40	10,843
1982	59.2	3,402	2,620	846		2,461	0	12	9,341
1983	61.5	711	2,583	132	79	2,620		15	6,138
1984	63.8	867	2,800	77	26	1,945	0	33	5,748
1985	65.8	258	2,779	86	35	1,967	5	50	5,180
1986	67.2	1,337	1,713	1,312	51	1,811	0	113	6,338
1987	69.1	3,025	1,776	1,886	72	1,988		113	8,860
1988	71.4	2,849	2,096	1,887	18	2,034		763	9,647
1989	74.1	1,497	2,814	2,444	25	2,654		1,121	10,557
1990	77.0	675	3,807	2,100	46	2,734		2,573	11,934
1991	79.7	70	920	2,756	67	2,169		3,921	9,903
1992	81.5	22	4,071	3,728	143	2,097		2,514	12,574
1993	83.4	76	2,657	1,694	155	2,362		1,901	8,845
1994	85.2	145	2,661	3,310	250	3,506		1,553	11,425
1995	86.9	116	2,857	988	50	3,958		1,270	9,238
1996	88.5	290	5,419	2,759	115	3,227		506	12,315
1997	90.0	154	2,704	2,417	203	4,085		322	9,885
1998	91.0	126	3,379	410	110	2,617		169	6,812
1999	92.3	225	4,668	901	23	2,958	1	183	8,958
2000	94.3	276	3,293	342	84	2,814	2	561	7,372
2001	96.6	305	1,688	268	138	2,701		436	5,536
2002	98.2	375	1,017	679	38	2,308		375	4,791
2003	100.0	357	5,502	147	121	2,514		74	8,715
					Oregon Statewide				
1981	55.8	19,806	12,028	23,368	11,934	25,988	45	9,636	102,805
1982	59.2	20,879	12,729	15,663	2,079	33,904	0	2,111	87,364
1983	61.5	4,943	12,860	7,573	3,063	29,833	39	3,507	61,818
1984	63.8	8,020	12,137	3,373	1,391	23,473	92	4,836	53,322
1985	65.8	13,771	16,199	7,962	1,246	25,737	263	4,138	69,316
1986	67.2	22,585	9,799	26,973	1,971	25,816	89	4,811	92,045
1987	69.1	39,093	12,099	43,609	2,426	35,216	49	4,176	136,669
1988	71.4	54,645	15,811	24,031	4,661	33,651	58	3,860	136,716
1989	74.1	19,210	18,317	24,155	1,196	34,026	20	4,660	101,584
1990	77.0	12,446	18,897	20,304	2,272	30,003	285	6,072	90,279
1991	79.7	7,291	9,365	15,139	1,239	36,061	1,723	7,001	77,820
1992	81.5	4,311	16,411	21,066	4,859	32,804	6,231	4,856	90,537
1993	83.4	2,909	14,269	10,688	4,656	33,148	2,746	4,574	72,990
1994	85.2	1,714	16,985	11,305	4,404	33,786	5,047	3,872	77,113
1995	86.9	4,113	23,067	9,896	4,661	35,645	8,056	3,713	89,150
1996	88.5	3,714	29,568	10,573	8,391	34,193	4,683	2,193	93,315
1997	90.0	3,079	16,259	8,788	8,156	31,091	7,579	2,327	77,280
1998	91.0	2,846	13,755	3,504	7,186	21,410	4,127	2,091	54,920
1999	92.3	2,212	25,027	10,366	4,098	24,035	6,409	1,958	74,105
2000	94.3	4,273	25,132	10,803	7,937	25,851	6,446	4,046	84,488
2001	96.6	6,068	19,969	7,826	7,809	21,118	4,277	4,438	71,504
2002	98.2	7,059	21,139	11,560	3,006	14,547	3,278	5,762	66,351
2003	100.0	8,839	37,117	5,051	6,168	17,702	3,642	4,966	83,487

Note: Value adjusted to Year 2003 dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.

Source: PacFIN November 2004 and February 2005 extractions.

APPENDIX D

COUNTY TIMBER HARVEST DATA FOR 1962-2003

CLATSOP COUNTY TIMBER HARVEST DATA FOR 1962-2003
Measured in thousands of board feet (MBF) log scale

Year	Industry	NIP	State	BLM	USFS	Native American	County and Municipal	Total
1962	206,050	6,049	24,340	0	0	0	0	236,439
1963	184,794	12,006	41,422	0	0	0		238,222
1964	247,072	8,757	35,443	0	0	0		291,272
1965	271,670	18,067	31,433	0	0	0	140	321,310
1966	228,927	9,353	23,833	0	0	0	0	262,113
1967	208,364	6,905	28,047	0	0	0	688	244,004
1968	336,544	6,399	37,728	0	0	0	37	380,708
1969	246,637	4,808	24,484	0	0	0	1,457	277,386
1970	276,466	5,090	21,693	0	0	0	0	303,249
1971	350,671	5,190	24,965	0	0	0	0	380,826
1972	227,901	15,720	54,310	0	0	0	0	297,931
1973	144,174	19,631	62,988	0	0	0	4,127	230,920
1974	118,299	8,368	30,488	0	0	0	272	157,427
1975	183,468	5,844	27,668	0	0	0	389	217,369
1976	202,887	6,646	69,292	0	0	0	236	279,061
1977	138,541	5,918	46,125	885	0	0	0	191,469
1978	150,126	4,624	55,370	0	0	0	0	210,120
1979	177,532	7,573	72,413	0	0	0	345	257,863
1980	135,838	2,831	60,583	0	0	0	169	199,421
1981	127,537	854	71,440	0	0	0	180	200,011
1982	120,371	5,256	54,007	0	0	0	2	179,636
1983	130,858	6,166	90,716	0	0	0	35	227,775
1984	102,823	10,782	97,982	0	0	0	668	212,255
1985	109,273	10,450	84,572	0	0	0	245	204,540
1986	110,171	15,775	45,931	0	0	0	1,002	172,879
1987	109,376	16,804	44,382	17	0	0	1,981	172,560
1988	109,929	22,660	94,415	0	0	0	1,135	228,139
1989	179,172	21,022	32,723	0	0	0	1,412	234,329
1990	100,996	12,756	16,062	0	0	0	2,863	132,677
1991	164,439	17,018	24,647	0	0	0	5,816	211,920
1992	165,832	15,687	27,447	0	0	0	2,053	211,019
1993	170,982	19,827	23,496	0	0	0	1,746	216,051
1994	141,949	18,735	49,655	0	0	0	1,239	211,578
1995	175,839	14,194	47,643	0	0	0	710	238,386
1996	159,862	3,747	22,350	0	0	0	318	186,277
1997	171,874	9,750	61,205	0	0	0	217	243,046
1998	157,482	5,999	22,950	0	0	0	27	186,458
1999	157,058	6,587	53,654	0	0	0	0	217,299
2000	157,294	10,127	77,671	0	0	0	957	246,049
2001	162,752	3,685	68,252	0	0	0	15	234,704
2002	199,855	3,581	103,468	0	0	0	126	307,030
2003	206,987	5,164	123,712	0	0	0	257	336,120

Source: Oregon Department of Forestry (2005).

TILLAMOOK COUNTY TIMBER HARVEST DATA FOR 1962-2003
Measured in thousands of board feet (MBF) log scale

Year	Industry	NIP	State	BLM	USFS	Native American	County and Municipal	Total
1962	95,396	6,858	62,883	42,268	24,900	0	0	232,305
1963	92,175	5,749	63,914	18,383	53,300	0		233,521
1964	87,427	6,918	61,468	28,956	54,700	0		239,469
1965	104,148	18,798	43,249	26,057	42,700	0	800	235,752
1966	90,342	8,585	40,943	28,072	35,200	0	9,260	212,402
1967	113,742	8,990	27,871	58,205	42,700	0	1,723	253,231
1968	105,940	6,785	50,988	52,799	47,152	0	180	263,844
1969	135,827	8,181	49,297	20,908	34,572	0	830	249,615
1970	112,467	5,548	31,597	41,258	22,098	0	30	212,998
1971	179,172	3,947	32,224	31,044	19,849	0	0	266,236
1972	101,595	820	36,095	46,895	67,168	0	0	252,573
1973	124,033	5,211	58,995	63,376	88,624	0	519	340,758
1974	140,973	4,982	31,876	40,495	44,114	0	0	262,440
1975	101,722	5,489	34,301	18,502	22,773	0	299	183,086
1976	134,860	6,323	24,459	49,211	47,768	0	160	262,781
1977	135,911	10,770	41,156	41,132	32,401	0	0	261,370
1978	142,002	5,284	14,764	36,937	19,555	0	500	219,042
1979	142,556	4,929	27,211	21,443	55,224	0	386	251,749
1980	115,914	4,082	28,905	32,887	50,529	0	523	232,840
1981	101,757	2,158	37,027	33,366	17,024	0	50	191,382
1982	83,161	1,780	18,173	6,427	24,937	0	0	134,478
1983	85,733	3,018	51,563	36,672	27,283	0	0	204,269
1984	62,069	4,884	26,875	34,127	77,332	0	1,632	206,919
1985	43,729	7,244	29,693	46,322	72,612	0	596	200,196
1986	45,810	13,362	30,720	41,020	55,880	0	1,804	188,596
1987	55,269	11,952	20,555	33,215	38,478	0	3,420	162,889
1988	30,103	9,930	53,822	58,497	51,126	0	3,615	207,093
1989	36,724	12,013	34,748	52,285	33,646	0	244	169,660
1990	59,194	7,111	19,119	21,861	25,989	0	5,956	139,230
1991	90,720	10,239	21,560	26,394	26,097	0	22	175,032
1992	68,970	13,659	27,975	16,604	4,874	0	944	133,026
1993	58,649	14,348	17,115	7,558	8,353	0	388	106,411
1994	85,716	13,913	33,442	14	1,157	0	2,394	136,636
1995	73,882	14,598	20,047	0	6,157	0	731	115,415
1996	66,061	8,326	28,349	1,675	1,551	0	1,173	107,135
1997	50,156	5,895	44,229	781	7,501	0	360	108,922
1998	44,770	6,640	35,366	625	4,388	0	1,464	93,253
1999	49,903	4,720	70,929	329	770	0	0	126,651
2000	55,521	7,008	57,203	15	1,245	0	0	120,992
2001	64,948	1,656	68,661	0	0	0	0	135,265
2002	80,101	3,385	62,807	82	53	0	0	146,428
2003	99,301	2,220	65,923	0	2,970	0	13	170,427

Source: Oregon Department of Forestry (2005).

LINCOLN COUNTY TIMBER HARVEST DATA FOR 1962-2003
Measured in thousands of board feet (MBF) log scale

Year	Industry	NIP	State	BLM	USFS	Native American	County and Municipal	Total
1962	193,684	22,680	7,200	13,524	150,800	0	0	387,888
1963	268,887	15,080	2,871	8,992	133,500	0		429,330
1964	300,837	20,645	9,679	10,175	127,200	0		468,536
1965	256,366	33,375	8,644	10,271	130,500	0	1,400	440,556
1966	251,275	33,777	324	18,038	121,400	0	4,750	429,564
1967	250,426	24,364	231	9,857	133,300	0	425	418,603
1968	165,970	135,026	4,795	20,830	126,523	0	0	453,144
1969	193,301	27,225	9,422	15,101	101,060	0	135	346,244
1970	139,598	15,655	8,858	14,512	47,972	0	0	226,595
1971	128,418	9,648	7,036	14,542	80,320	0	0	239,964
1972	88,699	12,493	24,612	23,707	121,927	0	20	271,458
1973	88,299	18,059	6,851	51,563	129,514	0	0	294,286
1974	96,423	3,660	16,014	23,927	116,161	0	0	256,185
1975	177,905	11,920	9,072	16,521	71,079	0	0	286,497
1976	147,264	7,634	11,559	9,467	117,977	0	961	294,862
1977	158,340	17,434	15,496	15,404	93,330	0	0	300,004
1978	186,531	10,690	21,820	18,026	103,285	0	100	340,452
1979	99,185	10,281	17,286	22,258	59,576	0	100	208,686
1980	105,914	3,743	3,607	3,136	56,620	0	146	173,166
1981	65,404	5,117	7,729	17,582	31,566	0	811	128,209
1982	108,020	6,270	1,795	14,157	41,167	20	49	171,478
1983	120,401	7,685	11,483	25,745	105,841	4,789	632	276,576
1984	117,091	6,479	23,869	21,822	129,958	2,292	120	301,631
1985	124,377	7,094	15,599	25,533	128,761	7,147	7	308,518
1986	108,455	9,538	15,000	21,618	138,089	136	0	292,836
1987	111,446	15,029	15,439	38,219	113,621	4,834	47	298,635
1988	121,384	19,910	22,550	44,536	164,796	15,391	0	388,567
1989	148,147	26,258	32,037	15,162	101,316	9,597	0	332,517
1990	181,710	17,217	12,464	21,228	59,683	2,434	0	294,736
1991	226,651	16,122	11,463	22,744	41,530	6,494	2	325,006
1992	255,761	23,396	22,840	16,317	29,187	9,028	0	356,529
1993	221,264	31,784	4,848	8,679	2,185	0	0	268,760
1994	94,304	24,736	9,317	6	4,204	0	5	132,572
1995	135,549	32,537	4,220	7	1,753	5,166	0	179,232
1996	126,918	16,665	8,426	0	1,760	0	182	153,951
1997	119,620	19,412	13,914	87	2,349	2,143	195	157,720
1998	70,764	12,560	5,954	0	10,402	6,112	621	106,413
1999	74,318	15,766	16,810	11	1,399	4,785	71	113,160
2000	118,217	13,272	2,514	0	4,077	0	891	138,971
2001	76,557	9,766	3,326	0	1,609	564	5	91,827
2002	137,617	8,401	9,407	0	3,589	5,700	11	164,725
2003	153,125	11,492	5,849	0	1,954	3,616	16	176,052

Source: Oregon Department of Forestry (2005).

COOS COUNTY TIMBER HARVEST DATA FOR 1962-2003
Measured in thousands of board feet (MBF) log scale

Year	Industry	NIP	State	BLM	USFS	Native American	County and Municipal	Total
1962	307,841	27,053	25,910	128,475	33,700	0	0	522,979
1963	297,903	38,899	28,137	193,499	54,800	0		613,238
1964	336,529	21,106	54,136	258,155	72,400	0		742,326
1965	341,100	45,066	60,935	156,588	62,600	0	1,432	667,721
1966	351,077	29,549	44,954	131,035	70,300	0	4,790	631,705
1967	260,561	35,298	26,064	86,652	71,800	0	1,082	481,457
1968	170,119	40,394	15,939	133,732	20,073	0	200	380,457
1969	153,599	19,333	40,803	135,754	23,064	0	700	373,253
1970	321,029	14,605	37,491	149,772	25,589	0	1,127	549,613
1971	406,379	10,645	23,352	161,997	42,682	0	3,321	648,376
1972	375,799	24,529	42,296	141,287	56,401	0	3,095	643,407
1973	326,732	32,928	62,306	195,122	66,182	0	3,540	686,810
1974	268,871	24,217	61,883	125,108	30,529	0	7,260	517,868
1975	318,470	17,511	35,637	99,559	22,906	0	4,216	498,299
1976	266,556	19,178	23,835	145,545	39,612	0	6,339	501,065
1977	280,371	31,687	35,597	142,281	23,390	0	0	513,326
1978	287,308	33,716	64,904	159,395	22,571	0	3,955	571,849
1979	210,127	24,363	50,611	118,473	27,125	0	5,756	436,455
1980	190,350	12,375	30,074	56,078	3,813	0	4,351	297,041
1981	203,183	14,588	36,129	53,079	5,332	0	3,537	315,848
1982	248,975	8,637	36,406	30,135	8,538	0	12,098	344,789
1983	191,367	6,122	33,145	82,009	35,115	0	8,735	356,493
1984	231,306	11,575	16,741	91,578	63,374	0	5,440	420,014
1985	241,388	15,253	51,925	92,650	37,887	0	10,895	449,998
1986	269,545	30,268	21,604	132,014	33,188	0	4,549	491,168
1987	263,047	23,338	25,574	132,011	29,585	0	16,278	489,833
1988	232,948	28,608	24,051	190,205	28,681	0	10,404	514,897
1989	263,553	51,958	21,662	123,865	20,193	0	5,198	486,429
1990	236,289	44,045	19,044	73,416	29,010	0	7,569	409,373
1991	217,463	37,170	11,295	43,308	22,677	0	8,539	340,452
1992	223,459	52,573	15,524	37,072	9,573	0	9,860	348,061
1993	203,847	62,712	20,492	47,885	897	0	6,666	342,499
1994	165,761	48,223	7,014	12,343	2,820	0	5,927	242,088
1995	255,015	45,224	7,599	13,341	5,013	0	5,939	332,131
1996	248,112	31,924	15,801	23,587	18,239	0	3,834	341,497
1997	284,302	36,651	18,858	15,287	6,812	0	8,388	370,298
1998	171,606	26,005	25,736	14,868	2,125	0	1,101	241,441
1999	179,035	30,874	21,493	19,214	5,176	0	11,057	266,849
2000	241,446	25,870	35,563	14,743	4,773	0	6,327	328,722
2001	190,252	14,783	19,669	4,849	837	3,528	10,119	244,037
2002	269,967	27,209	22,767	5,301	197	1,805	7,004	334,250
2003	280,614	20,638	13,085	1,206	116	670	9,948	326,277

Source: Oregon Department of Forestry (2005).

CURRY COUNTY TIMBER HARVEST DATA FOR 1962-2003
Measured in thousands of board feet (MBF) log scale

Year	Industry	NIP	State	BLM	USFS	Native American	County and Municipal	Total
1962	327,809	53,970	200	8,511	100,700	0	0	491,190
1963	280,041	39,252	8,919	54,829	107,300	0		490,341
1964	232,702	26,609	0	24,498	111,500	0		395,309
1965	201,311	14,482	1,853	37,354	96,600	0	1,250	352,850
1966	192,305	19,675	585	20,972	121,500	0	2,076	357,113
1967	196,696	18,259	237	19,652	143,400	0	502	378,746
1968	190,191	7,355	86	38,775	161,920	0	3,160	401,487
1969	250,305	10,175	0	26,338	118,815	0	0	405,633
1970	140,451	10,963	2,979	22,387	99,522	0	975	277,277
1971	57,158	10,222	8,919	47,909	148,351	0	800	273,359
1972	75,462	9,571	1,909	24,150	169,863	0	0	280,955
1973	64,650	21,689	1,864	26,813	138,620	0	0	253,636
1974	80,101	5,170	5,434	16,259	99,607	0	0	206,571
1975	62,032	14,172	230	9,221	69,621	0	0	155,276
1976	46,862	22,789	330	10,468	75,510	0	1,019	156,978
1977	73,205	11,478	0	21,303	102,133	0	0	208,119
1978	73,157	5,143	1,678	10,902	144,814	0	0	235,694
1979	49,322	7,300	187	14,580	84,599	0	0	155,988
1980	37,150	4,015	3	73,070	55,098	0	0	169,336
1981	28,471	3,884	301	5,004	43,745	0	0	81,405
1982	44,261	11,573	359	2,608	23,563	0	0	82,364
1983	57,878	3,369	1,529	15,551	24,000	0	0	102,327
1984	56,031	2,994	0	19,951	16,073	0	0	95,049
1985	34,306	6,143	2,049	17,482	65,499	0	0	125,479
1986	43,955	4,164	2,894	16,518	95,563	0	0	163,094
1987	29,301	8,491	2,181	3,141	101,693	0	0	144,807
1988	44,628	4,827	4,090	11,610	103,380	0	285	168,820
1989	29,398	9,201	2,648	23,420	102,647	0	0	167,314
1990	63,713	9,070	0	13,452	36,270	0	0	122,505
1991	60,877	13,770	0	16,788	26,755	0	0	118,190
1992	58,869	24,766	0	3,175	21,459	0	0	108,269
1993	67,548	26,683	0	102	2,002	0	196	96,531
1994	37,602	24,061	161	36	7,777	0	76	69,713
1995	48,696	19,172	0	0	4,758	0	59	72,685
1996	32,435	15,511	0	5,464	15,184	0	16	68,610
1997	38,175	15,537	15	10,205	15,369	0	0	79,301
1998	34,544	9,164	0	1,804	4,580	0	81	50,173
1999	48,528	16,127	0	3,511	10,644	0	0	78,810
2000	57,182	20,128	0	5,134	3,043	0	8	85,495
2001	40,144	10,532	0	1,207	538	0	0	52,421
2002	65,102	7,416	0	0	1	0	40	72,559
2003	62,360	10,507	0	594	4,981	0	4	78,446

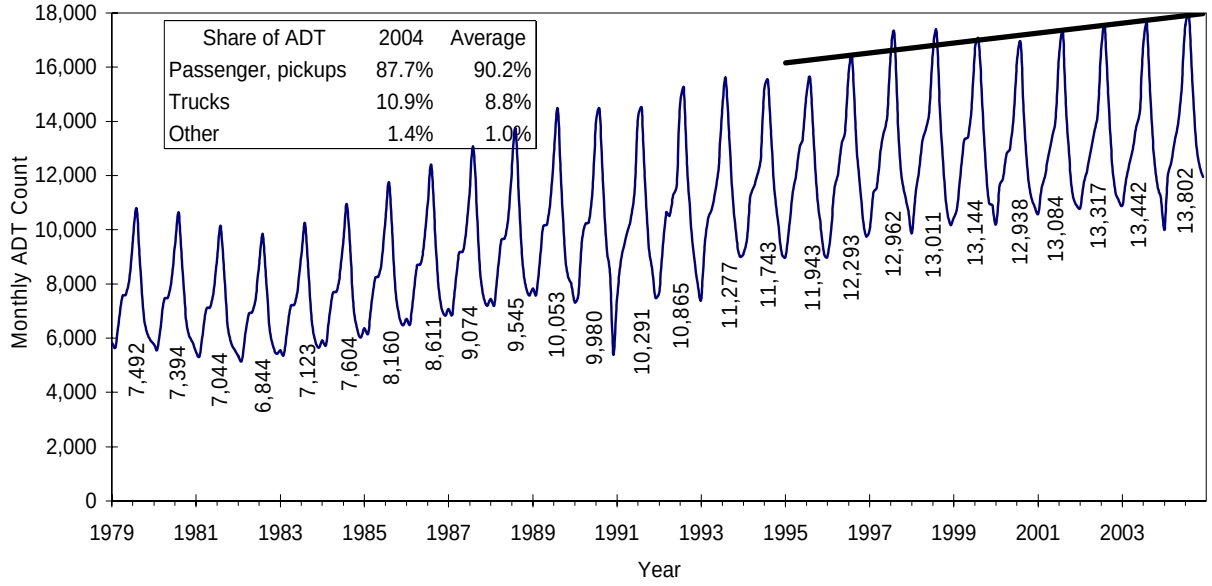
Source: Oregon Department of Forestry (2005).

APPENDIX E

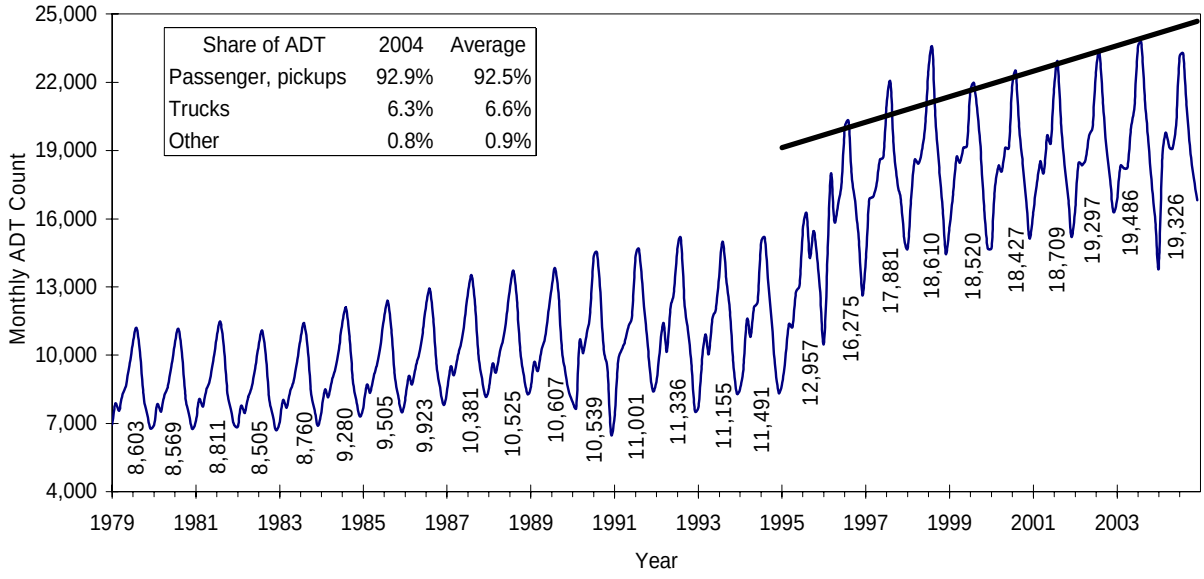
SELECTED OREGON COAST AVERAGE DAILY TRAFFIC COUNTS

Average Daily Traffic 1979-2004 by Month With August Trend

CLATSOP COUNTY
US 101, 2.4 Miles North of Gearhart



LINCOLN COUNTY
ORE 18, 0.7 Miles East of Valley Junction

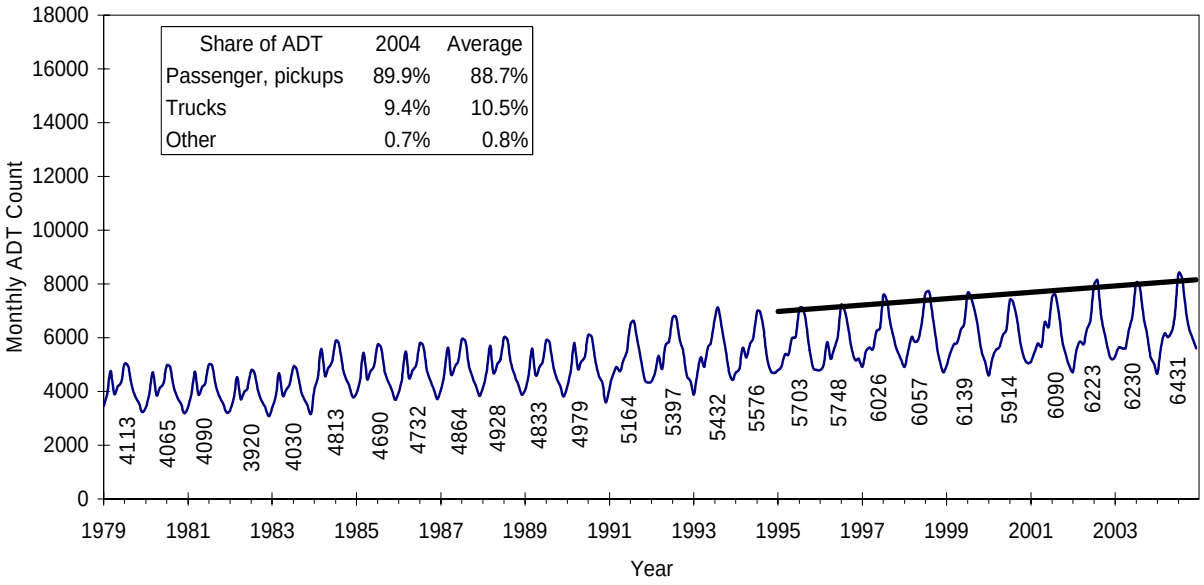


Notes:
1. Monthly ADT counts for years 1989 to present are actual, while years prior to 1989 are estimates using 1989 monthly percents of actual annual counts.
2. Annotated numbers for each year are average daily traffic counts.
3. Trend line is the August ten year annual average for years inclusive of the latest data year.
4. Trucks are defined as all single unit and multi-trailer trucks that are two axle and six tires or greater. Other includes buses, motorcycles, and scooters.
5. Vehicle classification share average is for five years, inclusive of the latest data year.

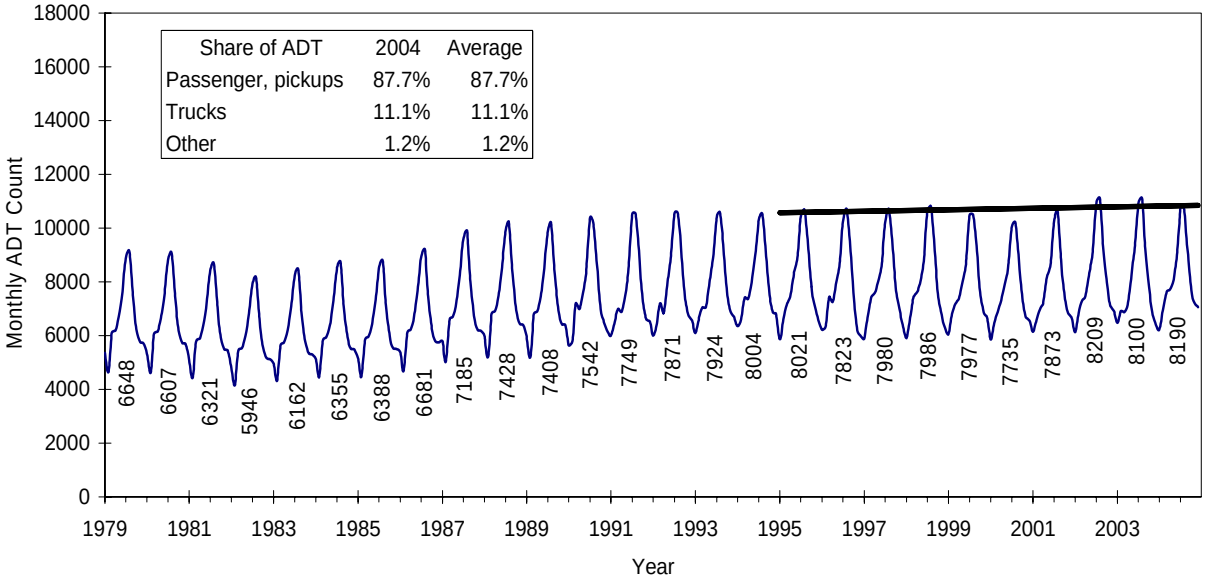
Source: Oregon Department of Transportation.

Average Daily Traffic 1979-2004 by Month With August Trend

LANE COUNTY
ORE 126, 2.7 Miles West of Elmira



DOUGLAS COUNTY
US 101, 1.09 Miles South of Coos-Douglas County Line[6]

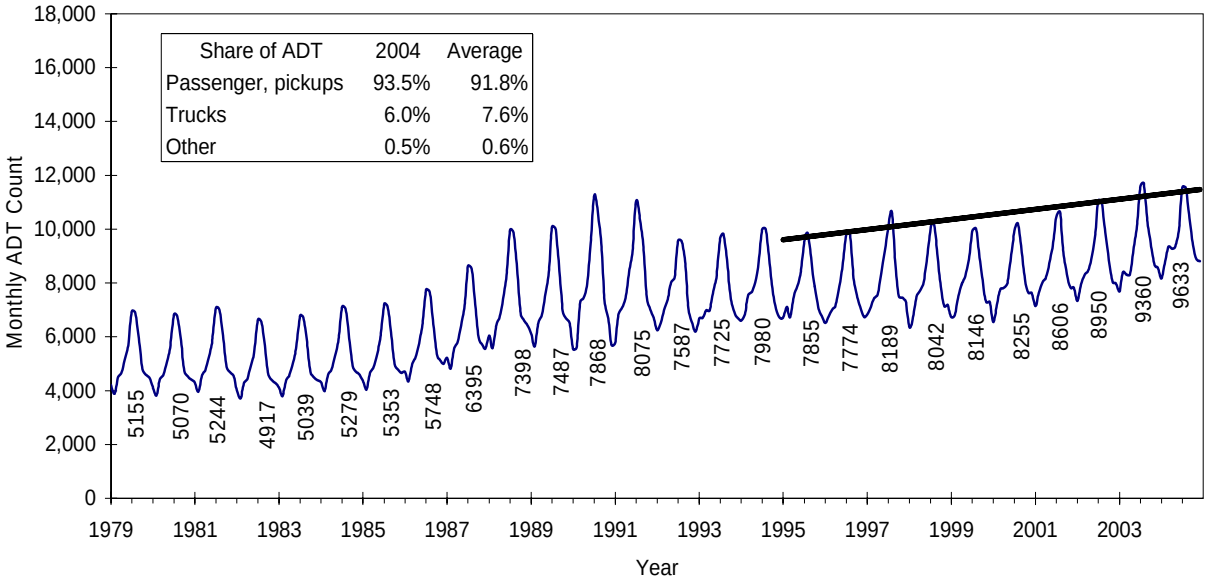


Notes:
1. Monthly ADT counts for years 1989 to present are actual, while years prior to 1989 are estimates using 1989 monthly percents of actual annual counts.
2. Annotated numbers for each year are average daily traffic counts.
3. Trend line is the August ten year annual average for years inclusive of the latest data year.
4. Trucks are defined as all single unit and multi-trailer trucks that are two axle and six tires or greater. Other includes buses, motorcycles, and scooters.
5. Vehicle classification share average is for five years, inclusive of the latest data year.
6. US 101 permanent recorder 6.3 miles south of Reedsport was removed at the end of 1991. Data after 1991 is from a new recorder located 1.09 miles south of Coos-Douglas County line.

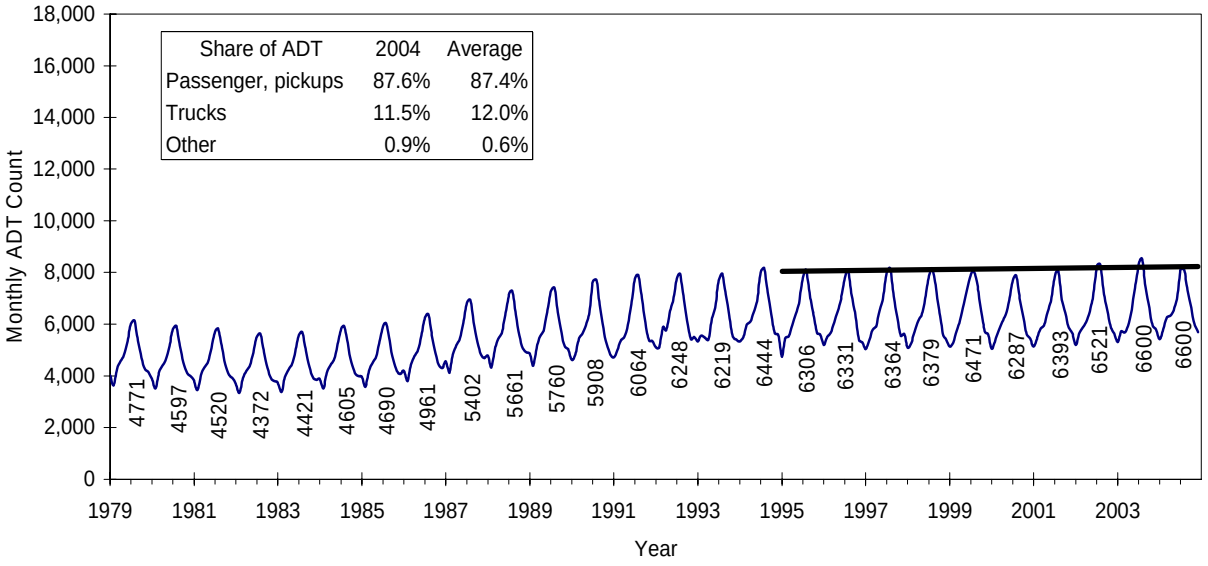
Source: Oregon Department of Transportation.

Average Daily Traffic 1979-2004 by Month With August Trend

CURRY COUNTY
US 101, 1.1 Miles North of State Line



CURRY COUNTY
US 101, 1.3 Miles South of Bandon



Notes:
1. Monthly ADT counts for years 1989 to present are actual, while years prior to 1989 are estimates using 1989 monthly percents of actual annual counts.
2. Annotated numbers for each year are average daily traffic counts.
3. Trend line is the August ten year annual average for years inclusive of the latest data year.
4. Trucks are defined as all single unit and multi-trailer trucks that are two axle and six tires or greater. Other includes buses, motorcycles, and scooters.
5. Vehicle classification share average is for five years, inclusive of the latest data year.

Source: Oregon Department of Transportation.

APPENDIX F

ECONOMIC ANALYSIS AND MODELING METHODOLOGY

Economic Analysis and Modeling Methodology

1. Input/Output Models

Economic input/output (I/O) models are used to estimate the impact of resource changes or to calculate the contributions of an industry to a regional economy. The basic premise of the I/O modeling framework is that each industry sells its output to other industries and final consumers, and in turn purchases goods and services from other industries and primary factors of production. Therefore, the economic performance of each industry can be determined by changes in both final demand and the specific inter-industry relationships. I/O models can be constructed using surveys of a regional economy. The disadvantages of the survey model approach are the complexity and high cost. Construction of a survey data I/O model involves obtaining data on the sectorial distribution of local purchases and sales, to final demand of every sector of the economy, and on the imports purchased and exports sold by each sector.

Another approach uses secondary data to construct estimates of local economic activity. The models developed for this study utilize one of the best known secondary I/O models. The U.S. Forest Service developed a computer system called IMPLAN. IMPLAN can be used to construct county or multi-county I/O models for any region in the U.S. The regional I/O models used by the Forest Service are derived from technical coefficients of a national I/O model and localized estimates of total gross outputs by sectors. IMPLAN adjusts the national level data to fit the economic composition and estimated trade balance of a selected region. Areas that are any combination of single counties can be constructed using IMPLAN. The IMPLAN model is now being offered for general use by the Minnesota IMPLAN Group (MIG, Inc. 2004). The IMPLAN based models used to generate response coefficients for Oregon coastal areas are based on 1998 data, a midpoint year between the original study (1994) and the current study's benchmark year (2003).

2. Imports and Exports

One way of measuring the contribution of a particular economic activity is to look at the amount of goods and services it sells and buys outside the local economy. A local economy has exports and imports similar to state or national exports and imports. Timber harvested and processed in Tillamook County and shipped to Los Angeles is an export which benefits the local economy. The beachcomber from Portland brings money to the Newport area economy. Recreational activities are called exports when they bring in "outside" money. Exports from the local economy stimulate local economic activity.

However, the money brought into a local economy does not all stay within the local economy. This is particularly true for the smaller regional economies which are not economically self-sufficient. Many of the goods and services consumed in the local economy must be brought in from the outside. They are the imports to the local economy. The money that flows out of the local economy to pay for these imports is referred to as leakage.

In larger, more industrially diverse economies, there are fewer "leakages" of economic activity due to purchases from outside the region. As a result, the multiplier effects are larger. In smaller, less diverse economies, where more goods and services are purchased outside the region, regional impacts are smaller. For this reason, state impacts will almost always be larger than impacts for sub-regions within the state.

The amount that a commercial fisherman spends to prepare a consumer-ready product for market, or a recreational fisherman spends to take part in a coastal fishery, has an important impact on the local and regional economy.[1] In addition, purchases made by the harvester, processor, or tourist-related businesses cause suppliers to purchase additional inputs in the form of labor, additional inventory, and other items. As workers and entrepreneurs receive wages, salaries, and profits from these activities, they spend money in the local area for a variety of goods and services. The total effect on the local economy depends upon the amount of the original dollar expenditures and the amount which is spent for subsequent purchases within the local economy. This effect is closely tied to the total expenditures, types of expenditures, and the structure of the economy.

3. Basic Sectors

Since imports take money out of the economy, it is important for the smaller economies to have some exporting sectors. In the I/O jargon, these are called "basic sectors." The dollars brought in by basic or exporting sectors begin the multiplier process. The basic sectors stimulate a local economy by originating the multiplier effect. When people refer to a change in the economic base of an area, they are talking about changes in the basic business sectors.

Sectors other than basic sectors generally do not generate "new dollars." Instead, they operate on the circulation of dollars already present in the economy. Therefore, nonbasic sectors do not initiate a multiplier effect themselves. Rather, they contribute to the multiplier effect of basic sectors by preventing leakage. Hospitals or medical clinics which supply services to local residents are part of the local economy supported by the basic sectors and are part of the "multiplier." A higher amount of services available in a local area increases the "multiplier" or leakage. A medical service which draws clients from outside the local area may be considered a basic industry. The Oregon Coast does not contain such centers. The same example can be given for educational institutions. On the Oregon Coast, regular kindergarten through community colleges are part of the multiplier process. Educational services such as Job Corps centers and marine science centers attract outside clients and financing and therefore are considered basic industries. For communities on the Oregon Coast, the basic sectors are often

1. Economic contributions are explained in this report often using fish resources as an example. The same general explanation may be used for other natural resource based industries.

resource-based. Examples of basic and nonbasic sectors are (not listed in any order of importance):

Basic Sector Examples	Nonbasic Sector Examples
Fish harvesting/processing	Medical services
Logging and timber processing	Movie theaters
Tourism and recreation	Grocery stores
Transfer payments	Banking services

Transfer payments include such things as Social Security payments, retirement payments, and non-local government salaries. Activities such as recreational fishing, being a form of recreation, are considered a basic sector industry for that portion of expenditures made by anglers whose residence is other than in the area they are fishing.

4. Multipliers and Coefficients

a. Output Multipliers[1]

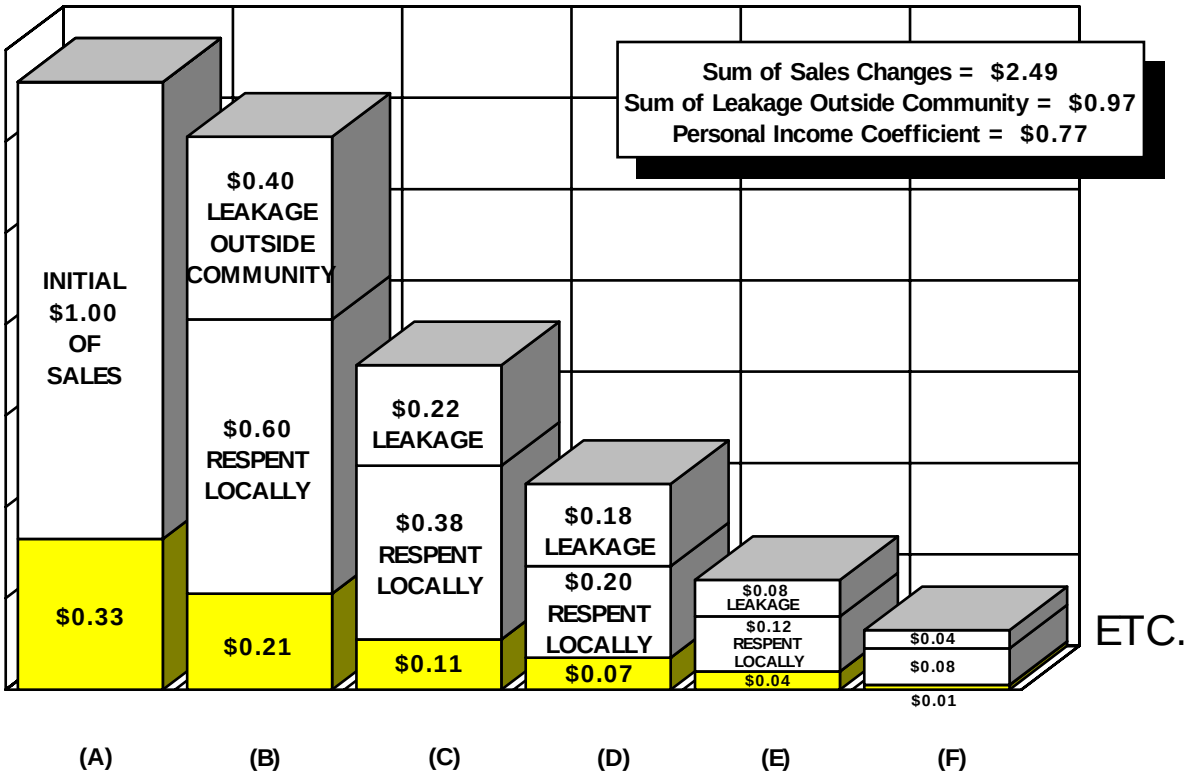
How is the effect of a dollar of export sales multiplied in a local economy? Suppose an industry increases export sales by $1,000. If the economy has an output multiplier of 2.49, total business sales through the county are expected to increase by a total of $2,490 as a result of the $1,000 increase in exports and the $1,490 in local sales generated by these exports. (The 2.49 is used as an example only. The actual output multiplier may be different.)

Figure F.1 demonstrates how local re-spending of the export payment by businesses and households creates this multiplier effect. The process begins when a dollar enters the local economy, in this case as the result of an export sale (Column A). The dollar will be re-spent by the exporting firm in order to purchase inputs (goods, services, labor, taxes, profits, etc.) to meet the increased export demand (Column B). Sixty cents of the dollar will be received by local businesses and households. But, $0.40 will leak out in the form of non-local purchases. Thus, in addition to the initial dollar, business re-spending has generated an additional $0.60 of business activity within the economy. Of the $0.60 which is locally received, $0.38 will be re-spent within the county. The rest ($0.22) will leak out (Column C) of the county. This process continues until the amount of resources remaining in the local economy becomes negligible (Columns D, E, F). Thus, greater leakage at any round of re-spending leads to a smaller multiplier.

In order to determine the total value, the initial dollar is added to the sum of the local re-spending. In this example, the multiplier equals 2.49 ($1.00 initial change + $0.60 + $0.38 +$0.20 + $0.12 + $0.08 and so on until it approaches $2.49). Thus, $2.49 of local business activity will be generated for each dollar that enters the local economy. The same process can be used to explain a decrease in export sales.

1. Output by definition is analogous with sales, but slightly different. Output represents the value of an industry's annual production. Sales may be higher or lower because an industry may sell more than they produce in a year to clear or retain inventory. Output for service industries does equate to sales.

Figure F.1
Output Multiplier and Personal Income Coefficient



Note: The shaded portion of the output (sales) that goes to households in terms of wages, salaries, and profits is called personal income.
Source: Radtke and Davis (August 1994).

The output multiplier calculates how much money is "stirred up" in the economy. It does not mean that someone in the local area is making a wage or profit from this money. The differences between output multipliers and personal income coefficients are often confused, which leads to misuse. People, especially decision-makers, must know and understand what type of multiplier or coefficient is being employed in the assessment of the economics of proposed policy decisions.

b. Personal Income Coefficients

A more useful measurement of the contribution of a sector's activity is the amount of local personal income directly and indirectly generated from an increase in sales. The distribution of the amount of local personal income generated is the shaded part of the output multiplier.

The "personal income coefficient" measures the income generated as a result of a change in sales. In the first round of export sales, $0.33 of local personal income is generated. The other $0.67 in the initial round goes to purchase supplies and services from other industries. These industries also create wages, salaries, and profits. As these sales work through the economy, a total of $0.77 of personal income is generated from every $1.00 of increase in sales.

The size of the personal income coefficient is largely determined by the amount of personal income generated by the first round. In an industry that is very labor intensive, the output multiplier may not be very large while the personal income coefficient is above average. On the other hand, if the industry goes through several transactions, but is not very labor intensive throughout the process, the output multipliers may be large and the income coefficient small.

The impacts estimated in this study are effects on total personal income, the amount that is retained as household income (salaries, wages, and proprietary income). Because many jobs in the fishing industry are not full-time, an employment figure could be misleading. An equivalent employment figure can be calculated by dividing the total personal income figure by a representative annual personal income average. In Oregon, a $27,500 per year wage or salary is a fair representative of an equivalent job across all industrial categories in coastal labor markets.