OREGON TRANSPORTATION PLAN UPDATE
Transportation Overview

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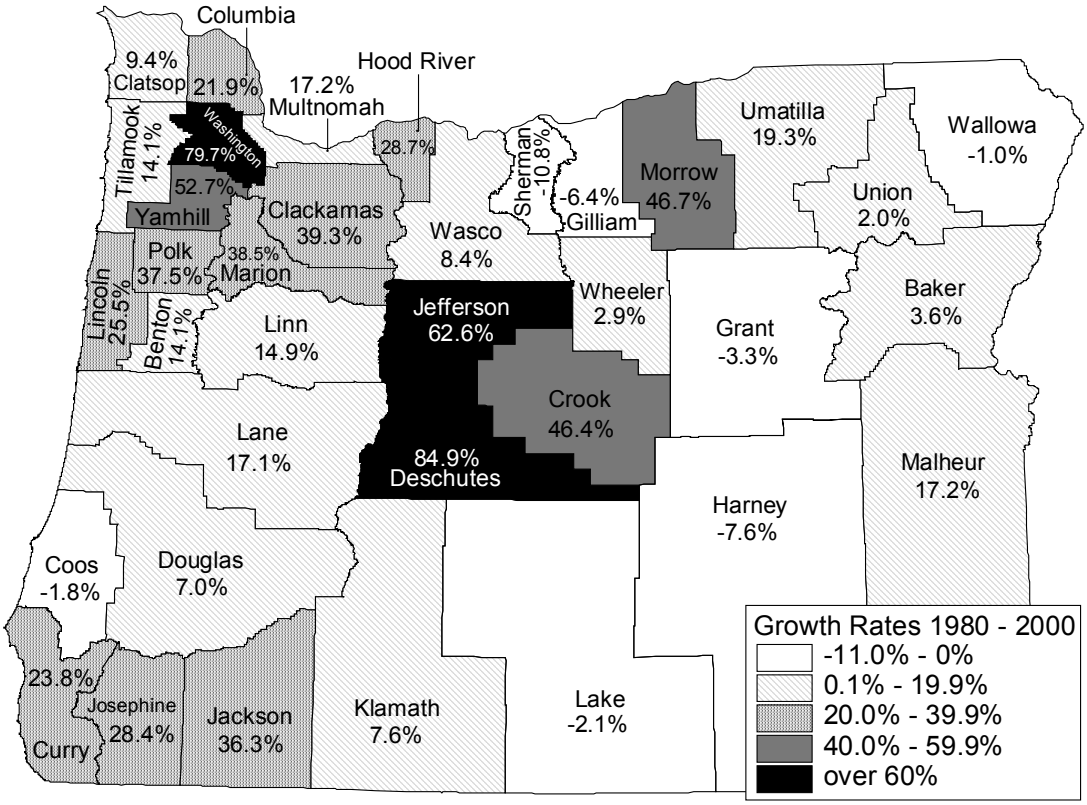
Population Growth Trends
1980 - 2000



Counties Ranked by Total Population Growth 1980 - 2000			
Washington	197,494	Malheur	4,635
Multnomah	96,854	Hood River	4,548
Clackamas	95,410	Klamath	4,495
Marion	79,235	Curry	4,059
Deschutes	52,970	Morrow	3,498
Jackson	48,269	Clatsop	3,069
Lane	47,131	Tillamook	3,003
Yamhill	29,332	Wasco	1,840
Polk	17,018	Baker	583
Josephine	16,744	Union	480
Linn	13,353	Wheeler	43
Umatilla	11,403	Wallowa	-75
Benton	9,660	Gilliam	-130
Lincoln	9,036	Lake	-162
Columbia	7,816	Sherman	-234
Jefferson	7,317	Grant	-275
Douglas	6,562	Harney	-628
Crook	6,083	Coos	-1,165

Statewide Population Growth (1980 - 2000): 779,271
Statewide Growth Rate (1980 - 2000): 29.5%

Source: U.S. Census Bureau, 1980 & 2000 Census

Population Growth Trends
1980 - 2000

The population of the State of Oregon increased by 29.5 percent, or 779,271 people, between the years 1980 and 2000. Most of this net increase occurred during 1990s, as the early 1980s saw much slower population growth, even a net loss in population over several years. This loss resulted from out-migration because of record high unemployment rates in Oregon during the 1981-1982 recession.

Three Oregon counties (Deschutes, Washington and Jefferson) experienced population growth rates over 60 percent during the 1980 to 2000 time period. Three counties (Yamhill, Morrow, and Crook) experienced growth rates between 40 percent and 60 percent during this period. Seven Oregon counties (Sherman, Harney, Gilliam, Grant, Lake, Coos and Wallowa) experienced a net decline in population between 1980 to 2000. Coos County is the only Oregon county located west of the Cascades that experienced a decline in population over this period. The remainder of Oregon counties experienced population growth rates up to 39.9 percent between 1980 and 2000.

The fastest growing Oregon counties were primarily located in Central Oregon, the northern half of the Willamette Valley / Portland Metro area, and Southwest Oregon. Morrow County in Northeast Oregon and Lincoln County along the Central Coast also experienced higher growth rates than other counties with similar characteristics in the immediate area.

While the population growth rates for each Oregon county indicates the magnitude of change, it is also important to analyze the total number of new residents added to each county to understand the state's population growth. The number of new residents can have a significant effect on the function of the region's transportation system and infrastructure.

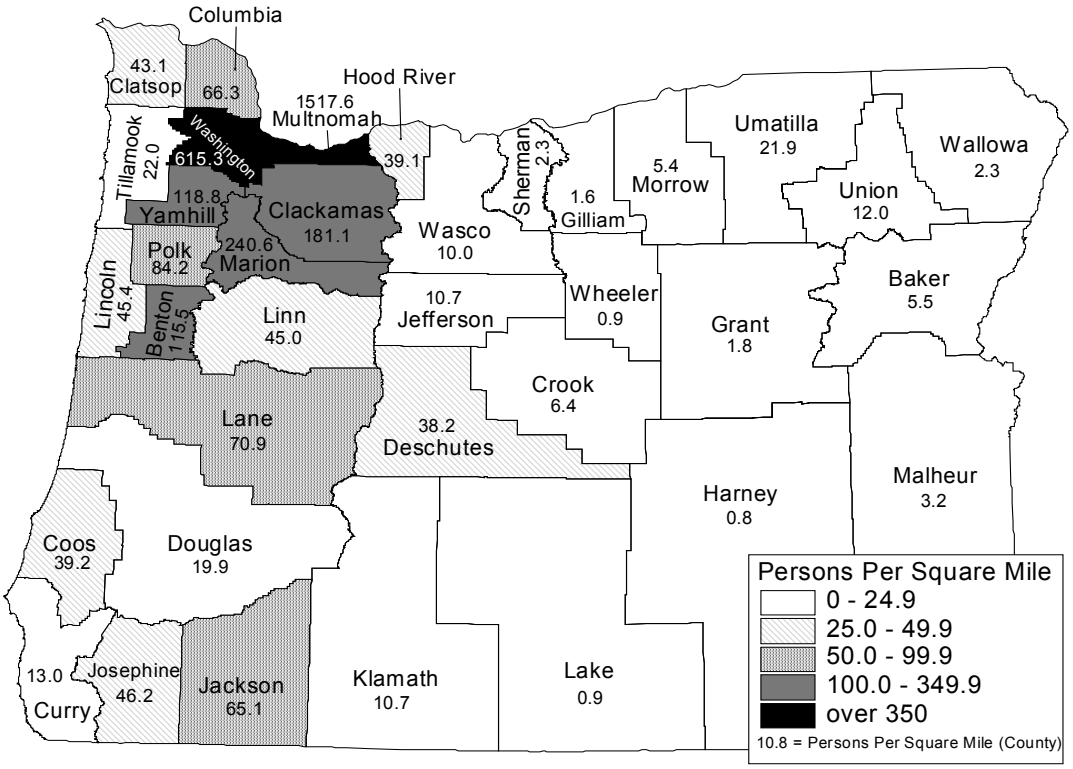
Washington County far outpaced any other Oregon county, adding 197,494 new residents between 1980 and 2000. Multonomah, Clackamas, Marion, Deschutes, Jackson and Yamhill Counties each added more than 47,000 new residents over this time period. Coos County on the Southern Oregon Coast experienced the largest loss in total population between 1980 and 2000 of any Oregon county.

Oregon's Fastest Growing Counties and Counties with Declining Populations
1980 - 2000

Oregon's Fastest Growing Counties (Growth Rate) 1980-2000		Oregon Counties with Declining Populations 1980-2000	
Deschutes	84.9%	Sherman	-10.8%
Washington	79.7%	Harney	-7.6%
Jefferson	62.6%	Gilliam	-6.4%
Yamhill	52.7%	Grant	-3.3%
Morrow	46.7%	Lake	-2.1%
Crook	46.4%	Coos	-1.8%
Clackamas	39.3%	Wallowa	-1.0%

Source: U.S. Census Bureau, 1980 & 2000 Census

Population Density
2000



Counties Ranked by Total Population 2000			
Multnomah	660,486	Clatsop	35,630
Washington	445,342	Malheur	31,615
Clackamas	338,391	Union	24,530
Lane	322,959	Tillamook	24,262
Marion	284,834	Wasco	23,791
Jackson	181,269	Curry	21,137
Deschutes	115,367	Hood River	20,411
Linn	103,069	Crook	19,182
Douglas	100,399	Jefferson	19,009
Yamhill	84,992	Baker	16,741
Benton	78,153	Morrow	10,995
Josephine	75,726	Grant	7,935
Umatilla	70,548	Harney	7,609
Klamath	63,775	Lake	7,422
Coos	62,779	Wallowa	7,226
Polk	62,380	Sherman	1,934
Lincoln	44,479	Gilliam	1,915
Columbia	43,560	Wheeler	1,547

2000 Total State Population: 3,421,399
2000 Statewide Population Density: 35.6 Persons Per Square Mile

Source: U.S. Census Bureau, 2000 Census

Population Density
2000

While Central and Southern Oregon have seen considerable population growth over the past two decades, the majority of Oregon's population continues to be located in the Willamette Valley, and in particular the Portland Metro area. Multnomah County has the highest population density of all Oregon counties at 1518 persons per square mile. The remainder of Oregon counties are considerably less dense, with only Washington County having a population density over 600 persons per square mile. Four Oregon counties (Marion, Clackamas, Yamhill and Benton) have population densities between 100 and 350 persons per square mile, all of which are located in the northern two-thirds of the Willamette Valley.

Eastern Oregon's population density is far lower than the western half of the state. Of the counties east of the Cascades, only Deschutes County and Hood River County have a population density over 25 persons per square mile. Hood River County lies in the Columbia River Gorge, in the transition area between west and east of the Cascade Range. For the purposes of this discussion, Hood River County will be considered as east of the Cascades.

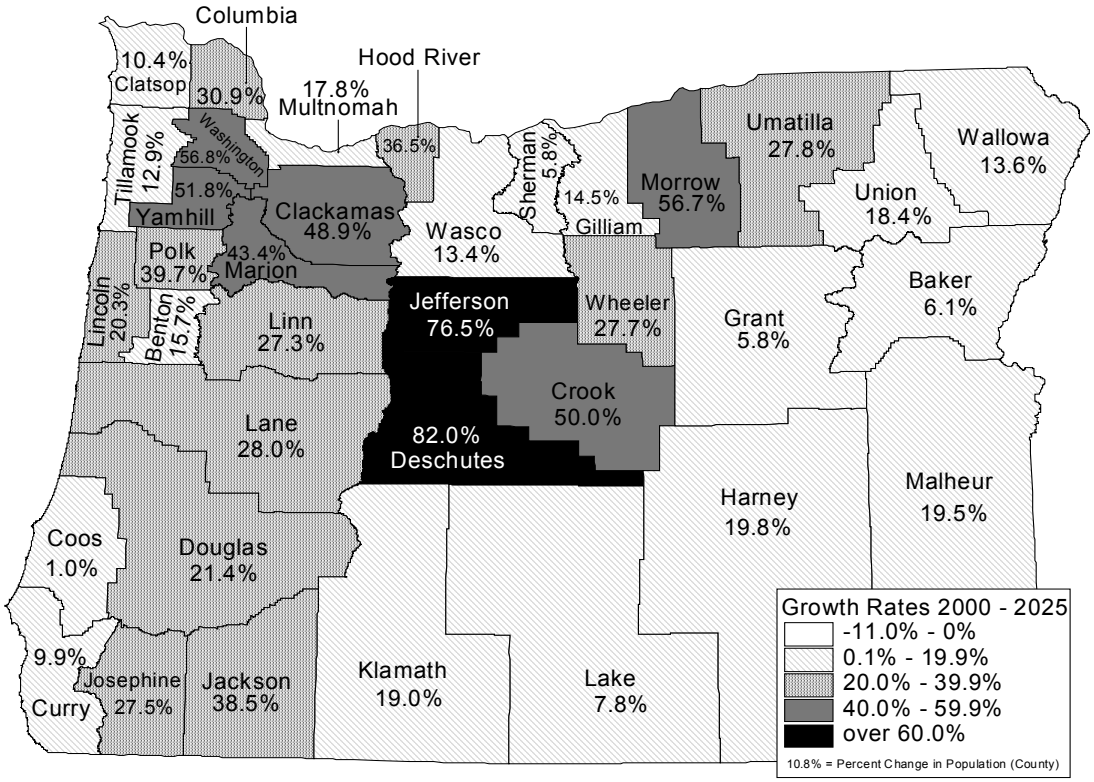
The 2000 Census shows Oregon's total population at 3,421,399. The five most populated counties (Multnomah, Washington, Clackamas, Lane and Marion) are all located in the Willamette Valley, with the top three located in the Portland Metro area. Jackson County has the highest total population and population density of all Southern Oregon counties. Recent increases in overall population secures Deschutes County's position as the most populous county east of the Cascades.

The majority of Eastern Oregon counties have a relatively small overall population despite their large physical area, leading to population densities well below the state average of 35.6 persons per square mile. Three Eastern Oregon counties (Sherman, Gilliam and Wheeler) have total populations under 2,000.

Counties with the Highest Population Density (2000)	
Multnomah	1,517.6
Washington	615.3
Marion	240.6
Clackamas	181.1
Yamhill	118.8
Benton	115.5

Source: U.S. Census Bureau, 2000 Census

Population Growth Trends
2000 - 2025 Forecast



Counties Ranked by Total Population Growth 2000 - 2025 Forecast			
Washington	252,881	Lincoln	9,015
Clackamas	165,403	Hood River	7,442
Marion	123,603	Morrow	6,238
Multnomah	117,843	Malheur	6,169
Deschutes	94,552	Union	4,519
Lane	90,271	Clatsop	3,690
Jackson	68,789	Wasco	3,186
Yamhill	44,026	Tillamook	3,137
Linn	28,088	Curry	2,083
Polk	24,773	Harney	1,506
Douglas	21,535	Baker	1,026
Josephine	20,821	Wallowa	982
Umatilla	19,616	Coos	655
Jefferson	14,535	Lake	580
Columbia	13,458	Grant	461
Benton	12,278	Wheeler	428
Klamath	12,127	Gilliam	278
Crook	9,599	Sherman	113

Forecast Total State Population Growth (2000 - 2025): 1,186,706
Forecast Statewide Growth Rate (2000 - 2025): 34.7%

Source: U.S. Census Bureau, 2000 Census & State of Oregon, Office of Economic Analysis: Long Term Population Forecast for Oregon and Its Counties 2000-2040

Population Growth Trends
2000 - 2025 Forecast

Note: Preliminary Forecast Data
(Subject to Change upon Final Forecast Publication)

Preliminary forecast data for Oregon's population from the State of Oregon, Office of Economic Analysis, predicts substantial population growth through 2025. Oregon is expected to add 1,186,706 people between the years 2000 and 2025. This forecast increase is over 90,000 more new residents than were added during the previous 25-year period from 1975 to 2000.

Deschutes County continues to be the state's fastest growing county with a forecast growth rate of 82 percent expected over this time period. Jefferson County and Crook County are also predicted to experience a high growth rate in the Central Oregon area. Morrow County in Northeast Oregon is expected to lead that region's growth rate with a forecast 56.7 percent increase in population over the 25-year time period. Outside of these high growth areas, Eastern Oregon counties are expected to grow at a relatively slow rate compared with much of the rest of the state.

The Northern Willamette Valley counties, including Washington, Yamhill, Clackamas and Marion, are expected to grow at a significant rate during this period. The majority of Coastal counties are expected to grow slower than most other west side counties, with Coos County experiencing the state's lowest growth rate of 1.0 percent between 2000 and 2025. However, unlike the 1980 to 2000 time period, no Oregon counties are expected to lose population through 2025.

Despite Central Oregon's high forecasted growth rates, the Northern Willamette Valley counties of Washington, Clackamas, Marion and Multnomah are all expected to add more new residents than Deschutes County. These four Willamette Valley counties are forecast to add 659,730 people among them. Both Washington and Clackamas Counties are expected to add more residents than Multnomah County, which contains the Portland Metro area's urban core. However, the 94,552 new residents forecast for Deschutes County will almost double the 2000 population of 115,367.

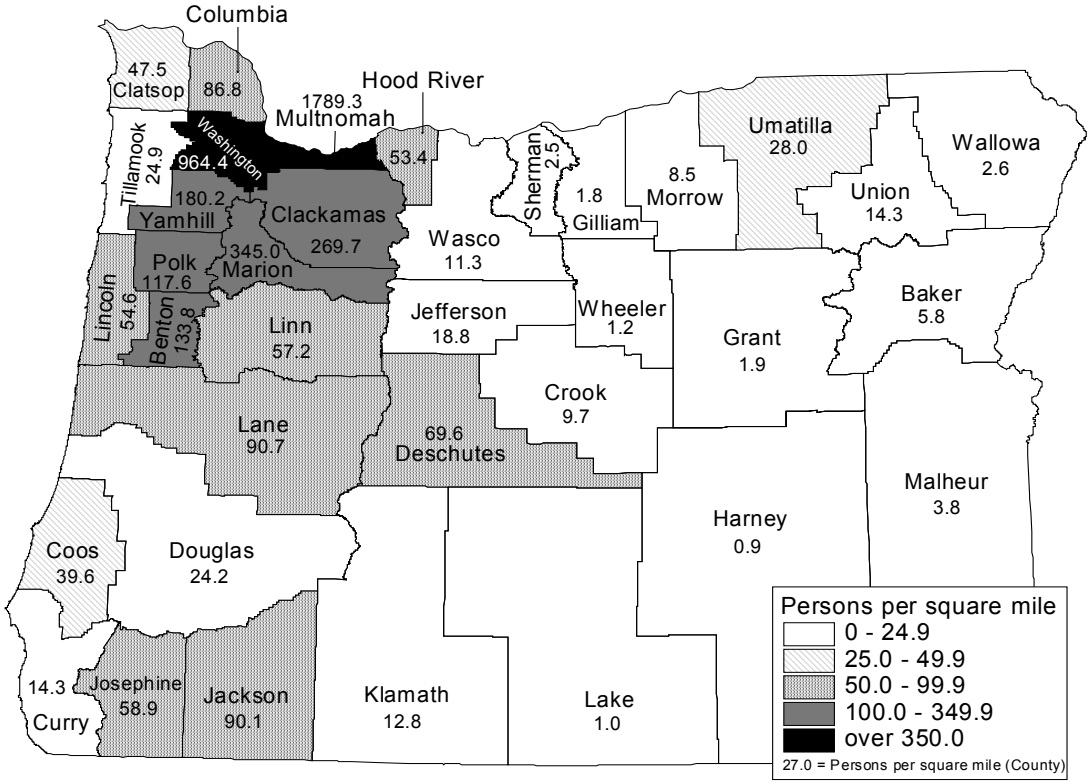
In general, Eastern Oregon counties are expected to add the fewest residents during the 2000 to 2025 time period. Sherman County is forecast to add only 113 additional people, the lowest net increase in the state.

Oregon's Fastest and Slowest Growing Counties
2000 - 2025 Forecast

Fastest Growing Oregon Counties (Forecast Growth Rate) 2000-2025		Slowest Growing Oregon Counties (Forecast Growth Rate) 2000-2025	
Deschutes	82.0%	Coos	1.0%
Jefferson	76.5%	Grant	5.8%
Washington	56.8%	Sherman	5.8%
Morrow	56.7%	Baker	6.1%
Yamhill	51.8%	Lake	7.8%
Crook	50.0%	Curry	9.9%
Clackamas	48.9%	Clatsop	10.4%

Source: U.S. Census Bureau, 2000 Census & State of Oregon, Office of Economic Analysis: Long Term Population Forecast for Oregon and Its Counties 2000-2040

Population Density
2025 Forecast



Counties Ranked by Total Population 2025 Forecast			
Multnomah	778,329	Clatsop	39,320
Washington	698,223	Malheur	37,784
Clackamas	503,794	Jefferson	33,544
Lane	413,230	Union	29,049
Marion	408,437	Crook	28,781
Jackson	251,058	Hood River	27,853
Deschutes	209,919	Tillamook	27,399
Linn	131,157	Wasco	26,977
Yamhill	129,018	Curry	23,220
Douglas	121,934	Baker	17,767
Josephine	96,547	Morrow	17,233
Benton	90,431	Harney	9,115
Umatilla	90,164	Grant	8,396
Polk	87,153	Wallowa	8,208
Klamath	75,902	Lake	8,002
Coos	63,434	Gilliam	2,193
Columbia	57,018	Sherman	2,047
Lincoln	53,494	Wheeler	1,975

2025 Forecast Total State Population: 4,608,105
2025 Forecast Statewide Population Density: 48.0 Persons Per Square Mile

Source: State of Oregon, Office of Economic Analysis: Long Term Population Forecast for Oregon and Its Counties, 2000-2040

Population Density
2025 Forecast

Note: Preliminary Forecast Data
(Subject to Change upon Final Forecast Publication)

Population densities are expected to increase across the state with the overall population growth forecast from the year 2000 to 2025. The patterns of population density are not expected to change drastically from year 2000 patterns, with the Northern Willamette Valley / Portland Metro area counties having the highest population densities in the state and rural areas of Eastern Oregon having the lowest population density among Oregon counties.

Overall population forecasts show a significant increase for many Oregon counties. The Western Oregon counties of Multnomah, Washington, Clackamas, Lane and Marion are expected to remain the most populous in the state.

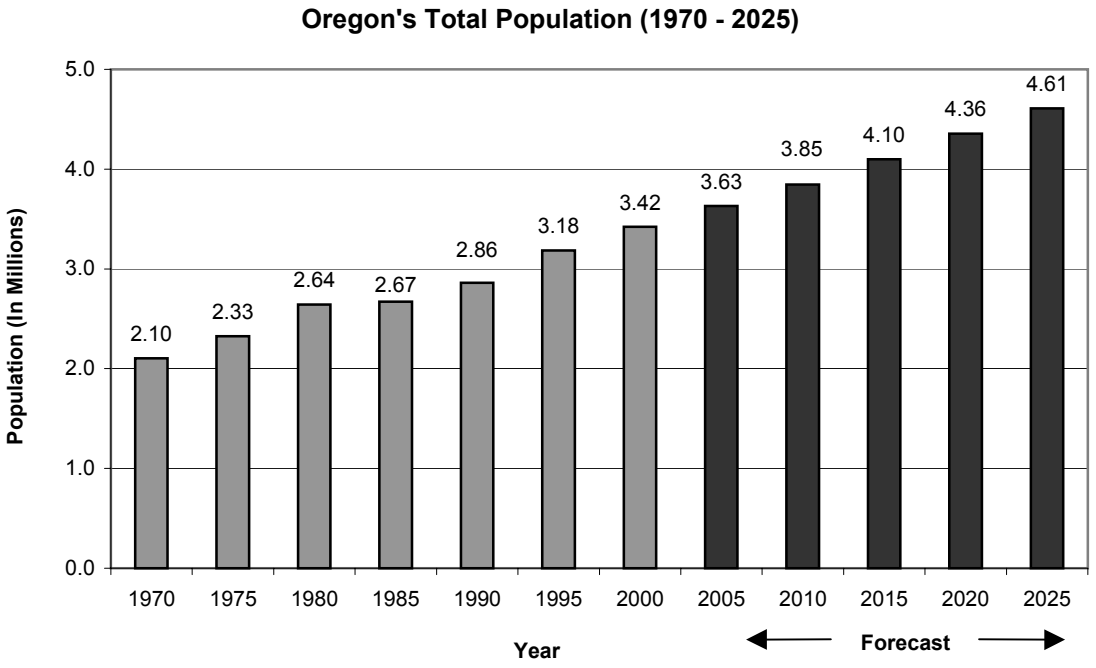
Jackson County in Southern Oregon and Deschutes County in Central Oregon are both expected have populations over 200,000 by 2025. Jackson County contains the growing Medford-Ashland urban area, and Deschutes County houses the expanding populations of Bend and Redmond.

Counties with the Highest Population Density 2025 Forecast	
Multnomah	1,789.3
Washington	964.4
Marion	345.0
Clackamas	269.7
Yamhill	180.2
Benton	133.8

Source: State of Oregon, Office of Economic Analysis: Long Term Population Forecast for Oregon and Its Counties, 2000-2040

Trends in Oregon's Population
1970 - 2025

Oregon's total population has steadily increased over the last three decades, adding approximately 1.32 million new residents between 1970 and 2000. Only the early 1980s, accompanied by a severe economic downturn and high unemployment rates in the state, saw a dramatic slowdown in overall population growth. Significant population growth is expected to continue in the state through the next two decades, placing additional stresses on critical services and infrastructure, including transportation.



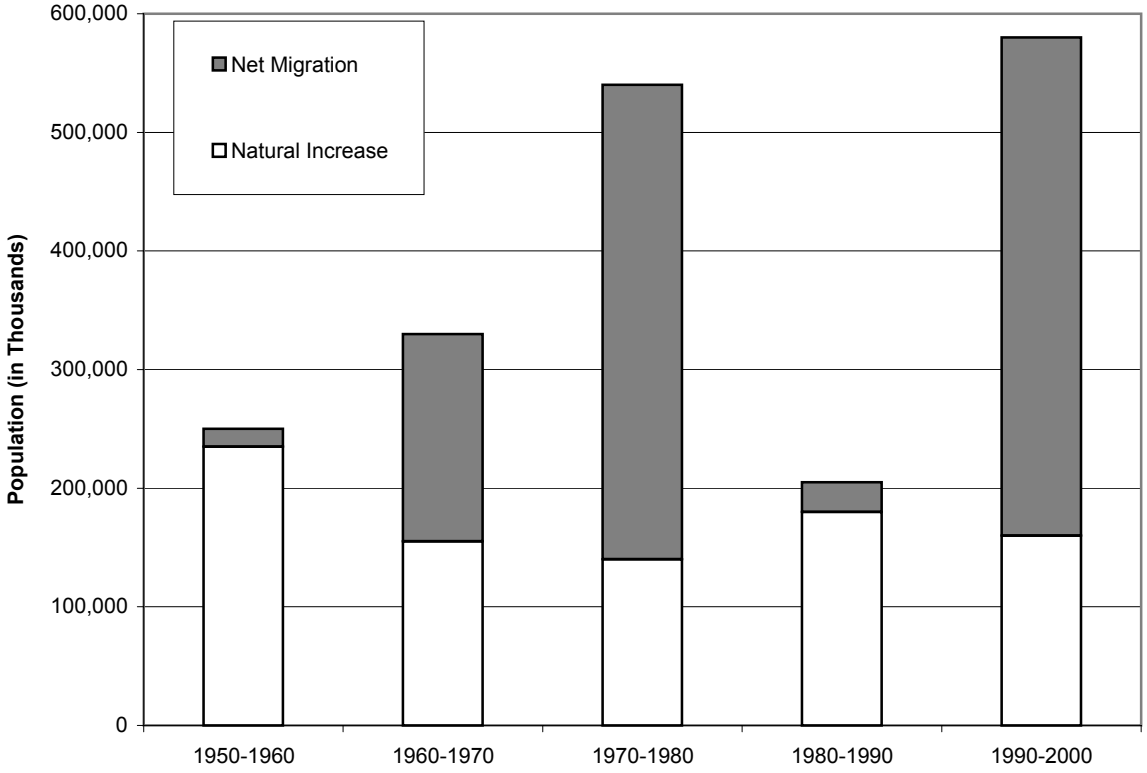
Source: 1970 - 2000: U.S. Census Bureau
2005 - 2025: State of Oregon, Office of Economic Analysis: Long Term Population Forecast for Oregon and Its Counties, 2000-2040

Components of Oregon's Population Growth
1950 - 2000

The last five decades have brought a significant increase to Oregon's population from both natural increase (births minus deaths) and net migration. The number of new Oregonians added by natural increase has held fairly steady after declining from the high rates of the 1950s baby boom era.

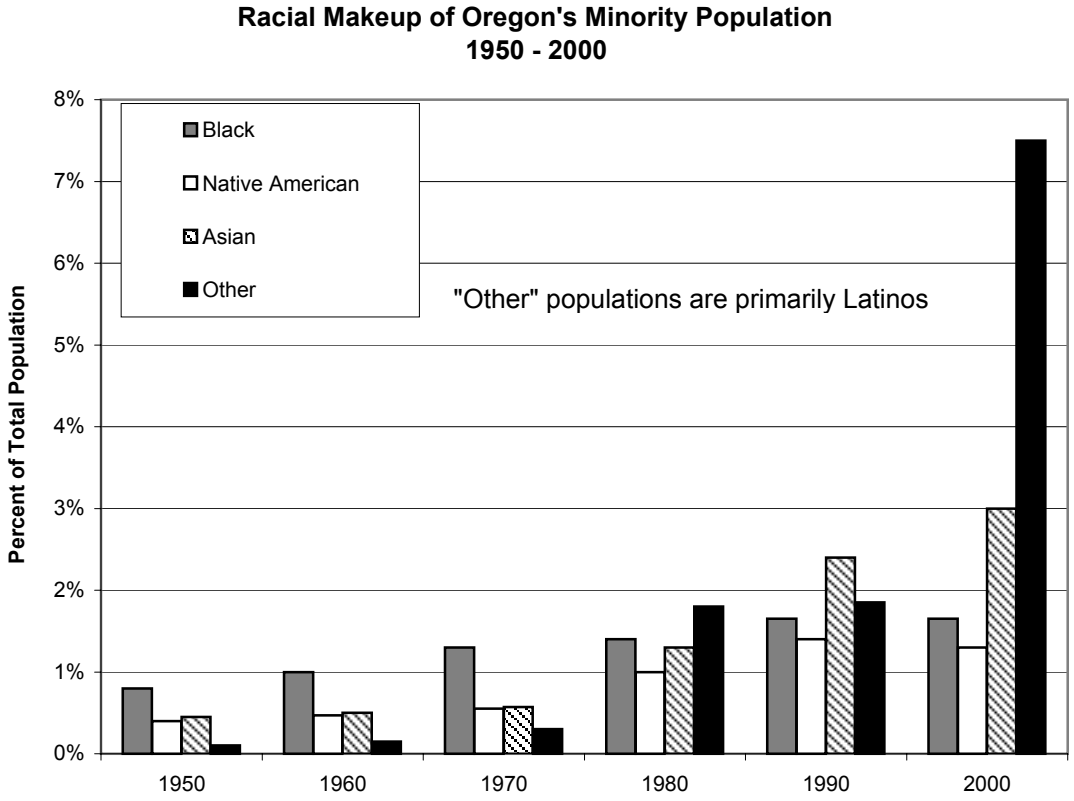
In contrast to natural increase, net migration has dramatically fluctuated over the last five decades. Migration can often be tied to the economic conditions throughout the nation and the state. During the 1980s Oregon was hit especially hard by a poor national economy and experienced a net out-migration for several years early in the decade. This led to a low net migration increase for the decade. In contrast, the 1990s brought a strong economy and a large increase in Oregon's population, the majority of which can be attributed to rapid in-migration throughout the decade. Oregon's growth rate of 20.4 percent during the 1990s ranked 11th in the nation for that time period.

Oregon's Population Growth (Net Migration and Natural Increase)
1950 - 2000



Source: Portland State University, Population Research Center, Portland Multnomah Progress Board & Oregon Progress Board: Oregon Outlook, April 2003

Growth of Oregon's Minority Population
1950 - 2000



Source: Portland State University, Population Research Center, Portland Multnomah Progress Board & Oregon Progress Board: Oregon Outlook 2003

Oregon's minority populations have increased since the 1950s, with more significant growth occurring in recent decades. African-American populations have increased relatively slowly from just under one percent of Oregon's total population in 1950 to approximately 1.5 percent in 2000. A similar growth rate has occurred in Oregon's Native American populations, increasing from under 0.5 percent of the total population in 1950 to approximately 1.25 percent in 2000. Oregon's Asian and other minority populations have increased at a faster rate than the Black and Native American population. In 1950, Asians made up under 0.5 percent of the total population. This percentage has risen to 3 percent in 2000. In 1950, other minority populations made up of primarily Latino residents comprised a very small portion of Oregon's total, near 0.2 percent. These populations have experienced a strong increase in total numbers over the past three decades, primarily from high levels of in-migration into Oregon. By 2000, other minority populations were 7.5 percent of the state's total residents, making them the largest minority group in the state.

Population Distribution
2000

Estimated MPO Population Characteristics

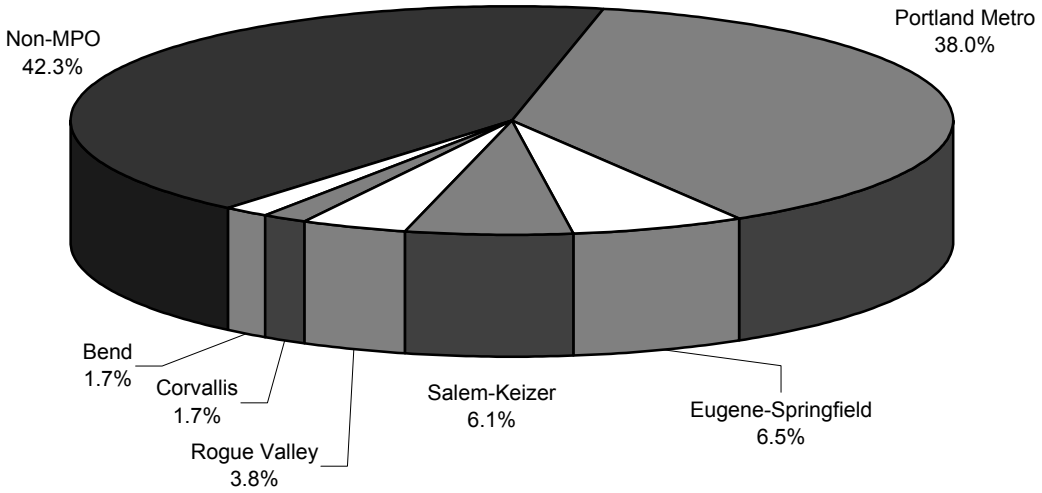
Metropolitan Planning Organization	Approximate Total Population (2000)	Approximate Area in Square Miles	Approximate Persons Per Square Mile
Bend	57,525	37	1555
Corvallis	58,229	39	1493
Eugene-Springfield* (UGB Area Only)	224,049	78	2872
Portland-Metro	1,305,574	462	2826
Rogue Valley	128,780	263	490
Salem-Keizer (SKATS Service Area)	207,229	135	1535
All MPO Areas	1,981,386	1,014	1,954

* Eugene-Springfield MPO area and density is calculated using the UGB.
All others are calculated from a MPO or service area boundary.

Note: MPO areas listings are approximate. The numbers are subject to change with changes to MPO boundaries.

Source: U.S. Census Bureau, 2000 Census & Oregon Metropolitan Planning Organizations

Percent of Total Oregon Population by MPO Area (2000)

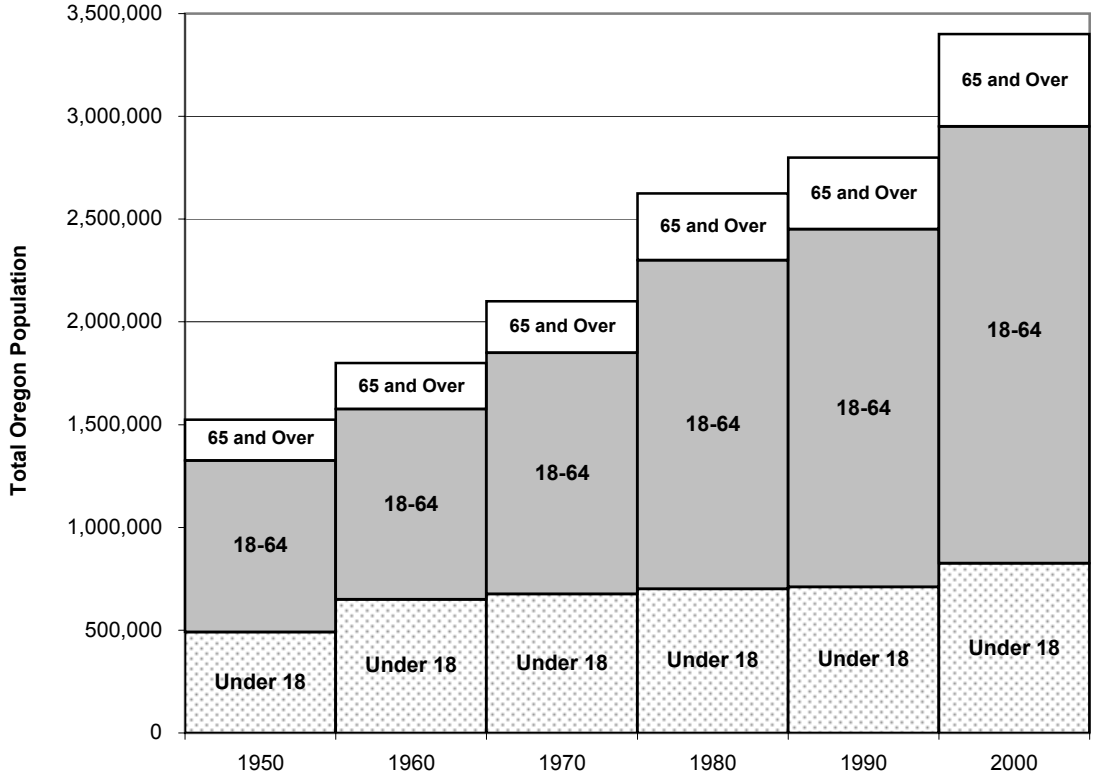


Source: U.S. Census Bureau, 2000 Census

Year 2000 Census data indicates that approximately 57.9 percent of Oregon's 3,421,399 residents live within the six metropolitan planning organization (MPO) areas.

The average population density for all MPO areas is 1,954 persons per square mile, significantly higher than Oregon's statewide population density of 35.6 persons per square mile.

Population of Oregon Age Groups
1950 - 2000



Source: Portland State University, Population Research Center, Portland Multnomah Progress Board & Oregon Progress Board: Oregon Outlook, April 2003

Oregon's demographics have been changing throughout the second half of the 20th Century. Not only has the overall population of the state increased, but there has been a noticeable increase in the proportion of the population age 65 and over, particularly in recent years.

Persons Age 65 and Over

Understanding the age characteristics of a population is important to establishing the proportion of residents in primary wage earning years versus those who are likely to be living on a retirement income. In addition, as the population of the state ages, different pressures and requirements are placed on the transportation system in order to meet mobility needs. Population age structure can show the number of residents who may be able to drive versus those who may be dependent on other modes of transportation for mobility. It should be noted that while these generalizations can be beneficial for evaluation, they by no means reflect all persons in the identified age class. Many state residents continue to work and drive well beyond any age classification cut-off.

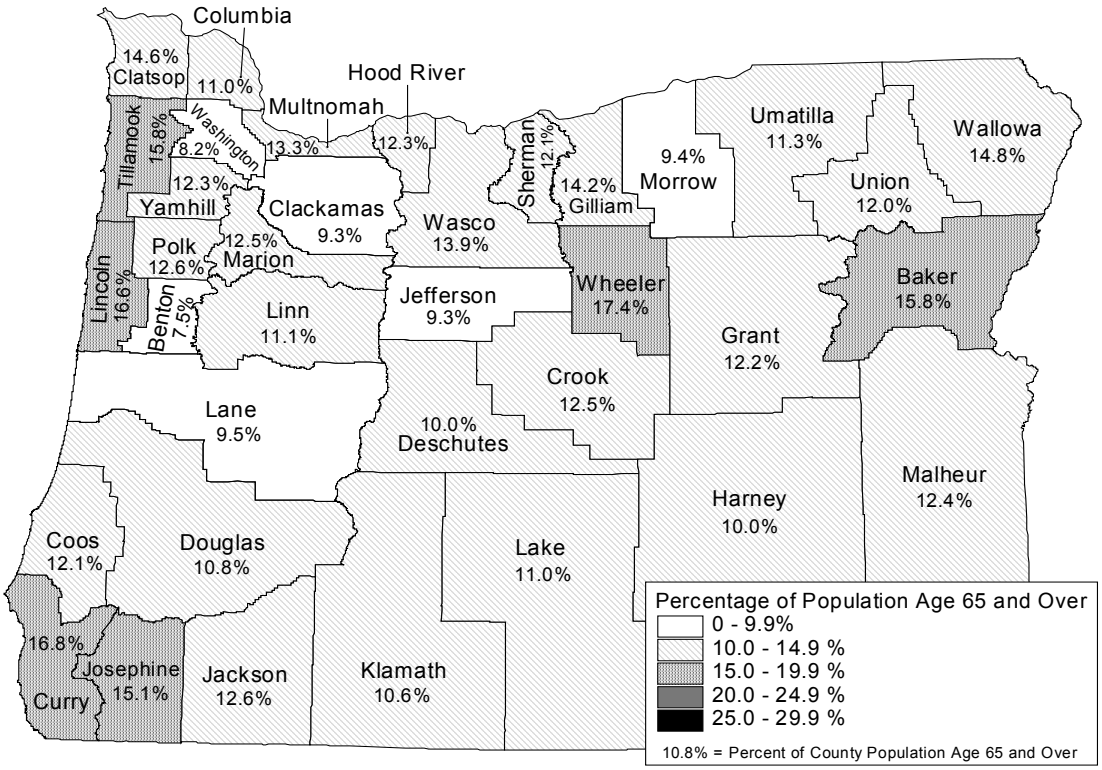
The percent of Oregon's population age 65 and over has increased from 11.5 percent in 1980 to 12.8 percent in 2000. This corresponds to an actual increase of 303,057 people age 65 and over in 1980 to 438,177 in 2000, an additional 135,120 people in this age class.

In 1980, 17.4 percent of Wheeler County's population was age 65 and over. In contrast, Benton County had only 7.5 percent of its population in the same age category, the lowest percentage in the state. Oregon coastal counties, a popular location for retirees, also had 12 to 17 percent of the population age 65 and over in 1980.

The majority of Oregon counties have experienced an increase in the proportion of the population age 65 and over from 1980 levels. In Curry, Wheeler and Josephine Counties, the number of people age 65 and over substantially grew to over 20 percent of the population in 2000. The percentage of persons age 65 and over stayed relatively low in the highly populated counties of the Willamette Valley / Portland Metro area. Conversely, in many of the primarily agricultural counties of Eastern Oregon and the counties located along the Oregon Coast, proportions of the population age 65 were well above the state average in 2000.

Even though many counties in rural Eastern Oregon and along the Oregon Coast have large proportions of their population in this age group, the overall numbers of people age 65 and over are relatively low compared with the more populated counties of Oregon. Multnomah County has one of the smallest percentages of persons age 65 and over, yet the county's large overall population leads to the greatest number of people in this age group of any Oregon county. Curry County has a much higher percentage of the population age 65 and over, yet has only 5,628 residents age 65 and over.

Persons Age 65 and Over
1980

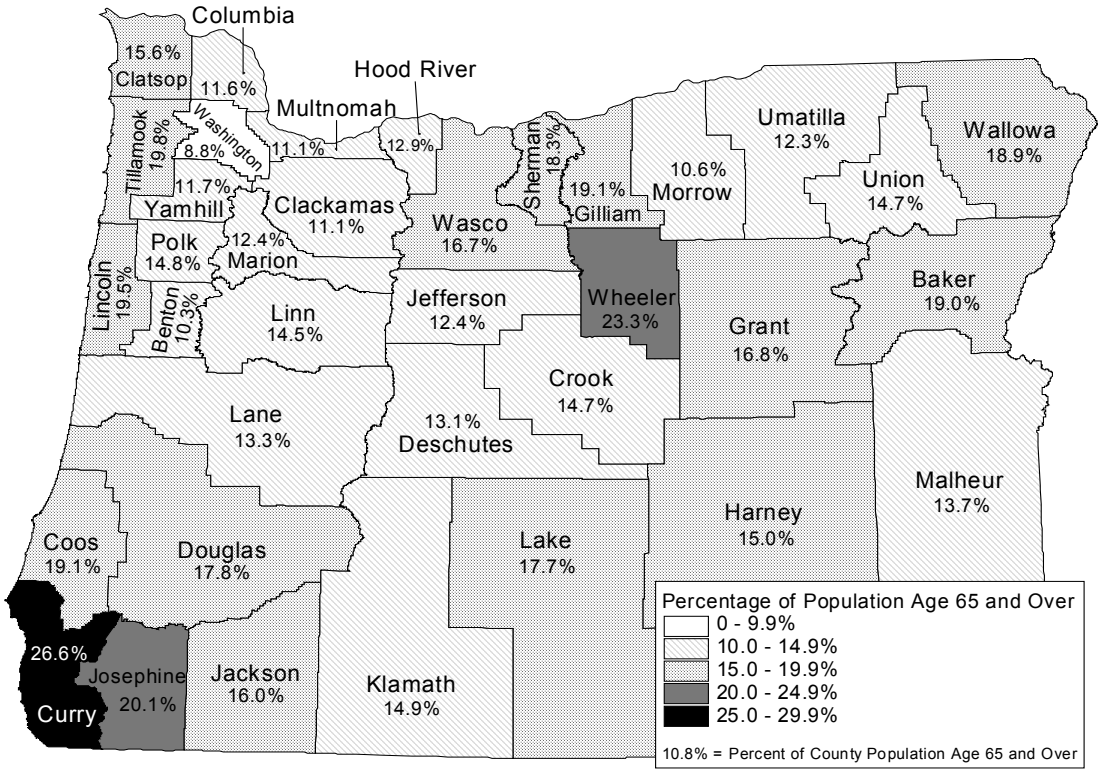


Counties Ranked by Total Population Age 65 and Over 1980			
Multnomah	75,000	Columbia	3,937
Lane	26,319	Tillamook	3,350
Marion	25,742	Malheur	3,335
Clackamas	22,657	Wasco	3,045
Washington	20,364	Union	2,879
Jackson	16,707	Curry	2,868
Douglas	10,126	Baker	2,561
Linn	9,987	Hood River	1,951
Josephine	8,933	Crook	1,641
Coos	7,715	Jefferson	1,084
Yamhill	6,857	Wallowa	1,080
Umatilla	6,693	Grant	1,004
Klamath	6,288	Lake	835
Deschutes	6,263	Harney	824
Lincoln	5,895	Morrow	701
Polk	5,712	Gilliam	291
Benton	5,138	Sherman	263
Clatsop	4,750	Wheeler	262

1980 Total Oregon Population Age 65 and Over: 303,057 (11.5%)

Source: U.S. Census Bureau, 1980 Census

Persons Age 65 and Over
2000



Counties Ranked by Total Population Age 65 and Over 2000			
Multnomah	73,607	Clatsop	5,545
Lane	42,954	Columbia	5,063
Washington	39,351	Tillamook	4,797
Clackamas	37,428	Malheur	4,321
Marion	35,206	Wasco	3,965
Jackson	28,991	Union	3,615
Douglas	17,888	Baker	3,185
Josephine	15,237	Crook	2,818
Deschutes	15,089	Hood River	2,623
Linn	14,954	Jefferson	2,363
Coos	12,020	Wallowa	1,364
Yamhill	9,977	Grant	1,330
Klamath	9,520	Lake	1,314
Polk	9,243	Morrow	1,169
Lincoln	8,686	Harney	1,141
Umatilla	8,681	Gilliam	365
Benton	8,026	Wheeler	360
Curry	5,628	Sherman	353

2000 Total Oregon Population Age 65 and Over: 438,177 (12.8%)

Source: U.S. Census Bureau, 2000 Census

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Persons Under Age 15

Another important component of Oregon's age characteristics is the under age 15 population. In 1980, 22.3 percent of Oregon's population was under the age of 15. By the year 2000 that number had decreased to 20.5 percent of the total population. However, due to the state's overall population growth during this time period, the total number of persons under age 15 continued to grow from 589,878 in 1980 to 699,577 in 2000, a net increase of 109,699.

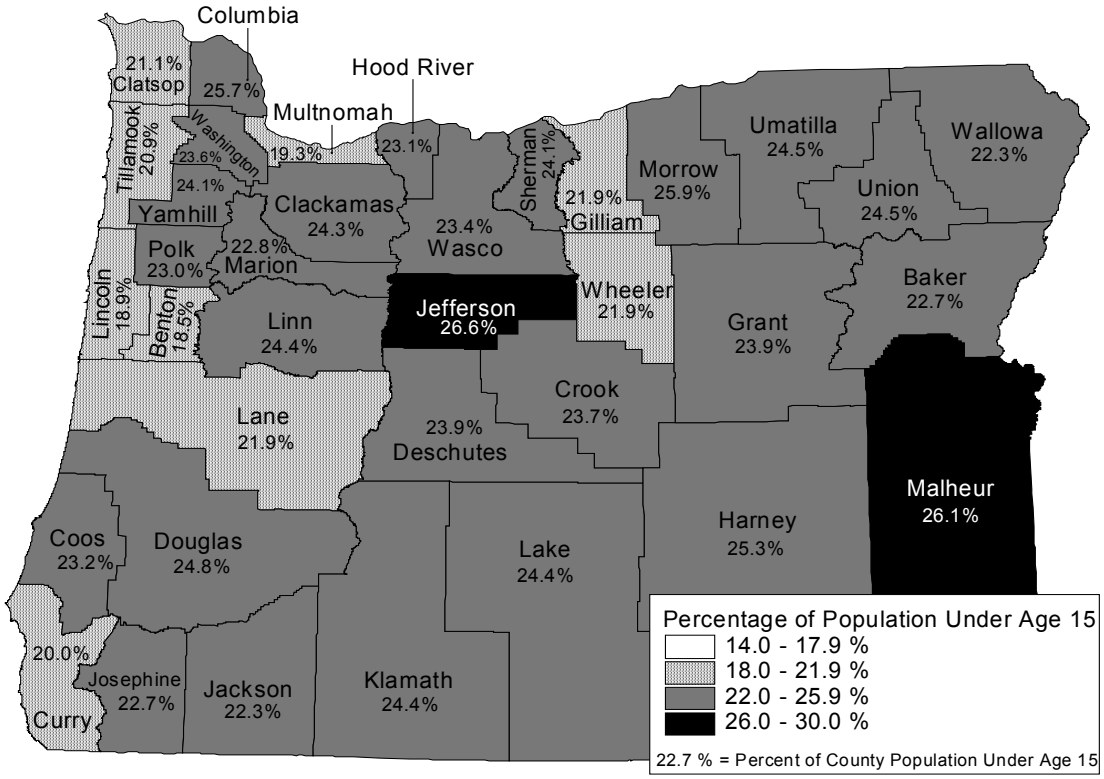
The percentage of population under age 15 in 1980 ranged from 26.6 percent in Jefferson County to 18.5 percent in Benton County.

The year 2000 map shows a drop in percent of the population under age 15 across the state. Morrow County in Northeast Oregon has the largest percent of its population under age 15 at 25.7 percent, while Curry County along the Southwest Oregon Coast has the lowest proportion at 15.5 percent.

Year 2000 data also show that Oregon coastal counties and Wheeler County in Eastern Oregon have relatively low percentages of the population under age 15, while the rest of the state has fairly similar numbers in this age class.

Total numbers of the population under age 15 are strongly tied to the overall population of each county. The under 15 age structure appears to be less spatially oriented than the geographic characteristics of the age 65 and over population. Some older components of the state's population tend to congregate in popular retirement areas. Others, including many residents in Central and Eastern Oregon, remain in their homes, farms and ranches for economic reasons. These factors create a higher proportion of age 65 and over population in many areas of the state. The under age 15 population does not have the ability or reason to concentrate in one particular area; rather they are usually tied to the location where their parents reside. Other than the slightly lower percentage of the population under age 15 shown in Oregon coastal counties, significant patterns in this age class are less distinctive on the county level than the age 65 and over population.

Persons Under Age 15
1980

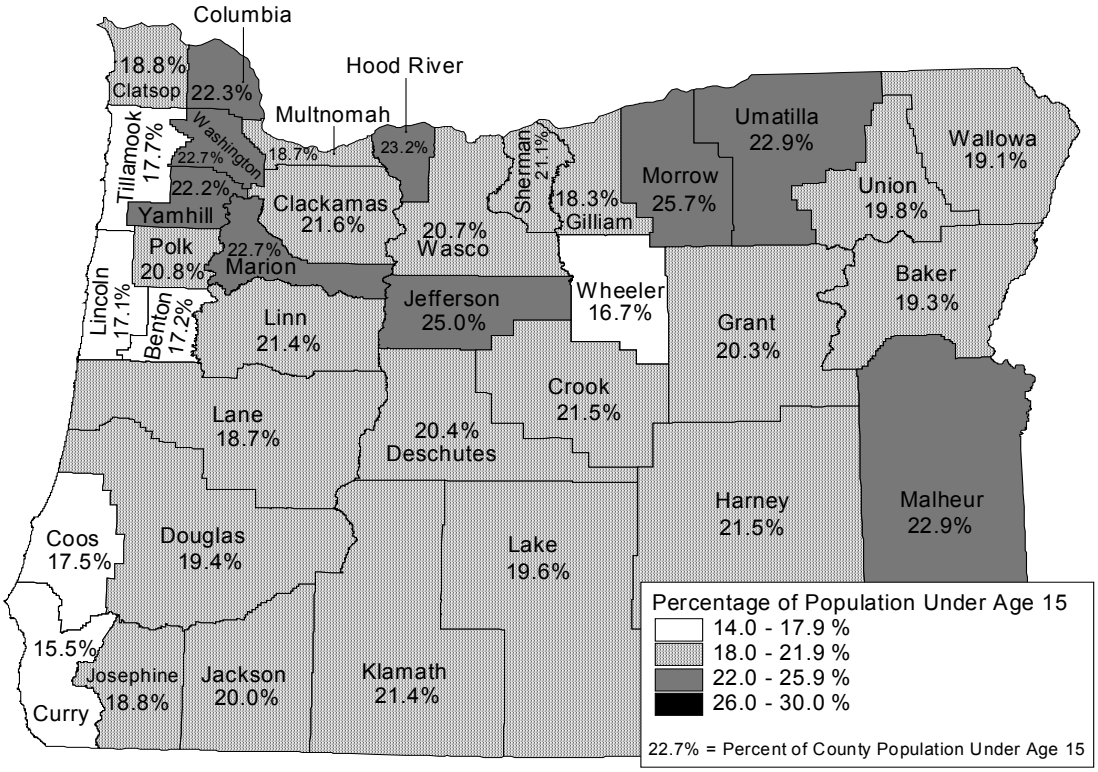


Counties Ranked by Total Population Under Age 15 1980			
Multnomah	108,814	Clatsop	6,862
Lane	60,306	Lincoln	6,713
Washington	58,572	Union	5,896
Marion	46,901	Wasco	5,127
Jackson	29,634	Tillamook	4,434
Clackamas	28,979	Hood River	3,670
Douglas	23,296	Baker	3,666
Linn	21,866	Curry	3,416
Deschutes	14,887	Jefferson	3,112
Coos	14,819	Crook	3,107
Umatilla	14,480	Harney	2,068
Klamath	14,436	Grant	1,963
Yamhill	13,387	Morrow	1,945
Josephine	13,383	Lake	1,854
Benton	12,670	Wallowa	1,628
Polk	10,449	Sherman	522
Columbia	9,178	Gilliam	448
Malheur	7,042	Wheeler	330

1980 Total Oregon Population Under Age 15: 589,878 (22.3%)

Source: U.S. Census Bureau, 1980 Census

Persons Under Age 15
2000



Counties Ranked by Total Population Under Age 15 2000			
Multnomah	123,403	Malheur	7,249
Washington	101,143	Clatsop	6,704
Clackamas	73,021	Wasco	4,925
Marion	64,732	Union	4,857
Lane	60,325	Jefferson	4,742
Jackson	36,198	Hood River	4,732
Deschutes	23,562	Tillamook	4,291
Linn	22,095	Crook	4,116
Douglas	19,445	Curry	3,274
Yamhill	18,847	Baker	3,228
Umatilla	16,166	Morrow	2,820
Josephine	14,258	Harney	1,634
Klamath	13,624	Grant	1,612
Benton	13,453	Lake	1,454
Polk	12,955	Wallowa	1,383
Coos	10,978	Sherman	408
Columbia	9,733	Gilliam	351
Lincoln	7,600	Wheeler	259

2000 Total Oregon Population Under Age 15: 699,577 (20.5%)

Source: U.S. Census Bureau, 2000 Census

Transportation Disadvantaged
2000 Statewide Summary

Age Groups		Number	Percent
Persons Age 65 and Over (See Page 16 for Additional Detail)		438,177	12.8%
Persons Age 10 to 14		242,098	7.1%
Occupied Housing Units (Number of Vehicles)		Number	Percent
None		99,926	7.5%
One	Not Considered	436,919	32.8%
Two		531,883	39.9%
Three or more	Disadvantaged	264,995	19.9%
Disability Status of the Civilian, Noninstitutionalized Population		Number	Percent
Population 5 to 20 years old		761,919	100.0%
With a disability		62,544	8.2%
Population 21 to 64 years old		1,973,306	100.0%
With a disability		354,828	18.0%
Percent Employed		N/A	57.9%
No disability		1,618,478	82.0%
Percent Employed		N/A	78.2%
Population 65 years and older		423,459	100.0%
With a disability		175,929	41.5%
Poverty Status in 1999		Number below poverty level	Percent below poverty level
Families		70,032	7.9%
Individuals		388,740	11.60%

Source: U.S. Census Bureau, 2000 Census

The above table is a statewide summary of classifications that are often defined as transportation disadvantaged. These classifications give an overview of the numbers of Oregon residents who fall into each of these categories.

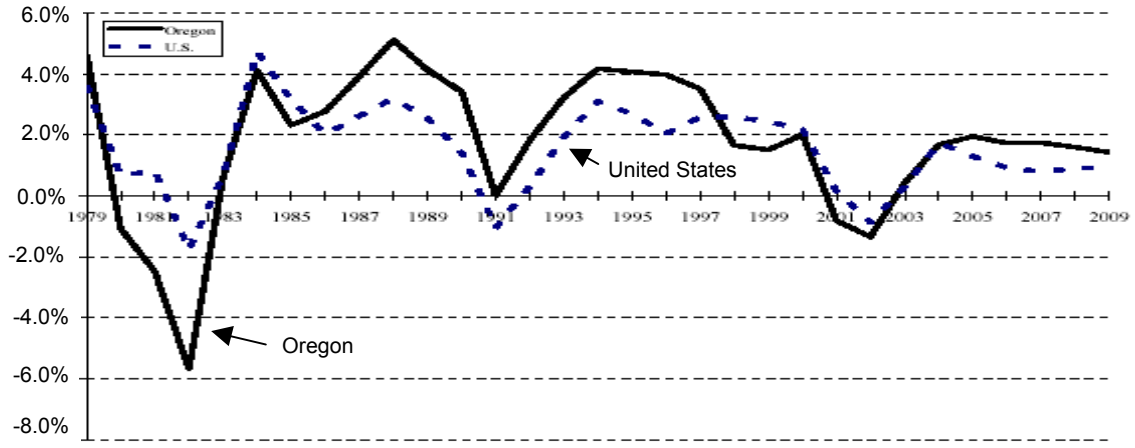
The transportation disadvantaged is defined as those who do not enjoy the same level of mobility as the general population. This category is difficult to quantify since all members of the groups cited in the above table are not at a disadvantage. Many persons age 65 and over, people on a low income or people with a disability still have access to an automobile and have the same level of mobility as the general population. Many persons can also be classified in more than one of the these groups, making it unreliable to sum the data in these categories.

The U.S. Census Bureau's disability status indicator classifies individuals as having a disability if any of these three conditions are true: (1) they were 5 years old and over and had a sensory, physical, mental, or self-care disability; (2) they were 16 years and over and had a disability that made it difficult for them to go outside the home alone; or (3) they were 16 to 64 years old and had an employment disability.

Trends in Oregon Employment and Income

Oregon changes in employment have followed patterns similar to those of the overall U.S. over the past few decades. Oregon employment growth outpaced the U.S. for much of the late 1980s and early to mid-1990s. This trend changed in the late 1990s, and the decline in employment has continued through 2003 as job losses have hit Oregon harder than much of the rest of the country. Short term forecasts indicate that Oregon employment should grow at the same pace or faster than the rest of the country through 2009.

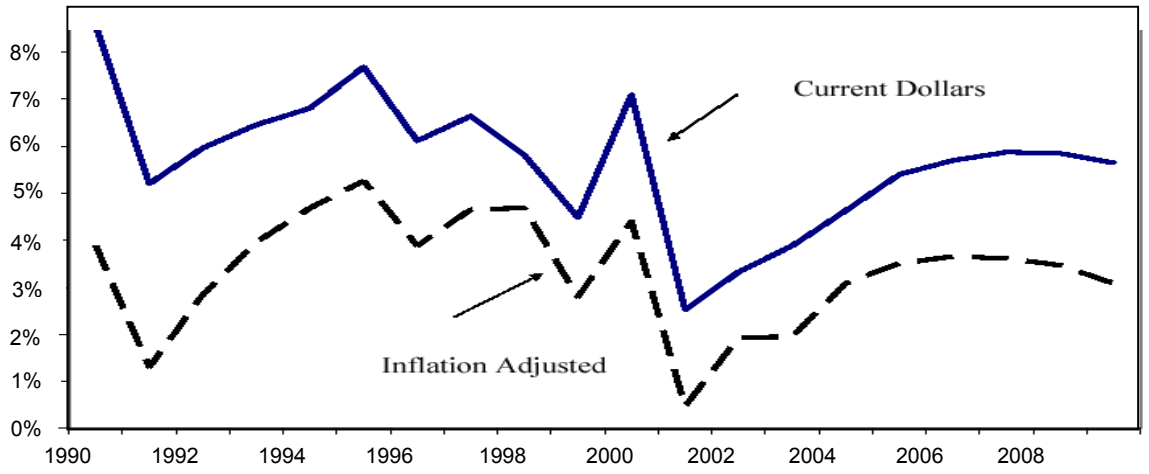
Percent Change in Employment
1979 - 2009



Source: State of Oregon, Office of Economic Analysis, Oregon Economic and Revenue Forecast, May 2003

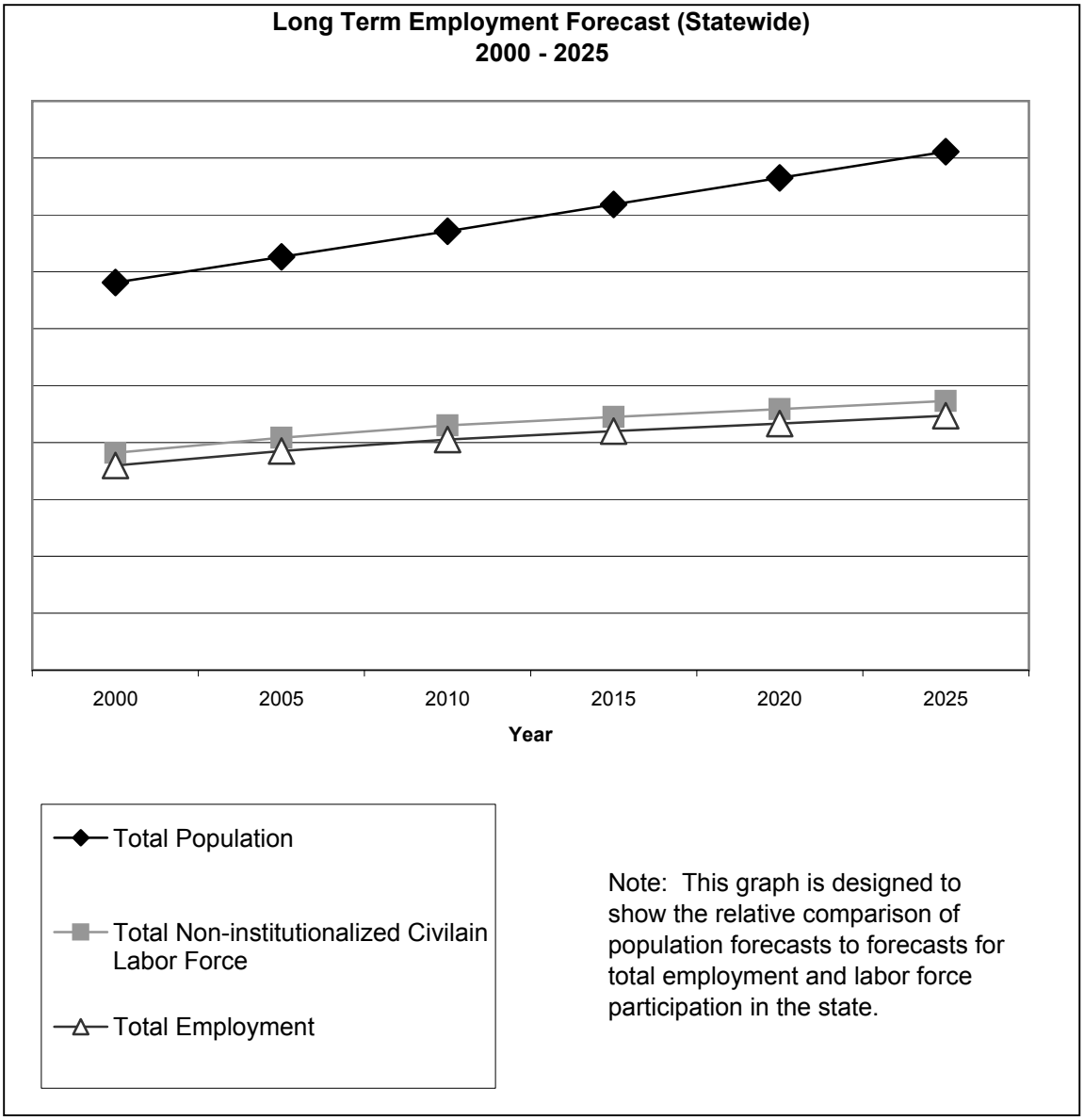
Oregon's total personal income growth has fluctuated with the overall economy and employment situation in the state. Much like total employment, the Oregon Office of Economic Analysis expects total personal income to increase at a faster pace for the remainder of the decade, recovering from the economic downturn of the early 2000s.

Oregon Total Personal Income Growth
1990 - 2009



Source: State of Oregon Office of Economic Analysis, Oregon Economic and Revenue Forecast, May 2003

Trends in Oregon Employment and Income



Source: State of Oregon, Office of Economic Analysis, Oregon's Population and Employment Forecasts, 1997

Long term employment forecasts indicate that both Oregon employment and labor force numbers will steadily increase through 2025. However, this increase is expected to be slower than the overall population growth in the state. As the population of the state ages and increasing numbers of people enter retirement, the percent of residents participating in the labor force and employment activities will drop. This trend indicates that the state will be required to rely on a smaller proportion of the working population to provide services for the increasing population of dependents and retirees.

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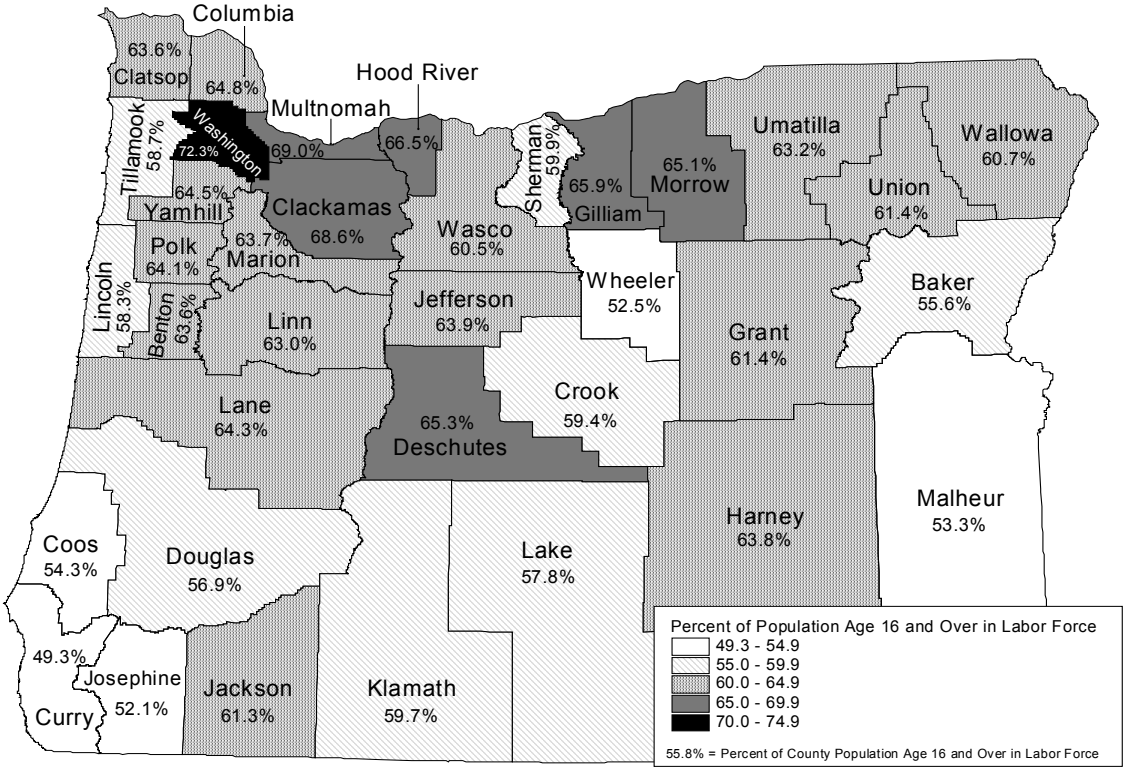
2000 Participation in Labor Force
Percent of County Population Age 16 and Over in the Labor Force



Counties Ranked by Total Number in Labor Force 2000			
Multnomah	365,188	Clatsop	18,119
Washington	244,449	Malheur	12,712
Clackamas	178,724	Union	11,853
Lane	166,126	Tillamook	11,499
Marion	137,444	Wasco	11,185
Jackson	87,189	Hood River	10,196
Deschutes	58,836	Jefferson	8,918
Linn	50,105	Crook	8,764
Douglas	45,166	Curry	8,683
Yamhill	41,891	Baker	7,333
Benton	40,427	Morrow	5,201
Umatilla	33,621	Grant	3,792
Josephine	31,364	Harney	3,765
Polk	31,179	Wallowa	3,452
Klamath	29,324	Lake	3,371
Coos	27,700	Gilliam	1,010
Columbia	21,419	Sherman	892
Lincoln	21,079	Wheeler	662

2000 Total Oregon Labor Force: 1,742,638 (65.2% of Population Age 16 and Over)

Source: U.S. Census Bureau, 2000 Census

December 2003 Oregon Unemployment Rates

Oregon	**7.0%**	Grant County	11.8%
(Seasonally Adjusted)	**7.2%**	Harney County	10.5%
United States	**5.4%**	Hood River County	7.9%
(Seasonally Adjusted)	**5.7%**	Jefferson County	6.6%
		Josephine County	7.8%
Portland-Vancouver PMSA	7.0%	Klamath County	9.6%
Corvallis MSA	3.5%	Lake County	10.9%
Eugene-Springfield MSA	6.5%	Lane County	6.5%
Medford-Ashland MSA	5.8%	Lincoln County	8.7%
Salem MSA	7.0%	Linn County	9.5%
		Malheur County	8.3%
Baker County	8.8%	Morrow County	10.2%
Clatsop County	6.7%	Sherman County	9.1%
Coos County	8.2%	Tillamook County	6.9%
Crook County	9.3%	Umatilla County	8.4%
Curry County	7.4%	Union County	6.2%
Deschutes County	6.9%	Wallowa County	9.5%
Douglas County	9.3%	Wasco County	10.6%
Gilliam County	6.7%	Wheeler County	9.8%

Note: County , MSA and PMSA numbers are not seasonally adjusted.

Source: Oregon Employment Department, Oregon Labor Market Information Systems

Oregon's labor force totaled 1,742,638 people, 65 percent of the total population age 16 and over in 2000. The percentage of residents participating in labor force activities varied significantly between counties and geographic areas of the state, reflecting the differing age structures and economic conditions across Oregon.

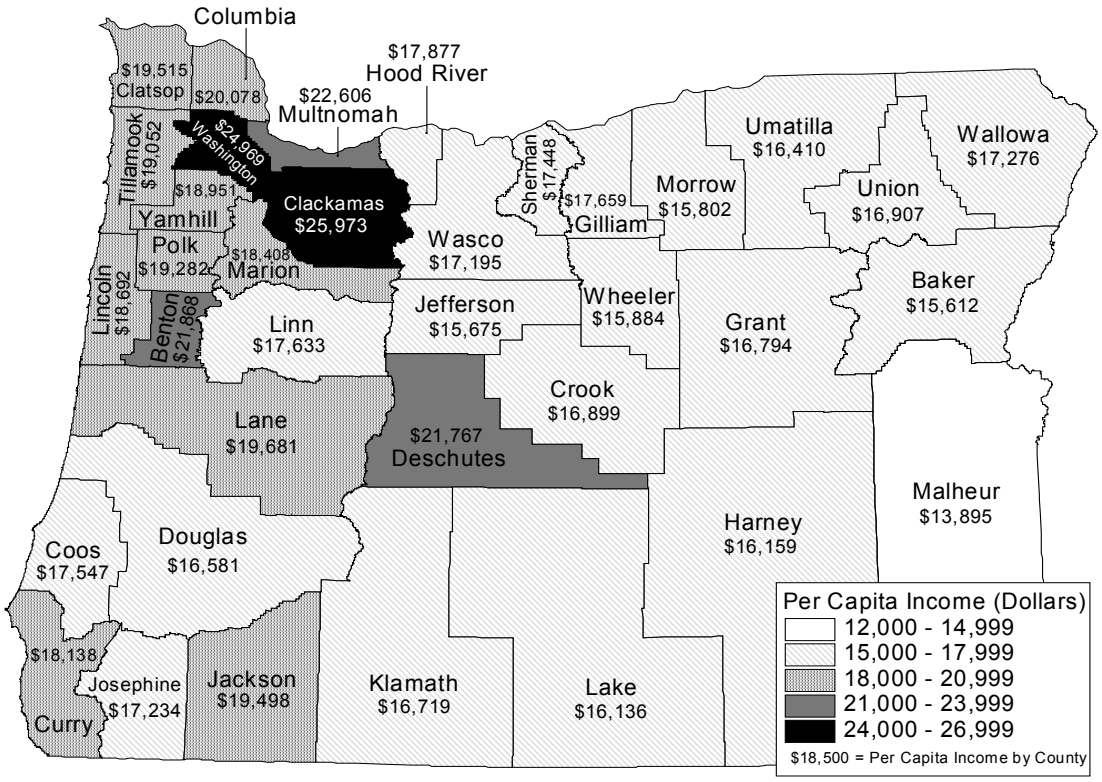
In Southwestern Oregon, Curry, Josephine and Coos Counties all had labor force participation rates that were significantly lower than the state average, with Curry County having the lowest rate in the state. Wheeler and Malheur Counties in Eastern Oregon also had labor force rates below 55 percent of the population age 16 and over. The counties in the Portland Metro area (Washington, Multnomah and Clackamas Counties) had the highest labor force participation rates among all Oregon counties.

The three Portland Metro area counties also had the greatest numbers of people participating in the labor force in the state. Lane and Marion Counties in the Willamette Valley had a labor force over 100,000 in 2000.

Unemployment rates are another important indicator of economic health. Oregon's December 2003 unemployment rate was 7.0 percent, seasonally adjusted to 7.2 percent. These figures are above the national rate of 5.4 percent, seasonally adjusted to 5.7 percent.

Grant County in Eastern Oregon had the state's highest unemployment rate at 11.8 percent, while the Corvallis Metropolitan Statistical Area (MSA) in Benton County had the state's lowest unemployment rate at 3.5 percent. The Portland-Vancouver Primary Metropolitan Statistical Area (PMSA), home to the largest concentration of Oregon's labor force, had an unemployment rate of 7.0 percent.

2000 Per Capita Income



Counties Ranked by Per Capita Income 2000			
Clackamas	$25,973	Coos	$17,547
Washington	$24,969	Sherman	$17,448
Multnomah	$22,606	Wallowa	$17,276
Benton	$21,868	Josephine	$17,234
Deschutes	$21,767	Wasco	$17,195
Columbia	$20,078	Union	$16,907
Lane	$19,681	Crook	$16,899
Clatsop	$19,515	Grant	$16,794
Jackson	$19,498	Klamath	$16,719
Polk	$19,282	Douglas	$16,581
Tillamook	$19,052	Umatilla	$16,410
Yamhill	$18,951	Harney	$16,159
Lincoln	$19,692	Lake	$16,136
Marion	$18,408	Wheeler	$15,884
Curry	$18,183	Morrow	$15,802
Hood River	$17,877	Jefferson	$15,675
Gilliam	$17,659	Baker	$15,612
Linn	$17,633	Malheur	$13,895

2000 Statewide Per Capita Income: $20,940

Source: U.S. Census Bureau, 2000 Census

2000 Per Capita Income

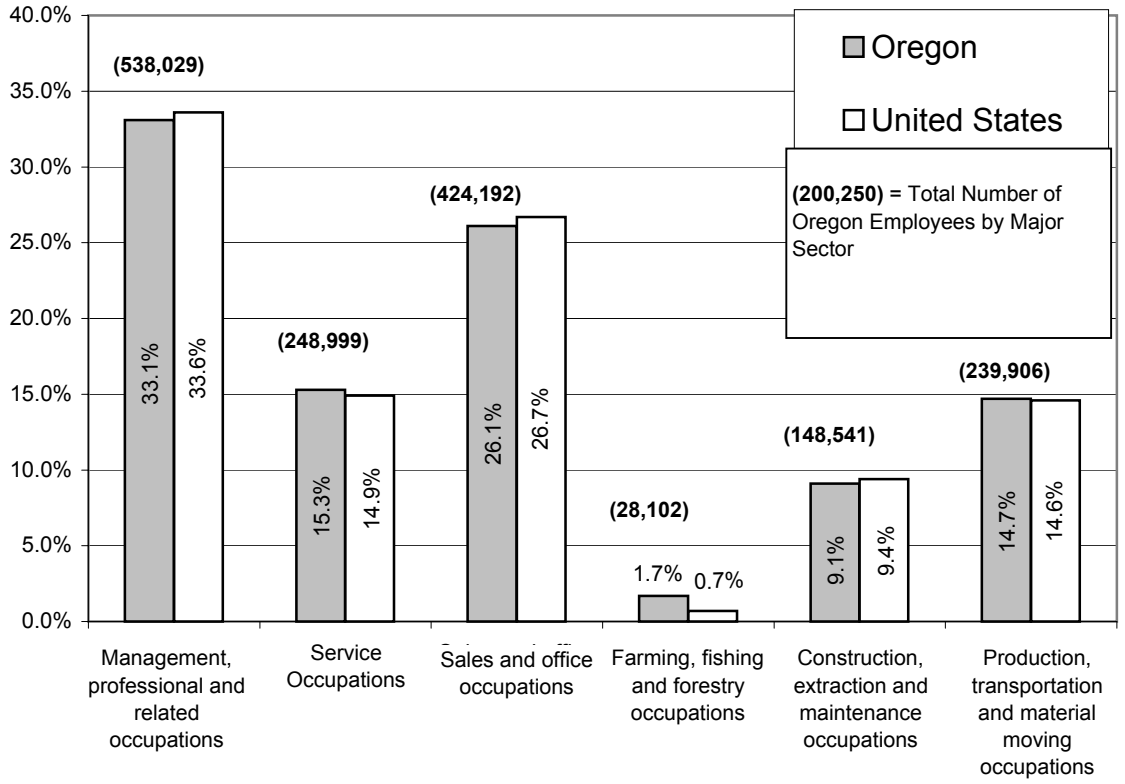
Oregon's statewide per capita income was $20,940 in 2000. Only five Oregon counties had per capita incomes above the state average (Clackamas, Washington, Multnomah, Benton and Deschutes). General patterns show that outside of Deschutes County in Central Oregon and, to a lesser extent, Jackson and Curry Counties in Southern Oregon, the Northwest portion of the state, particularly the Portland Metro area, had higher per capita incomes than the rest of Oregon counties.

The majority of Eastern Oregon counties had per capita incomes well below the state average. Linn County in the Central Willamette Valley and Coos, Josephine and Douglas Counties in Southwest Oregon have per capita incomes below the other counties west of the Cascades.

Per capita incomes have increased across the state from the mid-1980s. The 1988 Statewide Transportation Plan Overview reports that statewide per capita income was $12,011 in 1984. At that time Washington County had the highest per capita income in the state at $13,938 while Josephine County had the lowest at $8,661.

Statewide per capita income kept pace with inflation between 1984 and 2000. The statewide per capita income of $12,011 in 1984 would have the same buying power as $19,938 in 2000. Thus, the 2000 statewide per capita income of $20,940 is an increase of approximately $1,000 in additional buying power over 1984 levels.

2000 Oregon Employment by Major Sector
(Compared with U.S.)



Source: U.S. Census Bureau, 2000 Census

The largest percentage of employees in both Oregon and the United States were in management, professional, and related occupations, with 33.1 percent and 33.6 percent of employment respectively. The second largest number of employees were in sales and office occupations, at over 26 percent.

Farming, fishing, and forestry occupations was by far the smallest sector of Oregon employment in the year 2000 with only 1.7 percent of employees. Even though Oregon's economy has diversified over the past decades, the state still has a higher percentage of employees in this sector than the national average. Nationally farming, fishing and forestry accounts for only 0.7 percent of total employment, less than half of Oregon's.

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Major Topographic Features

Oregon Shaded Relief Map

Source: U.S. Geological Survey

Major Topographic Features

Oregon's rugged topography and dramatic variations in climate have shaped the state's development patterns including transportation systems. Transportation routes have developed to meet travel and commerce needs and generally follow along the river valleys and mountain passes.

The coastal areas of Oregon have a mild climate with typically more than 60 inches of rainfall per year. Many locations in the Coast Range experience over 100 inches of precipitation per year. This climate makes the Coast Range very productive for timber and other forestry applications.

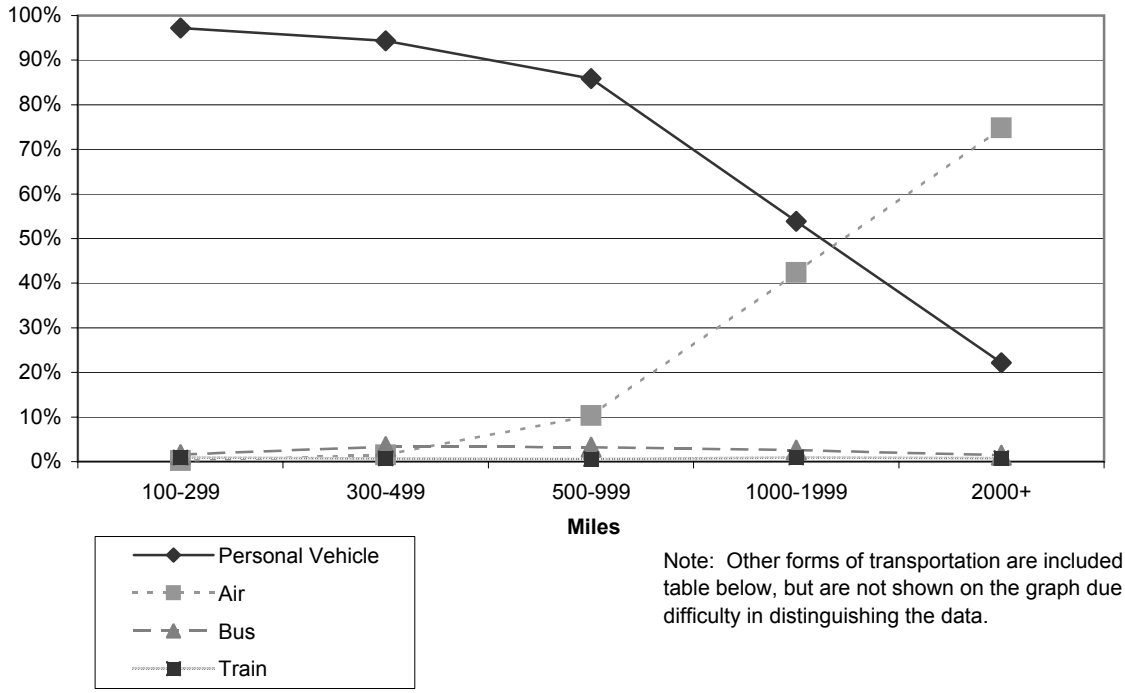
The Willamette Valley and valleys of Southwestern Oregon, located between the Coast Range and Cascade Range, are drier than coastal areas of the state. The majority of the state's population resides in these regions. Many places in the Willamette Valley receive about 40 inches of rainfall per year, while Medford in the southern part of the state gets approximately 20 inches of precipitation per year. This level of rainfall and a long growing season in the valley areas provide a good climate for agricultural activities.

The Cascade Range is significantly higher and broader than the Coast Range. The winters are much colder, with the majority of annual precipitation falling as snow in many locations. Annual precipitation ranges from over 80 inches in the north to less than 40 inches in the south. Like the Coast Range, the Cascades provide an excellent environment for timber growth. The Cascades also form a major buffer between the Western and Central / Eastern portions of the state. The combination of the north and south oriented Coast Range and Cascade Mountains make it difficult to develop east-west transportation routes across Oregon. The only major gap in this barrier is the Columbia River Gorge, along Oregon's northern border.

The climate of the state east of the Cascades has less rainfall and more extreme temperature ranges than Western Oregon. Major grain crops, irrigated crops and cattle production are important activities in this part of the state. The mountains, river valleys and a dispersed population have shaped the transportation routes in these rural regions. A band of approximately 20 inches of precipitation runs through Central Oregon with 10 inches of rainfall or less occurring along the Columbia River and southeastern part of the state.

Mode Choice of Intercity Passengers
United States, 2000

Percent of Long-Distance Trips by Mode and Roundtrip Distance



Note: Other forms of transportation are included table below, but are not shown on the graph due difficulty in distinguishing the data.

Mode	Round Trip Distance (in miles)					
	100-299	300-499	500-999	1000-1999	over 2000	Total
Personal Vehicle	97.2%	94.3%	85.9%	53.9%	22.2%	89.5%
Air	0.2%	1.5%	10.3%	42.4%	74.8%	7.4%
Bus	1.6%	3.4%	3.2%	2.6%	1.4%	2.1%
Train	0.9%	0.7%	0.6%	0.9%	0.8%	0.8%
Other	0.2%	0.1%	0.0%	0.1%	0.8%	0.2%

Source: U.S. Department of Transportation, The 2001 National Household Travel Survey

Passengers choose among the different modes of long-distance travel according to perceived travel costs. These costs include time, safety factors, direct costs of transportation, associated costs of transportation such as meals and lodging, and convenience of travel.

The personal vehicle is the dominant mode for long-distance intercity travel in the United States. In 2001, nearly 9 out of 10 long-distance trips were taken in personal vehicles. This mode was used for over 97 percent of all trips between 100 and 299 miles in length (round trip). Personal vehicle trips were a much smaller percentage of long-distance travel over 1000 miles in length, representing 53.9 percent of trips 1000 to 1999 miles in length and only 22.2 percent of trips over 2000 miles (round trip).

Air travel was the second most utilized mode of transportation for long-distance trips with 7.4 percent of the total. Travel by air is much more popular for trips over longer distances as the value of time becomes more of a factor in travel choice. In 2001, air travel accounted for 42.4 percent of trips between 1000 and 1999 miles and 74.8 percent of all trips over 2000 miles in length. Travel by bus accounted for 2.1 percent of total long-distance trips followed by train travel with 0.8 percent of the total. Other forms of transportation made up 0.2 percent of total long-distance trips.

Intercity Passenger Miles
United States, 2000

Long-Distance Trips and Trip Miles by Mode (in Millions)

Mode	Total Trips (millions)	Total Miles (millions)	Median Miles	Percent of Total Miles	Percent of Total Trips
Personal Vehicle	2,336.1	760,324.7	194	55.9%	89.4%
Air	193.3	557,609.3	2,068	41.0%	7.4%
Bus	55.4	27,081.3	287	2.0%	2.1%
Train	21.1	10,546.0	192	0.8%	0.8%
Other	5.8	5,117.9	188	0.4%	0.2%
Total	2,611.7	1,360,679.1	210	100%	100%

Source: U.S. Department of Transportation, The 2001 National Household Travel Survey

Nationwide, Americans took over 2.6 billion long-distance intercity trips in 2001. Over 2.3 billion of these trips utilized personal vehicles for travel. Despite carrying over 89 percent of all long-distance trips, personal vehicles only accounted for 56 percent of the total long-distance miles traveled. This percentage is considerably lower than the 82 percent of intercity passenger miles carried by personal vehicles in 1985 and 90 percent in 1960. The median length of all long-distance trips taken in personal vehicles was 194 miles in 2001.

Passenger miles by air has shown a dramatic increase over the past several decades. In 1960 air travel accounted for only 4 percent of intercity passenger miles increasing to 16 percent in 1985. The 2001 National Household Travel Survey showed that air travel supplied nearly 41 percent of long-distance miles that year, resulting in over 557 billion miles flown across the United States.

Long-distance travel by bus service has slightly increased from 1.4 percent of intercity passenger miles in 1985 to nearly 2 percent of the total in 2001, resulting in over 27 billion miles traveled. Train travel has held fairly steady since 1985 when this mode accounted for nearly 0.7 percent of total intercity passenger miles. In 2001, trains accounted for close to 0.8 percent of the total, or just over 10.5 billion total miles. Other modes of transportation provided over 5 billion long-distance miles, nearly 0.4 percent of the total.

Oregon Airport Passengers

Passenger Levels at Oregon's Commercial Service Airports
1993 and 2002

Airport	1993 Boardings	2002 Boardings	Percent Change
Portland International	4,240,590	5,978,025	41.0%
Mahlon Sweet Field (Eugene)	366,376	308,662	-15.8%
Rogue Valley International (Medford)	154,626	219,569	42.0%
Roberts Field (Redmond)	73,478	135,847	84.9%
North Bend Municipal (North Bend)	17,686	30,358	71.6%
Klamath Falls	18,617	29,663	59.3%
Eastern Oregon Regional (Pendleton)	9,752	10,447	7.1%
Total Oregon Enplanements	4,881,125	6,712,571	37.5%

Source: Federal Aviation Administration, Enplanement and All Cargo Reports 1993 & 2002

Total enplanements (passenger boardings) in Oregon have significantly increased over 1993 levels. In 2002, over 6.7 million passengers boarded commercial service planes in Oregon. This is nearly a 2 million passenger increase from the 4.9 million passengers who boarded aircraft in 1993. Redmond's Roberts Field saw the largest change in passenger boardings between 1993 and 2002, an increase of nearly 85 percent. Mahlon-Sweet Field in Eugene experienced nearly a 16 percent decline in passengers over the same period. Portland International Airport saw the greatest increase in numbers of new passengers between 1993 and 2002. Over 1.7 million more passengers traveled through Portland in 2002 than in 1993. Many airports experienced a decline in passengers from 2001 to 2002 as the events of September 11, 2001 and a sluggish economy affected air travel throughout the United States.

Nearly 90 percent of Oregon 6.7 million enplaned passengers traveled through Portland in 2002, up from nearly 87 percent in 1993. This figure shows Portland's important role in the state's aviation system.

Oregon Rail Ridership

Amtrak Passengers, Station Boardings and Deboardings in Oregon
Fiscal Years 1993 and 2002

Station	FY 1993	Daily Ave. FY 1993	FY 2002	Daily Ave. FY 2002	Increase 1993-2002
Klamath Falls	18,214	50	26,658	73	46%
Chemult	6,439	18	8,761	24	36%
Eugene	43,345	119	94,043	258	117%
Albany	14,196	39	30,775	84	117%
Salem	21,959	60	52,374	143	139%
Portland	338,507	927	467,148	1,280	38%

Source: Oregon Department of Transportation, Rail Division & Amtrak 11/27/02 and Thruway Ridership Reports

Passenger Rail Ridership Report, Portland - Eugene Corridor
Amtrak Cascades Trains and Thruway Motorcoaches Only
Fiscal Years 2001 and 2003

Eugene - Portland Service	FY 2001	FY 2003
Amtrak Cascades Trains	94,887	94,034
Thruway Motorcoaches	24,964	27,877
Total Corridor Services	119,851	121,911
Daily Eugene-Portland Corridor Rides	328.4	334.0

Source: Oregon Department of Transportation, Rail Division

Passenger Rail Ridership Report (Thruway Bus/Motorcoach Feeder Routes)
Fiscal Years 2001 and 2003

Thruway Bus/Motorcoach Feeder Routes	FY 2001	FY 2003
Central (Redmond-Bend-Chemult)	3,713	3,299
Coast (Portland-Seaside-Astoria)	3,610	6,526
Eastern (Bend-Burns-Ontario)	2,700	2,548
Southern (Eugene-Medford-Ashland) (not included in daily averages)	3,828	Discontinued (9/01)
Daily Thruway Feeder Route Rides	27.5	33.9

Source: Oregon Department of Transportation, Rail Division

Oregon rail passengers have substantially increased in numbers over the past decade. Amtrak station boardings and deboardings have increased throughout the state between fiscal years 1993 and 2002. This increase ranges from 36 percent at Chemult to 139 percent at the Salem Amtrak station. Ridership on both Amtrak Cascade trains and Thruway motorcoaches has modestly increased along the Eugene to Portland Corridor from 328.4 rides per day in fiscal year 2001 to 334 daily rides in fiscal year 2003. A similar increase in daily rides can be seen in the Thruway motorcoach feeder routes; however, overall feeder route ridership has decreased with the elimination of the southern route.

Car Ownership and Usage

Population Per Automobile (2000)

	Oregon	United States
Motor Vehicle Registrations	3,091,042	225,821,241
Persons per Automobile	1.11	1.24

In 2000, Oregonians had slightly more vehicles than average in the United States. Automobile ownership is approaching saturation levels, with more than one registered vehicle per licensed driver in the state. If long-term trends continue, motor vehicle ownership is expected to increase by approximately 6 percent over the next 20 years.

Source: Bureau of Transportation Statistics, 2000 & ODOT Transportation Planning Analysis Unit

Car Ownership and Usage and Their Relationship to Transit
Global Cities by Region (1990)

Cities	Car Ownership (per 1,000 People)	Annual Car Usage (Passenger km/person)	Annual Transit Usage (Passenger km/person)
Sacramento	N/A	19,239	117
Houston	N/A	19,004	215
San Diego	N/A	18,757	259
Phoenix	N/A	15,903	124
San Francisco	N/A	16,229	899
Portland	**N/A**	**14,665**	**286**
Denver	N/A	13,515	199
Los Angeles	N/A	16,686	352
Detroit	N/A	15,846	171
Boston	N/A	17,373	627
Washington	N/A	16,214	774
Chicago	N/A	14,096	805
New York	N/A	11,062	1,334
American Average	604	16,045	474
Australian Average	491	10,797	882
Canadian Average	524	9,290	998
European Average	392	6,601	1,895
Asian Average	109	2,806	2,587

Source: Peter Newman and Jeffrey Kenworthy, Sustainability and Cities: Overcoming Automobile Dependence

Cities in the United States are significantly more automobile oriented than most cities in other parts of the world. Car ownership rates in the U.S. are above Canadian and Australian rates and significantly above European and Asian ownership rates. This pattern holds true in annual car usage in each region, with the U.S. well above automobile passenger kilometers per person figures in all other regions. With a heavy reliance on automobiles in the U.S., annual transit usage falls behind all other evaluated regions. Transit systems are more integrated in major cities throughout these areas than in most U.S. cities. The level of transit usage does vary between selected U.S. cities. Annual transit passenger kilometers per person ranges from 117 in Sacramento to 1,334 in New York.

Local Passenger Trips by Public Transportation

2002 Major Transit Agency Ridership and Miles

Transit Agency	Annual Unlinked Trips 1997	Annual Unlinked Trips 2002	Annual Passenger Miles 1997	Annual Passenger Miles 2002
TriMet	71,389,345	88,633,200	291,491,919	384,480,432
Lane Transit District	7,879,180	8,582,138	33,742,213	30,781,460
Salem Area Mass Transit District	3,507,778	4,767,016	10,172,556	14,301,048
Rogue Valley Transit District	542,076	987,872	1,707,225	1,876,957
Total	83,318,379	102,970,226	337,113,913	431,439,897

Source: 1997 & 2001 National Transit Database

Other fixed-route bus systems carried 1.3 million riders in 2000.

Source: Oregon Department of Transportation, Transportation Key Facts 2002

Transit Rides Provided by Elderly and Disabled Service Providers
1992 - 2002

	1992	1997	2002
Annual Rides Provided to Elderly and Disabled Oregonians (Statewide) (estimated calculations)	3,853,677	3,856,266	5,490,483
Oregon Elderly & Disabled Population	584,991	744,891	904,791
Rides per Elderly or Disabled Person	6.59	5.18	6.07

Note: Data excludes urban rides on fixed route systems.

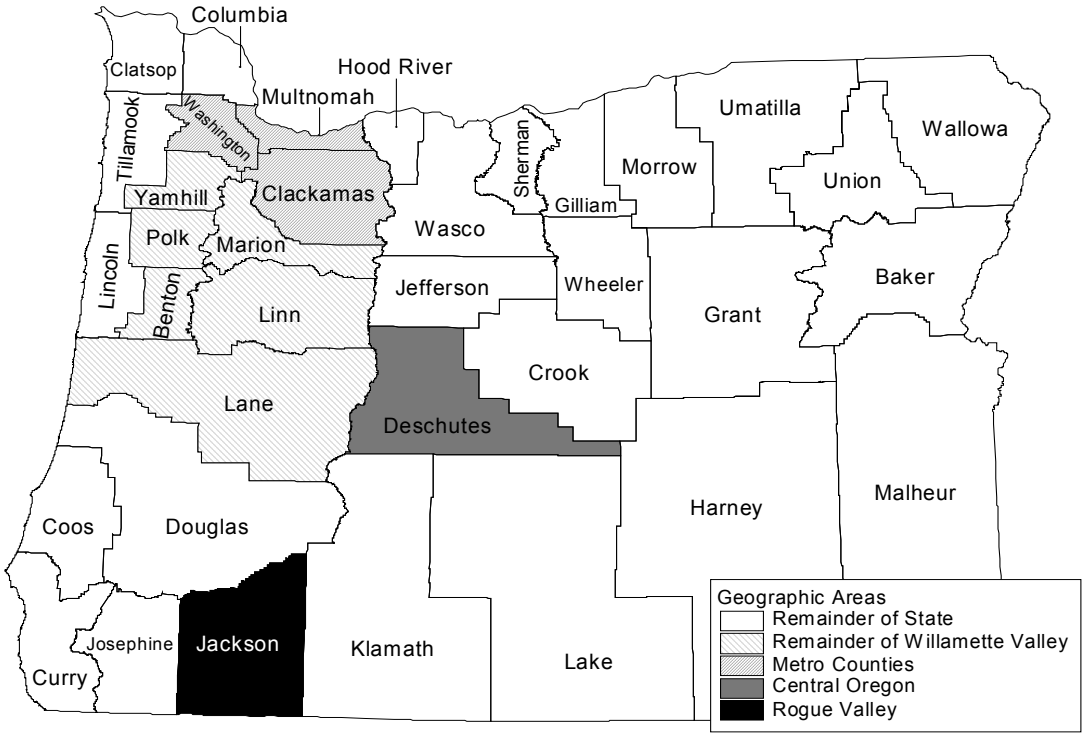
Source: ODOT, Public Transit Division

Public transportation providers operate light rail, intercity rail, express bus, local bus, dial-a-ride, intercity bus and rideshare. Public transportation is an important mobility link for many residents lacking transportation options and a viable alternative to the use of single occupancy vehicles.

The use of public transportation has grown across the state. Ridership on Oregon's four major transit agencies in Portland (TriMet), Eugene (Lane Transit District), Salem (Salem Area Mass Transit District), and Medford (Rogue Valley Transit District) has nearly doubled from 56 million in 1987 to approximately 103 million in 2002.

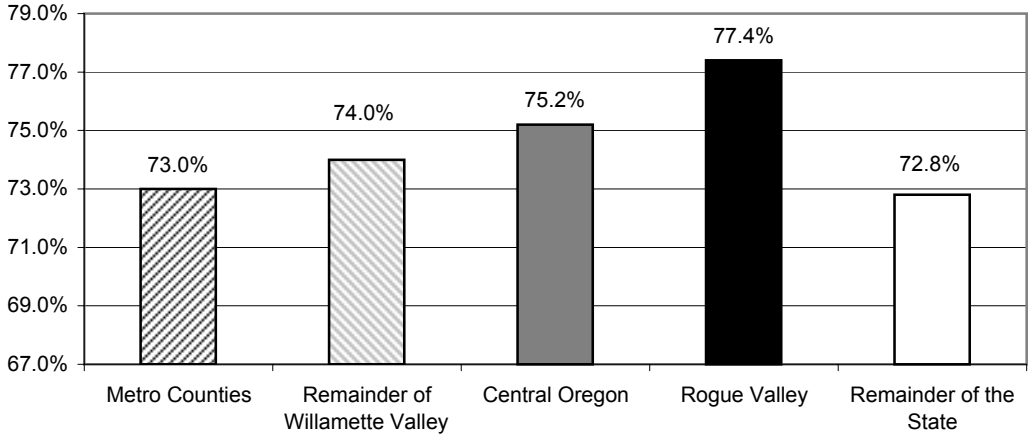
In 1987, just over 1.6 million trips were provided by both the Small City and Rural Area Program and the Federal Elderly and Handicapped Program. In 2000, approximately 1.3 million total trips were taken on small fixed-route bus systems alone. Nearly 5.5 million rides were provided to elderly and disabled Oregonians in 2002, up from 3.8 million just 10 years earlier.

Principal Means of Transportation
To Work, By Geographic Area
2000



U.S. Census Bureau data for the principal means of transportation to work for Oregon counties has been grouped into five geographic areas for this report. These areas were grouped together by the similar population characteristics of each county. Grouped geographic areas include the three metropolitan counties of the Portland metropolitan area, the remainder of the relatively highly populated Willamette Valley counties, Jackson County which contains the Medford-Ashland population center, Central Oregon which contains the Bend-Redmond population center, and the predominately rural counties across the remainder of the state.

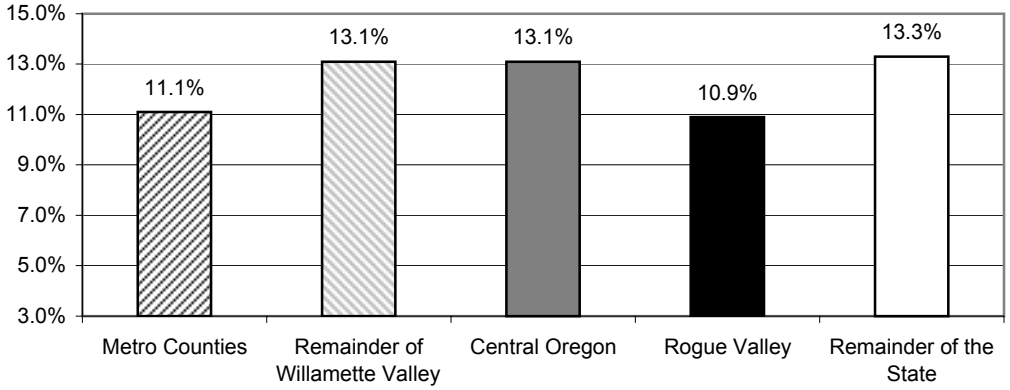
Percentage of Commuters Who Drove Alone



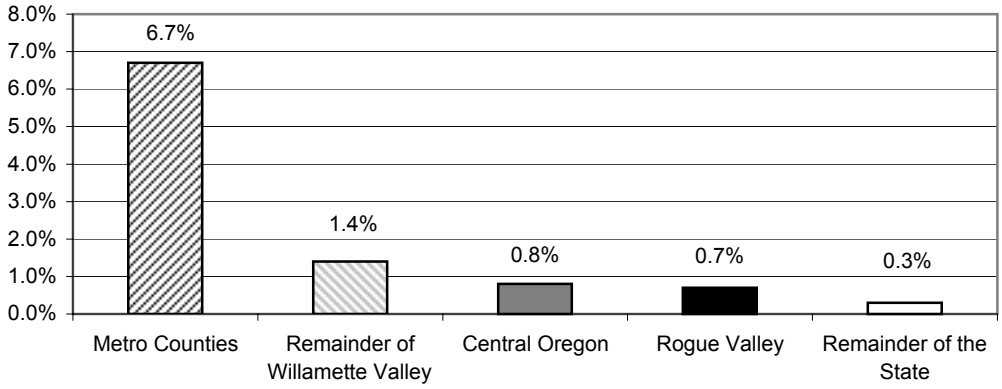
Source: U.S. Census Bureau, 2000 Census

Principal Means of Transportation
To Work, By Geographic Area
2000

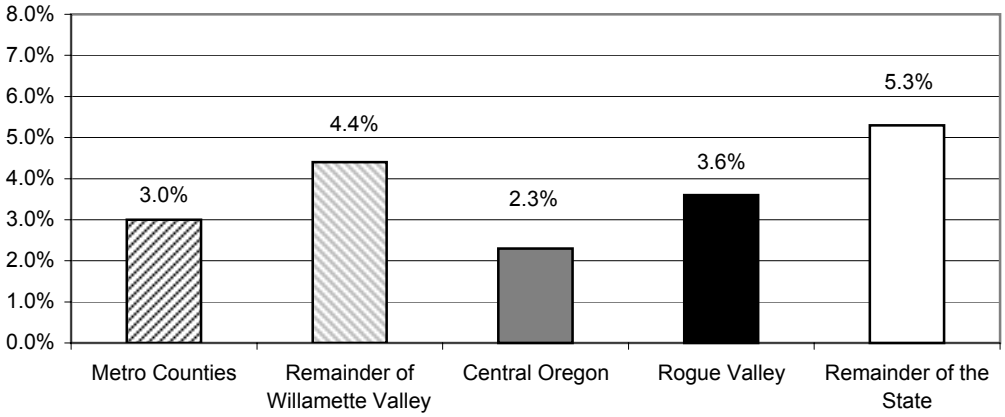
Percentage of Commuters Who Carpooled



Percentage of Commuters Who Used Public Transportation



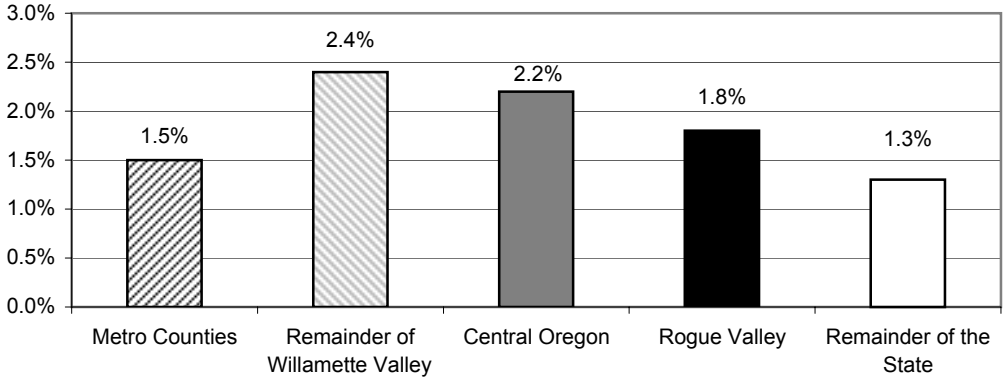
Percentage of Commuters Who Walked to Work



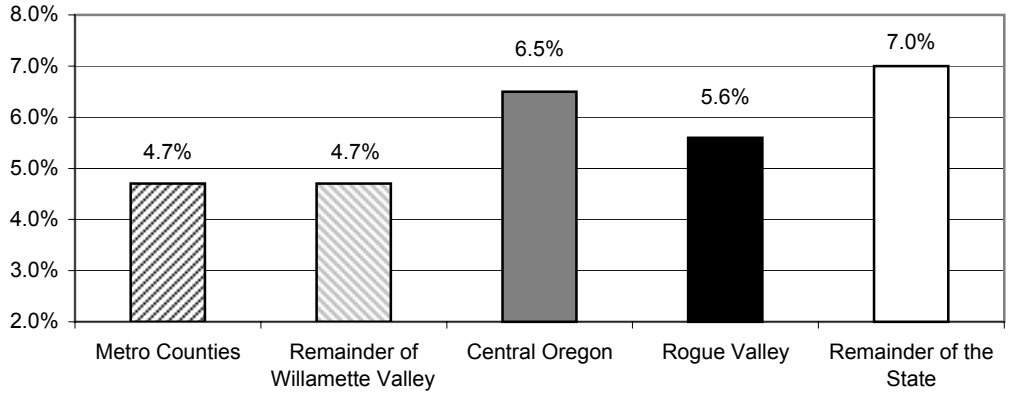
Source: U.S. Census Bureau, 2000 Census

Principal Means of Transportation
To Work, By Geographic Area
2000

Percentage of Commuters Who Used Other Means of Transportation



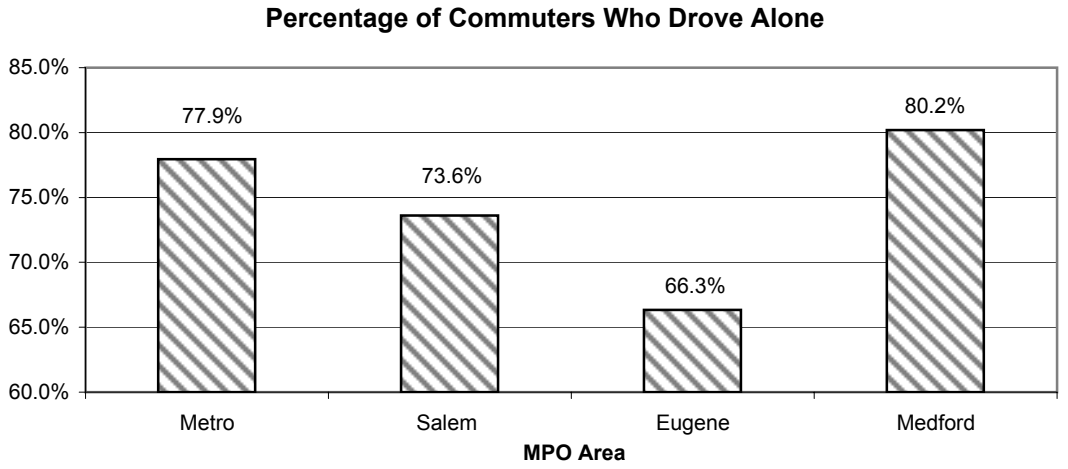
Percentage of Commuters Who Worked at Home

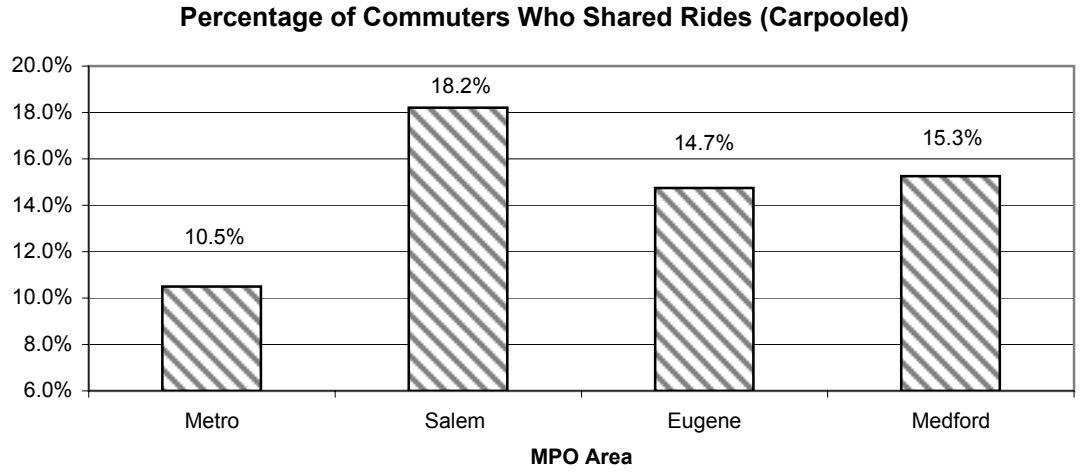


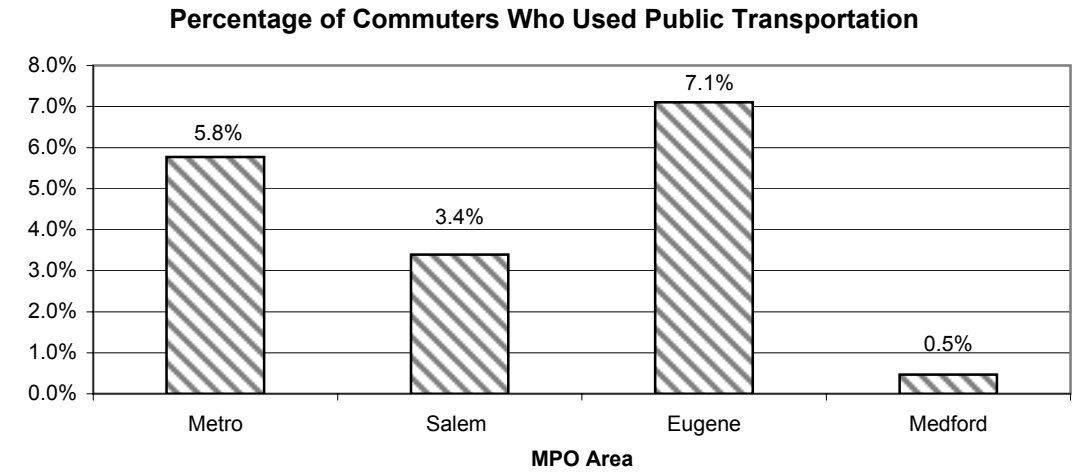
Source: U.S. Census Bureau, 2000 Census

When commute to work by mode data are broken down into geographic areas at the county level, each area is similar in the majority of commuting categories. There is a strong dominance of commuters who drove alone in all regions ranging from 77.4 percent in the Rogue Valley to 72.8 percent in the rural areas of Oregon. Carpooling is another important component of the commute to work numbers in each area, with 10 percent to over 13 percent of commuters using this option across the state. One category that does show a significant variation among geographic areas is the percentage of commuters who use public transportation. The three metropolitan counties of the Portland Metro area have a much larger percentage of transit commuters than all other regions (6.7 percent in the Portland Metro area versus less than 1.5 percent in all other geographic areas). This comparison reflects the large number of residents with access to extensive public transportation in the Portland area. Another category that shows an important difference between geographic areas is the percentage of commuters who worked at home. Central Oregon, along with rural portions of the state, had the highest level of people who work from home, a large component of which is tied to farming and ranching activities. Other commute to work categories have a small component of commuters and show little variation among geographic areas of the state.

Principal Means of Transportation
To Work, By MPO Areas
2000



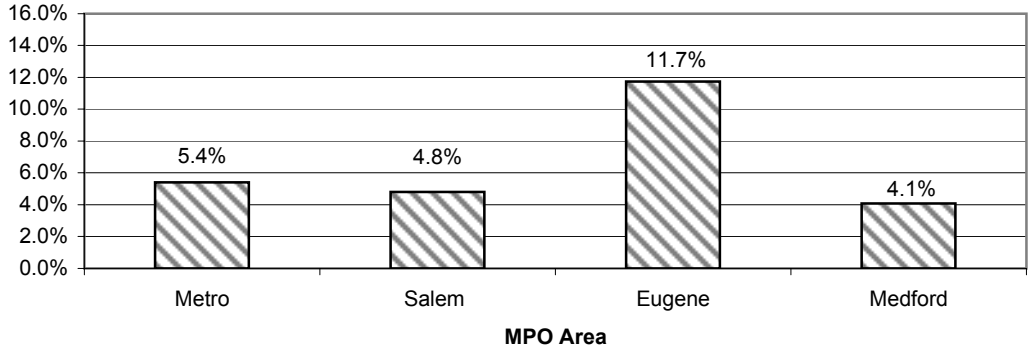




Source: Oregon Department of Transportation, Planning Section, Transportation Planning and Analysis Unit, Oregon Travel Behavior Survey, May 2000

Principal Means of Transportation
To Work, By MPO Areas

Percentage of Commuters Who Biked or Walked (2000)*



* Includes all Non-motorized Transportation

Source: Oregon Department of Transportation, Planning Section, Transportation Planning and Analysis Unit, Oregon Travel Behavior Survey, May 2000

New MPOs (2000)
Commute to Work Statistics

	Bend	Corvallis
Drove Alone (car, truck, or van)	74.6%	66.2%
Carpooled (car, truck, or van)	12.7%	9.3%
Public Transportation (including taxicab)	1.4%	2.5%
Walked	2.8%	11.1%
Other Means	2.8%	7.5%
Worked at Home	5.7%	3.4%

Source: U.S. Census Bureau, 2000 Census (Bend and Corvallis City Data)

Observed Mode Choice Comparison for All Trip Purposes

	Drive Alone	Shared Ride	Transit	School Bus	Non-Motorized*
Metro	42.4%	42.5%	2.5%	3.6%	9.1%
Salem	42.3%	43.2%	1.6%	3.1%	9.8%
Eugene	41.2%	40.3%	3.0%	2.3%	13.2%
Medford	45.0%	44.9%	0.4%	2.2%	7.6%
Rural	44.4%	43.9%	0.2%	4.1%	7.4%
National	47.5%	40.9%	2.0%	2.4%	7.2%

* Includes all Non-motorized Transportation

Source: Oregon Department of Transportation, Planning Section, Transportation Planning and Analysis Unit, Oregon Travel Behavior Survey, May 2000

Principal Means of Transportation

Metropolitan planning organizations (MPOs) are an important component of transportation planning and community development in the state. Oregon currently has six MPO areas, two of which are new organizations. Portland (Metro), Salem, Eugene, and Medford are established MPOs with transportation mode split data available. Bend and Corvallis are newer MPOs, so U.S. Census data for the cities of Bend and Corvallis were used as a substitute for MPO data in this analysis.

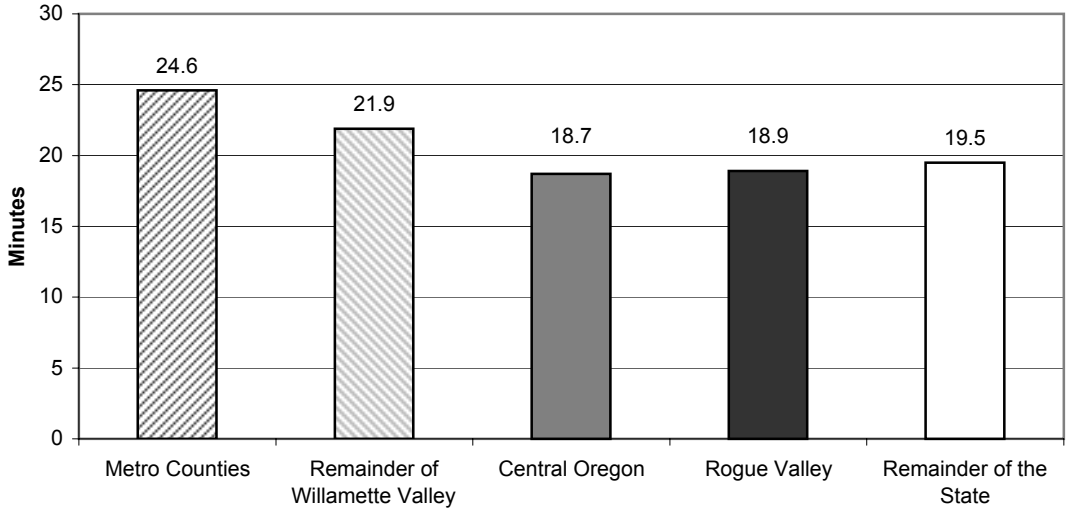
The characteristics of the principal means of transportation to work for MPO areas show a wider range of variation than similar features at a county or geographic area level. Medford had the highest percentage of commuters who drove to work alone at over 80 percent while Corvallis and Eugene had the lowest percentage of commuters who drove alone, 66.2 percent and 66.3 percent respectively. Over 18 percent of Salem area commuters carpooled to work, the highest among all MPO areas. Metro had the lowest percentage of carpoolers at 10.49 percent. Public transportation commuters ranged from 7.1 percent in the Eugene area to 0.47 percent in the Medford MPO area. Eugene also had the highest percentage, among the older MPO areas, of commuters who used non-motorized transportation to get to work at 11.74 percent. However, Corvallis likely has the highest percentage of commuters who used non-motorized transportation. Corvallis city data indicate that 11.1 percent of commuters walked to work and 7.5 percent used means other than driving alone, carpooling, transit, or walking. A large proportion of the 7.5 percent who used other means of transportation likely commuted by bicycle or other non-motorized transportation, giving Corvallis a significant component of commuters using non-motorized transportation.

The observed mode choice comparison for all trip purposes shows that the relative percentages of each mode change significantly from the commute to work numbers. Driving alone numbers drop from between 66 to 80 percent for commute to work numbers in MPO areas to as low as 41.2 percent for all trip purposes in the Eugene Metro area. Much of this decline can be attributed to the large increase in shared ride numbers as most residents travel with family and friends for non-work trips. There is also an increase in the use of non-motorized transportation for all trips purposes over commute only trips.

All four established Oregon MPO areas and rural Oregon had a lower percentage than the national average of residents who drove alone for all trip purposes. All areas except Eugene had a higher percentage of all trips by shared ride than nationally. Oregon public transportation numbers for all trip purposes varied compared to the national average. The transit figures for rural Oregon are expectedly low due to the limited access to public transportation in many of these areas while the MPO areas of Portland and Eugene have a higher percentage of transit trips than the national average. The percentage of residents who used non-motorized transportation for all trip purposes is also above the national average in the four established MPO areas and in rural areas of the state.

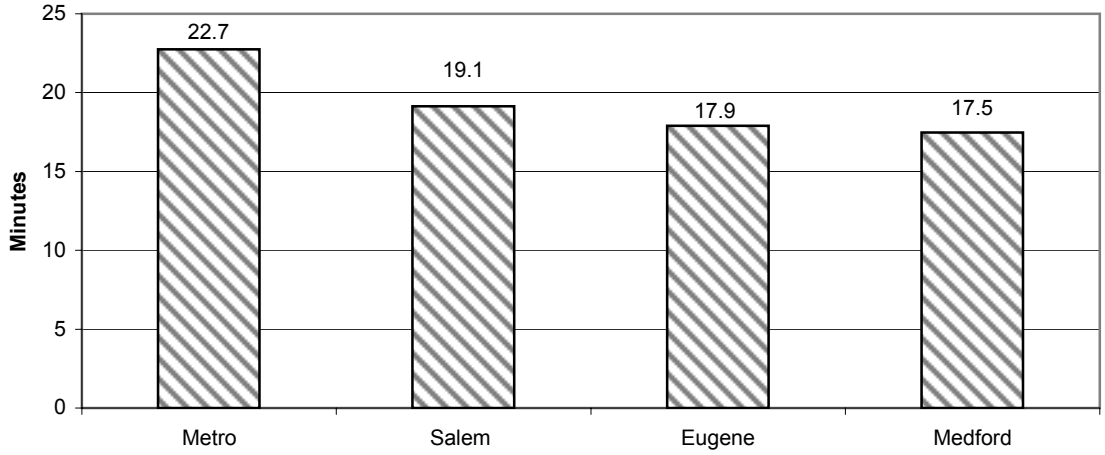
Mean Travel Time to Work

Mean Travel Time to Work by Geographic Area (2000)



Source: U.S. Census Bureau, 2000 Census

Mean Travel Time to Work by MPO Areas



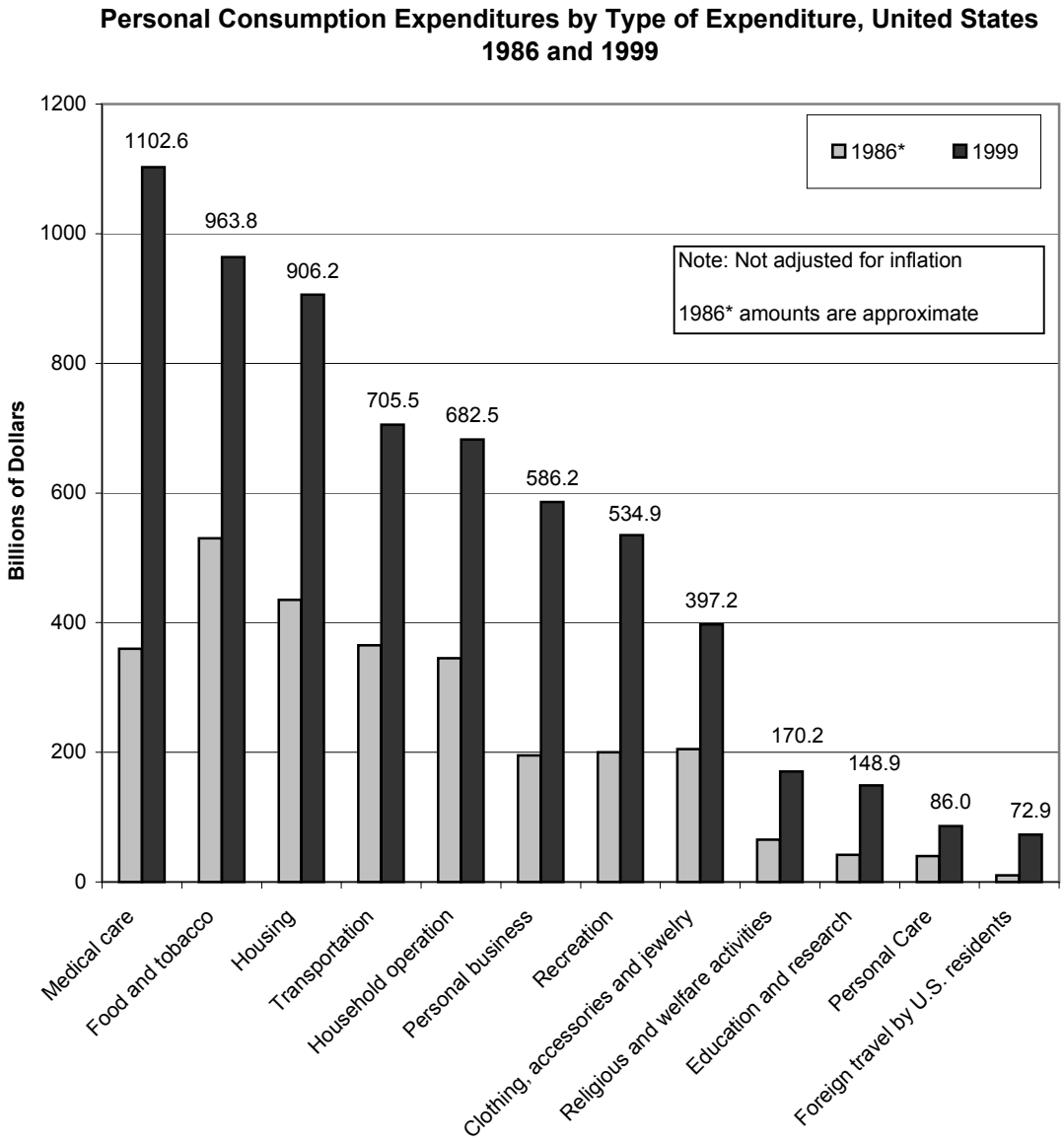
Source: Oregon Travel Behavior Survey, May 2000, Oregon Department of Transportation Planning Section, Transportation Planning and Analysis Unit

Mean Travel Time to Work by New MPO Areas (2000)

	Bend	Corvallis
Travel Time to Work (Minutes)	15.4	15.3

Source: U.S. Census Bureau, 2000 Census (Bend and Corvallis City Data)

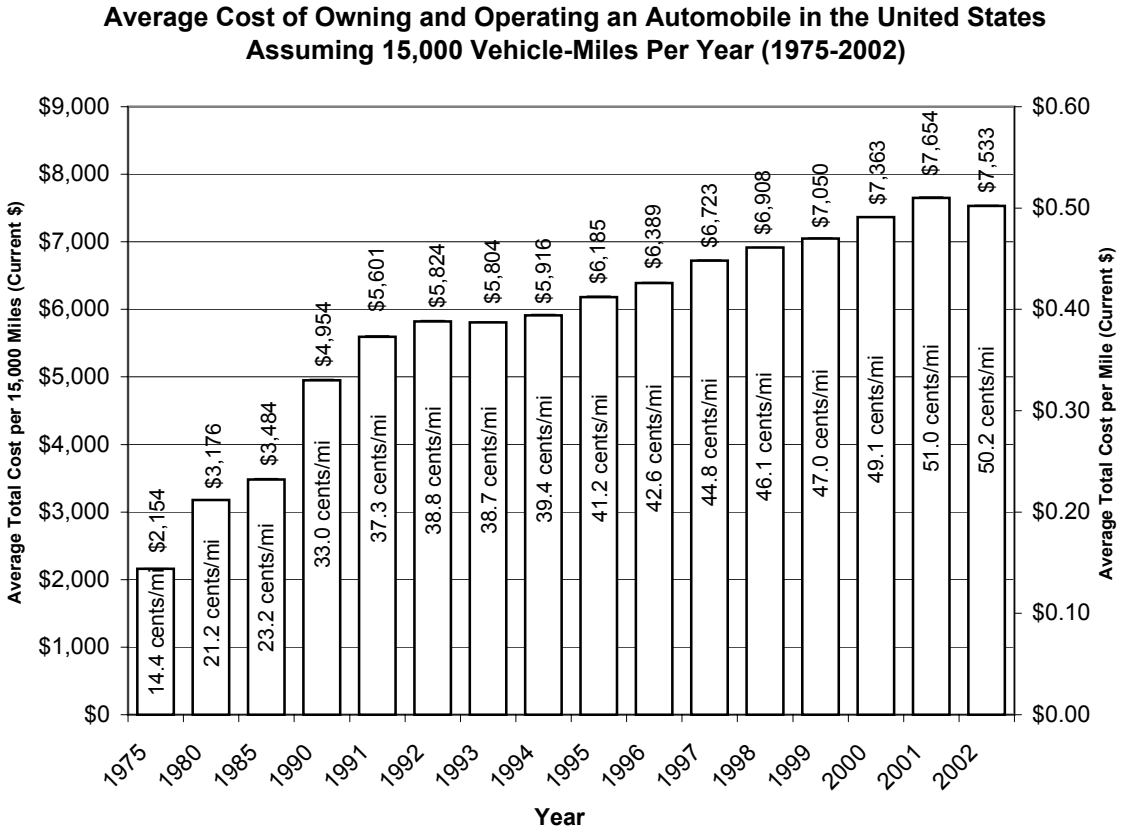
Transportation and Personal Consumption Expenditures, 1986 and 1999



Source: U.S. Census Bureau, Statistical Abstract of the United States, 2001
U.S. Department of Commerce, Survey of Current Business, July 1987, and
U.S. Department of Transportation, National Transportation Statistics, 1986

Transportation has a large direct impact on the economy not only in production and business but also in personal expenditures. The above figure shows the amounts of personal consumption expenditures in the U.S. in 1986 and 1999. Transportation was the fourth largest category for personal consumption in 1999 at $705.5 billion, nearly double the amount spent on transportation in 1986 ($365.3 billion). Only medical care expenditures which nearly tripled between 1986 and 1999, food and tobacco expenditures which nearly doubled over that time period and housing expenditures which more than doubled surpassed transportation in total personal consumption in 1999.

Average Vehicle Expenditures
1975 - 2002



Source: Bureau of Transportation Statistics & American Automobile Association

The above graph and the corresponding graphs on page C-45 give a brief history of the average travel costs for selected modes of transportation. These graphs represent the average costs in current dollars or unadjusted for inflation.

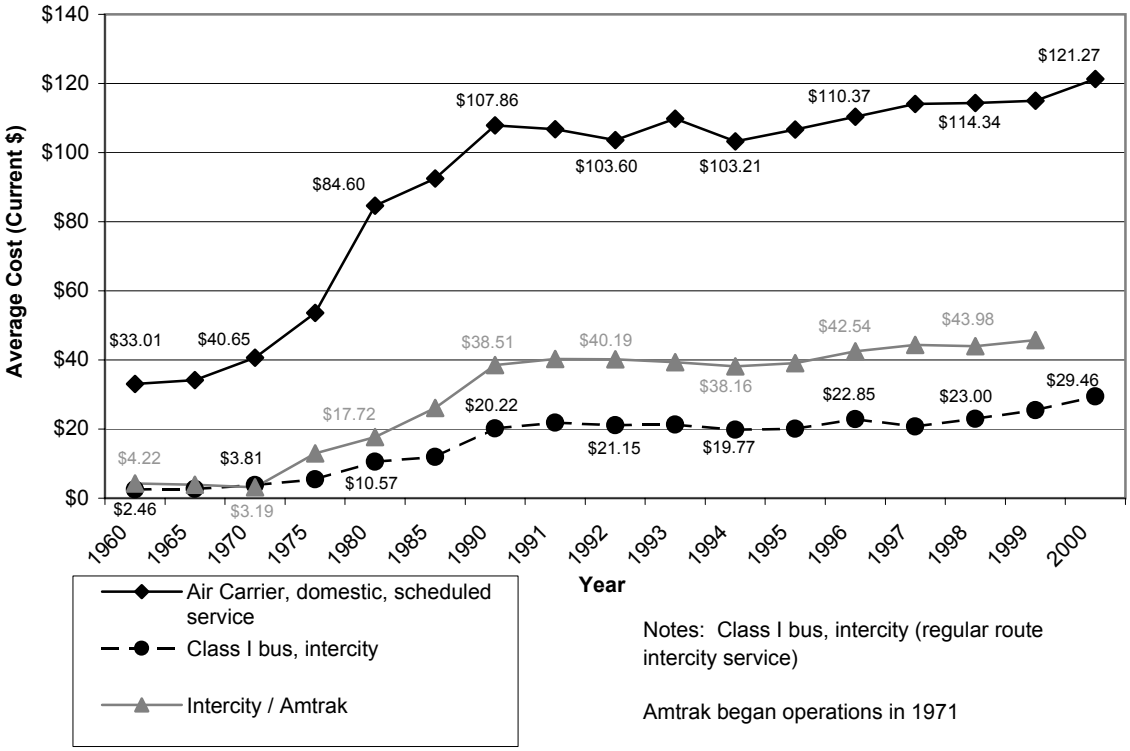
The costs of owning and operating an automobile has increased modestly over the past few decades, reaching an average cost of $7,533 (assuming 15,000 vehicle-miles traveled per year) or about 50 cents per mile in 2000.

The first graph on page C-45 shows the average cost of passenger fares for domestic air carrier service, intercity bus travel and intercity train travel between 1960 and 2000. In 2000, the cost of an average air carrier fare was $121.27 for domestic flights. Average fares for intercity bus service and train service in 2000 were $29.46 and $43.98 respectively.

The second graph shows the average passenger fares for transit and commuter rail travel over the last four decades. In 2000, the average transit fare was $0.93 and commuter rail prices averaged $3.33 across the United States.

Average Passenger Fares
1960 - 2000

Average Passenger Fares in the United States, Interurban Travel (1960-2000)

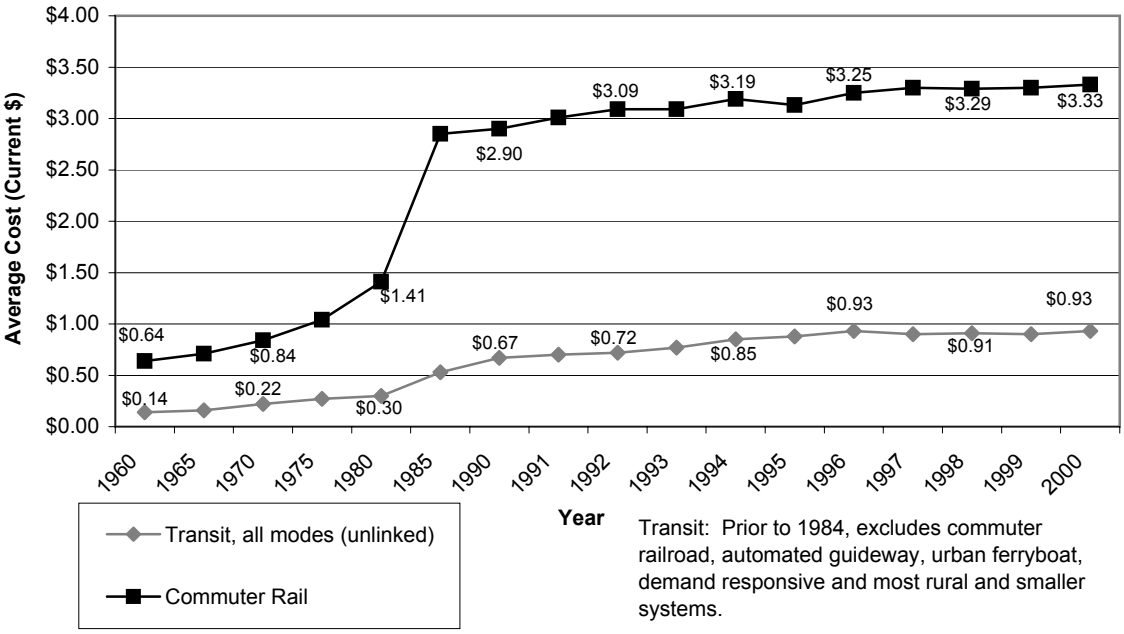


Notes: Class I bus, intercity (regular route intercity service)

Amtrak began operations in 1971

Source: Bureau of Transportation Statistics

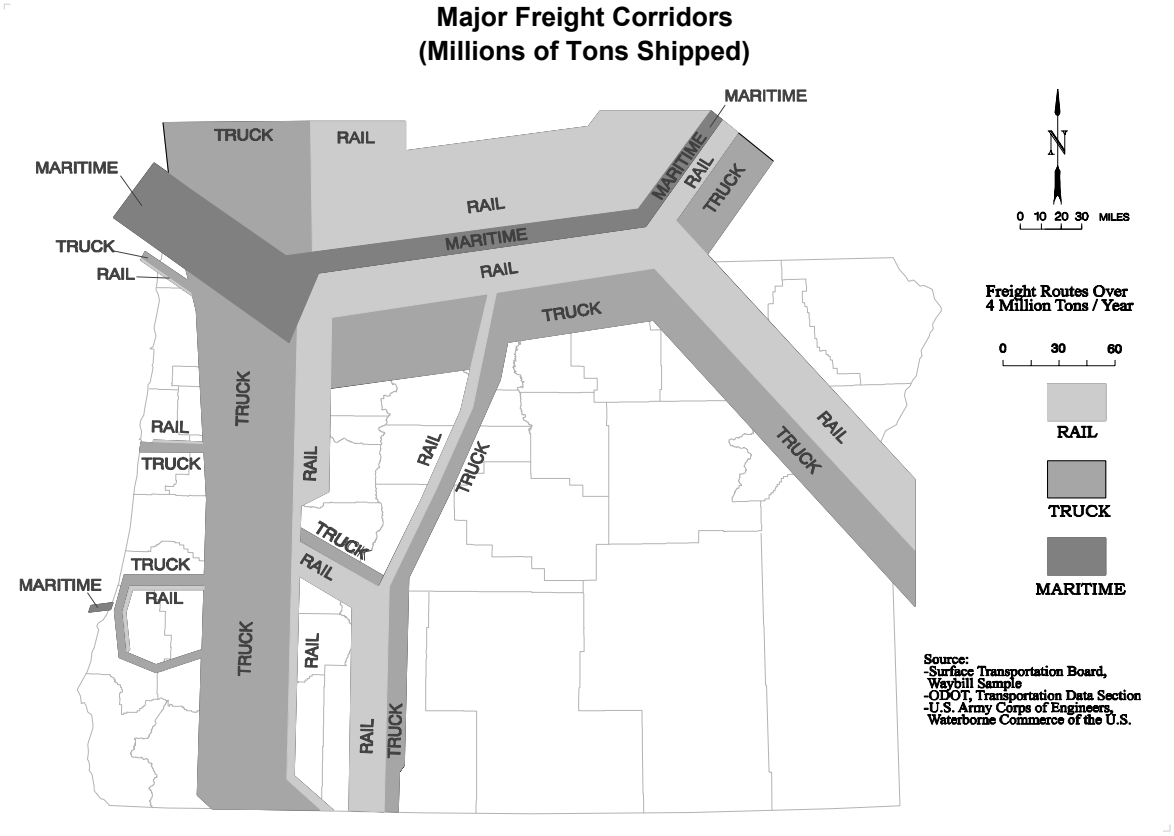
Average Passenger Fares in the United States, Urban Travel (1960-2000)



Transit: Prior to 1984, excludes commuter railroad, automated guideway, urban ferryboat, demand responsive and most rural and smaller systems.

Source: Bureau of Transportation Statistics

Freight Corridors in Oregon



Much of the movement of freight throughout Oregon is concentrated along major corridors. A large portion of Oregon's freight is moved by highways, rail lines and waterways in the I-5 and I-84 corridors. The I-5 corridor is the major north-south freight route in the state while the I-84 corridor is the major east-west corridor for the movement of goods. The I-5 corridor is dominated by truck movements while the I-84 corridor sees significant freight movement by truck, rail and waterways. Petroleum and natural gas pipelines are also located along the I-5 and I-84 corridors. In terms of total freight moved, the most important north-south freight corridor located east of the Cascades is U.S. 97. Both truck and rail freight play an important role in the U.S. 97 corridor. The OR 58 corridor, crossing the Cascade Range southeast of Eugene, and the southern part of the U.S. 97 corridor serve as important alternatives for freight movements between the Willamette Valley and Northern California. Several corridors are important for the east-west movement of freight between the I-5 corridor and the Oregon Coast. Air freight is less tied to corridor movements than other modes of freight transportation. However, much of the movement of air freight occurs at airports located in or near the metropolitan areas of the Willamette Valley where demand and production are highest. The state's commercial service airports, which handle most of the state's air freight, are also located in these major transportation corridors. Over 90 percent of the state's air freight moves through the Portland International Airport alone.

Source: ODOT Planning Section, Freight Moves the Oregon Economy, July 1999 & University of Oregon, Atlas of Oregon, 2001

Freight Movements

U.S. Freight Shipments by Tons and Value (1998, 2010 and 2020)

Mode	Tons (Millions)			Value (Billions $)		
	1998	2010	2020	1998	2010	2020
Total	**15,271**	**21,376**	**25,848**	**$9,312**	**$18,339**	**$29,954**
Domestic						
Air	9	18	26	$545	$1,308	$2,246
Highway	10,439	14,930	18,130	$6,656	$12,746	$20,241
Rail	1,954	2,528	2,894	$530	$848	$1,230
Water	1,082	1,345	1,487	$146	$250	$358
Total, Domestic	**13,484**	**18,820**	**22,537**	**$7,876**	**15,152**	**24,075**
International						
Air	9	16	24	$530	$1,182	$2,259
Highway	419	733	1,069	$772	$1,724	$3,131
Rail	358	518	699	$116	$248	$432
Water	136	199	260	$17	$34	$57
Other*	864	1,090	1,259	NA	NA	NA
Total, International	**1,787**	**2,556**	**3,311**	**$1,436**	**$3,187**	**$5,879**

* The "Other" category includes international shipments moved via pipeline or unspecified mode.

In 1998, the U.S. transportation system carried over 15 billion tons of freight valued at over $9 trillion. By 2020, this is expected to increase to nearly 26 billion tons of goods valued at close to $30 trillion. In 1998, trucks carried approximately 71 percent of the total freight tonnage and 80 percent of the total value of U.S. shipments. Trucks are expected to continue to be the predominant mode of freight transportation through 2020. However, other modes of transportation move a considerable amount of freight and play a key role in commodity shipments, especially in international trade.

Freight Shipments To, From and Within Oregon (1998, 2010 and 2020)

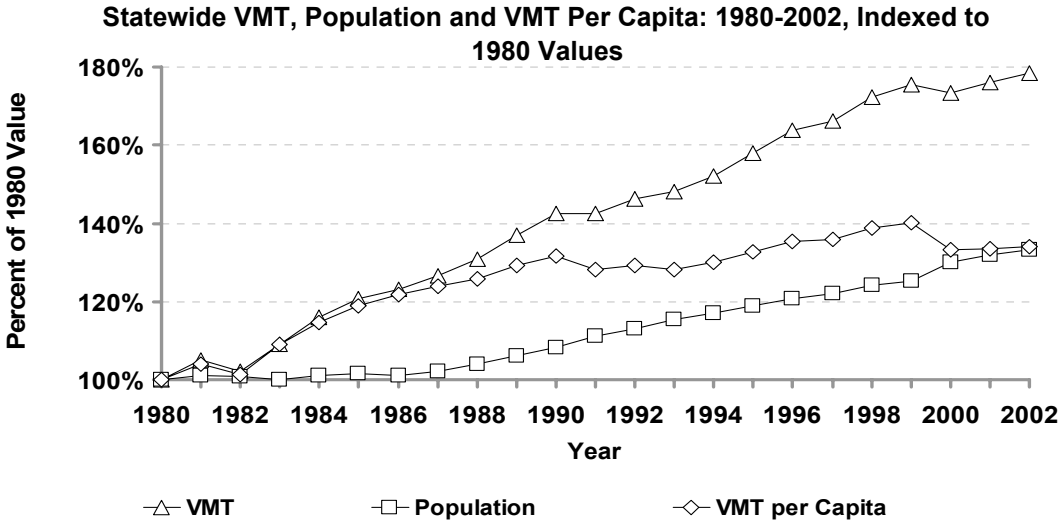
	Tons (Millions)			Value (Billions $)		
	1998	2010	2020	1998	2010	2020
State Total	291	428	557	$201	$411	$704
By Mode						
Air	<1	<1	1	$15	$42	$85
Highway	220	323	420	$165	$330	$555
Other*	2	3	4	< $1	< $1	< $1
Rail	53	81	109	$18	$34	$55
Water	16	20	24	$3	$5	$8
By Destination						
Domestic	258	372	477	$180	$362	$613
International	33	55	81	$22	$49	$90

* The "Other" category includes international shipments moved via pipeline or unspecified mode.

Total freight tonnage in Oregon is forecast to increase by over 90 percent from 1998 to 2020, with the value of freight moved increasing from $201 billion to $704 billion over the same time period. Trucks will likely continue to carry the bulk of freight in the state, with rail, water, air and other modes all contributing significantly to both total tons and total value of freight moved. Freight moved internationally, in both tons and total value, is forecast to grow more quickly than domestic freight transportation through 2020.

Source: FHWA, Freight Analysis Framework, Freight Transportation Profile (U.S. and Oregon)

Traffic Congestion
1980 - 2002 VMT Trends



Source: ODOT, Transportation Planning Analysis Unit and Finance Section

Vehicle miles traveled (VMT) is typically defined as the total number of miles traveled by all vehicles during a given period. VMT is usually reported on an annual or daily basis depending on the type of analysis being done. Vehicle miles traveled can also be presented in terms of per capita VMT (the average number of vehicle miles traveled per person). This figure is obtained by dividing total VMT by the total population of a defined area.

The above figure shows changes in population, VMT, and VMT per capita in Oregon between 1980 and 2001. Population and vehicle traveled changed very little between 1980 and 1982 due to a weak economy. Between 1982 and 1987, VMT grew throughout Oregon as the economy recovered from the recession but the state's total population remained stable. This resulted in a substantial increase in per capita VMT from 1982 to 1987, compared with the average increase throughout most of the 1980s and 1990s.

After 1987, Oregon's total population grew at a fairly constant annual rate of 1.7 percent and VMT continued to grow at a steady pace. While per capita VMT continued to grow, it slowed to a much lower rate than in the earlier 5-year period. Between 1990 and 1993, the rate of VMT growth slowed to near the same rate as total population growth, leading to very little change in per capita VMT. Per capita VMT began growing once again after 1993 as total VMT outpaced overall population growth in the state. In 2000, total VMT declined and per capita VMT dropped even further. This may be due to large increases in gas prices and a slowing of the economy.

Source: ODOT, Transportation Planning Analysis Unit,
Draft Statewide Congestion Overview for Oregon, September 2003

Traffic Congestion
1980 - 2002 VMT and Traffic Delay Trends

Total State VMT and VMT Per Capita (1980 - 2002)

Year	Total State VMT (in Billions)	VMT per Capita
1980	19.01	7,197
1981	19.89	7,456
1982	19.37	7,267
1983	20.68	7,794
1984	22.03	8,263
1985	22.87	8,563
1986	23.36	8,704
1987	24.00	8,885
1988	24.88	9,077
1989	25.94	9,296
1990	27.00	9,446
1991	27.04	9,264
1992	27.78	9,341
1993	28.06	9,247
1994	28.85	9,344
1995	29.94	9,529
1996	31.11	9,737
1997	31.49	9,709
1998	32.66	9,952
1999	33.28	10,037
2000	32.93	9,624
2001	33.43	9,630
2002	33.92	9,681

Source: ODOT, Transportation Planning Analysis Unit and Finance Section

Note: This data is associated with the figure of the previous page. See accompanying text for further discussion.

Annual Delay Per Peak Road Traveler (In Hours)

Year	Portland-Vancouver	Large Area Average	Salem	Eugene-Springfield	Small Area Average
1982	5	9	2	2	4
1990	16	26	7	4	8
1994	29	33	11	5	9
1999	42	45	14	10	14
2000	47	48	15	14	15

Source: ODOT, Transportation Planning Analysis Unit &
Texas Transportation Institute, 2002 Urban Mobility Study

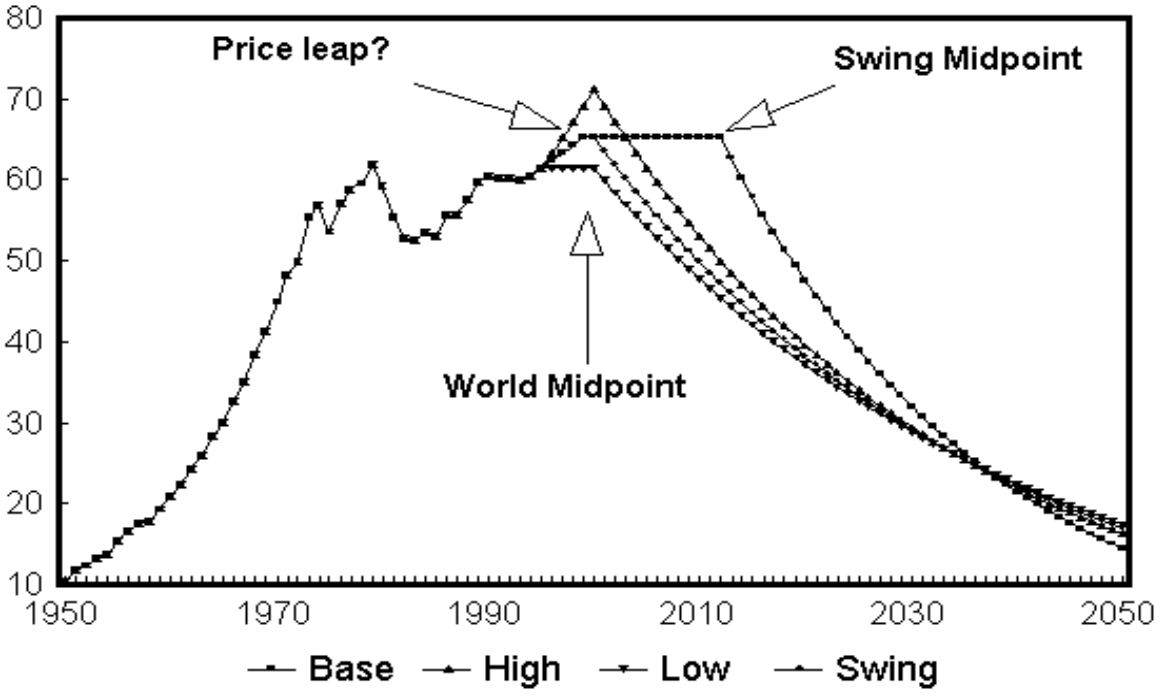
Large urban areas have a total population of over one million but less than three million residents. Small urban areas have a population less than 500,000 residents.

Transportation Energy

Petroleum continues to be the main source of energy used by the transportation system. The amount of energy needed by transportation continues to increase as society travels more miles. Forecasts estimate that world oil production will peak between 2005 and 2010 and dramatically decline after that point. The United States already imports over 60 percent of the total oil used, leaving the country economically vulnerable to supply variations, especially from the oil-rich, but unstable Middle East. As recently as 1984, the United States imported less than 30 percent of its oil, significantly less that the current total.

The Hubbert Curve is based on an estimated ultimate recovery of conventional oil and depicts alternative scenarios of production (base, high, low and swing). The swing case assumes a price leap when the share of world oil production from a few Middle Eastern countries reaches 30 percent. This is expected to curb demand, leveling off output, until the Middle Eastern (swing) countries reach their own midpoint of resource depletion. At this point, resource constraints force down total oil output at the depletion rate.

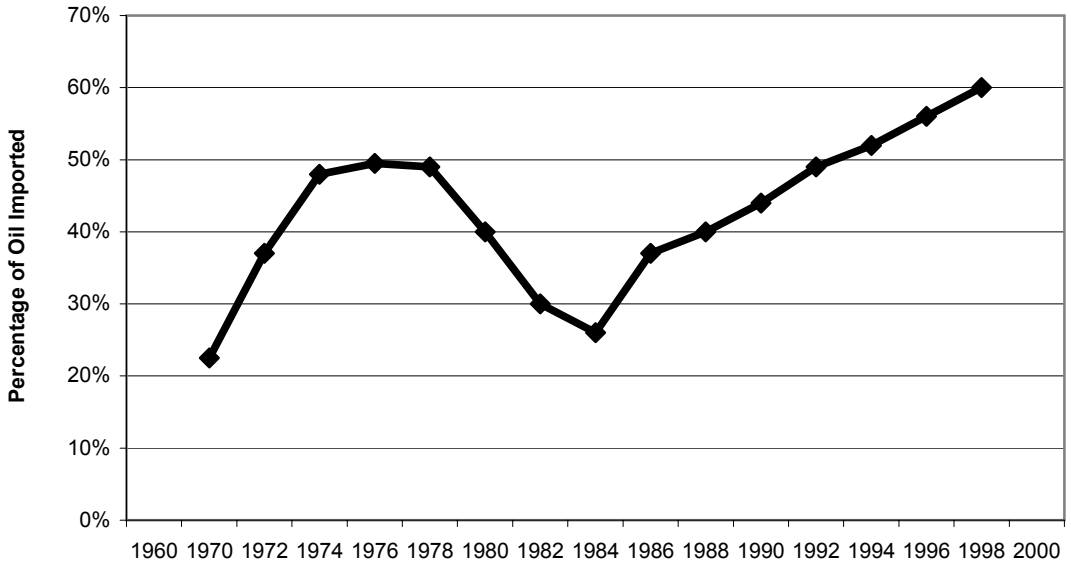
Supply and Production (Hubbert Curve)



Source: Hubbert Peak of Oil Production, www.hubbertpeak.com

Transportation Energy

U.S. Oil Imports



Source: Greg Bothun, Department of Physics, University of Oregon

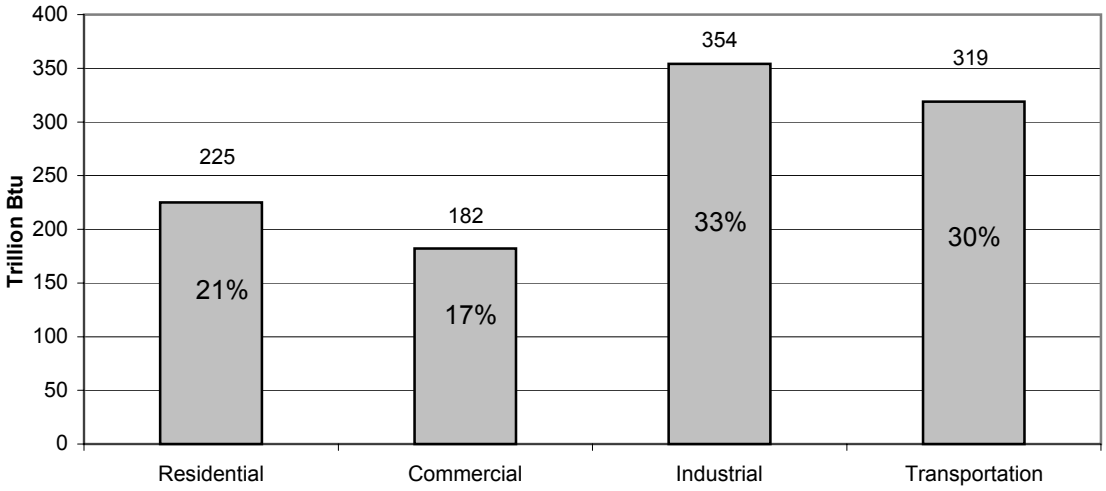
1950 - 1998 U.S. Gasoline Prices (Adjusted for Inflation to 1992 Dollars)

Source: Washington State Community, Trade and Economic Development, Washington's Energy Indicators

U.S. gasoline prices have held relatively steady between 1950 and 1998. Expect for a spike in the late 1970s and early 1980s gasoline prices have ranged between $1.00 and $1.50 per gallon (adjusted for inflation to 1992 dollars), keeping petroluem as the primary energy option for transportation activities in the United States.

Transportation Energy

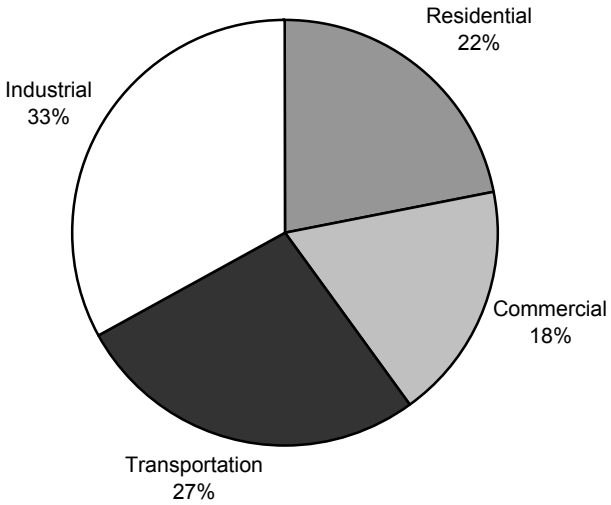
2000 Oregon Energy Consumption by Sector



Note: Percentages do not add to 100% due to rounding.

Source: U.S. Department of Energy, Energy Information Administration

2002 United States End-Use Shares of Total Consumption



Source: U.S. Department of Energy, Energy Information Administration, Annual Energy Review 2002

Transportation is the second largest consumer of energy in both Oregon and the United States, trailing only industrial activities in total energy usage. In 2000, transportation activities consumed approximately 30 percent of the total energy used in Oregon. Transportation's portion in Oregon is slightly greater than the 27 percent of energy used by transportation nationwide.

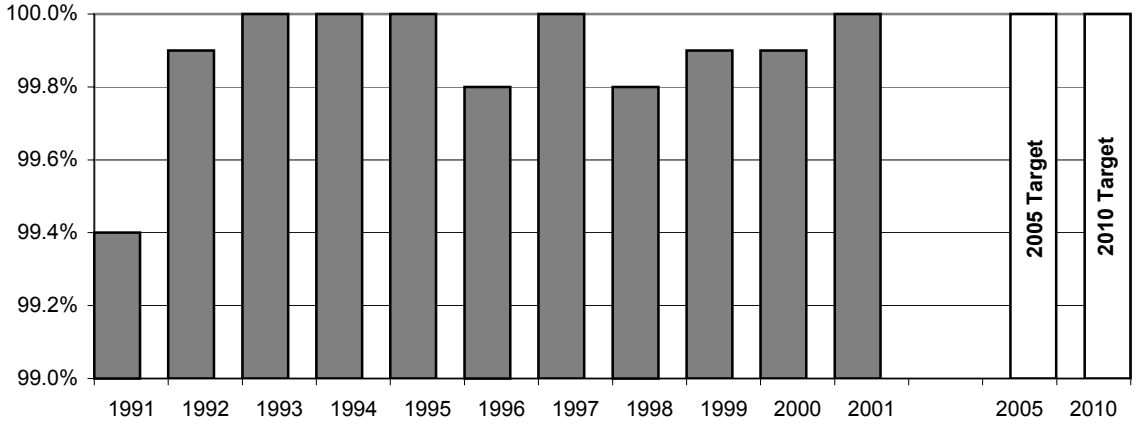
Environmental Impacts

Air Pollution

The Oregon Department of Environmental Quality reports that motor vehicles are now the number one source of air pollution in Oregon. Even though each individual vehicle emits a relatively small amount of pollutants into the atmosphere, the large number of vehicles operating in the state, along with the high level of use they receive, makes the total air pollutant contribution from motor vehicles larger than any other single source. Motor vehicles pollute the air during manufacturing, oil refining and distribution, vehicle refueling and, most significantly, during use. The major pollutants of vehicles include ozone, particulate matter, nitrogen oxides, carbon monoxide, sulfur dioxide, hazardous air pollutants or toxins, and carbon dioxide.

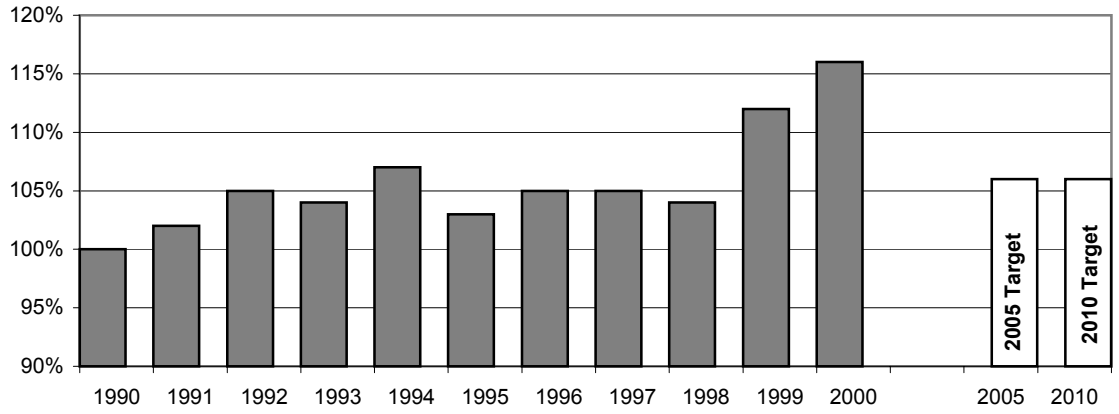
The Oregon Progress Board has established two benchmarks to monitor overall air quality in the state. The percent of time that air is healthy to breathe for all residents has increased from 1991 numbers and has stayed at or near 100 percent. Conversely, carbon dioxide emissions are steadily rising above established target levels. Carbon dioxide, which is produced from the combustion of fossil fuels, is widely regarded as a primary component of global warming.

Percentage of Time that the Air Is Healthy to Breathe for All Oregonians



Source: Oregon Progress Board, 2003 Benchmark Performance Report

Carbon Dioxide Emissions as a Percentage of 1990 Emissions



Source: Oregon Progress Board, 2003 Benchmark Performance Report

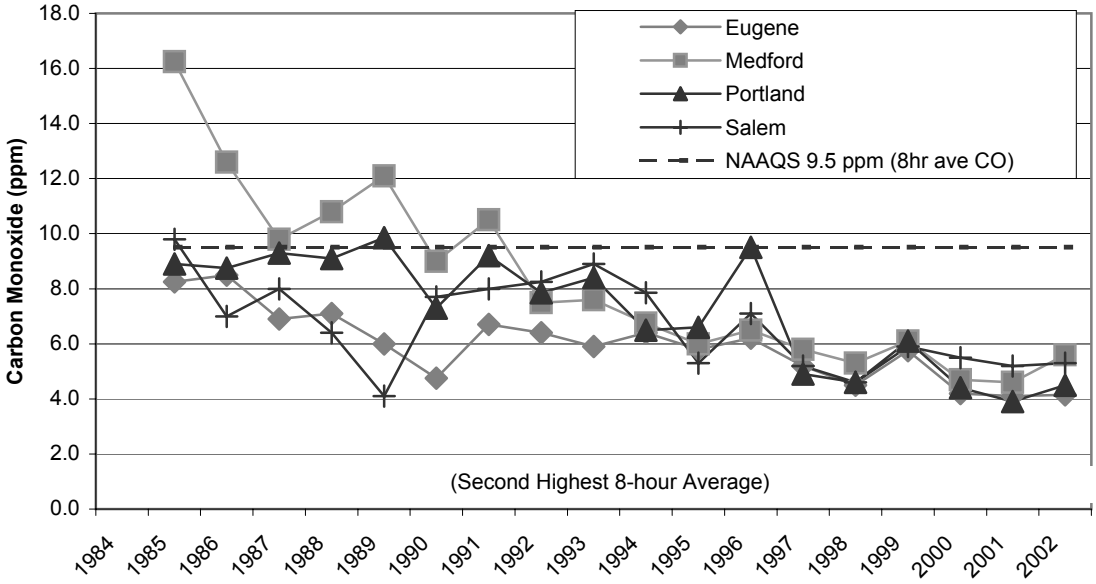
Environmental Impacts

Air Pollution

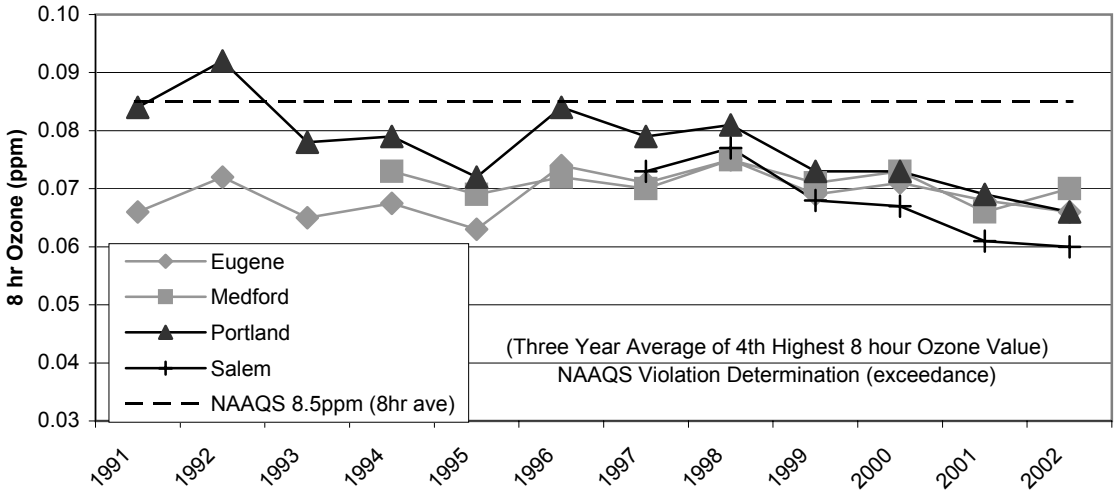
A detailed analysis of two major air pollutants shows an improving trend during recent years. Carbon monoxide levels in four of Oregon's population centers have shown significant improvement since the mid 1980s. All four areas have stayed below National Ambient Air Quality Health Standards (NAAQS) for carbon monoxide levels since 1991. Much of the improvement to carbon monoxide levels can be attributed to advances in and use of cleaner engine technologies.

Oregon ozone trends from 1991 to 2002 show moderate improvement for two of the four metro areas listed below. Eugene and Medford's ozone levels have remained fairly constant over the last decade, staying below NAAQS levels for this pollutant. Portland and Salem's ozone levels have declined from previous sample years. Portland has stayed below NAAQS levels since 1992, and Salem has been below this level during each sample year.

Oregon Carbon Monoxide Trends (1985 - 2002)



Oregon 8-Hour Ozone Trend (1991 - 2002)



Sources: Department of Environmental Quality, 2002 Oregon Air Quality Data Summaries

Environmental Impacts

Air Pollution

Fine particulate matter is another primary air pollutant in Oregon. While total suspended particulate matter (particles of all sizes) is generally not a transportation issue, fine particulate matter known as PM_{10} (10 micrometers in diameter and smaller) and $PM_{2.5}$ (2.5 micrometers in diameter and smaller) have transportation sources.

Levels of PM_{10}, which is mostly from wood smoke, have been reduced from mid-1980 levels. Transportation sources of PM_{10} include brake dust and very fine road dust that has been crushed multiple times. Increases in vehicle miles traveled will likely lead to increases in these pollutants from transportation sources. The Oregon Department of Environmental Quality began monitoring $PM_{2.5}$ in 1999 and had all of its testing sites operating by 2000. Significant trend data is not available for $PM_{2.5}$ at this time.

Oregon communities haven't always met the National Ambient Air Quality Standards for many pollutants. Several communities were designated by the Environmental Protection Agency as non-attainment areas. Since that time DEQ has worked with various stakeholders to improve air quality in these non-attainment areas. Many of the non-attainment areas have been changed to maintenance areas while other communities are in the process of doing so.

Source: Department of Environmental Quality, 2002 Oregon Air Quality Data Summaries

Oregon Communities with Air Quality Maintenance Strategies (Maintenance Areas)

City	Pollutant	Redesignation Date
Eugene-Springfield	Carbon Monoxide	1994
Grants Pass	Carbon Monoxide	1999
Portland	Carbon Monoxide	1996
Klamath Falls	Carbon Monoxide	2001
Medford	Carbon Monoxide	2001
Portland-Vancouver	Ozone	1996
Medford-Ashland	Ozone	1985

Source: Department of Environmental Quality, 2002 Oregon Air Quality Data Summaries

Remaining Non-attainment Communities with Air Quality Maintenance Strategy Development in Progress

City	Pollutant	Redesignation Status
Salem-Keizer	Carbon Monoxide	NAAQS met
Eugene-Springfield	PM_{10}	NAAQS met, plan in development
Grants Pass	PM_{10}	NAAQS met, plan in development
Klamath Falls	PM_{10}	NAAQS met, plan in development
La Grande	PM_{10}	NAAQS met
Lakeview	PM_{10}	NAAQS met
Medford-Ashland	PM_{10}	NAAQS met, plan in development
Oakridge	PM_{10}	NAAQS met, plan in development

Source: Department of Environmental Quality, 2002 Oregon Air Quality Data Summaries

Environmental Impacts

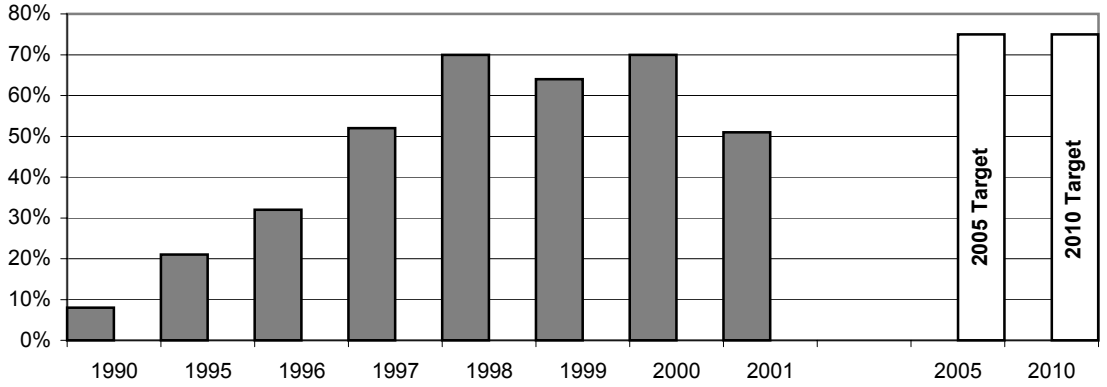
Water Pollution

Water pollution from non-point sources is not as easy to identify as point source pollution problems (i.e. pollutants coming from the end of a pipe or single factory). Water pollution from non-point sources is predominately from surface water runoff. Pollutants are picked-up as water flows across different land use features and washes into local rivers and streams.

Roads and parking lots are impervious surfaces that allow run-off to flow more quickly into open bodies of water, rather than allowing the water to seep into the ground, filtering out many pollutants and recharging ground water aquifers. The publication "Second Nature" by White and Ernst reports that a one-acre parking lot produces about 16 times as much run-off as a one-acre meadow. As runoff flows over paved surfaces the water temperature rises, degrading its level of dissolved oxygen and making area stream conditions unsuitable to some species. The water runoff also picks up numerous pollutants as it moves over paved areas or near roadways. These pollutants include sediment, nutrients, trace or heavy metals, pesticides and petroleum products, many of which are from transportation sources or activities. Maintenance practices along the transportation system can also have large effects on the water quality of area streams, associated habitats and environmental health.

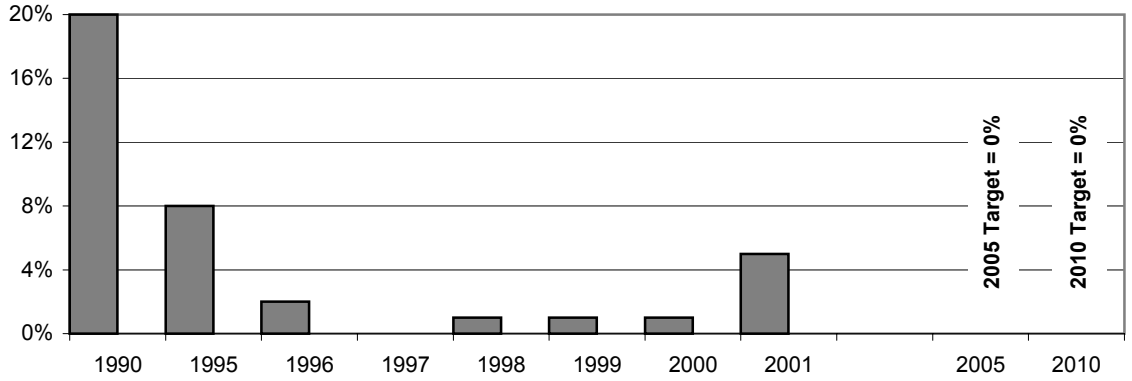
The Oregon Department of Environmental Quality measures water quality in Oregon waterways. Water quality variables include temperature, dissolved oxygen, total solids, pH levels, nitrogen and phosphorus levels.

Percent of Monitored Stream Sites with Significantly Increasing Water Quality



Source: Oregon Progress Board, 2003 Benchmark Performance Report

Percent of Monitored Stream Sites with Significantly Decreasing Water Quality

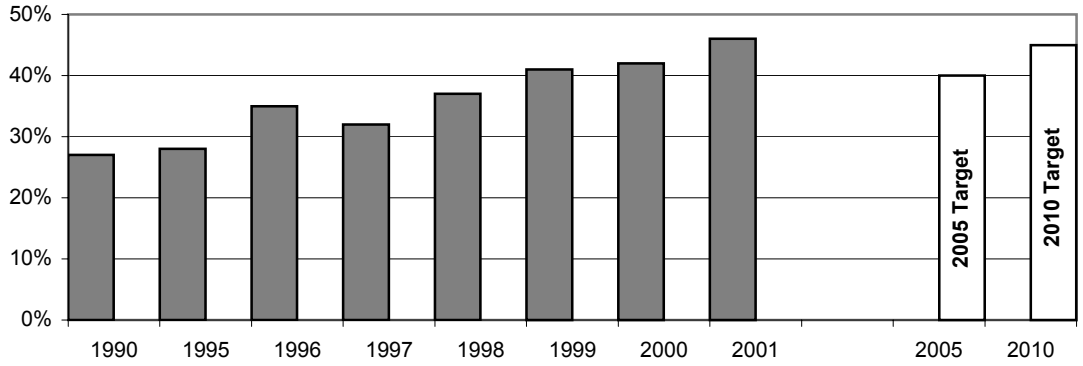


Source: Oregon Progress Board, 2003 Benchmark Performance Report

Environmental Impacts

Water Pollution

Percent of Monitored Stream Sites with Water Quality in Good to Excellent Condition



Source: Oregon Progress Board, 2003 Benchmark Performance Report

Overall stream water quality appears to be improving from early 1990 levels. The number of monitored streams with significantly increasing water quality has grown while the number of streams with significantly decreasing water quality has dropped. However, the drop in the number of sites with increasing stream quality levels in 2001 and an increase in the number of streams with decreasing water quality in the same year may indicate a tapering off of the benefits associated with established water quality plans. Among other things, these plans reduced point source pollution emissions across Oregon. Despite the recent drop off in the number of streams with increasing water quality and the recent increase in the number streams with decreasing water quality, figures show that the number of monitored streams in good to excellent condition has risen steadily since 1990.

ODOT has put fish passage issues as a high priority for future construction work and as a targeted program for improvement of existing infrastructure. ODOT has teamed up with the Oregon Department of Fish and Wildlife to identify and prioritize fish passage problems. ODOT has fixed or improved around 75 to 80 sites so far. This work has opened an average of 50 miles of streams per year between 1997 and 2002. Culvert retrofits are one option to improve fish passage. Where retrofits are not a viable solution due to natural or infrastructure factors, the existing structure (usually a culvert) can be replaced with a bridge or replaced with a larger, natural bottom culvert. Monitoring has shown that fish have returned upstream of repaired or replaced crossings that have not had fish present for 10 to 50 years.

ODOT has recently completed negotiations with NOAA Fisheries on the updated "Oregon Department of Transportation Routine Road Maintenance Water Quality and Habitat Guide Best Management Practices." This guide provides direction to the maintenance program in minimizing impacts on habitat, including salmon bearing streams.

Source: ODOT Clean Water Program, Environmental Services, Geo/Hydro Unit and Statewide Maintenance Section

Environmental Impacts

Noise Pollution

Noise, or unwanted sound, is a unique pollutant that leaves no visible evidence, yet it is a common irritant for residents and can be a health risk for many individuals, particularly for the elderly, young, and people with existing health problems. Prolonged exposure to noise can harm hearing, increase heart rate and blood pressure, and contribute to other physiological problems. Persistent noise exposure can lead to chronic-stress related diseases that pose a serious health risk to many individuals. Constant highway traffic, along with other transportation activities, particularly aircraft operations, can be a major factor in noise pollution.

Where necessary, mitigation efforts may be used to limit the exposure of nearby land uses from transportation noise. Noise barriers made from earth berms, concrete walls or wooden structures can help to reduce the noise levels experienced near highway facilities.

Sound level is measured in decibels. The decibel scale is logarithmic, or based on powers of ten, rather than a linear scale. This means that a small increase in decibel levels is a large increase in sound intensity. The intensity level of sound multiplies by 10 for every 10-decibel increase. The average human ear perceives an increase of 10 decibels as a doubling of noise loudness.

Common Sounds and Their Effect on Humans

Common Sounds	Noise Level (dBA)	Effect on Humans
Air raid siren	140	Painfully loud
Jet takeoff (200 feet)	120	Maximum vocal effort
Thunderclap		
Auto horn (3 feet)		
Pile driver	110	
Garbage truck	100	
Heavy truck (50 feet)	90	Very annoying
City traffic		
	85	Hearing damage after prolonged exposure (after 8 hours)
Alarm clock (2 feet)	80	Annoying
Noisy restaurant	70*	Telephone use difficult
Freeway traffic		
Man's voice (3 feet)		
Air conditioning unit (20 feet)	60	Intrusive
Light auto traffic (100 feet)	50	Quiet
Living room	40	
Bedroom		
Library	30	Very quiet
Soft whisper (15 feet)		
Broadcast studio	20	
	10	Just audible
	0	Hearing begins

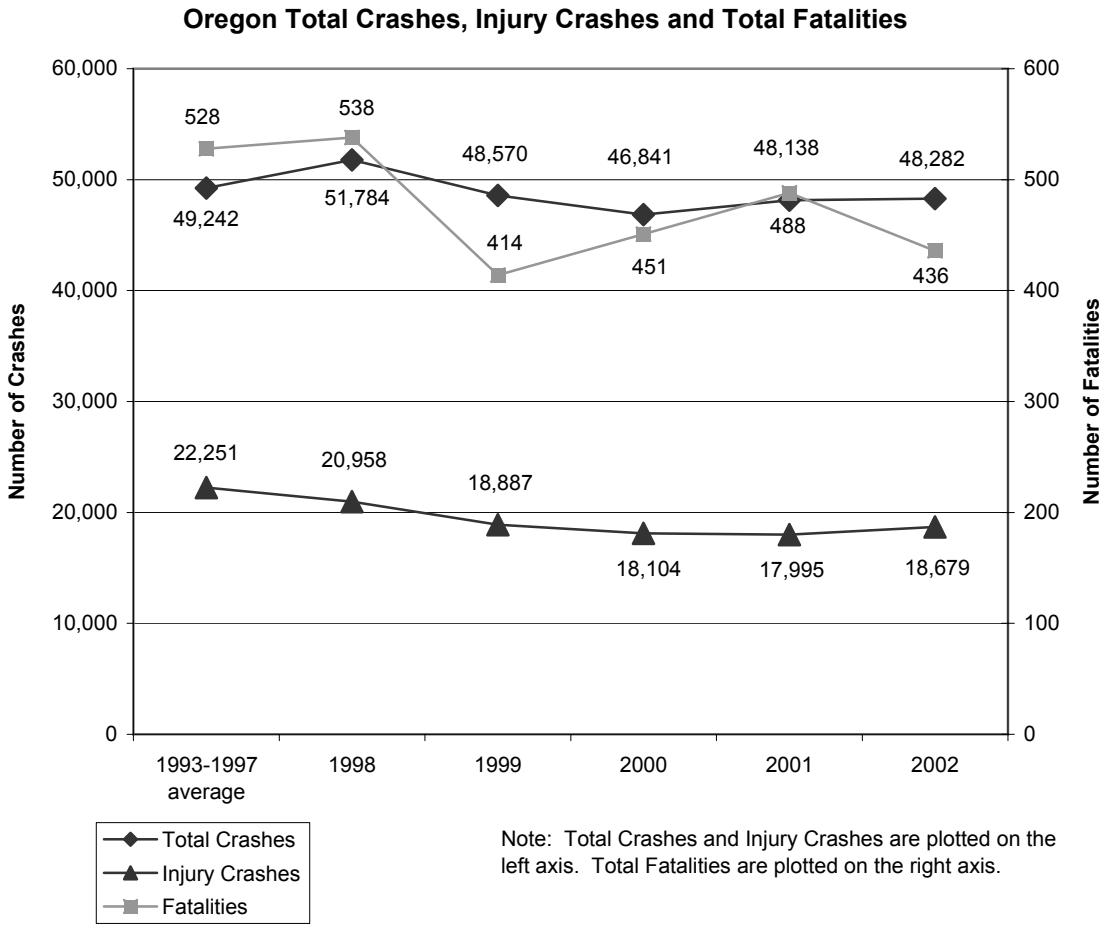
* Point at which noise begins to harm hearing

Note: Data in this table was collected from the American Academy of Otolaryngology and the American Medical Association and is meant to serve as a general, non-legal guideline for the effect of sound on human hearing.

Source: Oregon Department of Environmental Quality

Safety

Motor Vehicle Accidents



Crashes, Injuries and Fatalities							
	93-97 Average	1998	1999	2000	2001	2002	% Change 98-2002
Total Crashes	49,242	51,784	48,570	46,841	48,138	48,282	-6.8%
Fatal Crashes	464	485	366	407	427	388	-20.0%
Fatalities	528	538	414	451	488	436	-19.0%
Fatalities per 100 Million VMT	1.75	1.61	1.19	1.29	1.42	1.26	-21.8%
Injury Crashes	22,251	20,958	18,887	18,104	17,995	18,679	-10.9%
Injuries	35,124	32,089	28,745	27,503	26,972	27,791	-13.4%
Injuries per 100 Million VMT	116.38	96.14	82.81	78.46	78.08	80.37	-16.4%

Source: Oregon Department of Transportation, Transportation Safety Division, Oregon Traffic Safety Performance Plan, Fiscal Year 2004

The number of motor vehicle accidents in Oregon has held fairly steady since 1993; however, there has been a substantial increase in the number of vehicles and miles traveled over the same period. Thus progress has been made in overall safety in recent years. This trend is more evident when older safety data is evaluated in light of recent numbers. The fatality rate per 100 million vehicle miles traveled (VMT) has dropped significantly from 3.7 in 1976 to 1.26 in 2002, and the injury rate has dropped from 212.8 to 80.37 over the same period.

Safety

Motor Vehicle Accidents

Speeding							
	93-97 Average	1998	1999	2000	2001	2002	% Change 98-2002
Number of People Injured Involving Speed	8,249	9,465	7,763	7,333	7,508	8,724	-7.8%
Number of People Killed Involving Speed	282	249	199	193	211	225	-9.6%

Approximately 52 percent of all fatalities on Oregon highways in 2002 were speed-related. Speeding or driving too fast for current roadway conditions was the top contributing factor to fatal traffic accidents in the state. Overall, speed related fatalities have declined from an average of 282 during the mid 1990s to 225 in 2002.

Occupant Protection (Safety Belts and Child Restraints)							
	93-97 Average	1998	1999	2000	2001	2002	% Change 98-2002
Total Occupant Use	82.4%	87.0%	88.0%	89.0%	91.0%	90.0%	3.4%

The use of occupant protection equipment has continued to increase from earlier compliance levels, achieving a level of over 90 percent in 2001. This is dramatically higher than the restraint use rates in earlier decades.

Motorcycle Safety							
	93-97 Average	1998	1999	2000	2001	2002	% Change 98-2002
Number of Fatal Crashes	25	25	18	39	34	29	16.0%
Number of Motorcyclists Killed	25	25	18	39	33	28	12.0%

Motorcycle fatalities and crashes have increased across the state in recent years. Fatal motorcycle crashes represent 8 percent of all fatal crashes in Oregon, while motorcycles themselves represent only 2 percent of the total registered vehicles in the state.

Impaired Driving							
	93-97 Average	1998	1999	2000	2001	2002	% Change 98-2002
Alcohol-Involved Fatalities	217	225	163	175	174	163	-27.6%
Other Drug-Involved Fatalities	N/A	56	41	39	40	52	-7.1%

While the number of impaired driving fatalities have dropped over recent years, it still remains a serious problem on Oregon highways. It is estimated that in 2002, approximately 46 percent of all traffic fatalities were alcohol or drug-related.

Source: Oregon Department of Transportation, Transportation Safety Division, Oregon Traffic Safety Performance Plan, Fiscal Year 2004

Safety

Motor Vehicle Accidents and Other Modes

Work Zone Safety							
	93-97 Average	1998	1999	2000	2001	2002	% Change 98-2002
Number of Work Zone Crashes	454	485	412	350	321	305	-37.1%
Number of Work Zone Fatalities	13	14	9	6	6	6	-57.1%

Oregon has been able to defy the national trend of increases in numbers of work zone deaths between 2000 and 2001. In fact, work zone fatalities have decreased in Oregon by over 57 percent from 1998 to 2002.

Bicyclists in Motor Vehicle Crashes							
	93-97 Average	1998	1999	2000	2001	2002	% Change 98-2002
Number of Injuries - Crashes w/ motor vehicles	734	738	649	611	619	658	-10.8%
Number of Fatalities - Crashes w/ motor vehicles	13	7	3	7	13	6	-14.3%
Percent Helmet Use - Children	40.4%	56.0%	49.0%	51.0%	44.0%	38.0%	-32.1%

Bicyclist fatalities in 2002 were down considerably from the prior year's total of 13 deaths, a recent high. Helmet use among children has trended downward from 1998, with only 38 percent wearing helmets in 2002.

Pedestrians in Motor Vehicle Crashes							
	93-97 Average	1998	1999	2000	2001	2002	% Change 98-2002
Number of Injuries	702	664	643	599	577	595	-10.4%
Number of Fatalities	64	68	47	51	60	48	-29.4%

The number of pedestrians injured in motor vehicle accidents has steadily decreased from earlier numbers; however, the number of fatalities has fluctuated between 47 and 68 deaths over recent years. Area roadways continue to represent a serious safety issue to pedestrians.

Source: Oregon Department of Transportation, Transportation Safety Division, Oregon Traffic Safety Performance Plan, Fiscal Year 2004

Safety

Other Modes

Commercial Motor Vehicles							
	92-96 Average	1997	1998	1999	2000	2001	% Change 97-2001
Commercial VMT (Millions)	N/A	1,623	1,774	1,693	1,591	1,645	1.4%
Commercial Motor Vehicle Crashes	N/A	1,004	1,057	1,096	1,092	1,045	4.1%
Crash Rate (per Million VMT)	N/A	0.619	0.596	0.647	0.686	0.635	2.6%
Injuries	N/A	630	577	629	572	494	-21.6%
Fatal Crashes	N/A	67	65	46	54	53	-20.9%
Fatalities	N/A	79	71	56	55	66	-16.5%
Fatal Crash Rate per Million VMT	N/A	0.041	0.037	0.027	0.034	0.032	-22.0%

Commercial motor vehicle crash rates were up slightly in 2001 from 1997 totals. Despite this small increase, commercial vehicle crashes, injuries, fatalities and fatal crashes are down from 1997 totals. The ODOT Transportation Safety Division reports that crashes continue to remain a problem in and near the state's 12 truck safety (AIM) corridors where traffic density, commercial driver behavior, engineering and merging highways contribute to a higher accident rate.

Source: Oregon Department of Transportation, Transportation Safety Division, Oregon Traffic Safety Performance Plan, Fiscal Year 2003

Rail Crossing and Derailment Incidents						
	1998	1999	2000	2001	2002	% Change 98-2002
Number of Highway-Railroad At Grade Incidents	33	29	27	34	25	-24.2%
Number of Train Derailments Caused By Human Error, Track or Equipment	44	51	34	46	45	2.3%

Railway crossing incidents were down from 33 in 1998 to 25 in 2002, a decrease of 24.2 percent. Over the same time period, the number of train derailments has fluctuated around the 2002 total of 45 incidents

Source: Oregon Department of Transportation, Performance Measure Data Summary

Safety

Other Modes

Number of Collision Incidents at Oregon's Four Major Transit Agencies				
Transit Agency	Transit Vehicles 1996	Transit Vehicles 2001	Collision Incidents 1996	Collision Incidents 2001
Lane Transit	79	116	15	18
Rogue Valley Transit	N/A	19	N/A	2
Salem Area Mass Transit	41	69	7	7
TriMet (Bus)	513	734	105	175
(Light Rail)	23	58	7	15

The number of transit vehicle collision incidents increased between 1996 and 2001. However, a significant portion of the rise in incidents can be attributed to an increase in the number of transit vehicles operated by each agency.

Source: National Transit Database 1996 & 2001

Aviation Safety

Air travel is one of the safest modes of transportation available; however, one serious accident can result in a large number of fatalities. Major commercial airlines typically have a very low accident rate. In 1999, major airlines had an accident rate of 2.9 accidents per million flight hours in the United States, consistent with the rest of the 1990s.

Typical general aviation activity includes personal and business trips, corporate flying, aerial applications and instructional flights. General aviation accident rates are significantly higher than that of commercial airlines. In 1999, general aviation in the United States had an accident rate of approximately 64.1 accidents per million hours flown. This figure represents a slight decline in accident rates since the early to mid- 1990s. Oregon experienced 41 general aviation accidents in 1999, slightly below the average number of annual accidents from 1989 to 1997.

Source: National Transportation Safety Board, Annual Review of Aircraft Accident Data, U.S. General Aviation, Calendar Year 1999 & U.S. Air Carrier Operations, Calendar Year 1999

Recreational Boating Accidents

Oregon was home to over 194,000 registered boats in 2002. The Oregon State Marine Board reports that approximately 80 accidents occurred on Oregon waters in that year, lower than any total from the 1990s. However, it is estimated that only 10 to 15 percent of reportable accidents are actually reported to authorities. Therefore, actual accident numbers and rates are likely much higher.

Sixteen people lost their lives in recreational boating accidents in Oregon during 2002, resulting in a state fatality rate of 0.82 per 10,000 registered boats. This rate is down from the recent high of 1.36 fatalities per 10,000 registered boats in 1993, but up from 2000 and 2001 when the fatality rate was 0.72. Oregon experienced a fatality rate above the national average for most of the 1990s. Oregon's higher accident rate is primarily due to a longer boating season and proximity to the Pacific Ocean.

Source: Oregon State Marine Board

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