

# Measuring Premature Mortality among Oregonians



Oregon Department of Human Services  
Addiction and Mental Health Division

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## **About this report**

This report was prepared by the Oregon Department of Human Services Addictions and Mental Health Division. It contains the results of a seven-year mortality data analysis to assess how Oregonians who received public substance abuse and mental health treatment compared with the general population in terms of mortality and other factors.

Data was gathered on 527,564 persons who were treated for substance abuse, mental health problems or both, between 1996 and 2005 and matched with death records from 1999 to 2005. In the seven years 20,325 individuals who received services died – 9.7 percent of the total 208,622 deaths.

## **Executive summary**

According to the analysis, Oregonians who receive public substance abuse and/or mental health treatment have an average age of death that is much lower than the general population.

In the general population, 18 percent of the deaths are for people under the age of 60. However, the percentage is much higher for people identified as having mental health and/or substance abuse issues:

- 95 percent of the deaths for those treated for both substance abuse and mental health issues were for people under 60 years old;
- 84 percent of the deaths for those treated for substance abuse only were under 60 year old; and
- 32 percent of the deaths for those treated for mental health problems were under 60 year old.

In terms of years of life lost, the numbers tell an alarming story. For Oregonians who were treated for both substance abuse and mental health and died during the study period, the average age of death was 45.1 years old. That equates to 34.5 years of potential life lost on average. For Oregonians who were treated for substance abuse only and died during the study period, the average age of death was 50.5 years old. That equates to 29.3 years of potential life lost on average.

Mental health-only treatment recipients die at the average age of 71.4, more than five years earlier than the general population. They lose 16 years of potential life compared to 12 years for the general population.

AMH clients were more likely than the general population to die of external causes. Individuals who died of external causes lost more years of potential life than those who died of other causes:

- Homicide, 40.4 years;
- Poison, 36.3 years;
- Suicide, 31.4 years;
- Substance abuse, 26.2 years; and
- Unintended injuries, 25 years.

## Introduction

Several previous studies have documented that individuals who receive publicly funded mental health and substance abuse treatment die prematurely in comparison to their peers in the general population. This analysis looks more broadly at the mental health population instead of focusing on diagnoses associated with serious mental illness as in the earlier studies. Also unique is that this study focuses on individuals with co-occurring disorders who are generally unaccounted for in other reports.

This study and previous research show that persons diagnosed with mental illness:

- Are disproportionately exposed to risk factors including substance use (10, 18);
- Have high risks associated with suicide, homicide, and unintended injuries (7, 18);
- Are economically disadvantaged (6, 14, 20, 22, 23); and
- Vulnerable to co-morbid diseases (1, 4, 8, 10, 13, 16, 17, 19).

In addition antipsychotic medications are known to elevate the chance of dying from cardiac arrest (1, 8, 13, 19). Because of these increased risks, individuals with mental illnesses die younger and lose more years of potential life (2, 3, 4, 5, 7, 10, 17, 18) than their peers in the general population. This disparity is increasing over time (21).

Other studies indicate that persons who abuse and/or are dependent on drugs and/or alcohol are at a greater risk for death than individuals in the general population or with mental disorders. Persons with substance abuse issues often die at about two-thirds of their expected life. Substance abuse/dependence also poses the highest risk of death to those with mental disorders (10, 18). For example, when those with mental illness have substance abuse issues, they die much younger than those with substance use disorder alone (2).

Risks associated with substance abuse/dependence and mental illness affect genders and races differently. Females fare better than males (2, 3) and whites live longer than blacks (9, 12, 15, 24). Some studies report that the black-white disparities are growing with time, while at least one study (24) predicts that the disparities could be eliminated within four decades. These

predictions, however, are questionable because the authors failed to account for disparities arising from situational and biological factors.

Public program leaders, health professionals, advocates and stakeholders continue to be concerned with the disproportionately high loss of life of those with substance use and/or mental health disorders (11). Efforts are under way to reduce observed disparities in mortality. Initial interventions to modify behavioral and other risks have increased life expectancy by up to five years. (25).

This analysis examined seven years of mortality data to identify and measure mortality risks and their impacts on Oregon clients who use public mental health and substance abuse treatment services. Results are discussed in terms of average age at death, age-adjusted mortality rates and years of potential life lost.

## **Methodology**

Oregonians who received at least a unit of publicly funded treatment for substance use or mental health disorders from January 1996 through December 2005 were identified in the Client Process and Monitoring System (CPMS) and matched with death records from vital statistics. Between 1999 and 2005, 20,325 persons who received treatment died – approximately 9.7 percent of all Oregonians age 15 or older who died during the same period.

The study population ( $N_s = 527,564$ ) was grouped into three mutually exclusive categories based on diagnosis during treatment. The first group consists of those with mental health disorders alone ( $n_{mh} = 226,787$ ); the second includes those with substance abuse disorders alone ( $n_{ad} = 246,899$ ); and the third group has persons with both substance use and mental disorders ( $n_{ms} = 53,878$ ).

Each group was compared with the general population on average age at death, age-adjusted mortality rates, and years of potential life lost (YPLL). The general population is defined as those who did not receive publicly funded substance abuse or mental health treatment between 1996 and 2005. Many members of the general population may have mental health and/or substance abuse issues, but it is impossible to differentiate those people with the available information.

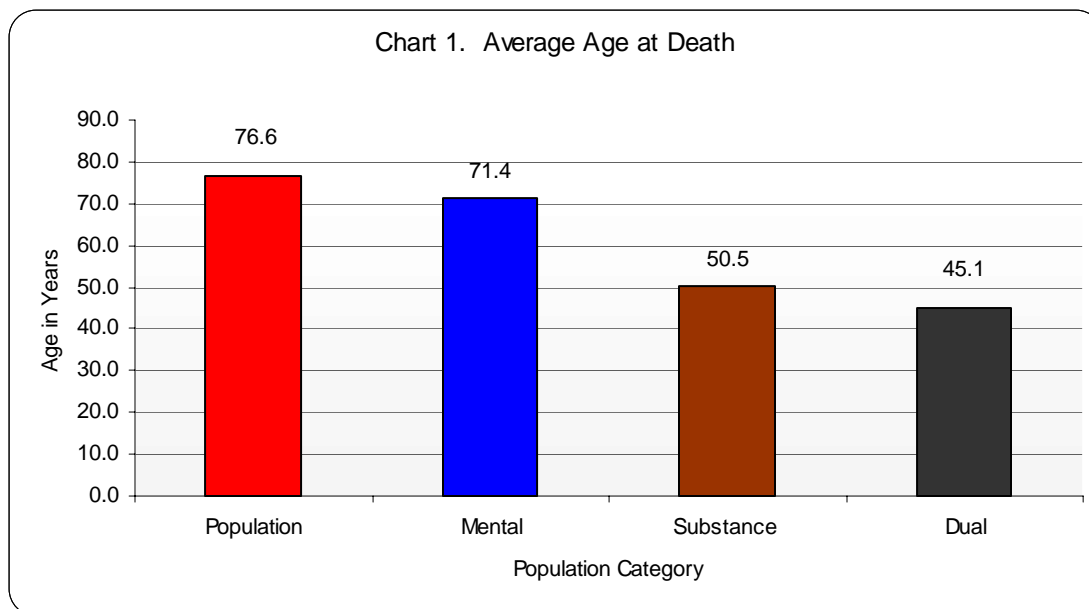
*(Note: Age and sex adjustment was performed using the 2000 standard population and YPLL is defined as the number of years deceased individuals would have lived to predetermined expected life had they not died prematurely. Primary causes of death are classified into 11 clinical categories using the International Classification of Diseases 10<sup>th</sup> edition (ICD-10) codes.)*

## Results

Program clients and the general population are predominantly white with slightly more minorities participating in the addictions program. Proportionately more women are represented in the mental health than in the general population. However, more than 80 percent of addiction program clients are men (both among those treated and those that died)

## Age at Death

A person's age at death provides the most direct measure of premature mortality. *Chart 1* compares each of the different program population groups with the general population on the average age at death. Individuals with both substance abuse and mental health disorders died at an average age of 45.1 years -- 31.5 years younger than the general population. Those with substance use disorder alone died at an average age of 50.5 years, or 26.1 years younger than their cohorts in the general population. Individuals with mental disorder alone die about 5.2 years younger than their peers in the general population.



The average age at death varies between sexes and racial groups (Chart 2). The disparity between racial groups is greater than the disparity between sexes, particularly for those with mental disorders. Non-white males with mental disorders die about 10 years younger than their white peers among the mental health treatment recipient population (68.1 years vs. 58.2 years). Similarly, non-white females with mental disorder die about 8.4 years younger than white females with mental disorders (74.6 years vs. 66.2 years).

Exposure to substance abuse substantially diminishes disparities between sexes and race groups. *Chart 2* shows virtually no statistical difference in average ages at death between males and females within each racial group or between whites and non-whites within each sex group. This observation may suggest that observed differences in mortality profiles between sexes or among races set in at advanced age, after substance abuse has already had its impact.

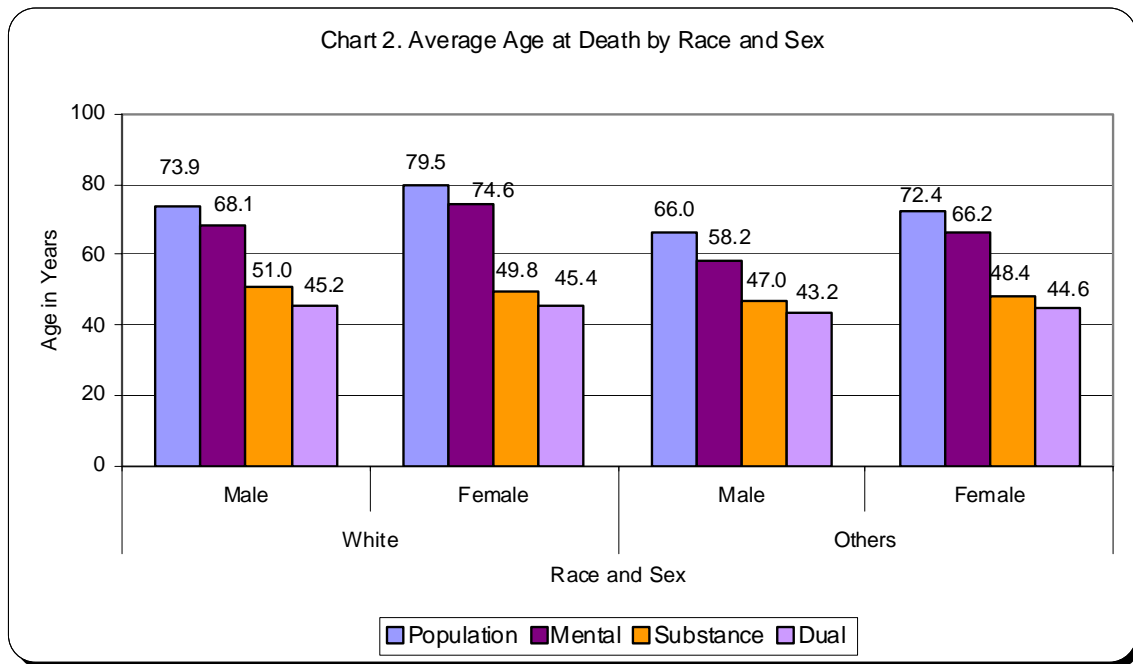
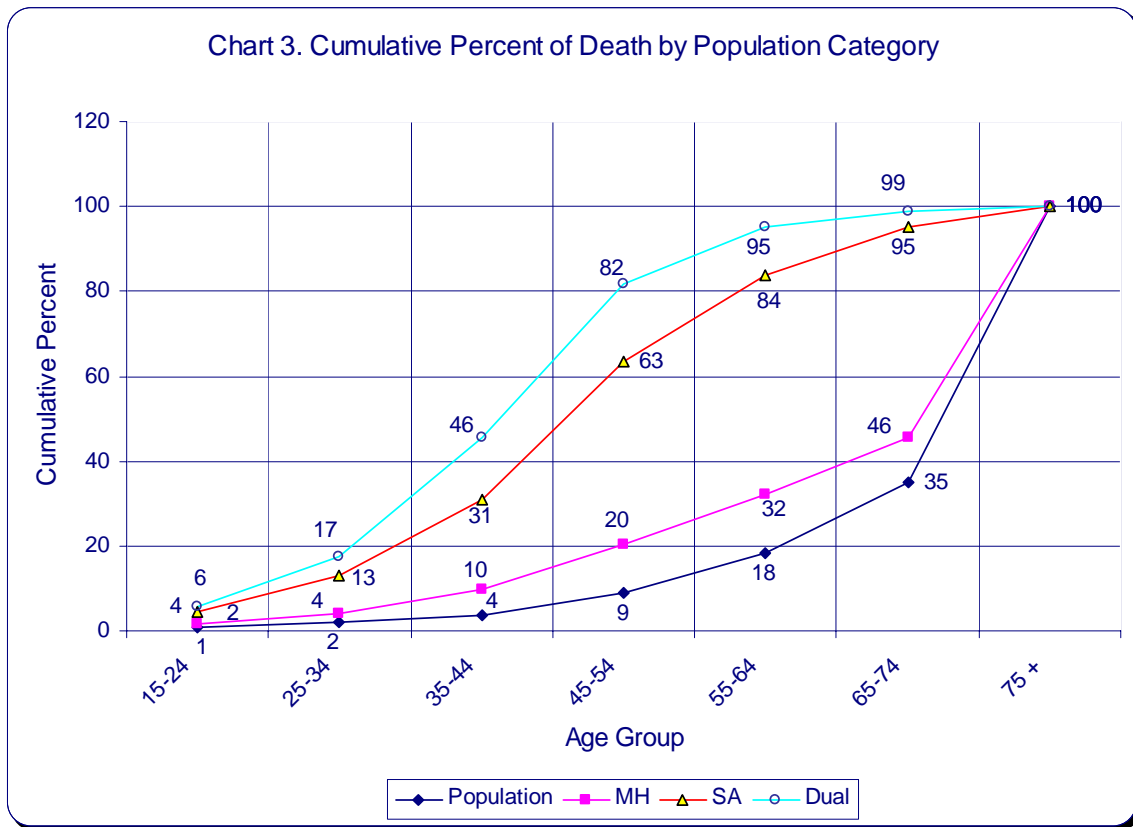


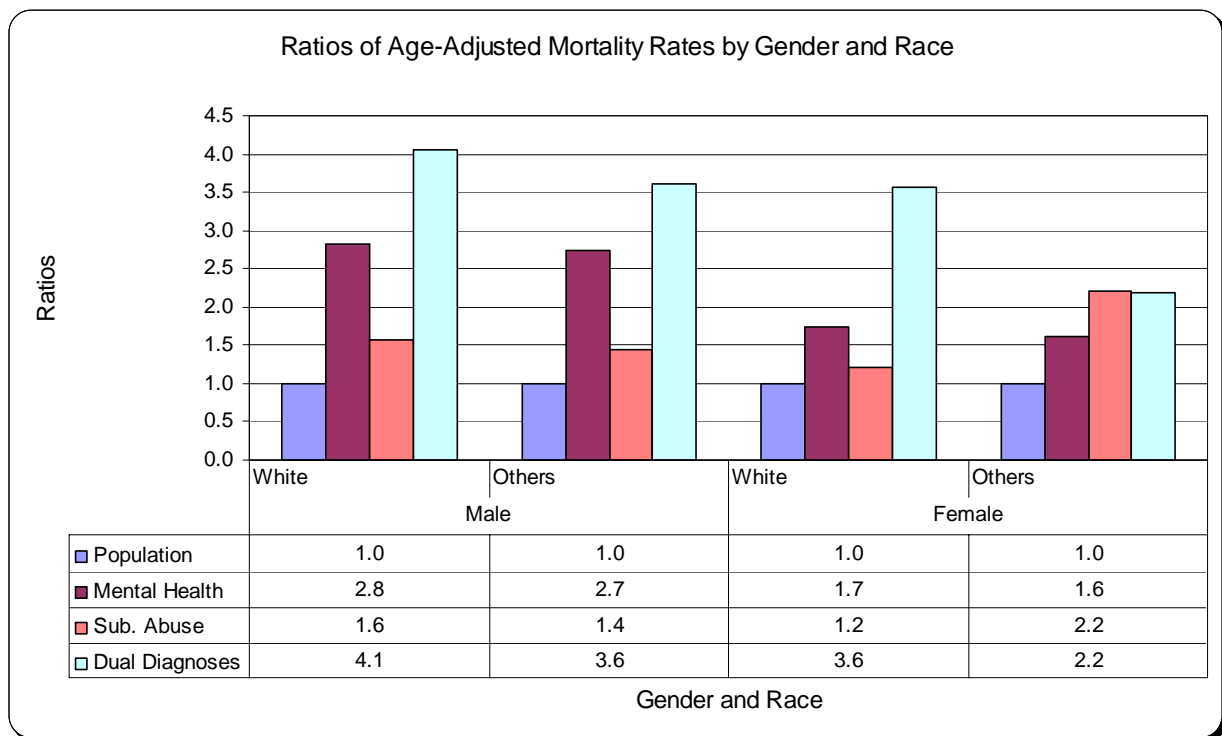
Chart 3 shows the cumulative percentage for each population group of deceased individuals by age group. More than 95 percent of mental health and substance abuse clients and 84 percent of substance abuse clients are deceased at about age 60, compared to 18 percent of the general population and just one-third of those with mental disorders. About 65 percent of the general population and 54 percent of people with mental disorders live beyond retirement age, a chance that those with substance use issues would not share.





## Age-Sex-Race (Age) Adjusted Mortality Rates

Crude death rates are adjusted for age, sex, and race using the 2000 standard population. The resulting rates (age-adjusted rates) are helpful in drawing more meaningful comparisons among population, sex, or race groups. *Chart 4* shows the ratios of age-adjusted mortality rates for persons with substance use or mental disorders to age-adjusted mortality rates of the general population. A ratio of 1.0 means the group and the general population have similar mortality experiences. The group could comprise those with substance use or mental disorders or those with both substance use and mental disorders.

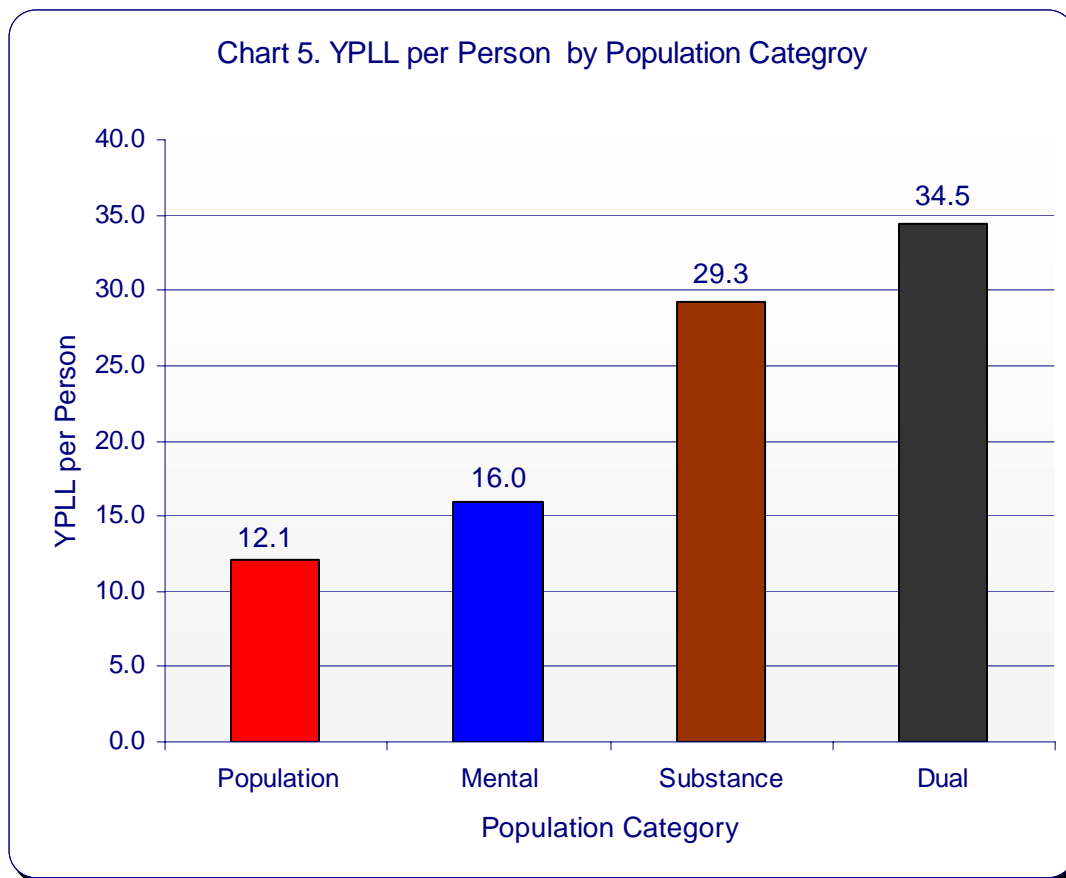


The age-adjusted mortality ratios show that exposure to both substance use and mental disorders increases white males' odds of dying by about four times (4.1). Similar odds for white females are close to four-fold (3.6) as are those for non-white males. When factoring in mental disorders, odds of dying increase for both sexes and races. However, males in both races are at a greater risk than females. There is little difference among races within each sex group.

## Years of Potential Life Lost (YPLL)

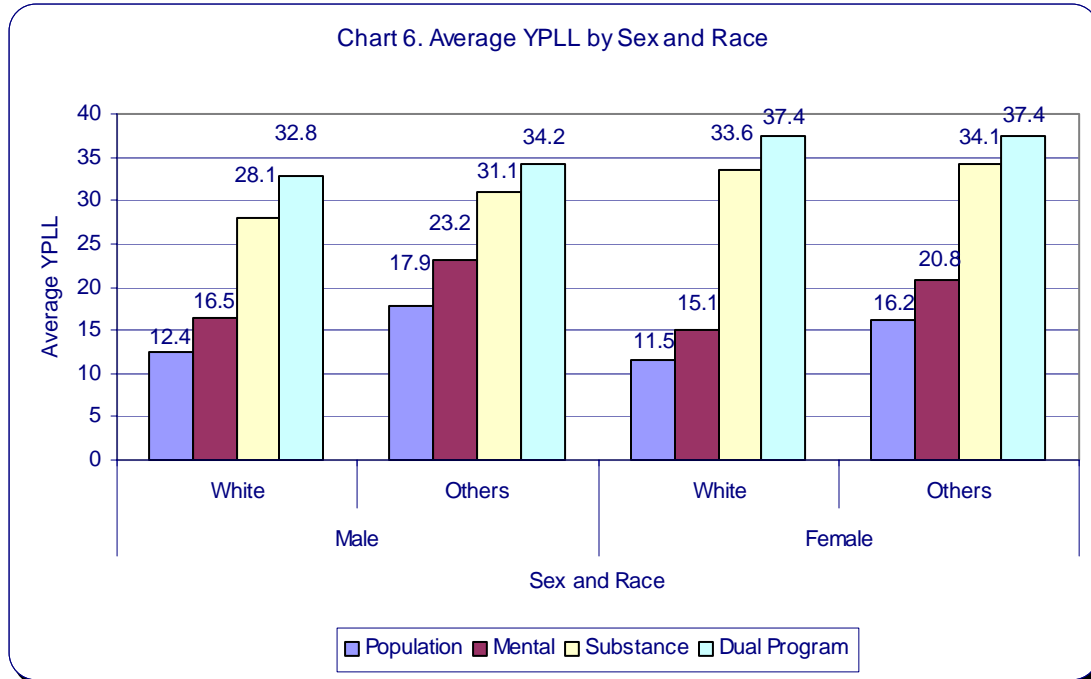
Years of potential life lost (YPLL), is the amount of time deceased individuals would have lived to a predetermined expected life, if not for dying prematurely.

*Chart 5* shows the average YPLL for each category of population in the study. Individuals with both substance abuse and mental health issues lost on average 34.5 YPL, a rate three times higher than their peers in the general population. Those with substance abuse issues alone lost 29.3 YPL, about two and half times that of the general population. Persons with mental health problems lose approximately four YPL more than the general population. This disparity is much smaller than reported in other studies because those studies do not differentiate between persons with mental health issues alone and persons with both substance abuse and mental health issues. In addition most studies focus only on population with severe mental illness, while this study is more inclusive of the full range of diagnosable disorders.



The rate of loss of years of potential life varies between sexes and racial groups. *Chart 6* shows average years of potential life lost (YPLL) by sex and racial groups. There are no perceptible differences in YPLL between males and females within their own race group.

Men and women with substance use and mental disorders had the highest rate of loss regardless of their sex or race, ranging from 32.8 YPL for white males to 37.4 YPL for white and other race females. Those with mental illness lost approximately 15.1 YPL for white females up to 23.2 YPL for males of other races. Within each racial group, females lost more YPL than males.



## Cause of Death

All causes of death are classified into 11 mutually exclusive clinical categories based on primary causes of death identified with the *International Classification of Diseases* (10<sup>th</sup> edition ICD-10).

Table 3 shows the distribution of deceased Oregonians among clinical categories, the percent share of each population group in cause-specific number of deaths (Table 3, Section I), and percent share of each cause of death in population-group specific deaths (Table 3, Section II). For example, 1,650 persons died of poison from 1995 to 2005. Approximately 24.4 percent or 403 of these persons were treated for both substance abuse and mental health problems and represent 16 percent of the dual treatment recipients who died during the seven-year period.

Approximately 60 percent of those who died of poison were treated for mental illness only (13.9 percent), or substance abuse (21.4 percent), or both substance use and mental disorders (24.4 percent). Similarly, more than 45 percent of those who died of substance abuse-related causes (1,898) were treated for mental illness only (8.5 percent), or substance abuse (20.1 percent), or both disorders (16.6 percent). Almost one in every three of those who committed suicide received treatment for either or both substance abuse or mental health issues.

Table 3. Distribution of Deaths by Clinical Category

Clinical Cause Category	Number Of deaths	I. Share of population category in Cause specific Deaths, %				II. Share of Clinical Categories in Population specific Deaths, %			
		Populatio n	Mental	Substanc e	Dual	Populatio n	Mental	Substanc e	Dual
Neoplasm	50,923	95.0	3.0	1.5	0.4	25.7	11.6	16.8	9.0
Circulatory system	72915	92.8	5.7	1.1	0.4	35.9	31.6	17.1	12.5
Respiratory system	20,023	91.2	7.1	1.2	0.6	9.7	10.7	5.2	4.6
Diabetes	6,973	88.9	9.3	1.2	0.6	3.3	4.9	1.9	1.6
Unintended Injuries	7,857	84.2	6.2	6.4	3.3	3.5	3.7	11.1	10.2
Suicide	3,710	68.5	14.4	9.3	7.8	1.4	4.0	7.6	11.5
Poison	1,650	40.2	13.9	21.4	24.4	0.4	1.7	7.7	16.0
Homicide	654	69.1	8.3	14.2	8.4	0.2	0.4	2.0	2.2
Mental illness	5,489	84.1	15.6	0.2	0.1	2.5	6.5	0.2	0.2

Substance	1,898	54.8	8.5	20.1	16.6	0.6	1.2	8.4	12.5
All others	36,530	87.3	8.6	2.7	1.4	16.9	23.8	21.9	19.7
All categories	208,622	90.3	6.4	2.2	1.2	100.0	100.0	100.0	100.0

More than half (50.2 percent) of the individuals with both substance abuse and mental health issues died of the following: unintended injuries, 10.2 percent; suicide, 11.5 percent; poison, 16 percent; and substance related causes, 12.5 percent.<sup>1</sup> Approximately 20 percent of those with substance abuse and mental health issues died of causes under the “other” category. Nearly 48 percent of these individuals died of liver problems (20.2 percent), hepatic failure (18.6 percent), and unspecified cause (8.9 percent).

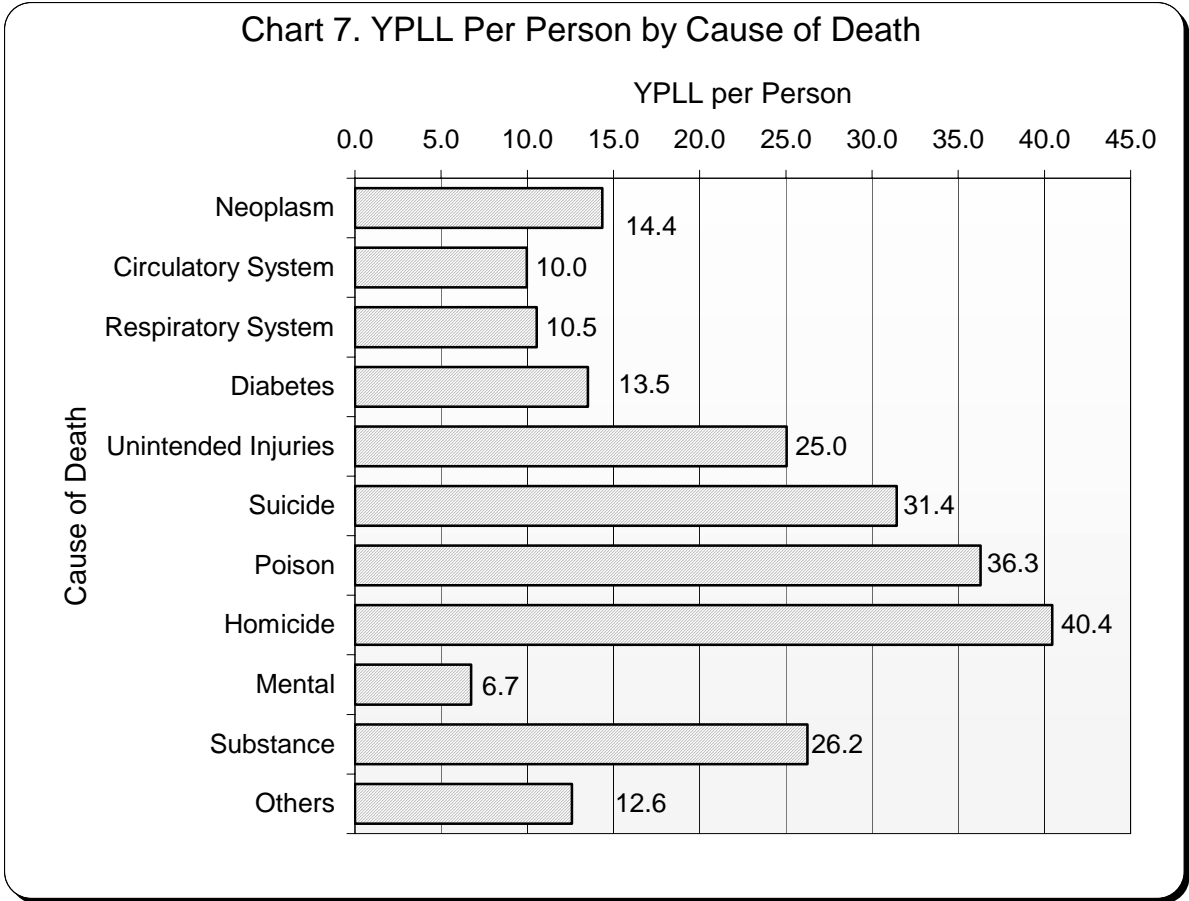
More than one-third (34.8 percent) of individuals with substance abuse issues only died of the following: unintended injury, 11.1 percent; suicide 7.6 percent; poison, 7.7 percent; and substance-related causes, 8.4 percent.<sup>2</sup> About 50 percent of those with substance use disorders died from causes in the “other” category: alcoholic liver disease, 29.1 percent; hepatic failure, 12.6 percent; and unspecified causes, 7.3 percent.

Approximately 6.5 percent of those with mental illness died of causes related to mental disorders – eight in 10 from dementia. More than 40 percent of those with mental illness died of “other” causes in the clinical category: Alzheimer’s disease, 27.7 percent; Parkinson’s disease, 6.2 percent; and unspecified causes, 6.8 percent.

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<sup>1</sup> More than 93% of those who died of substance-related causes died of alcohol-related causes (34%), opioid-related causes (24%), and multi-drug use-related causes (35%).

<sup>2</sup> More than 75% of those who died of substance-related causes died of Alcohol-related causes (51.1%) and multi-drug use-related causes (25.1%).



*Chart 7* shows average YPLL per person for each clinical category. Individuals who died of external causes (unintended injuries, suicide, poison, homicide, and substance) lose about 29 YPL about 2½ times more than all other causes. Persons who die of homicide tend to be young (average age at death 38.4) losing 40.4 YPL. Those who died of poison and suicide lost more than 36 and 31 YPL, respectively.

## **Summary**

This study confirms many of the findings in other studies, including previous work by the Oregon Department of Human Services Addictions and Mental Health Division. Unlike most published reports, however, this study takes a broader look at the mental health population instead of focusing on a few select diagnoses generally associated with serious mental illness. Another unique component is the focus on individuals with co-occurring disorders, which is generally absent from other reports.

It is clear that people who receive services in the public mental health and substance abuse treatment system have many risks that may increase the likelihood of premature death. This report cannot account for all of those risks, but mental health and substance abuse issues likely compound them. The data shows that early death is more likely when the disorders are concurrent.

Worth exploring in greater detail are differences between this report and other studies about the years of potential life lost for persons with mental illness. Accounting for co-occurring disorders is likely one factor, but additional analysis -- limiting the current data to serious mental illness -- would help determine if the study differences remain.

This report demonstrates another issue -- many people die from substance abuse related issues, but never touch the public treatment system. It is possible that many of these people may have received privately-funded services, but the study suggests that there are many people who could have benefited from service but did not receive it.

## **Conclusion**

This report highlights that mental health and substance abuse is an important quality of life issue for Oregonians. Dying prematurely not only destroys human potential, but has an economic impact as well. DHS Addictions and Mental Health Division recently enacted a wellness initiative to better understand this issue and develop long term plans to address it.

The DHS Addictions and Mental Health Division wellness initiative involves a task force of people working together on real, tangible, life saving strategies that impact Oregonians living with mental illness and substance abuse disorders, together with community service providers and government agency staff.

Reports, studies, and articles support what we have suspected and known for some time now:

- We must treat and support the whole person.
- Care coordination and wellness screening is essential.
- Access to a range of health care options as well as basic health care must be afforded to all Oregonians.
- Early intervention and prevention across the life span does save lives and make a difference in reducing YPLL numbers, while improving quality of life for persons with a mental illness and/or a substance use disorders.
- Medication management and medication empowerment education will equip persons taking prescriptions, as part of their person-centered treatment plan, with the tools and personal strength to ask questions and work along side treatment providers to find healthier and more effective ways to support recovery and wellness.
- Disparities equal discrimination. Right now disparities exist for health care coverage, accessing services, having a voice at the legislative table for persons with behavioral health disabilities, and finding culturally appropriate treatment programs. Oregon has a rich opportunity to lead the way to wellness for all of its citizens.

The DHS Addictions and Mental Health Division, through the wellness initiative, will:

- Fund grassroots person-to-person wellness efforts to support education and life style changes at the individual level,
- Fund community education programs in medication management and empowerment,
- Work with partner DHS and community agencies to implement changes in care coordination, planning and wellness screening,
- Develop a mechanism to increase the use of peer-to-peer support services so that individuals can find the side-by-side support needed to successful in life style changes, and

Seek “wellness champions” among our legislative and administrative leaders to create sustainability for a statewide wellness effort.



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