

# Mortality

## ALL CAUSES

During 1998, Oregon's death rate changed little from the preceding year, increasing 0.5 percent to 898.4 per 100,000 population, up from 893.7. For the past six years the rate has fluctuated between 888 and 909 per 100,000 population. [Figure 6-1; Table 6-3]. During 1998, 29,346 Oregonians died, 596 more than the previous year.

Record high death rates were recorded for several of the leading causes: Parkinson's disease (up 27.3% to 8.4 per 100,000 population, Alzheimer's disease (up 10.8% to 24.7), diabetes mellitus (up 4.7% to 26.6), and suicide (up 4.2% to 17.4). Among these, all but suicide have shown strong and consistent increases in death rates since the mid-1980s. Record low death rates were recorded for arteriosclerosis (down 5.4% to 7.0 per 100,000 population) and heart disease (down 4.5% to 222.7). And, although not a record low, the rate for AIDS declined 24.1 percent to 2.2, its lowest rate since 1986.

Between 1997 and 1998, the age-specific death rates increased for both males than females and for all age groups except 0- to 4-year-olds and 45- to 64-year-olds. Males have consistently had higher death rates than females, but the gap is narrowing. A generation earlier, the rate for males was 33 percent higher; by 1998 it was just 1.5 percent higher. The median age of Oregonians at death remained at 78 years, 81 for females and 75 for males. On average, an Oregonian died every 18 minutes during 1998.

Oregon's 1998 crude death rate for all causes combined was somewhat higher than the nation's. However, its 1998 age-adjusted death rate was 4.3 percent lower than the nation's. [Table 6-42].<sup>1</sup>

***An Oregonian died every 18 minutes.***

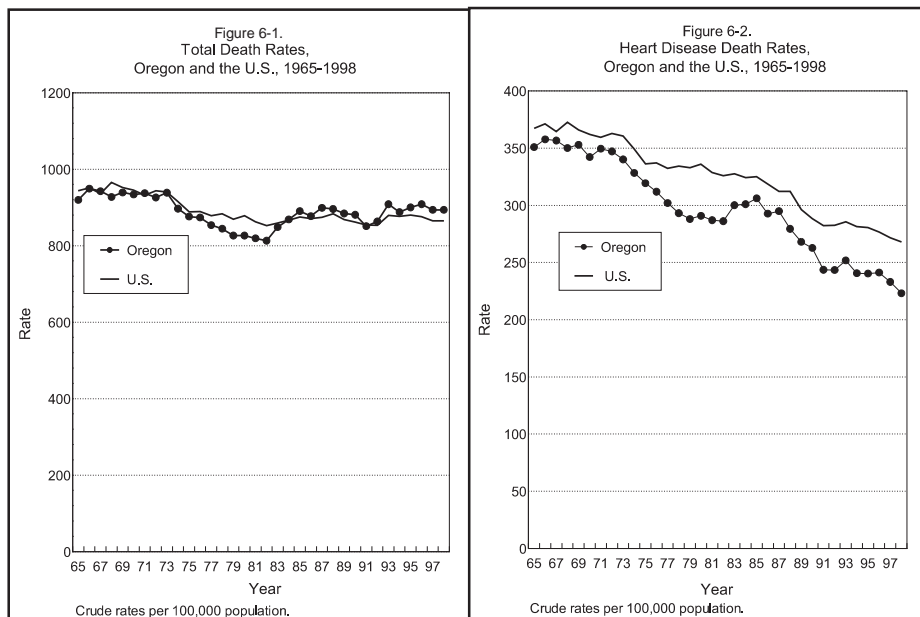
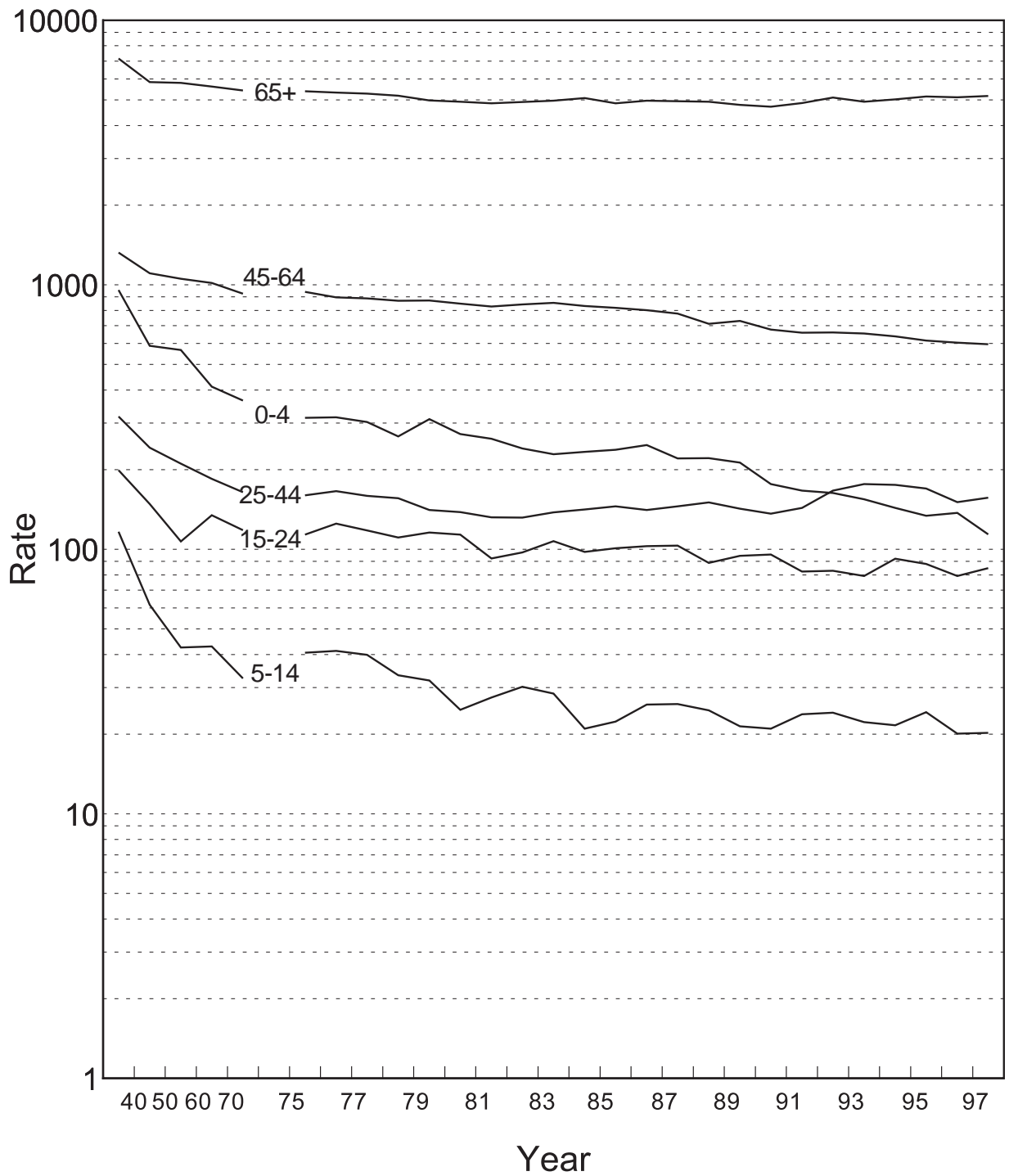
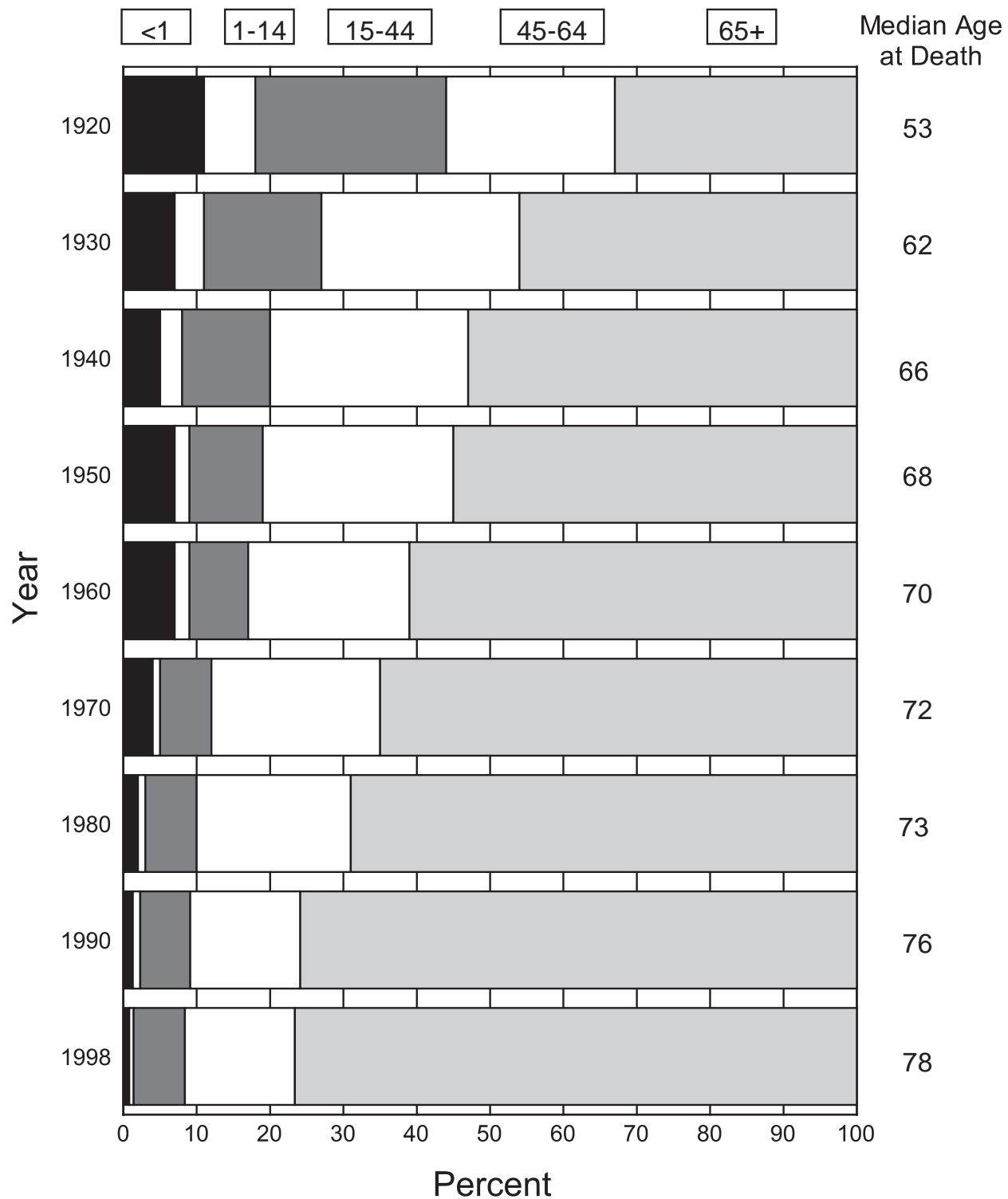


Figure 6-3.  
Age-Specific Death Rates,  
Oregon Residents, 1940-1998



Rates per 100,000 population.

Figure 6-4.  
Proportion of Deaths by Selected Age Groups,  
Oregon Residents, 1920-1998



(Age-adjusted death rates control for the effect of the age distribution of a population on its death rate. Any remaining differences are due to factors other than age.)

### HEART DISEASE

Heart disease continued to be the leading cause of death in Oregon, accounting for one of every four resident deaths. The near-continual annual declines seen over the past several decades essentially ceased during the early 1990s resuming only in 1997. The death rate (222.7 per 100,000 population) is now 15 percent lower than was in 1990 and 20 percent lower than was in 1988.<sup>2</sup> [Figure 6-2; Table 6-3].

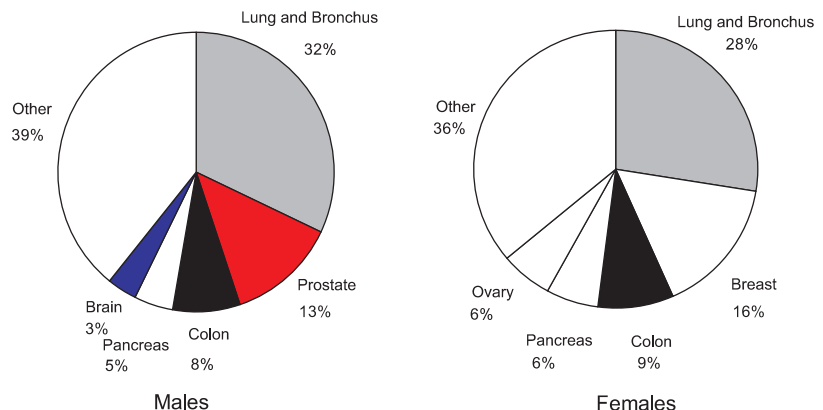
As with many causes of death, the heart disease mortality rate was higher among males than females. This disparity narrowed during the latter half of the twentieth century, however. [Table 6-2]. During the most recent 10-year period, the difference fell by half. In 1988, the rate for males was 14 percent higher than that for females; by 1998, the male rate was just 6.4 percent higher than the female rate. Heart disease is the leading killer of Oregonians 75 or older. The median age for the 7,276 Oregonians who died from this cause was 80 years.

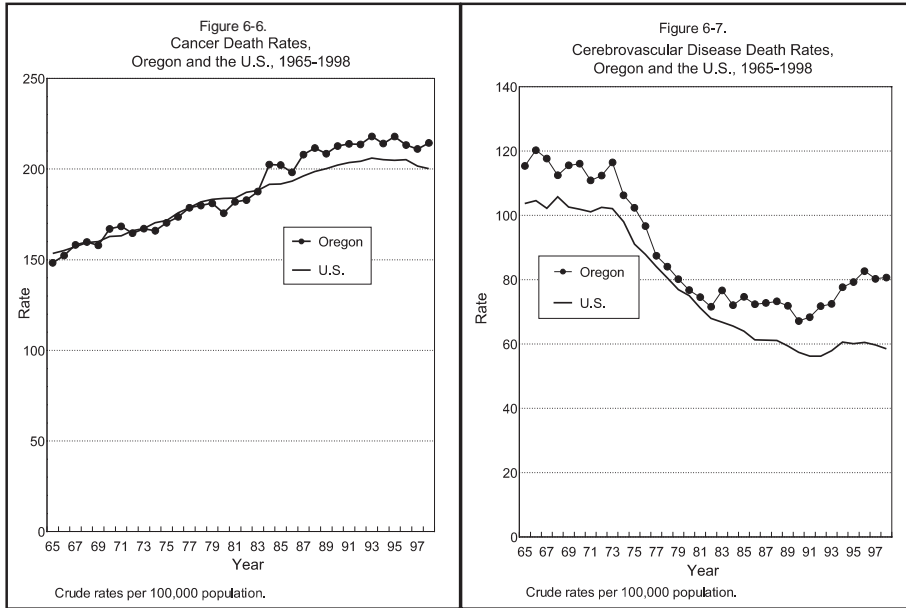
Oregon's rate has consistently been lower than the U.S. rate; in 1998, the state's age-adjusted death rate was 22 percent lower than the nation's. [Table 6-42]. An Oregonian died of heart disease every 72 minutes.

The heart disease category includes a number of conditions. Most common, and accounting for the majority of heart disease deaths, are myocardial infarctions, coronary occlusions, coronary thromboses, and coronary heart disease. The infarctions, occlu-

**Over the past two decades the proportion of deaths due to heart disease declined from one in three to one in four.**

Figure 6-5.  
Distribution of Malignant Neoplasms  
by Sex and Site, Oregon Residents, 1998





**Lung cancer is the most common fatal cancer for both men and women.**

sions, and thromboses are acute, often terminal events, while coronary heart disease is a chronic condition.

### MALIGNANT NEOPLASMS

During the 1960s through the 1980s, the Oregon cancer rate rose relentlessly. That trend may be in remission; the only clear trend during the 1990s is that there is no consistent upward or downward movement. This may represent a plateauing of the death rate. During 1998, the death rate was 214.4 per 100,000 population, about midway between the range of values seen during the 1990s and only marginally higher than the rate recorded the previous year (211.1). [Figure 6-6; Table 6-3].

Although ranking second, after heart disease, cancer is the leading killer of Oregonians ages 45 through 74. [Table 6-4]. During 1998 the median age at death for cancer patients remained at 73, the highest ever recorded. The death rate for males was 7.8 percent higher than that for females (222.6 versus 206.4), with the disparity greatest among the elderly. Although at lower overall risk from fatal cancer, women ages 35-54 were more likely to die from cancer than were their male counterparts. In addition to the cancer-caused deaths of 7,007 Oregonians, cancer contributed to another 878 deaths where it was not the underlying cause. [Table 6-35].

The decades-long upward trend in cancer mortality was driven principally by an increasing number of lung cancer deaths, a cause that would be rare in the absence of smoking. The lungs were the most common site of cancer for both sexes, with lung cancer deaths becoming increasingly prevalent among women during recent decades. In 1970, there were 4.5 lung cancer fatalities among men for every female death. By 1998 the ratio declined to 1.3 to 1.0. The total lung cancer death rate has more than quintupled since 1950, increasing from 11.6 to 63.2 per 100,000 Oregonians. (This has

LUNG CANCER DEATH RATES			
YEAR	TOTAL	MALE	FEMALE
1970	33.5	56.4	11.4
1975	41.2	65.9	17.7
1980	48.3	69.9	27.4
1985	56.2	76.0	37.2
1990	64.3	81.2	48.1
1995	62.5	69.5	55.7
1998	63.2	71.3	55.2

Rates per 100,000 population.

been accompanied by a sharp increase in chronic obstructive pulmonary disease deaths, as well.)

During 1998, record low death rates were recorded for rectal and cervical cancer. There were no record highs.

Oregon's age-adjusted cancer death rate was nearly identical to the nation's during 1998, just 0.1 percent lower. Cancer claimed the life of an Oregonian every 75 minutes.

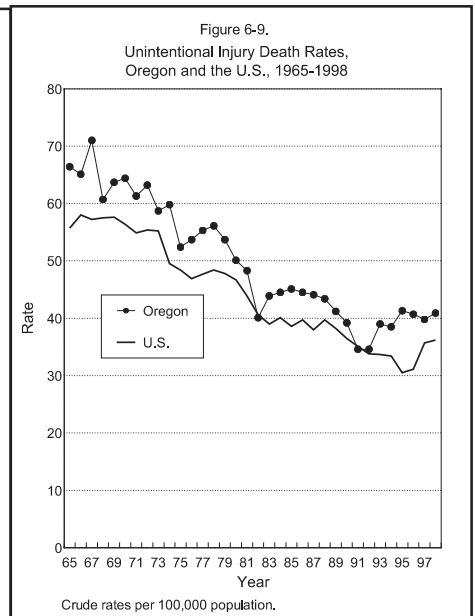
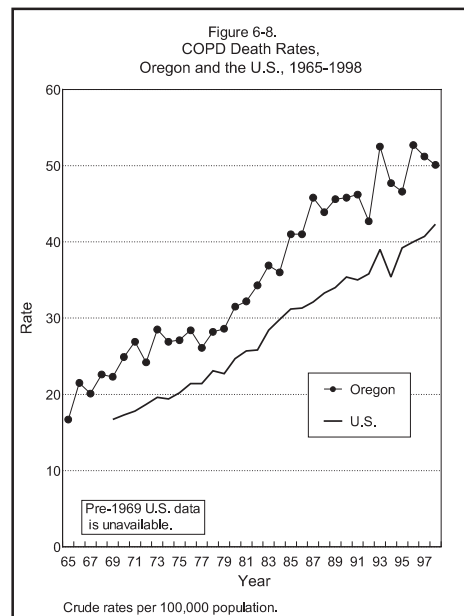
### CEREBROVASCULAR DISEASE

During most of the 1980s, the death rate for cerebrovascular disease fluctuated between a narrow range of values, ultimately declining to a record low 67.2 per 100,000 population in 1990. The early and mid-1990s were marked by increasing mortality with the rate reaching 82.7 during 1996, a 23 percent increase. [Figure 6-7; Table 6-3]. The rate declined to 80.3 in 1997 and remained essentially unchanged at 80.7 during 1998. Nearly every age group has witnessed an increase in cerebrovascular disease death rates since the beginning of the decade. Besides the 2,636 deaths due to cerebrovascular disease, these conditions contributed to the deaths of another 1,503 Oregonians. [Table 6-35].

Cerebrovascular disease was the third most common cause of death among Oregonians, and struck females far more often than males (97.6 vs. 63.4). However, males 45-74 years old had higher death rates than similarly-aged females. The median age at death was 83 years. [Table 6-13].

Over the past quarter-century, the crude death rate from cerebrovascular disease has consistently been higher in Oregon than in the U.S. as a whole. Part of this difference is because the state's population is older than the nation's but even after controlling for this variable with age-adjusted death rates, Oregon's 1998 rate was 18 percent higher than the U.S.

**Since 1990, the cerebrovascular disease death rate has increased 20 percent.**



rate and ranked ninth highest among the states. An Oregonian died from cerebrovascular disease every 3.3 hours.

Sudden circulatory crises such as strokes, cerebral thromboses, and hemorrhages are common acute forms of these diseases; cerebral arteriosclerosis is a chronic form.

**COPD**

Chronic obstructive pulmonary disease (COPD) has become an increasingly common killer of Oregonians over the past several decades, and is currently the fourth leading cause of death. During 1998, the death rate declined marginally to 50.1 per 100,000 population from its record high of 52.7 recorded in 1996. [Figure 6-8; Table 6-3]. The median age at death remained at 77, a record high.

Just ten years ago, there was a distinct, gender difference in the risk of death from COPD. In 1988, males were 48 percent more likely to die from this cause than were females, but by 1998, they were only 2.4 percent more likely to do so. The vast majority of COPD deaths are caused by tobacco use and the sharp rise in deaths among women reflects their increasing smoking prevalence during past decades. No other cause, except lung cancer, has a higher proportion of deaths linked to tobacco use than does COPD. [Table 6-19].

The group of allied conditions categorized as COPD includes four principal diseases: chronic and unspecified bronchitis, emphysema, asthma, and chronic airways obstruction. In addition to the 1,638 Oregonians whose deaths were due to chronic obstructive pulmonary diseases, COPD was a factor in another 1,916 deaths. [Table 6-35].

During 1998, Oregon’s age-adjusted COPD death rate was 12 percent higher than the U.S. rate. An Oregonian died from chronic obstructive pulmonary disease every 5.3 hours. Most of these deaths were preventable.

**UNINTENTIONAL INJURIES**

Until the early 1980s, Oregon’s unintentional injury<sup>3</sup> death rate had been declining. The downward trend resumed in 1986 and accelerated through 1991 falling to 34.6 per 100,000 population, a record low. [Figure 6-9; Table 6-3]. Subsequently, the rate trended upward reaching 41.3 in 1995 and has since remained around 40 per 100,000. In 1998 the rate was 40.9. Since the record low during 1991-92, rates have risen for both sexes and most age groups, and males remained more than twice as likely as females to die from unintentional injuries.

Although this category ranked fifth overall in the number of deaths (1,337), it was the leading cause of premature death and the leading cause of death for Oregonians ages 1-44; more years of potential life were lost before age 65 from unintentional injuries than

<b>COPD Death Rates</b>		
Year	Male	Female
1988	52.0	36.1
1998	50.7	49.5
% Change	-2.5	+37.1

Rates per 100,000 population.

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***Unintentional injuries were the leading cause of years of potential life lost.***

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**Most unintentional poisoning deaths were overdoses of illicit drugs.**

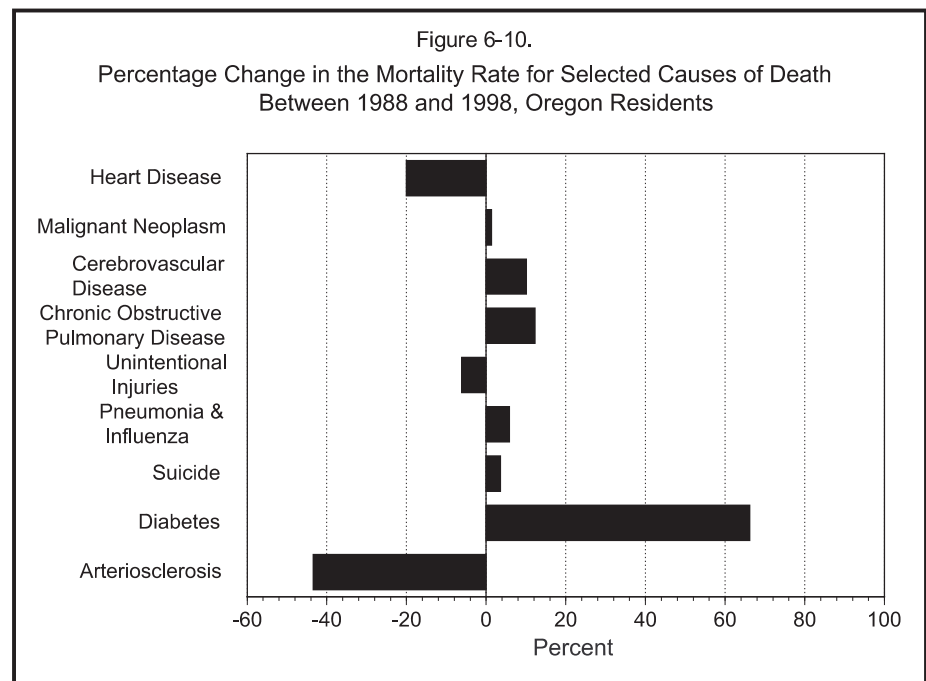
from any other cause. [Table 6-25]. Cancer and heart disease ranked second and third, respectively.

Motor vehicle-related deaths (545) accounted for 41 percent of all unintentional injury deaths; over half (58%) of the decedents were 15-44 years old. (One in eight of the deaths involving motor vehicles were of pedestrians. [Table 6-16].) Falls, the second most common type of fatal unintentional injury, claimed 278 Oregonians. The death rate for falls rose to 8.5 in 1998, a record high and likely a reflection of the aging population; 79 percent of fall victims were 75 or older. Most fatal falls occurred in the home. Poisonings and drownings were the third and fourth most common causes of unintentional injury deaths. [Table 6-16]. (For further information on drownings, see *Oregon Health Trends*, No. 50.) During 1998, 66 fatal unintentional injuries were sustained in the workplace.<sup>4</sup> [Table 6-14]. Summer is the season of greatest risk, with more residents dying from unintentional injuries during August than any other month.

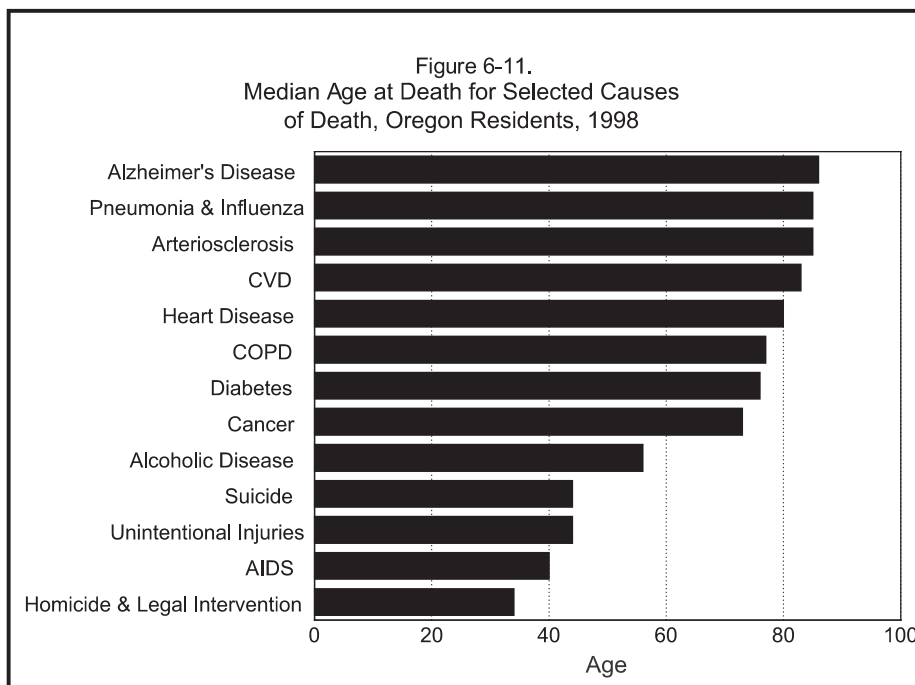
Oregonians continued to be more apt to suffer a fatal unintentional injury than the average American. During 1998, the state's age-adjusted rate exceeded the U.S. rate by 16 percent. An Oregonian died as a consequence of an unintentional injury every 6.6 hours.

**PNEUMONIA AND INFLUENZA**

The death rate for the sixth leading cause of death, pneumonia and influenza, increased 9.2 percent during 1998 to 30.9 per 100,000 population. As is typical, the 1998 mortality rate for pneumonia and influenza was higher for females than males (33.3 versus 28.5). This is the fifth leading cause of death among Oregonians 75 or older.







Besides the 1,010 deaths attributed to pneumonia and influenza, these infections played a role in another 1,234 deaths. [Table 6-35]. Oregon's 1998 age-adjusted mortality rate was 21 percent lower than the national rate and fourth lowest among the states and the District of Columbia. A resident died of pneumonia or influenza every 8.7 hours in 1998.

## DIABETES

During the early to mid-1980s, the diabetes mellitus death rate fluctuated over a narrow range of values. Then in 1987 it moved sharply upward, with the disease claiming a record number of Oregonians. The rate has risen every year since then. By 1998, the rate had more than doubled (26.6 versus 12.3 per 100,000 population in 1986). [Table 6-3]. The increase has occurred across all age groups and both sexes. Among all Oregonians in 1998, diabetes caused 870 deaths and contributed to another 1,935. [Tables 6-3 and 6-35]. Other than the ever increasing obesity of Oregonians, and possibly improved physician awareness and reporting of the disease, local diabetes authorities have no explanation for the rising death rate.

Historically, Oregon's diabetes death rate had been markedly lower than the nation's, but with the increases during recent years the gap narrowed; by 1998 the state's age-adjusted death rate was higher than the U.S. rate, although by just 0.7 percent. An Oregonian died of diabetes every 10.1 hours in 1998.

## ALZHEIMER'S DISEASE

Alzheimer's disease (including Alzheimer's dementia) has been reported with increasing frequency during the past decade and

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***The diabetes death rate hit a new high for the twelfth consecutive year.***

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***During the past decade, the Alzheimer's disease death rate has doubled and now ranks third highest nationally.***

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Oregon's death rates for certain neurological disorders rank among the highest in the nation		
Cause	Rank*	% Diff.*
Alzheimer's	3	+54
Parkinson's	2	+56
ALS**	3	+36
* Highest to lowest among the 50 states and the District of Columbia.		
+ Between Oregon's age-adjusted death rate and the nation's.		
** Amyotrophic Lateral Sclerosis, or Lou Gehrig's Disease.		

ranked eighth among the leading causes of death during 1998. After brief pause during 1997, the death rate for this cause resumed its upward trend, increasing from 22.3 per 100,000 population to 24.7 in 1998. Women remained more than twice as likely as men to die from Alzheimer's disease; the rates were 33.2 and 15.9, respectively. [Table 6-2]. Alzheimer's was the sixth leading killer of women and ninth of men. This devastating disorder takes years to claim its victims' lives; nine in ten of the deaths occurred after the decedent's 75th birthday. [Table 6-6]. Besides the 806 deaths due to this cause, Alzheimer's disease contributed to 492 deaths. [Table 6-35].

This state's Alzheimer's disease death rates have historically been higher than the nation's; Oregon's 1998 rate was 54 percent higher and ranked third highest among the states and the District of Columbia. [Table 6-42]. An Oregonian died from Alzheimer's disease every 10.9 hours. For further information on Alzheimer's disease in Oregon, see *Oregon Health Trends*, Number 52.

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**The suicide rate hit a record high during 1998.**

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## SUICIDE

Despite the economic good times, Oregonians committed suicide at a record pace during 1998: 569 Oregonians (17.4 per 100,000 population) killed themselves. (Note that residents choosing "Death with Dignity" [Measure 16] are not counted here.) Although often exhibiting considerable variation from year to year, the long-term trend of the suicide rate in recent decades has been gradually upward, driven principally by increasing suicidal behavior among the state's youth. (However, the role of youth suicide in the increase in overall suicide rates appears to be abating.)

Suicide was the seventh leading cause of death among males; they were four times more likely to kill themselves than were females (28.0 versus 7.0 per 100,000). Male suicide rates have consistently been high in older age groups, with the rate two to three times higher for men 80 or older than for their younger counterparts. [Table 6-7]. Among females, age-specific rates typically increase into middle age, peak among 45- to 54-year-olds, and then decline. However, in recent years women 80 or older have shown an increasing likelihood of suicidal behavior.

The youngest Oregonian to commit suicide was an 11 year old boy (who hanged himself) and oldest a 96 year old man (who shot himself with a handgun). Suicide was the fourth leading cause of years of potential life lost before age 65, following unintentional injuries, cancer, and heart disease. [Table 6-25]. It was the second leading cause of death for Oregonians ages 15-34. [Table 6-4].

Firearms were the most frequently chosen method (59%) of completed suicide, followed by poisoning (16%) and hanging (15%). The method varied within different age and sex cohorts, however. [Table 6-17].

As in years past, the 1998 age-adjusted rate for Oregon was substantially higher (43%) than for the U.S.; Oregon's rate ranked tenth highest nationally. An Oregonian took his or her own life every

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**Six in ten suicides are committed with firearms.**

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15.4 hours in 1998. For additional information on suicide, see *Suicide and Suicidal Thoughts by Oregonians*, and *Youth Suicide: Results from the 1999 YRBS*, recently published reports by the Center for Health Statistics.

## ALCOHOLISM

In 1998 the Oregon alcoholism<sup>5</sup> death rate was 12.1 per 100,000 population. Since 1988, the death rate has fluctuated between a low of 10.4 in 1991 and a high of 13.2 in 1996. [Table 6-3].

During 1998, alcoholism was the eleventh leading cause of death overall, but ranked fourth among Oregonians 45-54. [Table 6-4]. However, if intentional and unintentional injury deaths (e.g., motor vehicle crashes) that involved alcohol were included in this count, the category would rank substantially higher. (The role, if any, of alcohol in injury deaths is rarely reported on death certificates.) Males have long been more likely to die from alcoholism than females; in 1998 their death rates were 15.7 and 7.6, respectively.

A total of 380 deaths were directly due to alcoholism and related disorders, with alcoholic liver disease accounting for the majority (64%). In addition, alcohol-related diseases were reported as contributing to another 287 deaths. [Table 6-35]. Alcoholism often led to early death; one-half of all those who died from it succumbed by age 56, the lowest median age at death for this cause ever recorded.

During 1998, Oregon's age-adjusted death rate was 37 percent higher than the nation's, and ranked ninth among the 50 states and District of Columbia.<sup>6</sup> A non-injury alcohol-caused death occurred every 23.1 hours in Oregon.

## PARKINSON'S DISEASE

During 1998, the Parkinson's disease death rate resumed its upward climb, increasing 27 percent over the previous year to 8.4 per 100,000 population. [Table 6-3]. The death rate is now 75 percent higher than it was in 1988. As usual, Oregon men were more likely than women to die from this disease; the rates were 10.1 and 6.7, respectively. [Table 6-2]. A small number of middle-aged residents died from Parkinson's disease, but nine in ten of the deaths occurred to residents 75 or older. [Table 6-6]. For additional information, see *Oregon Health Trends*, Number 52.

The state's age-adjusted death rate for this cause was the second highest in the nation during 1998, with residents 56 percent more likely to die from this debilitating disease. (Besides having very high death rates for Alzheimer's and Parkinson's diseases, Oregon's ALS death rate was also elevated, ranking third highest nationally.) The 275 deaths in 1998 represent the loss of an Oregonian every 1.3 days.

## ARTERIOSCLEROSIS

The arteriosclerosis death rate continued its long-term downward trend in 1998, falling to yet another record low. The rate (7.0

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***One half of all alcoholism deaths occurred by age 56, the youngest age ever recorded.***

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***Oregon's Parkinson's disease death rate was the second highest in the nation.***

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***The arteriosclerosis death rate fell to another record low.***

per 100,000 population) is now half of what was in 1988. (In that year, arteriosclerosis was the ninth leading killer of Oregonians; a decade later, it ranked thirteenth. [Table 6-23].) Nonetheless, in 1998, Oregon's age-adjusted death rate was 26 percent higher than the U.S. rate and ranked ninth highest nationally.

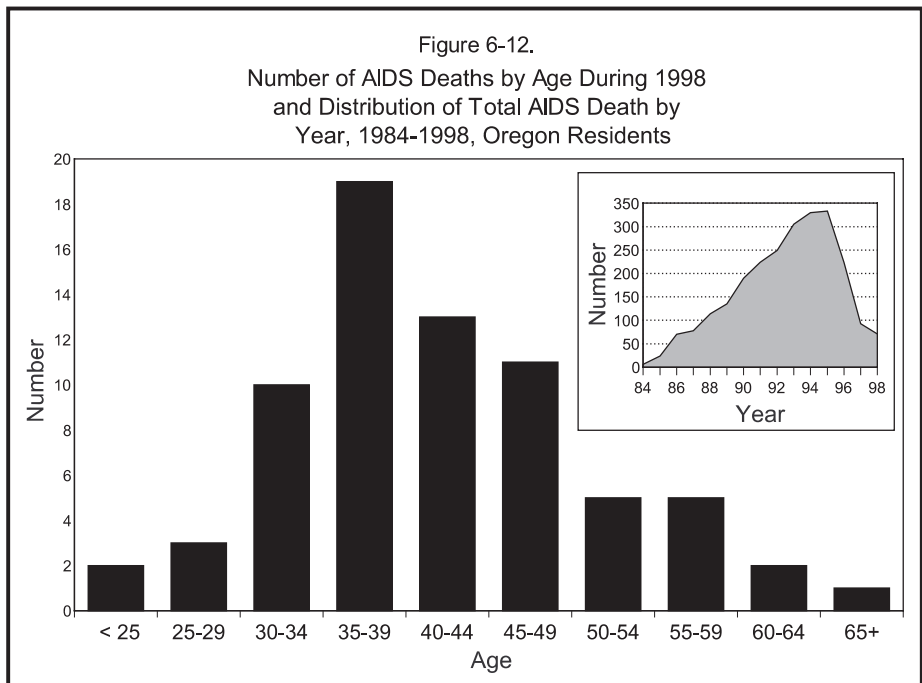
Women typically bear the greater risk, and that was so in 1998; their death rate was 8.1, compared to 5.9 for men. [Table 6-2]. An Oregonian died from arteriosclerosis every 1.6 days in 1998. Note, however, that these figures do not include all deaths involving arteriosclerosis, since many have been classified under more specific manifestations of cardiac and cerebral disease. Arteriosclerosis was listed as the underlying cause of death for 228 Oregonians but contributed to the deaths of another 882 residents.

**HOMICIDE**

In 1994, the homicide death rate was 6.0 per 100,000 population. In each subsequent year the death rate declined ultimately reaching 4.1 per 100,000 population in 1997, a near record low. In that year, Oregonians were a third less likely to be a homicide victim than they were just a few years earlier. Most recently, however, homicide rate showed a slight uptick to 4.3. (The highest rate ever recorded, 6.8, occurred in 1986. [Table 6-3].) Eight of the 142 homicide deaths resulted from legal intervention. [Table 6-17].

Males were more apt to be murdered than females; their death rate was over two times higher, 6.0 compared to 2.7. [Table 6-2]. Even the youngest Oregonians were at risk: eight children who had not yet reached their fifteenth birthday were murdered during 1998. The median age at death was 32 years. [Figure 6-11; Table 6-13].

***Oregonians are a third less likely to be murdered compared to other U.S. residents.***



Firearms were used in two of every three homicides; most were handguns. [Table 6-17].

Oregonians have long been at less risk of being murdered than the average U.S. resident. In 1998, Oregon's age-adjusted homicide rate was 35 percent lower than the nation's. Even so, an Oregonian was murdered every 2.6 days.

**AIDS**

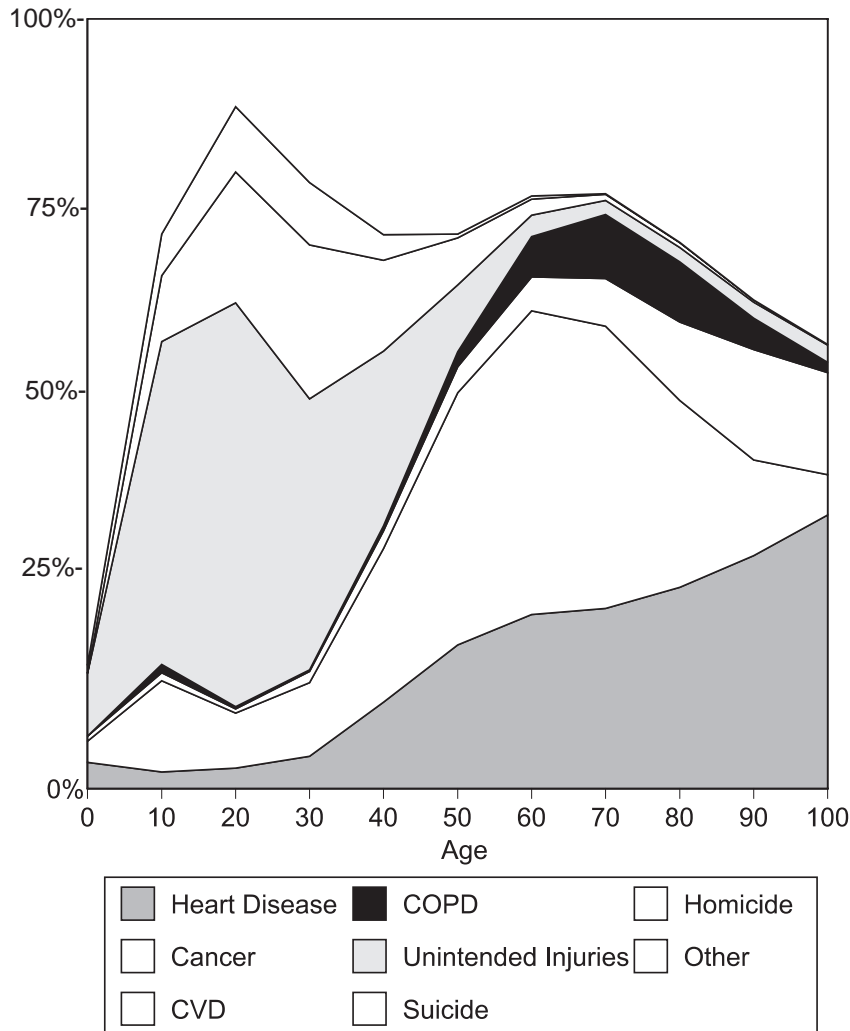
In 1994 the AIDS death rate peaked at 10.7 per 100,000 population. Since then, the death rate has fallen annually and now stands at 2.2, a 79 percent reduction. This is the lowest rate recorded since 1986. [Table 6-3]. Much of this decline can be attributed to the powerful new AIDS drug "cocktails" that are saving lives. Patients

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***The AIDS death rate has fallen to a level not seen since 1986.***

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Figure 6-13.  
Percentage of Deaths by Cause and Age  
Oregon Residents, 1998




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***The oldest Oregonian to die in 1998 was a 107 year old woman who died from congestive heart failure.***

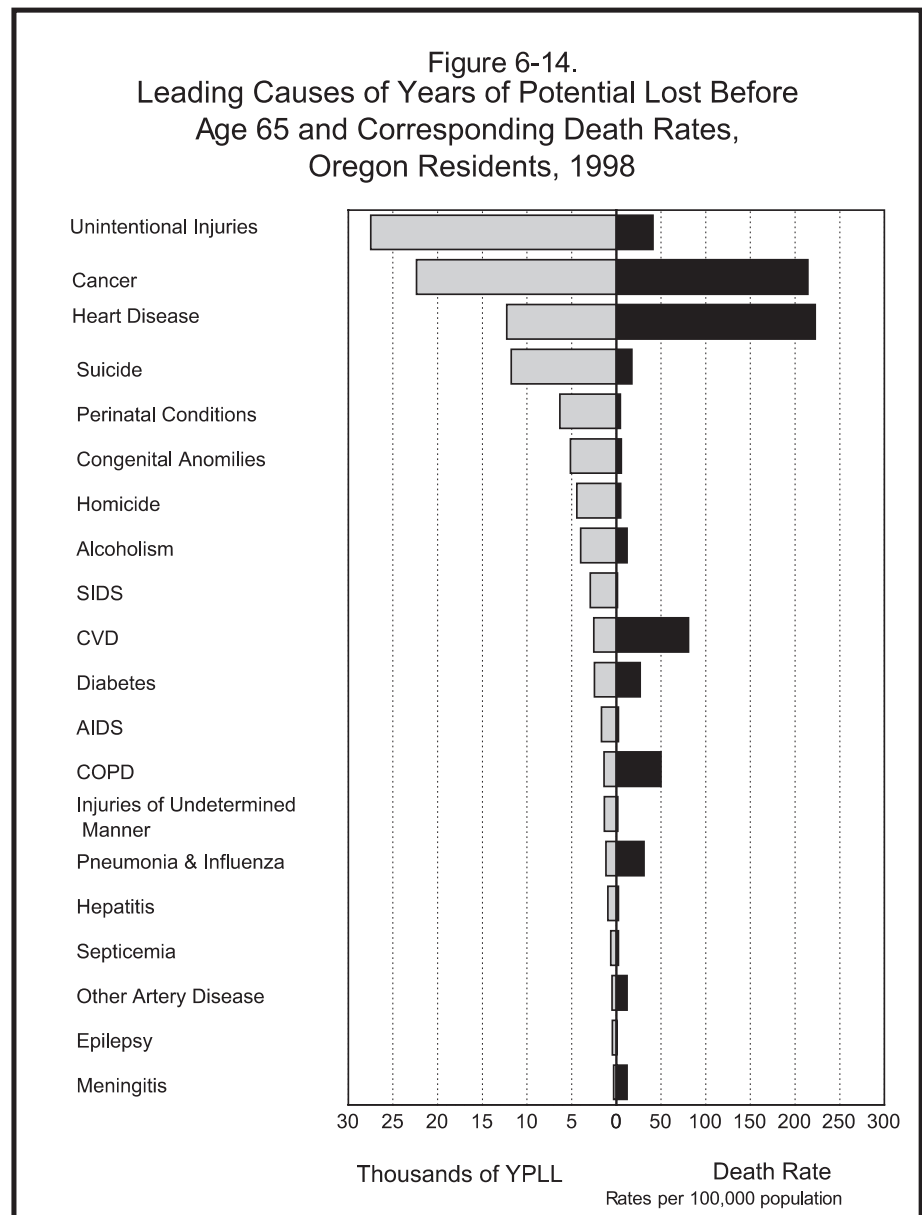
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now commonly receive more than one anti-retroviral drug plus a protease inhibitor.

Nearly all (67 or 94%) of the decedents during 1998 were males, but four were females. [Table 6-6]. Most deaths (63%) occurred among Oregonians 25 to 44 years old. AIDS was the second leading cause of death among Oregon men 25-44 years old for much of the 1990s but no longer ranks among the top five leading causes of death. [Table 6-4]. Moreover, the median age at death is at a near record high: 40 years. [Table 6-13]. In addition to the 71 deaths directly due to AIDS, the human immunodeficiency virus was reported to have contributed to another 13 deaths. [Table 6-35].

The age-adjusted death rates in Table 6-42 illustrate that Oregonians were 65 percent less likely to die from AIDS during 1998 than were Americans as a whole. An Oregonian died from AIDS every 5.1 days.

Figure 6-14.  
Leading Causes of Years of Potential Lost Before Age 65 and Corresponding Death Rates, Oregon Residents, 1998



## **YEARS OF POTENTIAL LIFE LOST**

Mortality rates alone do not show the full impact upon society of certain causes of death. The deaths of young people are a greater “cost” to society than deaths of older people in terms of years of potential life lost (YPLL).

The YPLL yardstick quantifies premature mortality occurring in younger age groups by measuring the number of years between age at death and a set standard. With the standard set at 65 years, for example, a death at age 21 results in 44 years lost. The numbers of YPLL among all decedents are then totaled. Figure 6-14 shows the disparity between death rates and the years of potential life lost. (In all references to YPLL in this report, that standard is 65 years unless otherwise noted.)

## **ENDNOTES**

1. Comparisons between Oregon and the U.S. are based on 1998 age-adjusted rates; see Table 6-42 and the Technical Notes for comments on age-adjusted rates. Oregon’s population is older vis-a-vis the U.S. population. Rates are adjusted to the U.S. standard million. All other rates are crude rates (i.e., the number of deaths divided by the population, times 100,000).
2. These and subsequent heart disease rates do not include alcoholic cardiomyopathy deaths, which are included in the alcoholism category. The totals for heart disease, including alcoholic cardiomyopathy, are given in Tables 6-6, 6-7, 6-10, and 6-32 through 6-33.
3. Unintentional injuries is preferred to the term accidents (ICD E800-E949) among health professionals.
4. Note that this figure, unlike those presented in Annual Reports prior to 1993, is based on the number of fatal injuries occurring at work [Table 6-14] rather than the National Safety Council classification system [Tables 6-15 and 6-30].
5. This complex of diseases includes alcoholic psychosis, alcoholic dependence syndrome, alcoholic gastritis, alcoholic cardiomyopathy, alcoholic polyneuropathy, and alcoholic liver disease.
6. This disparity may be partially explained by the death certificate query program administered by the Oregon Center for Health Statistics: When a cause suggestive of alcoholism is listed on the death certificate, the certifying physician is queried about the role of alcohol in the decedent’s death. About ten percent of all death certificates are queried for additional information; the role of alcohol in a death is just one of the reasons prompting a query.