

### 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.

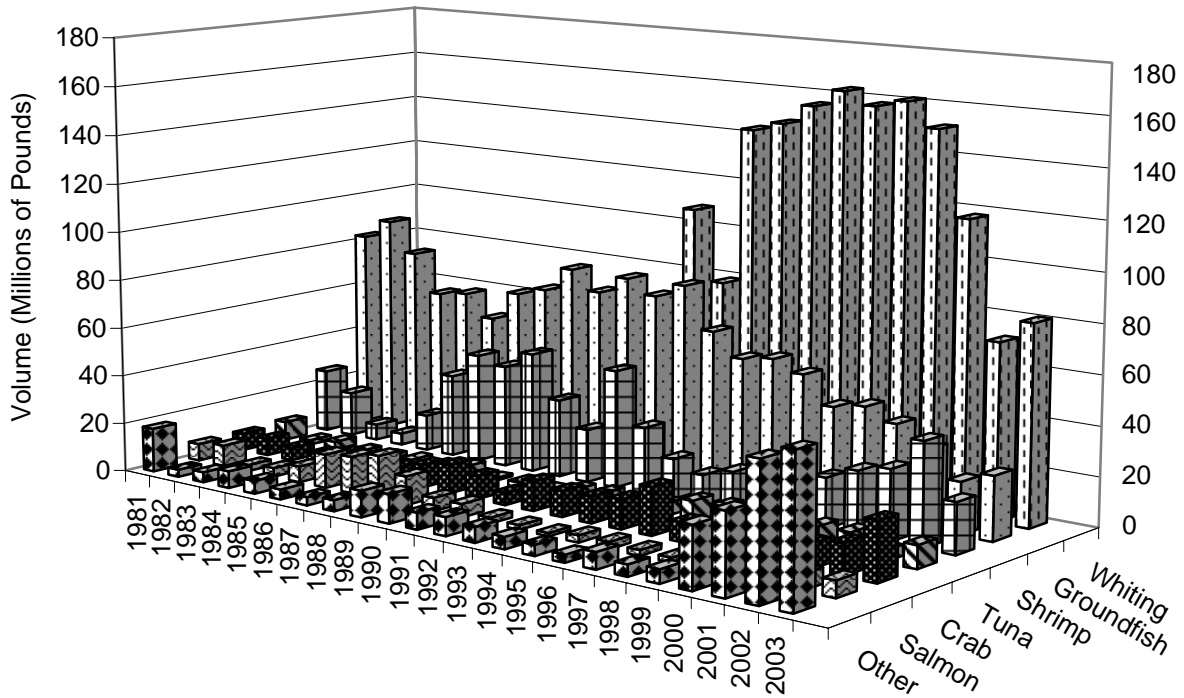
The commercial fishery has been an important part of coastal areas' economies in the Pacific Northwest. Oregon fishermen harvested and landed in Oregon 225.0 million pounds of fish in 2003, worth a total of \$82.3 million (Figures III.1 and III.2). (Appendix C shows landing volume and value by port since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

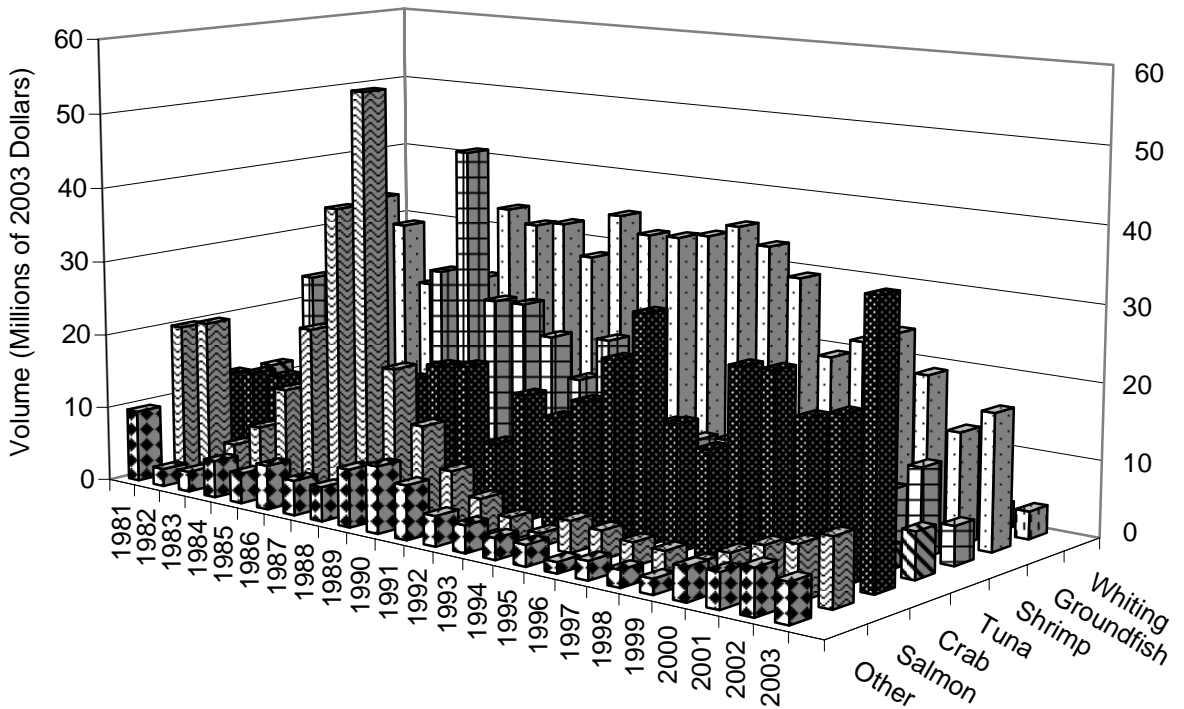
For ports that relied heavily upon salmon and tuna, the drop in fishing activity of these species produced greater negative impacts than for those which had a broader and expanding base of fishing activity. The Astoria area realized the greatest loss between the years 1981 and 1985. The unadjusted dollars 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

Year	Price Index	Salmon		Dungeness Crab		Pink Shrimp		Albacore Tuna		Groundfish		Pacific Whiting		Other		Total	
		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.

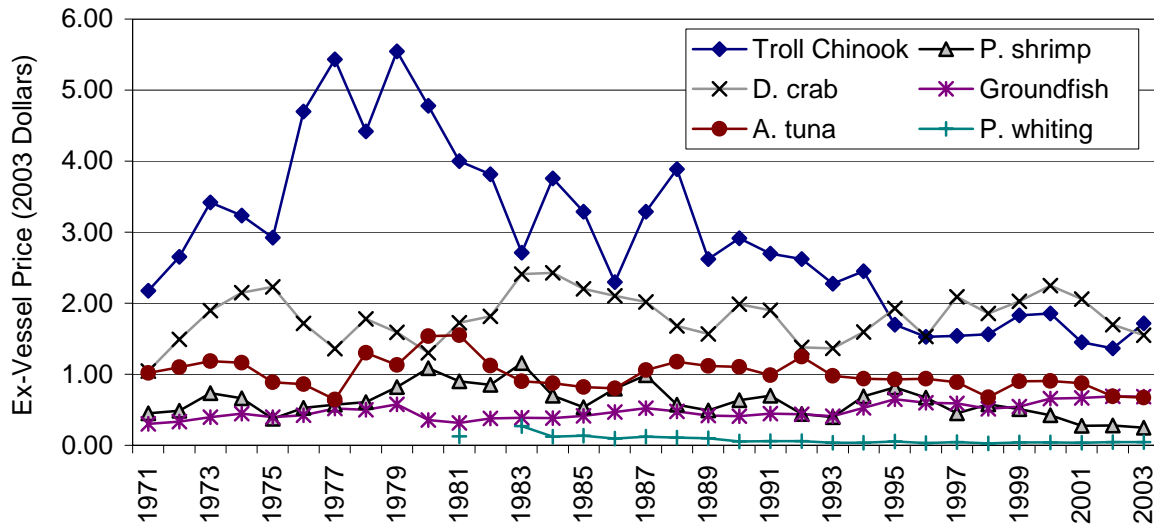
Table III.3  
Oregon Annual Ex-Vessel Prices by Selected Species and Species Groups in 1971 to 2003

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
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.

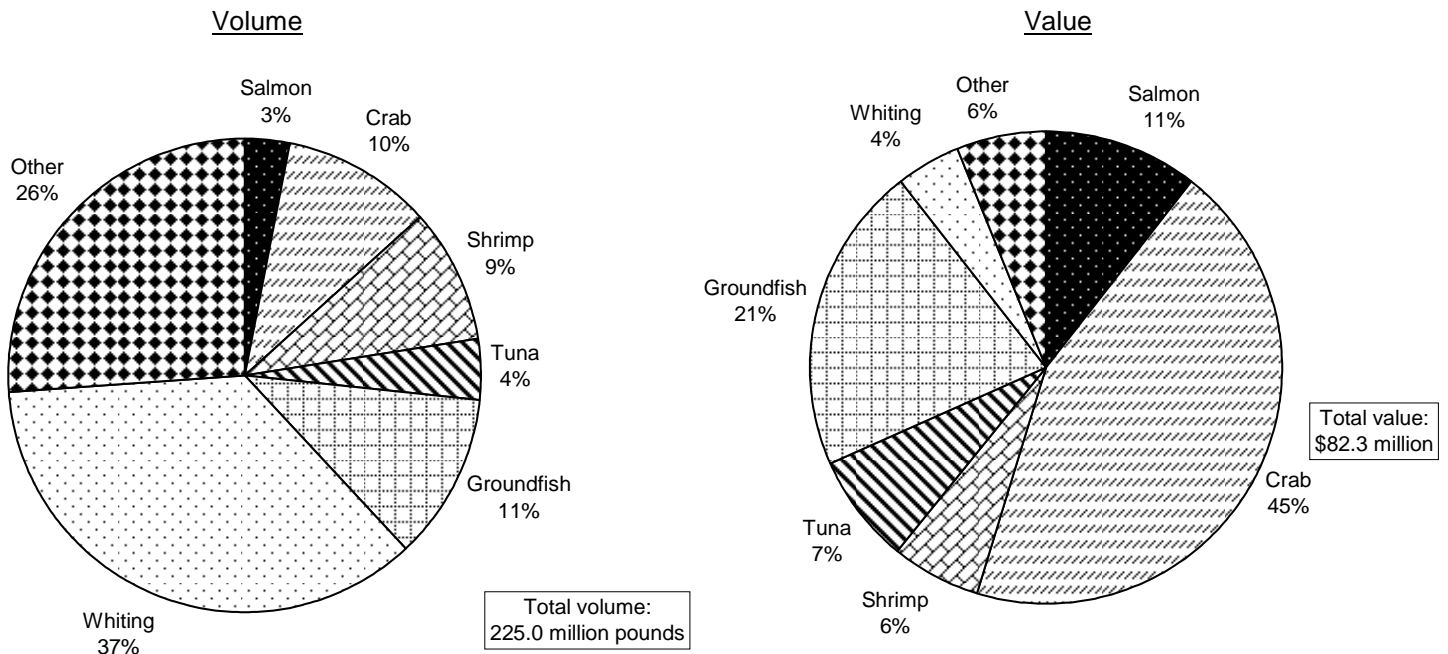
Because the products produced by the commercial fishing industry in Oregon are tied to worldwide markets, prices fluctuate depending on worldwide demand and resource conditions. In the late 1980's, strong prices for all fish products increased the value of the landings. This was especially true for the 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 the 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

<u>Year</u>		<u>Oyster Production (Gallons)</u>	<u>Salmon (Round Pounds)</u>
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.<sup>1</sup>

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

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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.

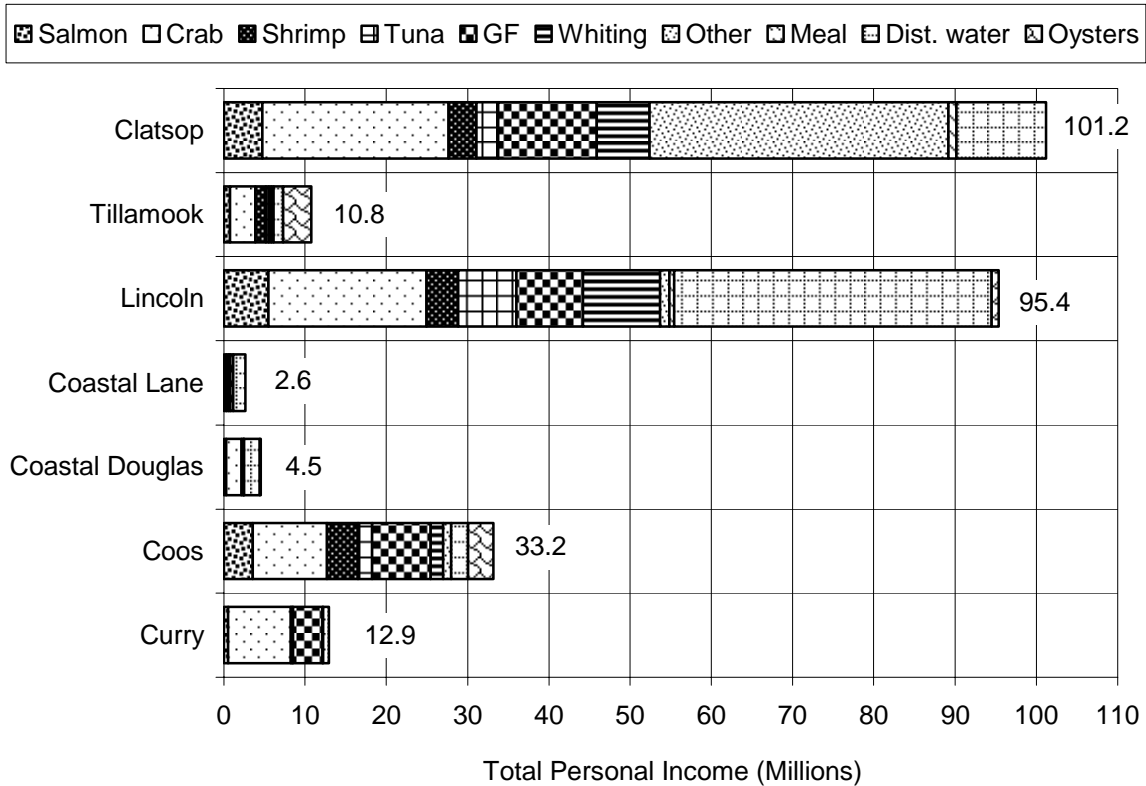
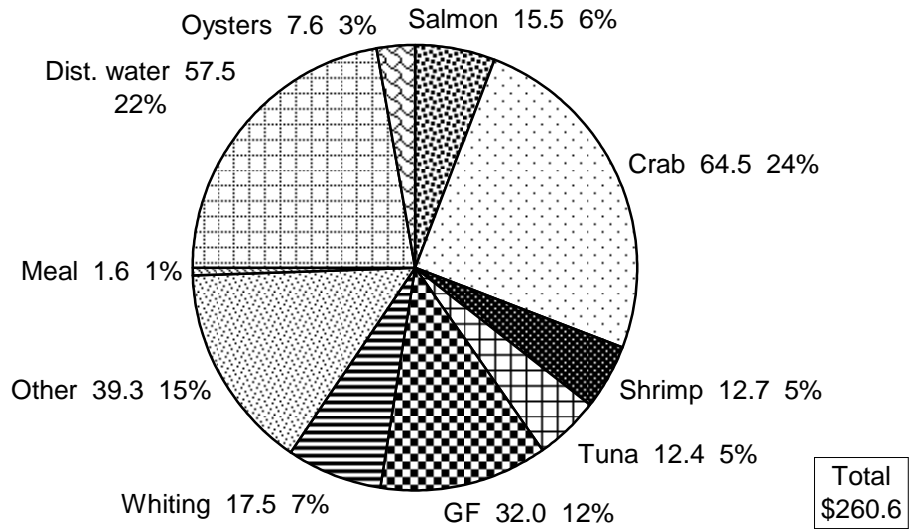
Table III.7  
Oregon Study Areas Commercial Fishing and Aquaculture Volume, Value, and Economic Contribution in 2003

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								
<b>Total Personal Income</b>	<b>Income</b>	<b>Income</b>	<b>Income</b>	<b>Income</b>	<b>Income</b>	<b>Income</b>	<b>Income</b>	<b>Income</b>	<b>Income</b>	<b>Income</b>	<b>Income</b>	<b>Income</b>	<b>Income</b>	<b>Income</b>	<b>Income</b>	<b>Income</b>								
	Per Round	Income	Per Round	Income	Per Round	Income	Per Round	Income	Per Round	Income	Per Round	Income	Per Round	Income	Per Round	Income								
	Price	Pound	Price	Pound	Price	Pound	Price	Pound	Price	Pound	Price	Pound	Price	Pound	Price	Pound								
		(\$000's)		(\$000's)		(\$000's)		(\$000's)		(\$000's)		(\$000's)		(\$000's)		(\$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	Vegetables	Specialty Products	Total Crops & Other	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

Year	Price Index	Clatsop County			Tillamook County			Lincoln County			Coos County			Curry County		
		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.

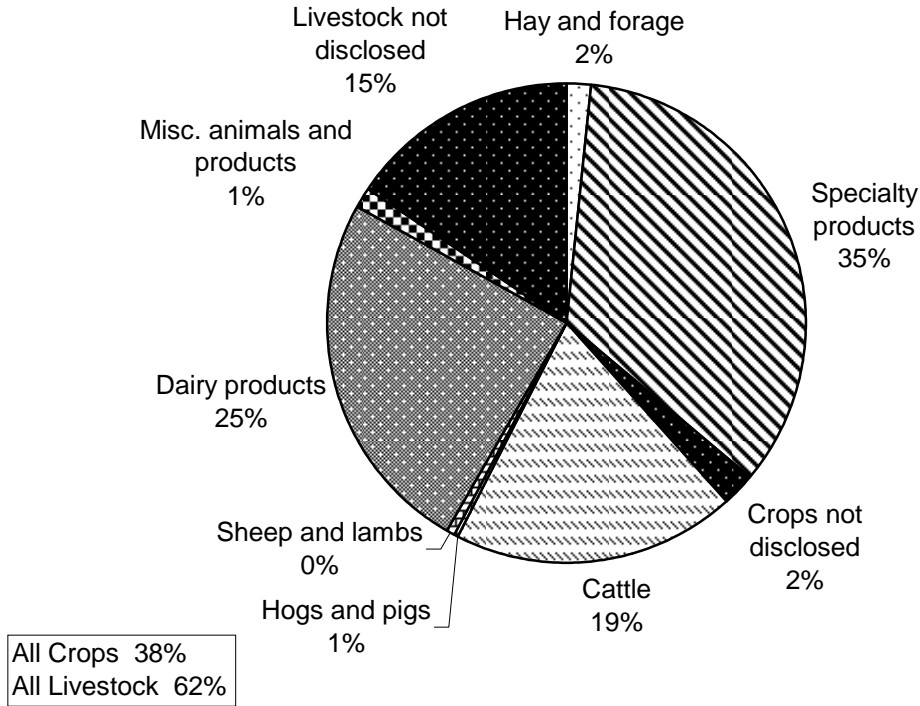
Source: OSU Extension Service (2006).

## 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



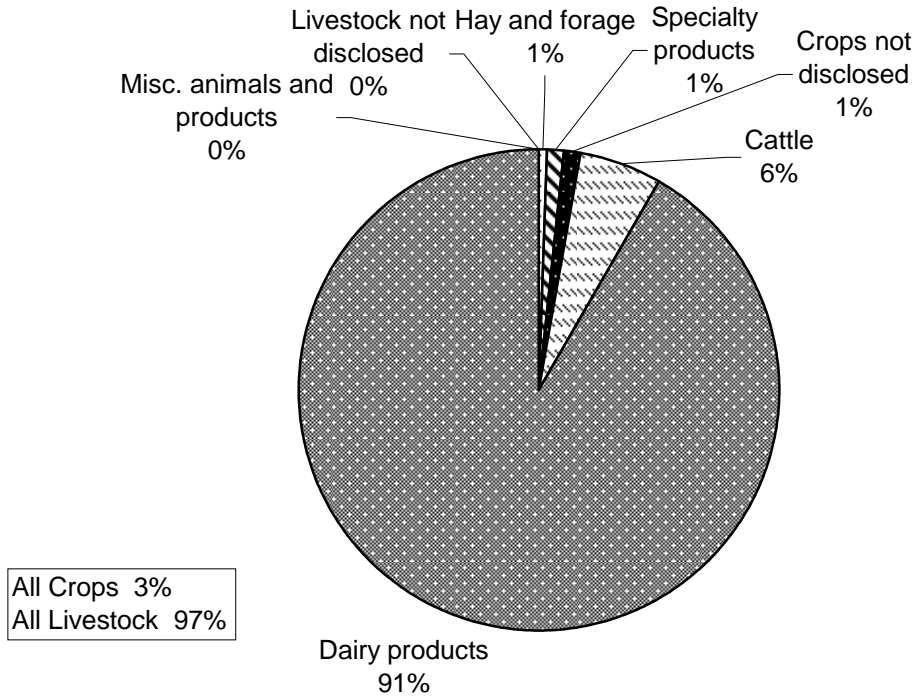
Sales by Commodity in 2003		Agricultural Sales by Year			
		Year	Crops	Livestock	Total
Hay and forage	153	1993	15,174	8,181	23,356
Specialty products	3,043	1994	12,259	7,539	19,798
Not disclosed	192	1995	14,631	6,566	21,197
All Crops	<u>\$3,388</u>	1996	13,618	6,396	20,014
Cattle	1,700	1997	14,732	6,538	21,270
Hogs and pigs	45	1998	4,698	6,805	11,504
Sheep and lambs	32	1999	5,191	7,041	12,232
Dairy products	2,205	2000	6,573	6,475	13,047
Misc. animals and products	128	2001	2,975	6,195	9,170
Not disclosed	1,370	2002	2,802	5,960	8,762
All Livestock	<u>\$5,479</u>	2003	3,388	5,479	8,868
All Crops and Livestock	<u>\$8,868</u>				

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



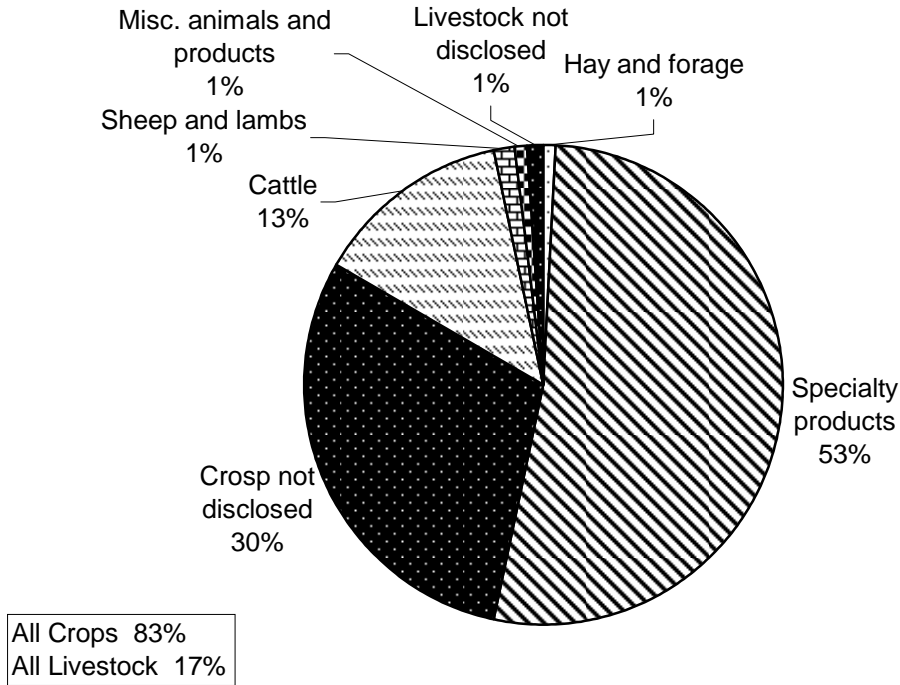
Sales by Commodity in 2003		Agricultural Sales by Year			
Hay and forage	460	<u>Year</u>	<u>Crops</u>	<u>Livestock</u>	<u>Total</u>
Specialty products	1,121	1993	7,936	84,933	92,869
Not disclosed	850	1994	7,739	85,967	93,707
		1995	10,123	82,147	92,269
All Crops	<u>\$2,431</u>	1996	9,527	84,408	93,934
		1997	10,229	84,436	94,665
Cattle	5,200	1998	4,571	80,276	84,847
Hogs and pigs	0	1999	3,251	79,130	82,381
Sheep and lambs	0	2000	4,543	87,510	92,053
Dairy products	82,590	2001	1,842	91,065	92,906
Misc. animals and products	35	2002	2,812	92,255	95,067
Not disclosed	41	2003	2,431	87,866	90,298
All Livestock	<u>\$87,866</u>				
All Crops and Livestock	<u>\$90,298</u>				

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



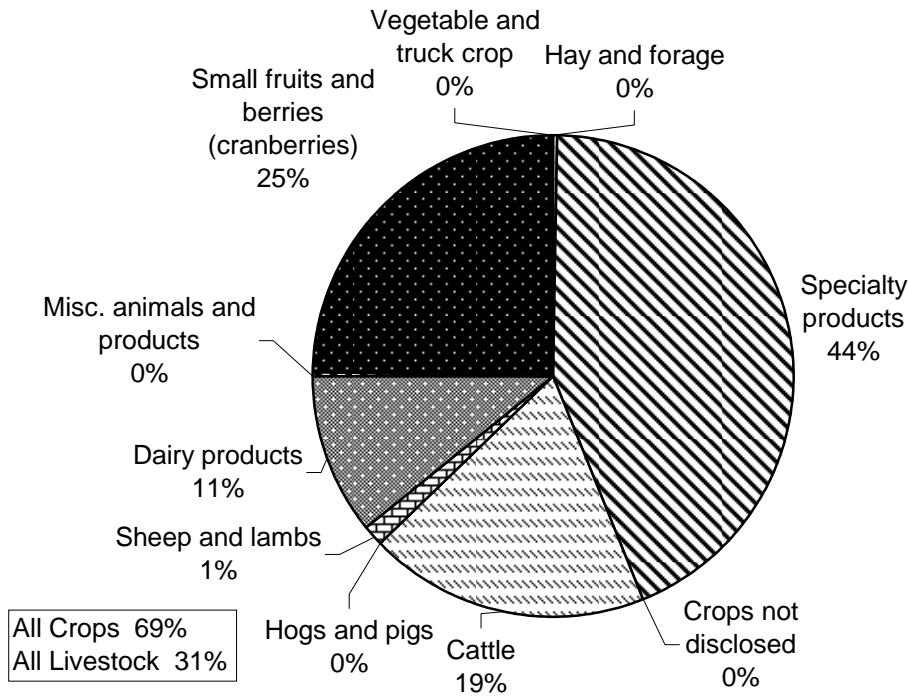
Sales by Commodity in 2003		Agricultural Sales by Year			
		Year	Crops	Livestock	Total
Hay and forage	92	1993	23,320	2,698	26,017
Specialty products	5,100	1994	18,884	2,406	21,290
Not disclosed	2,926	1995	25,196	2,012	27,207
<b>All Crops</b>	<b>\$8,118</b>	1996	13,261	1,753	15,015
Cattle	1,300	1997	13,366	2,150	15,516
Hogs and pigs	0	1998	9,331	1,802	11,132
Sheep and lambs	145	1999	11,686	1,249	12,936
Dairy products	0	2000	9,657	1,616	11,273
Misc. animals and products	64	2001	8,253	1,613	9,866
Not disclosed	117	2002	7,726	1,617	9,343
		2003	8,118	1,626	9,744
<b>All Livestock</b>	<b>\$1,626</b>				
<b>All Crops and Livestock</b>	<b>\$9,744</b>				

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



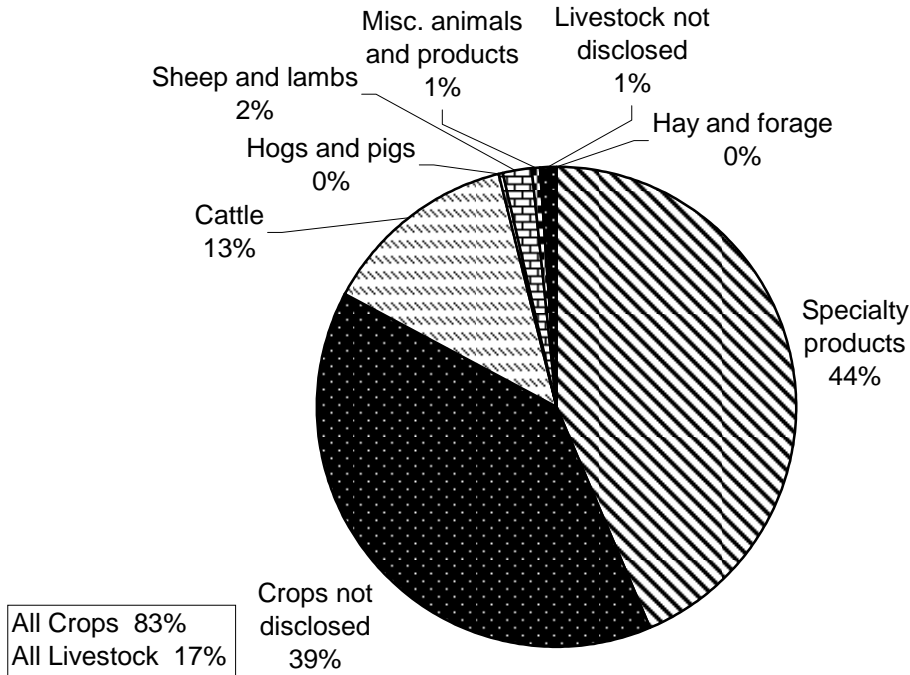
Sales by Commodity in 2003		Agricultural Sales by Year			
		Year	Crops	Livestock	Total
Hay and forage	186	1993	47,760	20,545	68,305
Small fruits and berries (cranberries)	12,265	1994	48,453	21,908	70,361
Vegetable and truck crop	18	1995	42,425	20,369	62,794
Specialty products	21,700	1996	42,422	22,362	64,784
Not disclosed	81	1997	45,068	23,172	68,241
<b>All Crops</b>	<b>\$34,250</b>	1998	27,896	21,988	49,884
Cattle	9,434	1999	22,168	21,796	43,964
Hogs and pigs	28	2000	24,806	14,881	39,687
Sheep and lambs	577	2001	23,840	16,720	40,561
Dairy products	5,439	2002	29,454	16,852	46,306
Misc. animals and products	227	2003	34,250	15,705	49,955
<b>All Livestock</b>	<b>\$15,705</b>				
<b>All Crops and Livestock</b>	<b>\$49,955</b>				

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



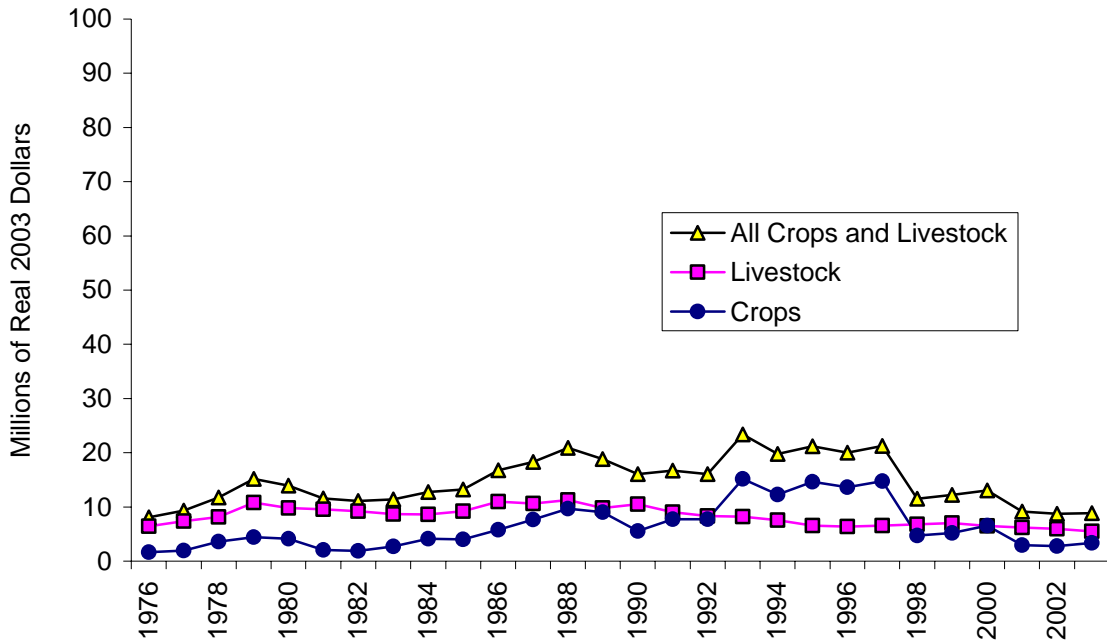
Sales by Commodity in 2003		Agricultural Sales by Year			
Commodity	Value	Year	Crops	Livestock	Total
Hay and forage	14	1993	22,023	3,791	25,814
Specialty products	10,800	1994	22,542	4,817	27,360
Not disclosed	9,697	1995	19,558	4,330	23,888
All Crops	\$20,511	1996	20,165	3,921	24,086
Cattle	3,298	1997	19,500	4,975	24,475
Hogs and pigs	19	1998	13,647	4,160	17,807
Sheep and lambs	528	1999	14,314	4,136	18,450
Dairy products	0	2000	17,116	4,383	21,498
Misc. animals and products	125	2001	16,012	5,253	21,265
Not disclosed	270	2002	19,454	5,154	24,608
		2003	20,511	4,240	24,752
All Livestock	\$4,240				
All Crops and Livestock	\$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).

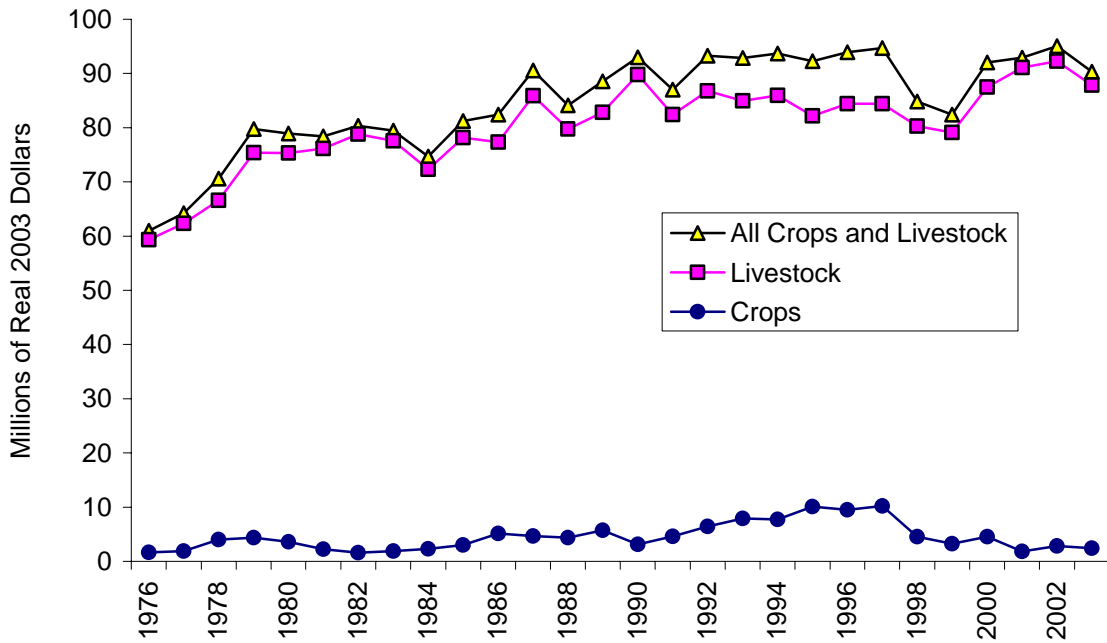
Figure III.11  
Clatsop County Gross Farm Sales in 1976 to 2003



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

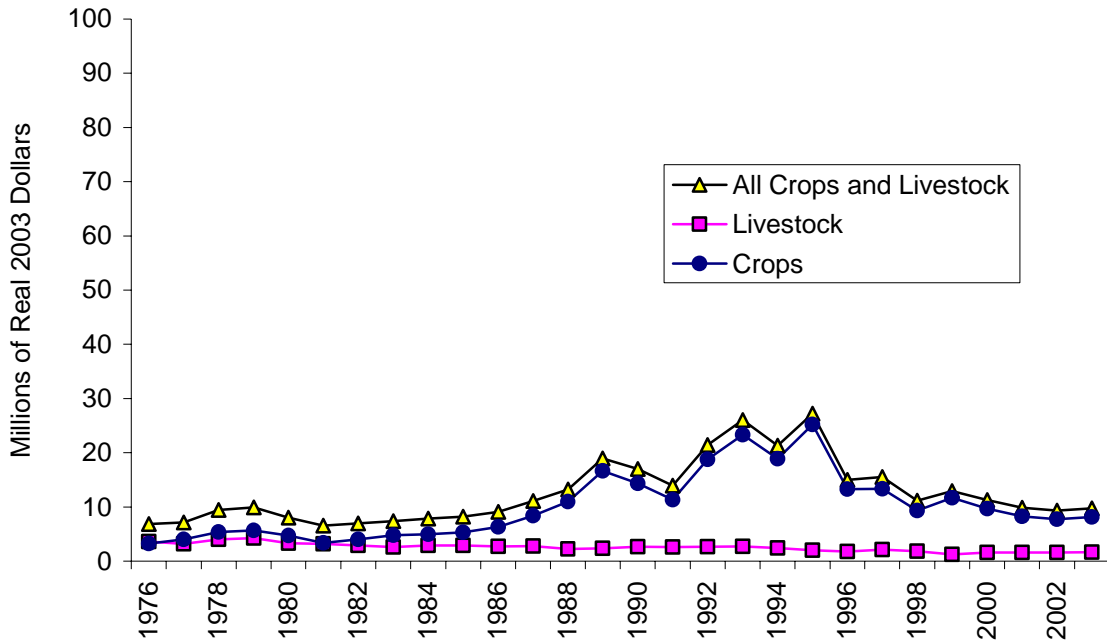


Notes: 1. Values in millions adjusted to 2003 dollars using the GDP implicit price deflator developed by the U.S. Bureau of Economic Analysis.

Source: OSU Extension Service (2006).



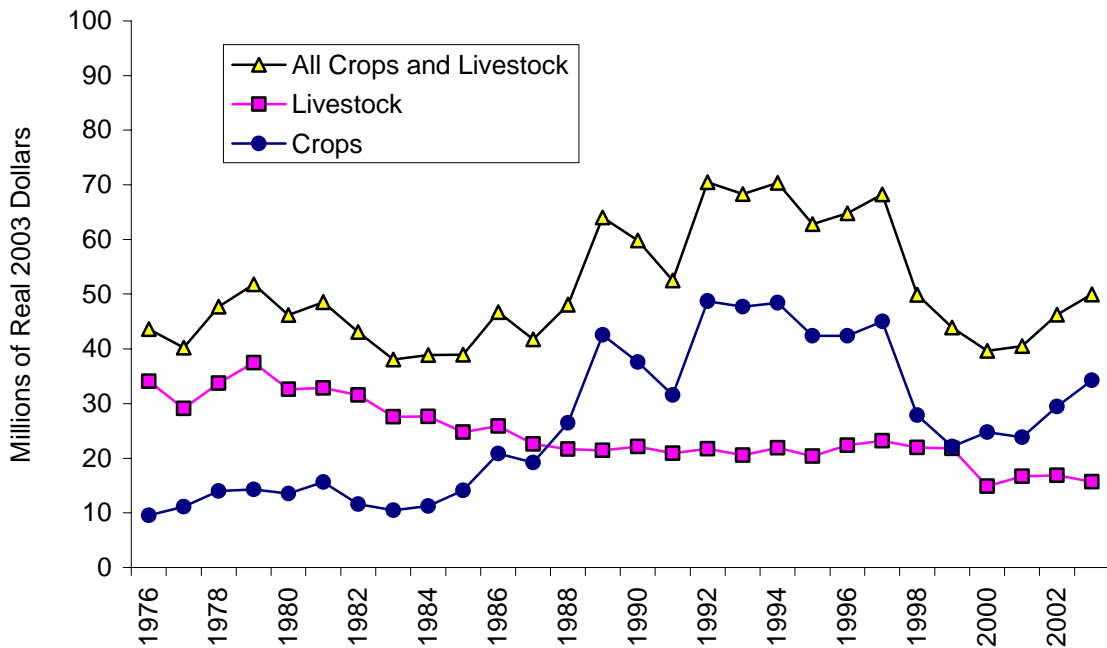
Figure III.13  
Lincoln County Gross Farm Sales in 1976 to 2003



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).

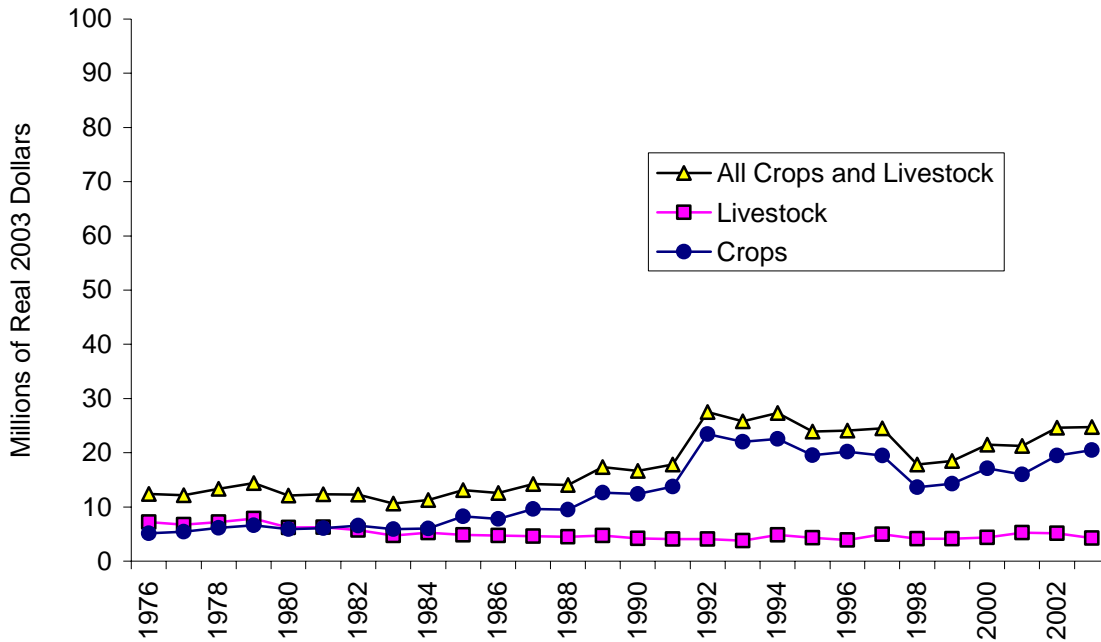
Figure III.14  
Coos County Gross Farm Sales in 1976 to 2003



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**

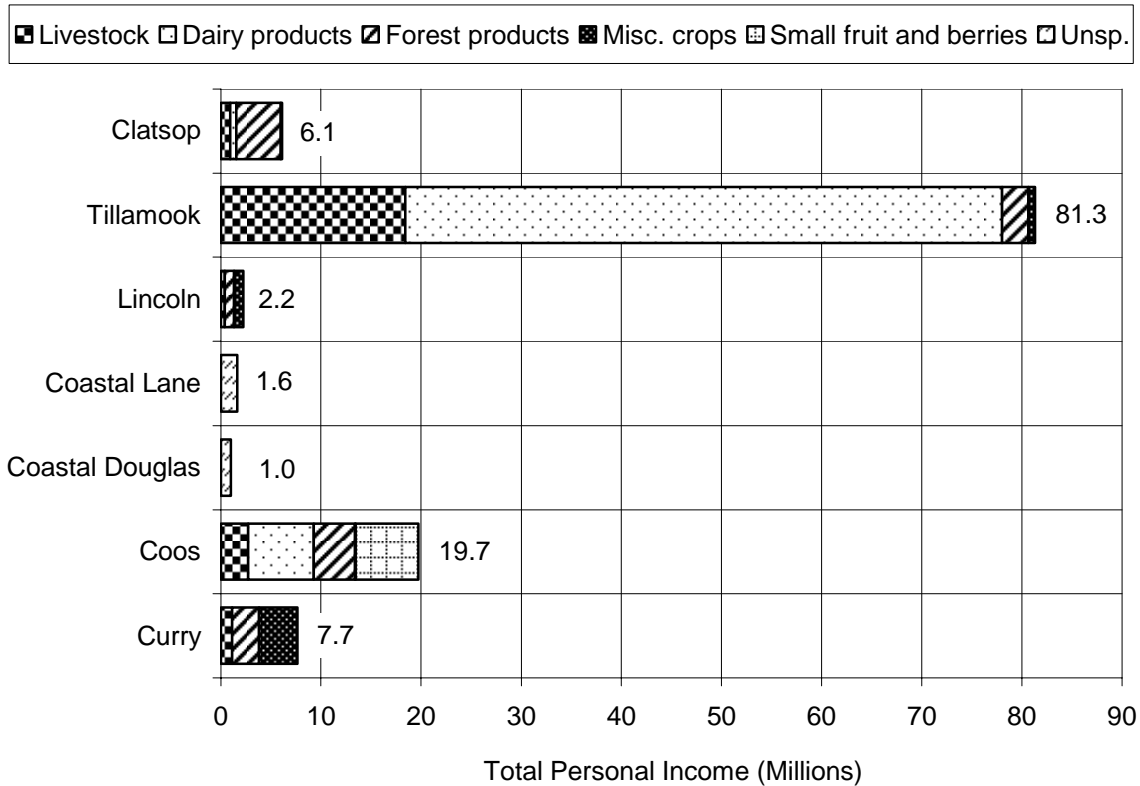
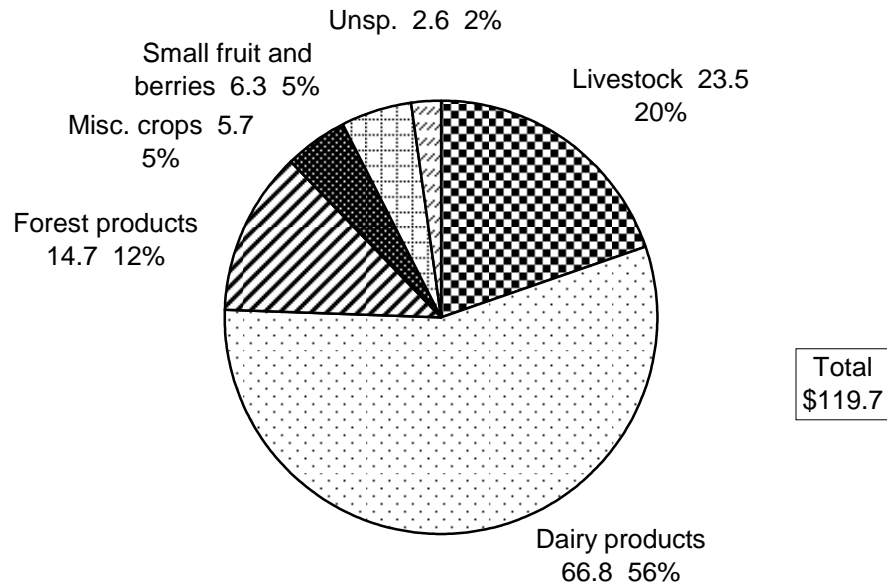
Agriculture production and primary processing in 2003 generated total personal income of \$120 million in Oregon coastal communities. Tillamook County, which includes the Tillamook Creamery and several meat product producers, receives a total of \$81 million in personal income from the agriculture sector. 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.

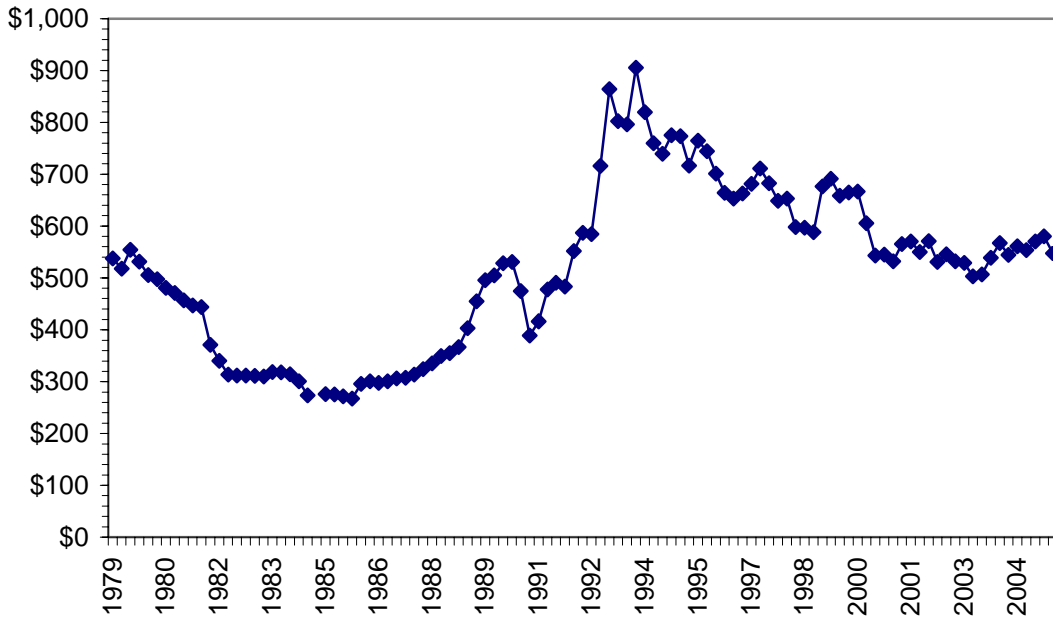
Over the past 25 years, a series of forces changed the technological requirements for labor in logging and wood processing. Technological change diminished the labor input per unit of output. At the same time, it expanded total output by allowing more complete utilization of raw materials. Larger timber 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.<sup>1</sup> 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.

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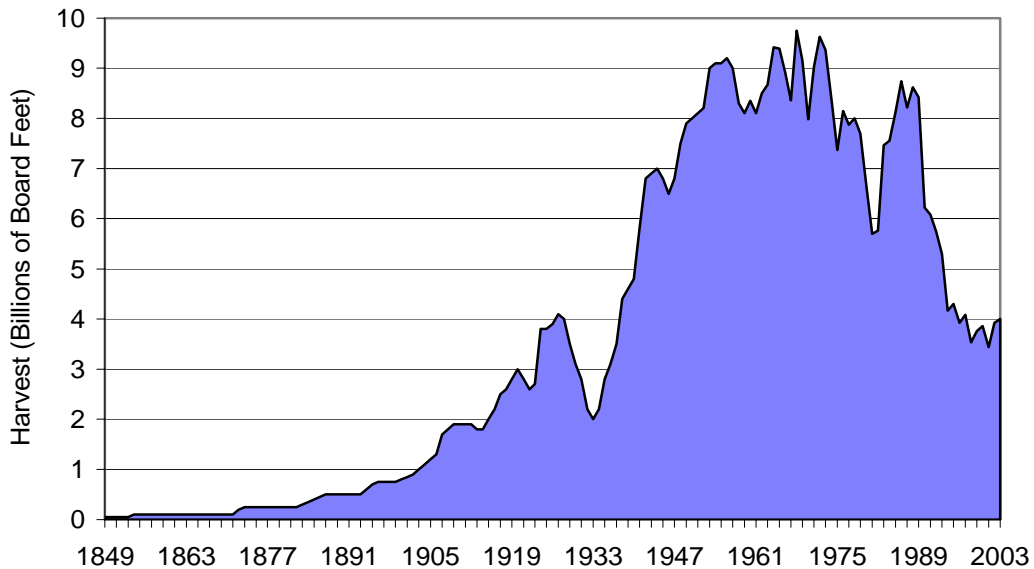
1. These data and the resulting lumber may not include the "improvements" made in recovery from log scale to lumber sold. For example, recovery has increased in Oregon for sawmills from about a factor of 1.7 to about 2.1. Part of this is due to better technology, but it may also be due to the "scale 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**

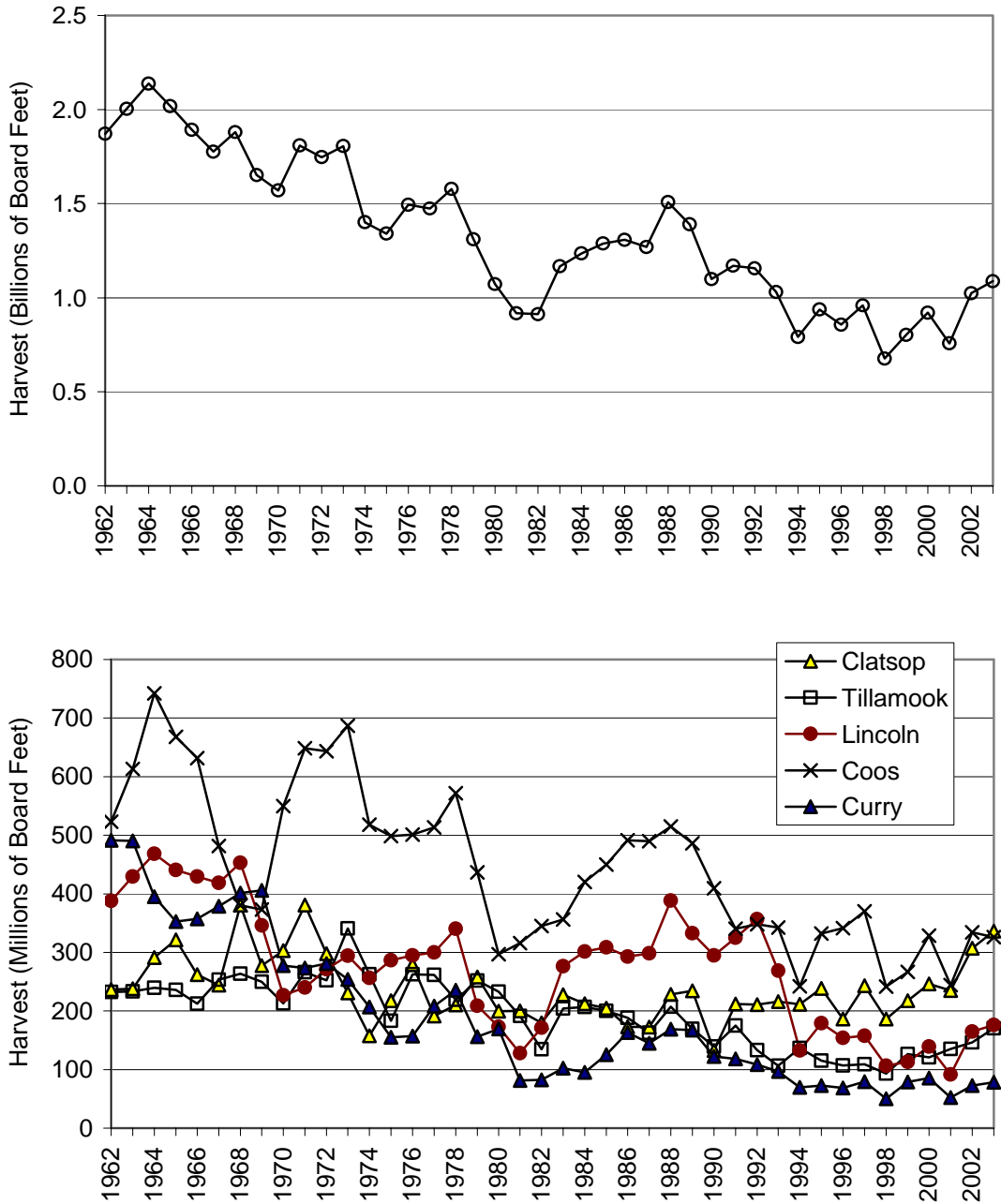
The millions of visitors to the State parks and waysides with beach access are a testament to the priceless wilderness and natural beauty to be found along the Oregon Coast. Oregonians, other U.S. residents, and visitors from other countries contribute significantly to the local economy through spending 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.<sup>1</sup> From a business perspective, tourism is an economic opportunity. For this study, tourism is defined as the action and activities of people

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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

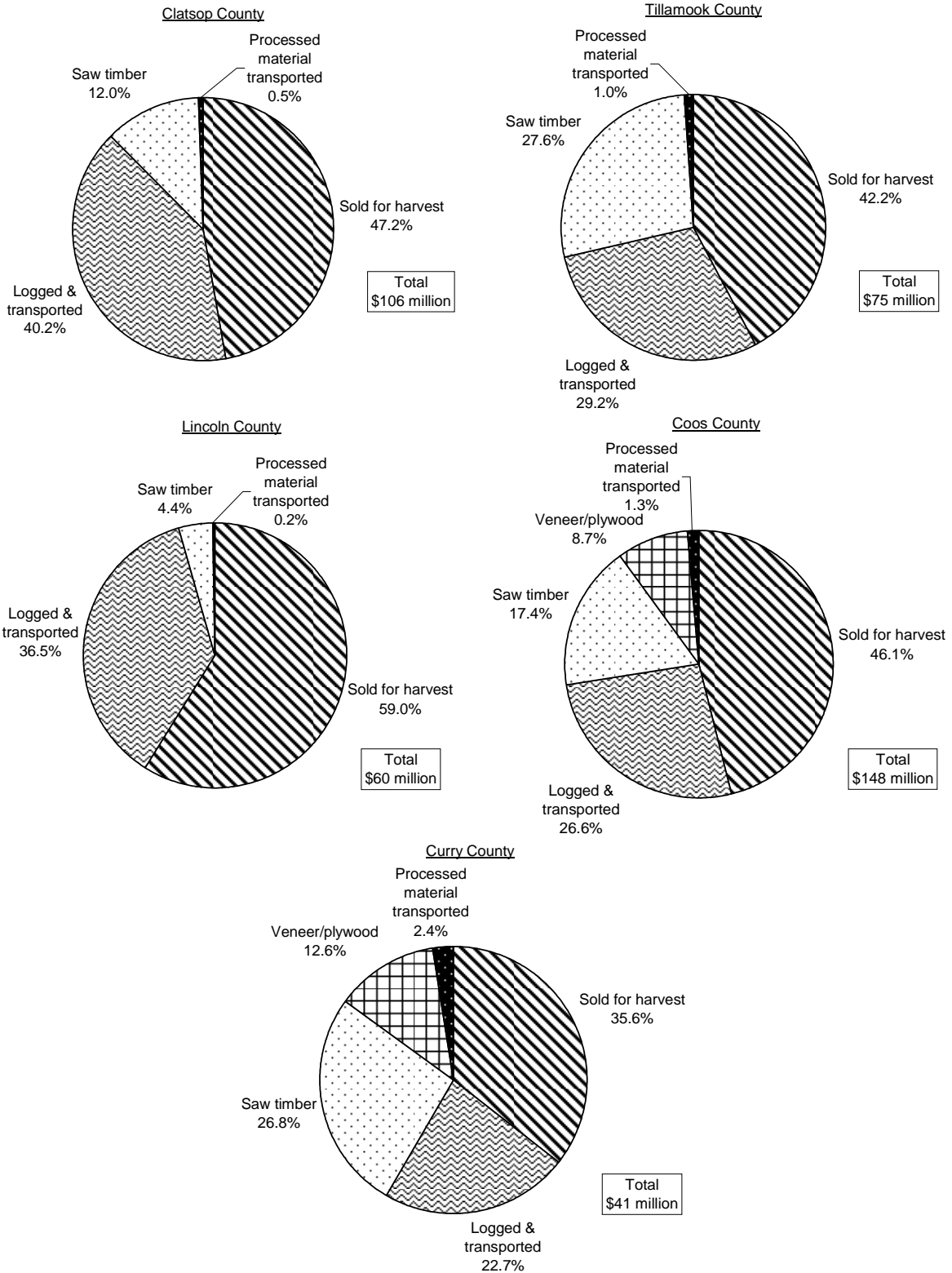
	Coefficients					Coefficients				
	MBF	Income in \$/MBF	Employment per MMBF /10	Total Income in \$	Total Employment	MBF	Income in \$/MBF	Employment per MMBF /10	Total Income in \$	Total Employment
	Clatsop County					Tillamook County				
Sold for Harvest /1,2,3	336,120	149.50	5.44	50,249,940	1,827	170,427	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.

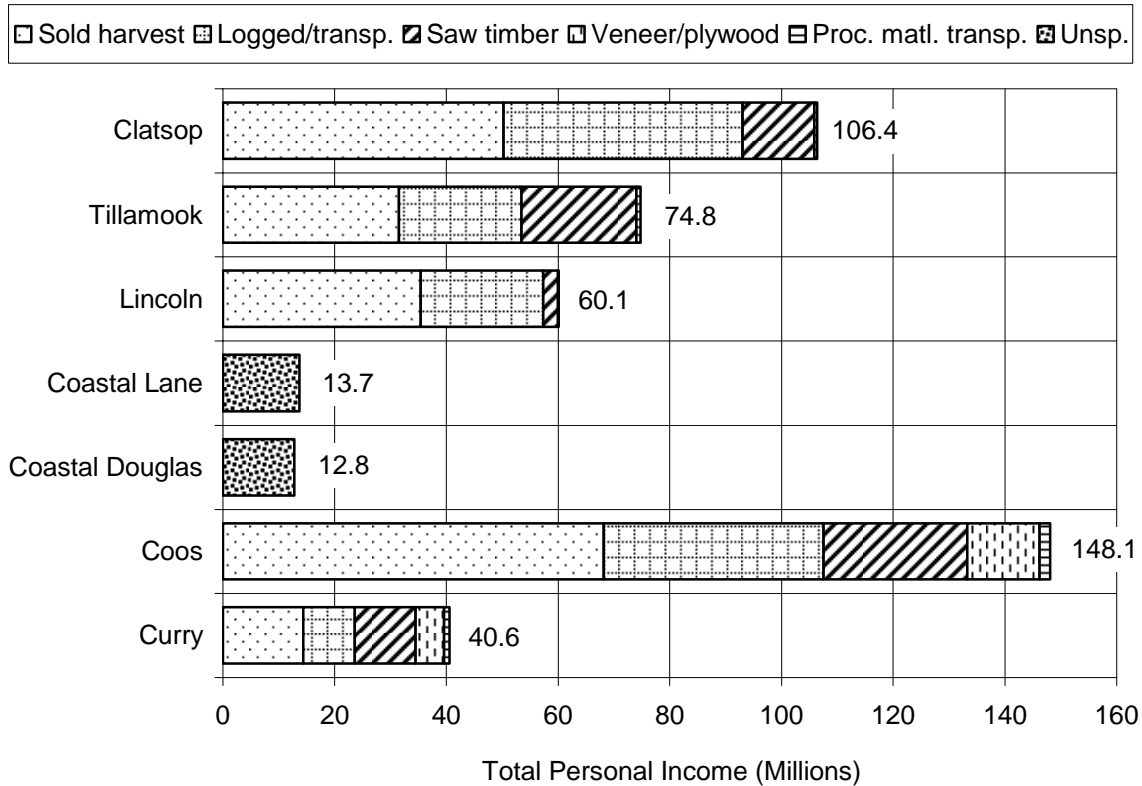
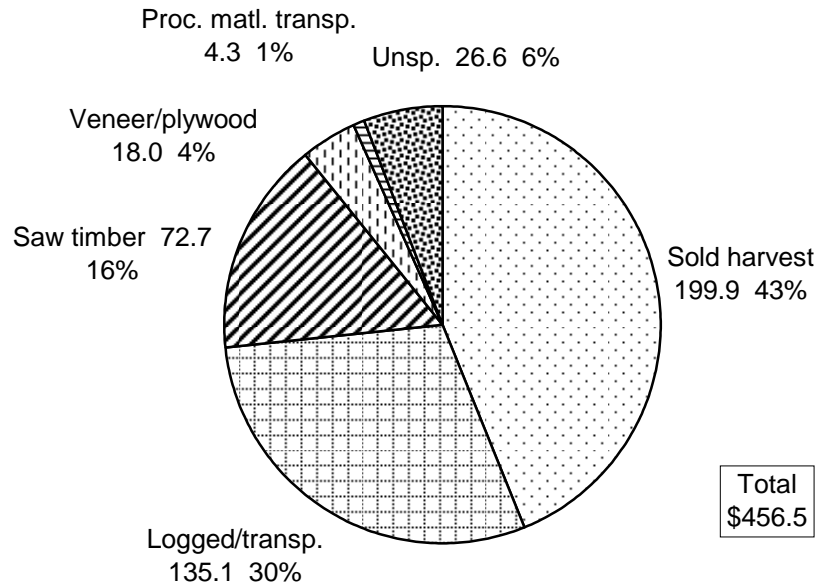
Figure III.20  
Oregon Study Areas Timber Economic Contribution by Production Sector in 2003



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.<sup>1</sup>

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.<sup>2</sup>

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	Multiplier*	Personal Income	Wage & Salary	Outside Sales	Multiplier*	Personal Income	Wage & Salary	Outside Sales	Multiplier*	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%				
Srv. 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%					
Svc. 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.

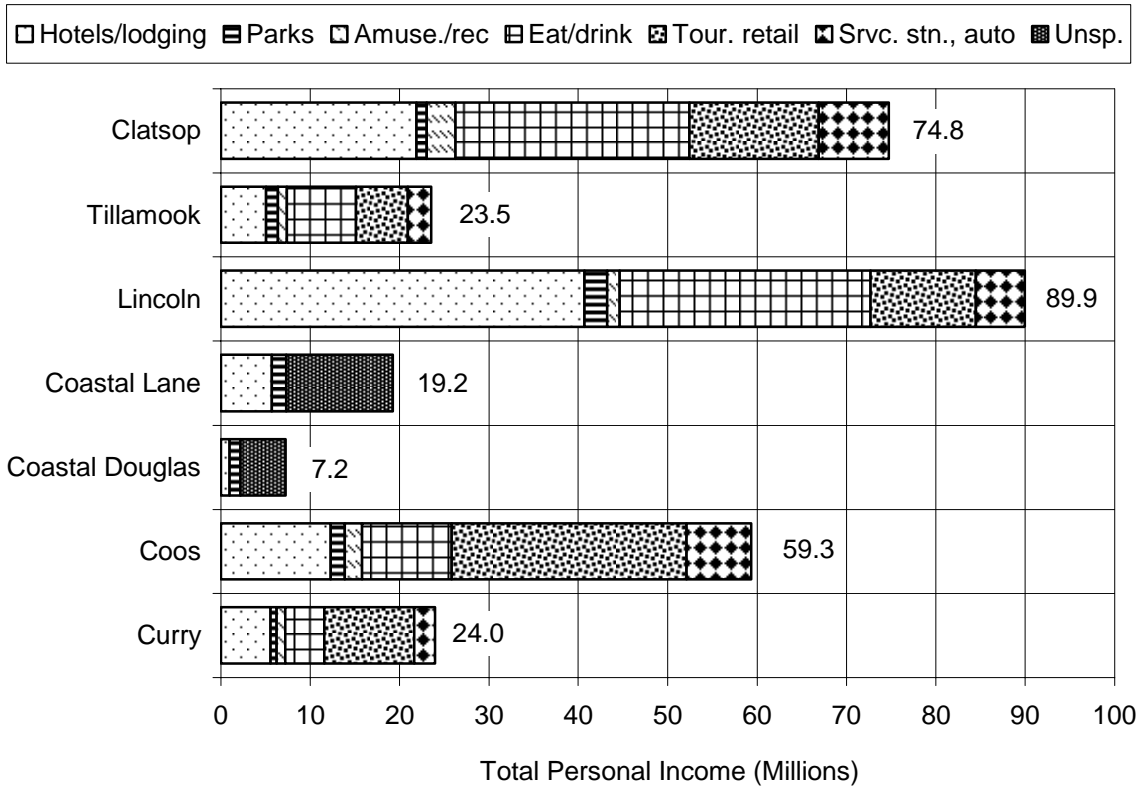
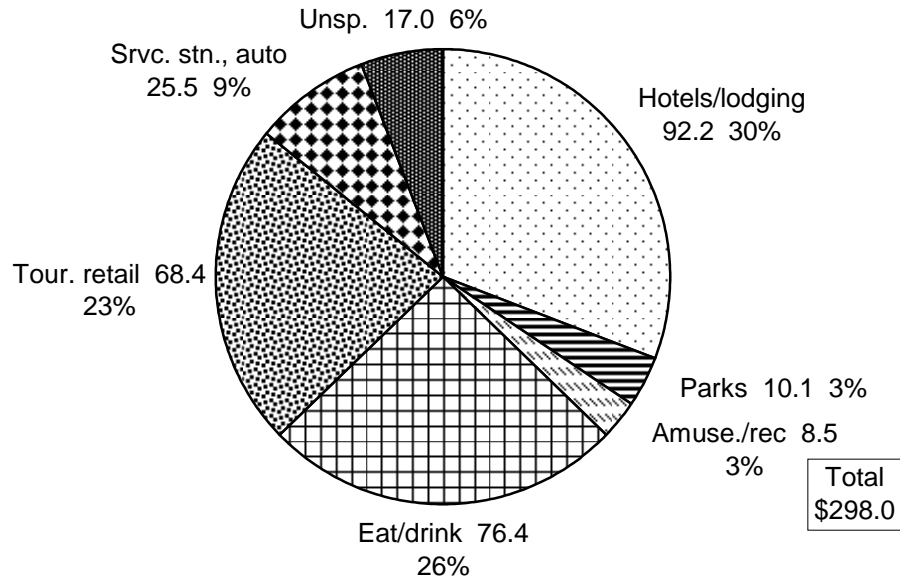
3. State and Federal Parks Wage and Salary data is from a 1991 survey and is updated to 2003 using the CPI for all urban consumers.

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.

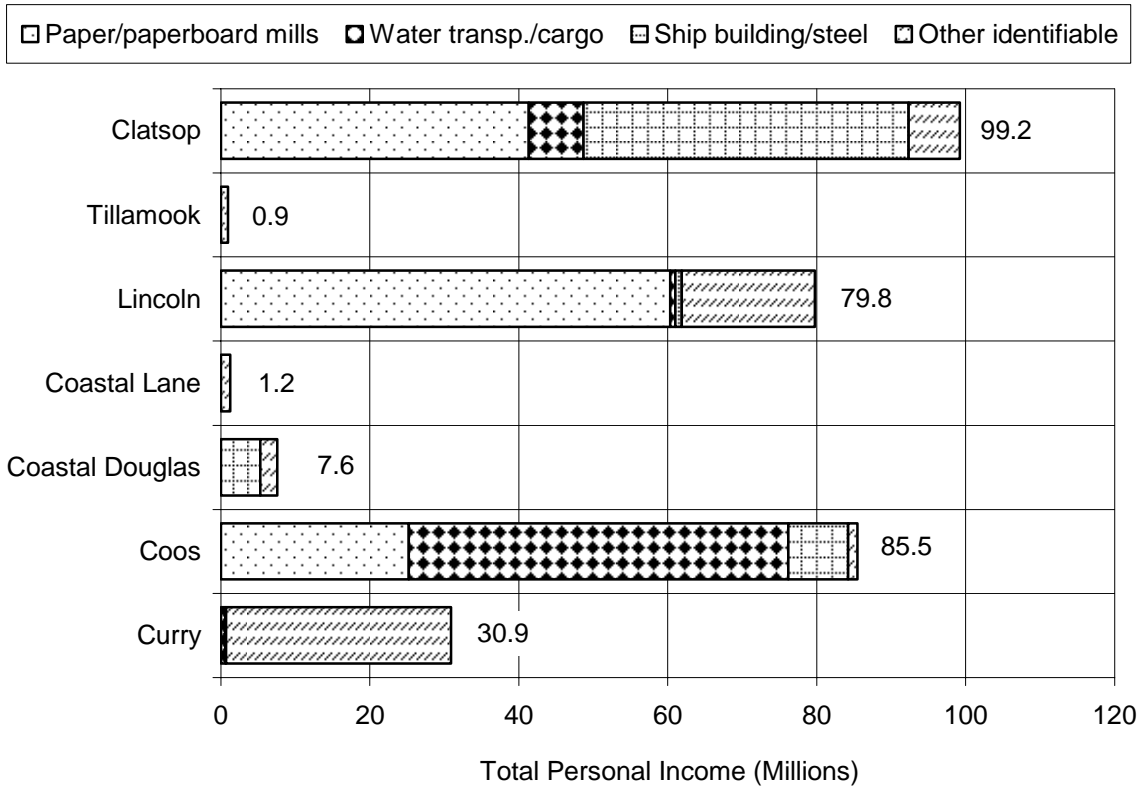
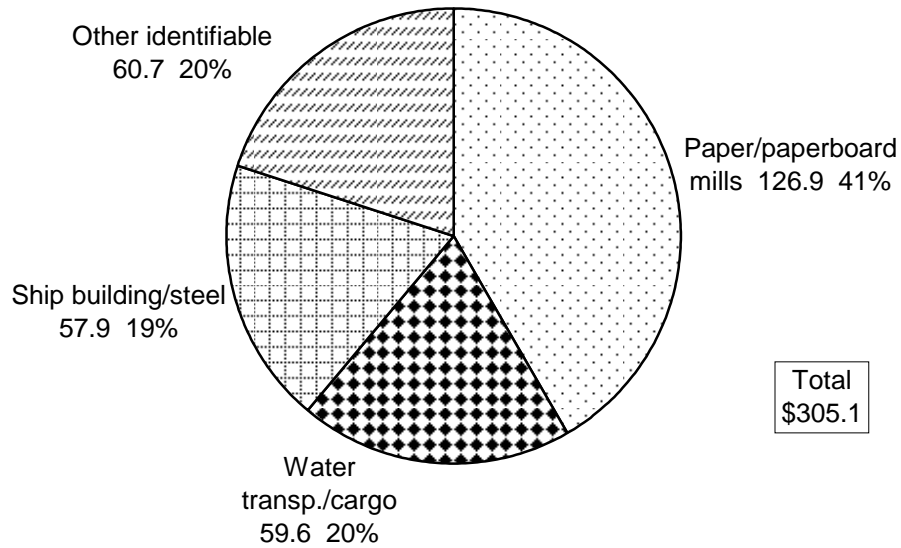
Table III.15  
Study Areas Other Identified Industries Employment and Economic Contribution in 2003

	Employ- ment	Payroll	IMPLAN Multiplier	Income	Employ- ment	Payroll	IMPLAN Multiplier	Income
<u>Clatsop County</u>					<u>Tillamook County</u>			
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
<b>Total Personal Income</b>				<b>\$99,222,561</b>				<b>\$937,500</b>
<u>Lincoln County</u>					<u>Coastal Lane County</u>			
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
<b>Total Personal Income</b>				<b>\$79,750,056</b>				<b>\$1,225,000</b>
<u>Coastal Douglas County</u>					<u>Coos County</u>			
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
<b>Total Personal Income</b>				<b>\$7,558,250</b>				<b>\$85,469,040</b>
<u>Curry County</u>					<u>Total Coast</u>			
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
<b>Total Personal Income</b>				<b>\$30,918,098</b>				<b>\$305,080,504</b>

- 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 Consumer Units	By Age of Reference Person				
		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**

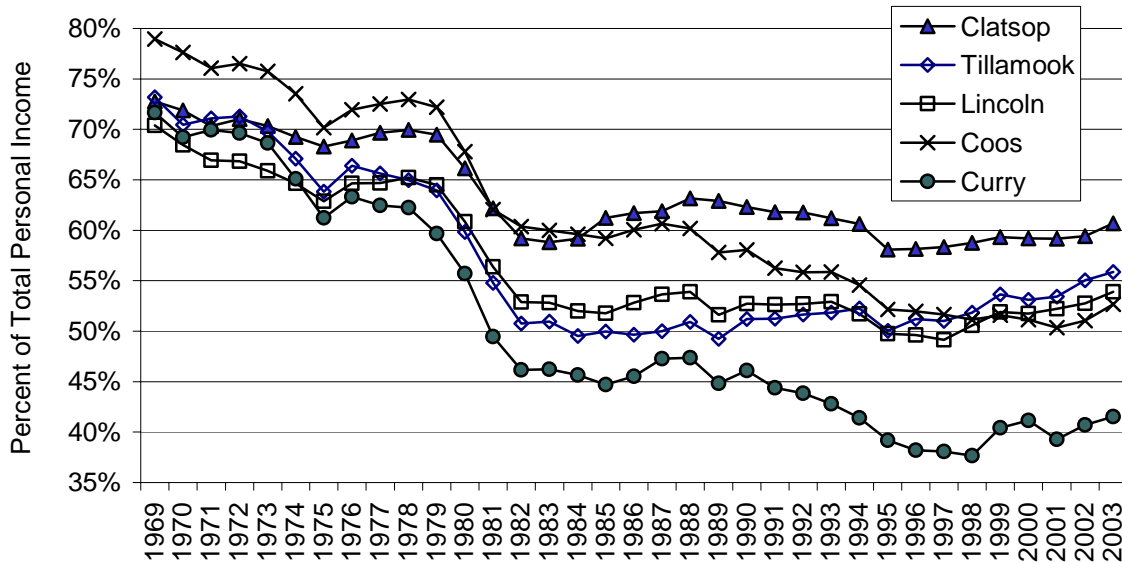
These payments include Social Security, medical payments, and specific retirement programs for railroad workers, federal civilians, military personnel, and State and local government employees. Medical payments include Medicare, Medicaid and other vendor payments.

### **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.

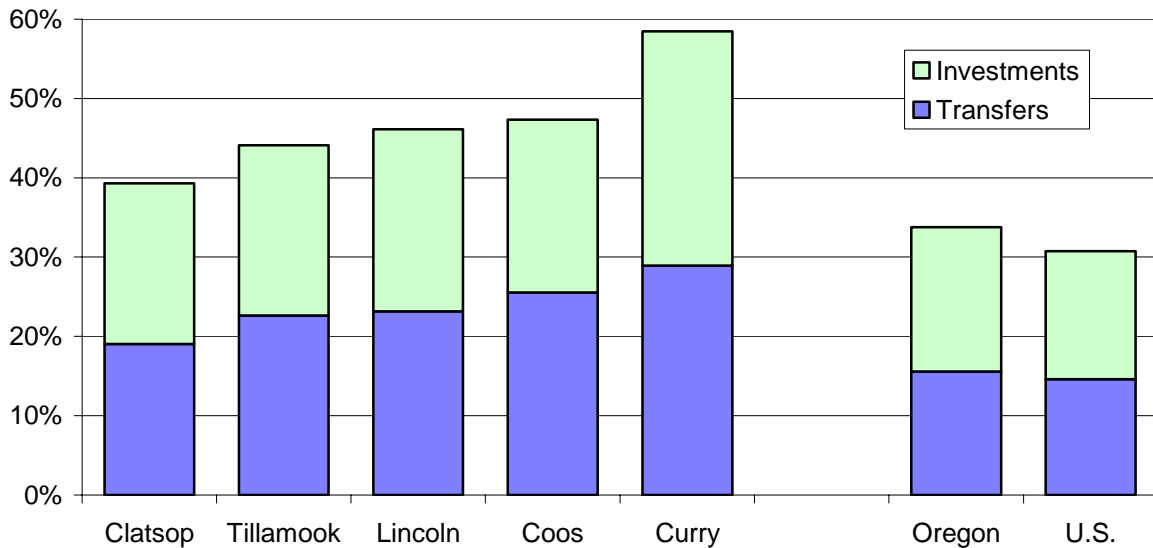
Transfer payments and returns from investments have become a major source of income for most coastal areas. Transfer payments and investment range between 39 and 58 percent of the total personal income in the coastal counties of Oregon. This compares to about 34 percent for Oregon and 31 percent for 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).<sup>1</sup> 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.<sup>2</sup>

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

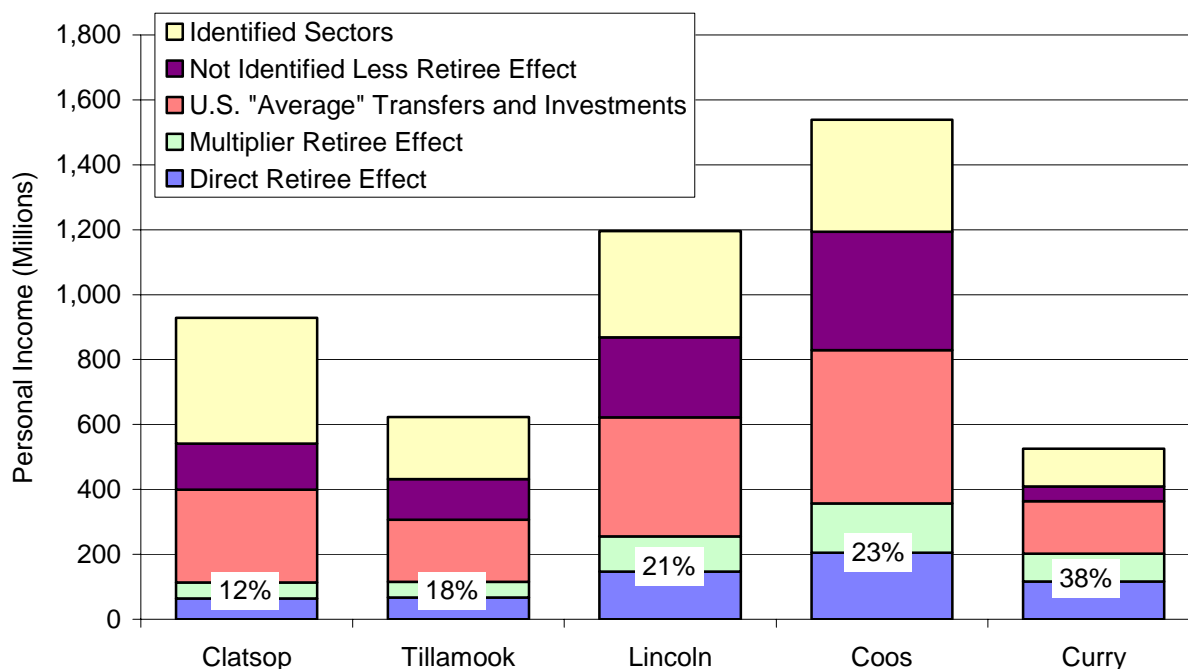
	United States	Oregon	Oregon Coast	Clatsop County	Tillamook County	Lincoln County	Coos County	Curry County
Total personal income	\$9,151,694.0	\$102,418.8	\$5,357.3	\$928.7	\$622.8	\$1,196.1	\$1,539.1	\$525.7
Transfer and investment	\$2,810,852.0	\$34,593.6	\$2,480.7	\$365.0	\$274.9	\$551.6	\$728.8	\$307.4
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.

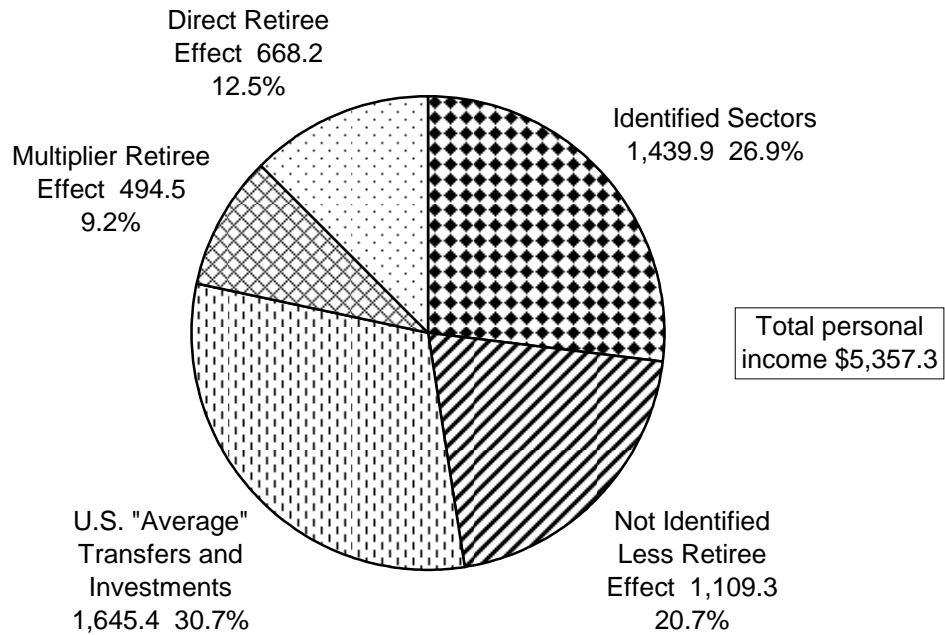
Source: Study.

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.<sup>1</sup>

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.

