

Tri-County Region Opioid Trends

Clackamas, Multnomah, and Washington, Oregon

2016



Staff from the public health departments of Clackamas, Multnomah, and Washington counties produced the content of this special report in collaboration with the Oregon Public Health Division of the Oregon Health Authority and Health Share of Oregon.

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"We have to help the country see that addiction is a chronic disease like diabetes or heart disease. If we help people see that it will make it easier for folks to come forward. It will make it easier for communities to support treatment programs in their neighborhoods."

--Dr. Vivek Murthy, United States Surgeon General

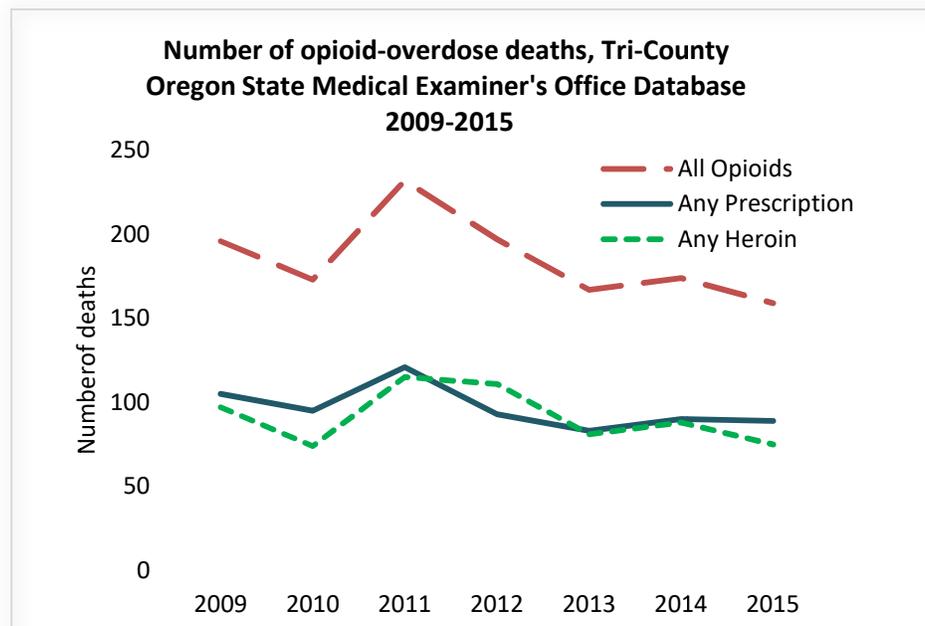
Executive Summary

The purpose of the 2016 *Tri-County Region Opioid Trends* report is to provide the public, community advocates, physical and behavioral health providers, and policy makers with accurate quantitative data about a pervasive problem. The report is organized in five chapters: fatal overdoses, 9-1-1 overdose responses (non-fatal overdoses), opioid prescribing trends, syringe exchange trends and client survey, and substance use treatment. In the following pages, the key points of each chapter are summarized alongside considerations for future policy; in the discussion section, we identify data gaps and analytic challenges.

While deaths have diminished since the peak in 2011, we are disappointed to report there has been little decrease in fatal overdoses in the Tri-County region over the last three years. Although half of all opioid deaths are caused by prescription pain pills, legal opioid prescribing remains persistently high; more than one in five people in the region receives an opioid prescription every year. Although our efforts at harm reduction through syringe exchange prevent the spread of HIV and hepatitis C, the high demand for syringes suggests that injection drug use may be increasing. Finally, we are deeply concerned that many of those suffering from addiction want treatment to reach long-term recovery but do not receive it.

Fatal Overdose

Both Oregon Medical Examiner records and National Vital Statistics analysis show that total opioid deaths in the Tri-County peaked in 2011 but remain stubbornly elevated. In 2015, prescription opioids and heroin killed similar numbers of people in our region but, in contrast to national trends, heroin deaths here have not increased. Deaths from pain pills remain persistently elevated.

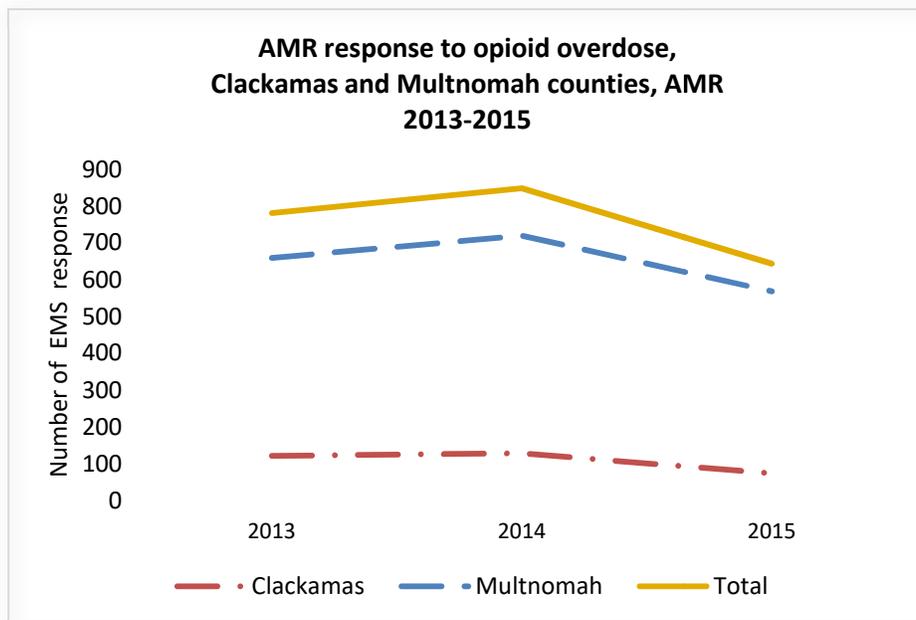


Across the Tri-County region in 2015 there were:

- 159 fatal opioid overdoses; two thirds occurred in Multnomah County.
- Deaths occur at younger ages among males than females in all three counties.
- Deaths from heroin occur at younger ages than from prescription opioids in all three counties.
- Over 90% of opioid deaths occurred among those of white race.

9-1-1 Overdose Responses (Non-Fatal Overdose)

Naloxone is the antidote for opioid overdose and can prevent death if given early after respiratory depression begins. One measure of the frequency of non-fatal opioid overdose is how often paramedics successfully use naloxone to revive patients. From 2014 to 2015, we noted a substantial decline in such ambulance naloxone responses. The decreased need for naloxone after 9-1-1 response may reflect either fewer overdoses or more frequent bystander administration of naloxone.



American Medical Response ambulances provided service in Clackamas and Multnomah Counties; in 2015:

- There were over 600 overdose responses in Clackamas and Multnomah counties, with 88% of these occurring in Multnomah.
- In Multnomah County, over half of responses occurred in public places or businesses; most of the remainder occurred in private residences.
- In Clackamas County, two thirds overdose responses were to private residences.
- Data were available for Washington County but were not comparable to Clackamas and Multnomah because there is a different ambulance company operating in that county.

Overdose Policy Considerations

This report illustrates that opioid deaths in the region have declined from a peak in 2011-2012, but that progress in preventing fatal overdose has slowed. While we are pleased to report a trend toward slightly fewer EMS responses to opioid overdose, our optimism is tempered because more widespread use of naloxone by the public may cause EMS records to underestimate the true number.

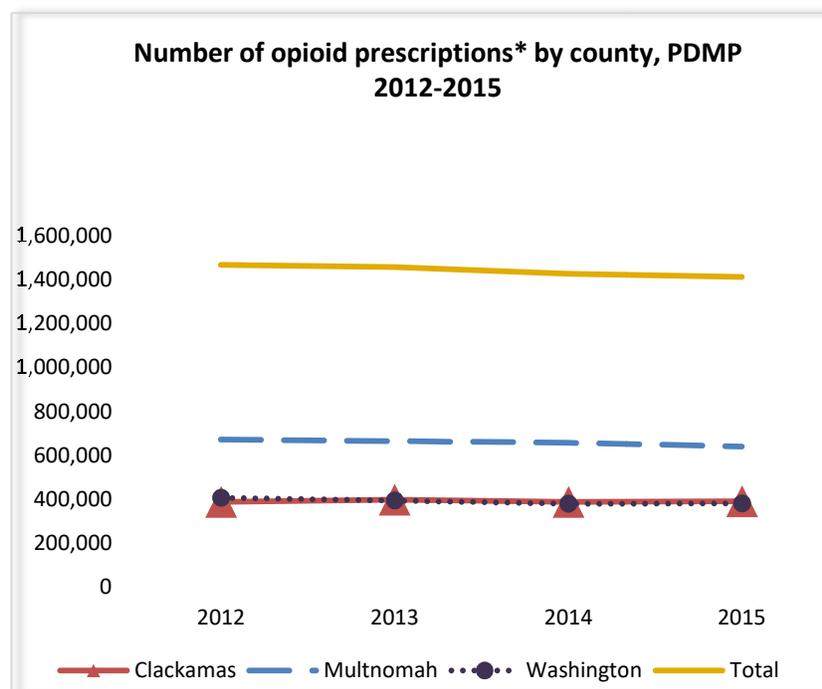
Decreasing the number of opioid users, providing better treatment for chronic pain, and providing more high quality addiction treatment will be needed to turn the tide on overdose fatalities. In the short run, better data and increased access to the antidote naloxone can prevent fatal overdose among opioid users. To do so, policy makers may wish to consider:

- Changing naloxone to over-the-counter status because it is not a drug of abuse.
- Adopting lessons learned from State and National evaluations of successful naloxone programs.
- Promoting state, local, and health-insurer policies that include naloxone prescription coverage for members, and encourage community pharmacies to stock naloxone.
- Providing incentives and support for law enforcement and other community first responders to understand, carry, and use naloxone.
- Linking naloxone administration to recovery treatment.
- Developing media campaigns for the public to learn about fatal overdose prevention with naloxone.
- Facilitating bulk purchasing of naloxone to decrease cost.
- Disseminating regular, detailed reporting of fatal and non-fatal overdoses by county.

Opioid Prescribing

Prescription opioids can be used appropriately for pain, misused by the intended patient, misused by others, or diverted for illegal sale. Excessive prescribing is likely to be an important driver of the opioid epidemic in Oregon for several reasons.

*Excludes tramadol which was added to PDMP in mid 2014.



First, the higher rates of opioid prescribing are tightly correlated with fatal overdose and substance use treatment admissions. Second, in national polls, 75% of current heroin users report first becoming addicted to prescription pain pills; a 2016 survey at our regional syringe exchanges found more than 50% of heroin users reported getting hooked on pain pills before switching to heroin. Finally, compared with other states, Oregon has consistently high rates of opioid prescribing, especially for long-acting versions of these drugs.

Analysis of de-identified data from the Oregon Prescription Drug Monitoring Program (PDMP) showed that:

- There has been little decrease in the number of total opioid *prescriptions* and total opioid prescription *recipients* from 2012 through 2015.
- In each county, more than 20 of every 100 residents received an opioid prescription in 2015.
- While Clackamas County has the highest prescribing rate in the region, residents of all three counties frequently receive opioids.
- In 2015, retail pharmacies dispensed over 1.4 million opioid prescriptions to residents of the region which has a total population of approximately 1.7 million.
- The rate of prescribing increases steeply after age 15 and is highest in those ages 65-74.
- The overall rate of prescribing is higher in Clackamas County and higher in younger age groups compared with Multnomah and Washington counties.
- Females are prescribed opioids at a higher rate than males in all three counties.

Prescribing Policy Considerations

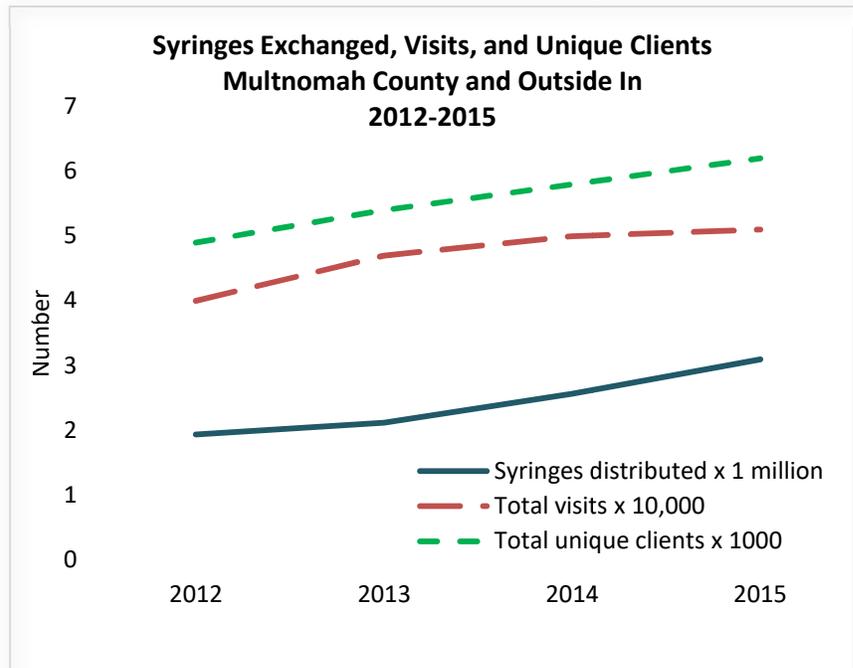
Although the misuse of prescription opioids has been widely publicized, this new analysis shows that through the end of 2015, the medical community in our region continues to dispense opioids at a high rate. In 2015, doctors, nurses, physician assistants, naturopaths, and dentists wrote nearly as many as many opioid prescriptions as there are people alive in the region. While there are many appropriate uses of opioids, our region's volume of prescribing per capita is beyond many other states and far in excess of the rate of prescribing in other countries. Policy options for addressing excess prescribing include:

- Encouraging Oregon licensing boards to include PDMP registration as part of licensure.
- Enhancing Oregon's PDMP to provide alerts to practitioners for possible unsafe prescribing.
- Allowing the PDMP program to partner with licensing boards to provide education to providers prescribing outside of the state-adopted CDC guidelines.
- Partnering of Oregon with neighboring states to provide cross border sharing of prescribing information.
- Developing metrics with insurers and health systems to monitor prescribing patterns.
- Enhancing links from the PDMP to electronic medical records to increase safety and decrease burden on providers.
- Providing incentives for free drug disposal to decrease the quantity of unused opioid pills
- Evaluating safe prescribing programs from other states.

Syringe Exchange

Syringe exchange is one part of a comprehensive public health approach to prevent the spread of HIV/AIDS, hepatitis C, and other blood-borne pathogens among injection drug users. Because most syringe exchange clients report using heroin, the clients of these programs can provide insight into the population suffering from opioid addiction and the need for substance use disorder treatment.

The syringe exchange programs run by Outside In and Multnomah County report:



- More than 3 million syringes exchanged in 2015, a 59% increase since 2012.
- More than 6,000 unique clients served in 2015; 70% were male, 78% white non-Hispanic race.
- 63% of first time clients in 2016 reported injecting heroin as the primary drug.
- Methamphetamine use among syringe exchange clients has increased from 38% in 2010 to 83% in 2016.
- In 2015, 40% of syringe exchange clients were homeless; an additional 27% reported an unstable housing situation.
- Among heroin users, 51% reported first being hooked on prescription pain pills.
- More than half of heroin users surveyed wanted to quit or cut down but report many barriers to treatment.

Substance Use Disorder Treatment

Comprehensive substance use disorder data are not available for the Tri-County region. In light of this limitation, Health Share of Oregon (Health Share), the state's largest Coordinated Care Organization serving 220,000 low income members, provided information as a proxy for the Tri-County; the Tri-County region also has Medicaid members served by FamilyCare. Analysis of Health Share of Oregon data shows:

- Opioid use disorder accounted for approximately 40% of all substance use disorder claims (other substance use disorders include alcohol, amphetamines, cocaine, marijuana, etc.).
- In 2015, nearly 5,000 Health Share members had a primary opioid substance use disorder claim.
- Comparison between the three metro area counties suggests possible gaps in the continuum of care, especially in Clackamas and Washington counties.

Opioid Substance Use Treatment Policy Considerations

Physical dependence and addiction to opioids is difficult to accurately measure. Our partnership Health Share provides some insight from medical claims into the magnitude of the problem, the services currently provided, and the characteristics of those in treatment. These data also suggest that there are geographic gaps in the availability of recovery services even in the most populated region in the state. This analysis also finds that among Medicaid clients, opioid drugs are the most frequent reason for substance use disorder treatment in our region. Between analysis of Health Share claims data and responses to the survey conducted at syringe exchange sites, we worry that treatment is not uniformly accessible and many receive no treatment at all in a given year. Despite the limitations of our methods, our local observations are broadly consistent with recent findings from the 2013 National Survey on Drug Use and Health that found that more than 75% of those with prescription opioid use disorders received no treatment in the previous year.¹

Policy options to consider include:

- Updating and sharing a regional inventory of substance use disorder treatment options.
- Identifying gaps in substance use disorder treatment capacity.
- Eliminating or decreasing barriers to accessing opioid use disorder treatment.
- Requiring payers to use consistent criteria for level of addiction treatment.
- Eliminating payer policies that require clients to ‘fail first’ at one treatment before having access to other options.
- Requiring all payers and providers to support medication assisted opioid addiction treatments.
- Providing incentives for prompt treatment after overdose reversal by naloxone.
- Convening health care payers and treatment providers to collaborate on quality, metrics, and reimbursement for addiction treatment.
- Providing incentives for primary care office-based opioid use disorder treatment.

¹ Center for Behavioral Health Statistics and Quality. (2014). *2013 National Survey on Drug Use and Health: Detailed Tables*. Rockville, MD: Substance Abuse and Mental Health Services Administration.

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Acknowledgement and Authorship

Fatal Overdoses

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9-1-1 Overdose Responses (Non-Fatal Overdoses)

Thanks to Maciek Sobieraj at American Medical Response for pulling and analyzing the EMS response data for Multnomah and Clackamas counties. We also thank him for his tireless work helping to improve the algorithm and reliability of our data by reviewing 200+ medical records, along with Paul Lewis and Amy Zlot from Multnomah County and Amanda Brunton from Clackamas County. Thanks to Gene Fry for pulling the data from Metro West Ambulance Technical Services for Washington County. Amanda Brunton, Amy Zlot, and Washington County's Kathleen Rees wrote this section.

Opioid Prescribing Trends

We appreciate Josh Van Otterloo, Oregon Public Health Division, for his help analyzing PDMP data. Amanda Brunton, Kathleen Rees, Amy Zlot, and Josh Van Otterloo wrote this section.

Syringe Exchange Trends and Client Survey

The following people were crucial in collecting a large amount of data in a very short period of time. We thank them for their effort and dedication: Sarah Abuelkhair, Zoe Arends-Derning, Angela Buckwalter, Katie Chickadonz, Andrew Lozovoy, Mike May, and Haven Wheelock from Outside In; Erin Browne, Alex Coleman, Kelsi Knavel, Emma Jo Neumann, and Molly Steele from Multnomah County. Lindsay Jenkins from Multnomah County wrote this section.

Substance Use Treatment

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Leadership, Editing, and Technical Assistance

Paul Lewis, Tri-County Health Officer/Multnomah County Health Officer; Christina Baumann, Washington County Health Officer; and Sarah Present, Clackamas County Health Officer provided leadership for this project. Thanks to Multnomah County staff: Claire Nystrom and Tyler Swift for editing, David Dowler for providing technical input, and Chris Sorvari for editing and managing the development of this publication. Special thanks to community member, Valivann Seangly, for editing figures.

Introduction

The prolonged upsurge in United States opioid overdoses since the late 1990s continues to shorten lives, damage brains, and destroy relationships. While unmatched for providing relief from severe pain, the wrong dose of pain pills or heroin quickly kills by causing breathing to cease. Besides sudden fatal overdose, continuous use of opioids invariably leads to physical and often psychological dependence; the term addiction is used when this dependence interferes with normal social functioning and personal obligations.

In November of 2016, The United States Surgeon General, Dr. Vivek Murthy, released a report discussing alcohol, drugs and health. According to the information in the report, “*20.8 million people in the United States have a substance use disorder (not limited to opioids), equivalent to the number of Americans with diabetes.*”² In response to this troubling finding, he has asked the country to see addiction as a chronic disease and a public health priority.

Specific to the unprecedented levels of opioid misuse, dependence, and addiction, Dr. Murthy sent 2.7 million letters in August 2016—one to each licensed prescriber in the United States—urging providers to help curb the misuse of prescription drugs, one of the major contributors to this preventable epidemic.

The year 2008 provides context to help understand the magnitude of deaths from opioid misuse. That year, drug overdoses first surpassed fatal motor vehicle accidents as a cause of death in Oregon and in the United States as a whole. Since then, drug-overdose deaths have increased almost everywhere in the country.

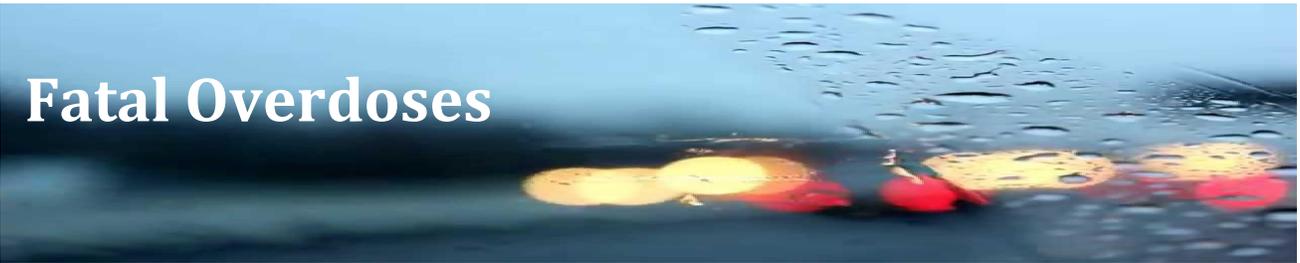
While the opioid death count is a striking measure of opioid harm, other, non-fatal, drug complications are far more frequent. For every death there are an estimated 26 non-fatal overdoses and approximately 100 additional people suffering from opioid dependence and addiction. Other harms linked to opioid misuse such as criminality, job loss, homelessness, and destruction of relationships are hard to measure, but, if included, dramatically expand the scope of damage.

This report captures some of the magnitude and breadth of opioid harms in our neighborhoods, cities, and counties. It builds on the *Opiate Trends Multnomah County, 2004-2014* report,³ by expanding to include neighboring Clackamas and Washington counties, increasing the number of outcomes measured, and refining and validating the measures used. This current report provides an assessment of fatal and non-fatal overdose; drivers of the epidemic, such as rates of opioid prescribing; harm reduction interventions like syringe exchange and naloxone distribution; and our community’s capacity to provide pathways to recovery for those suffering from addiction.

² <https://addiction.surgeongeneral.gov/surgeon-generals-report.pdf>

³ <https://multco.us/file/47548/download>

Fatal Overdoses



Background

Over the past two decades, opioid-related deaths have become an increasingly prominent public health issue in the United States. Reliable and up-to-date data are critical to inform public health responses and community-based interventions. National and state agencies can rely on delayed information (i.e., vital records) to produce broader descriptive reports, but for effective and immediate response, local agencies require more timely surveillance tools. Medical Examiner data is one source of timely information that can be used to ascertain trends in opioid-related deaths.

Methods

The State Medical Examiner's Office maintains a database for all deaths investigated under its jurisdiction. Data in the following sections are based on case reports for deaths investigated by the Medical Examiner (ME) in Clackamas, Multnomah, and Washington counties. According to ORS 146.090, the Medical Examiner investigates and certifies the cause and manner of all human deaths that are:

- Apparently homicidal, suicidal, or occurring under suspicious or unknown circumstances;
- Resulting from the unlawful use of controlled substances or the use or abuse of chemicals or toxic agents;
- Occurring while incarcerated in any jail, correctional facility, or in police custody;
- Apparently accidental or following an injury;
- By disease, injury, or toxic agent during or arising from employment;
- While not under the care of a physician during the period immediately previous to death;
- Related to disease which might constitute a threat to the public health; or
- In which a human body apparently has been disposed of in an offensive manner.

While the ME should be involved in all drug-related deaths, the ME does not conduct an investigation in some rare cases, generally due to reporting errors. Overall, for capturing information on opioid-related deaths, ME data are considered an effective source for rapidly collecting this information.

Deaths were included in this report if the primary or contributing causes of death involved at least one of the following: prescription opioid, heroin, or an unspecified opioid. All manners of death (i.e., suicide, accident, homicide, and unspecified) were included. Any differences between numbers presented here and reports published by the ME are the result of different case definitions related to cause or manner of death.

The county associated with a case is based on the ME's determination of jurisdiction, not on residence of decedent. Data were examined for Clackamas, Multnomah, and Washington counties for the years 2009 through 2015. Categorization of specific drugs into opioid categories was based on a prior assessment of our surveillance system. A list of search terms can be found in the Appendix (ME APPENDIX Table 1). In some investigations, the specific opioid responsible is not identified in the records. In this report, this category is referred to as "unspecified opioid."

Demographics were calculated using basic frequencies, while historical trends were analyzed in two different ways. First, Poisson regression was utilized for count data to compare change across the seven years. This analysis was repeated with each year set as the reference to look at comparisons between individual years. Second, to compare 2015 to the six previous years collectively by individual county, a one-sample median test was employed. This test allowed for calculation of the six-year median and comparison to the 2015 total without requiring normal distribution of the data. All analyses were conducted in SAS 9.3 using a significance level of 0.05.

It is not possible to calculate death rates by county due to the facts that deaths investigated by the ME are assigned to a county based on where the death occurred rather than the residence of the deceased and that address information for the deceased is sometimes incomplete (as a result, the denominator, or the population at risk for a death investigated by the ME, is unknown, precluding calculation of a rate). Rates are an important measure of risk, because they take the underlying population distribution into account. As an alternative, we display rate data for some indicators from the Centers for Disease Control and Prevention's (CDC) WONDER,⁴ which is an ad-hoc query system for public health data. Detailed mortality data are available by state and county, as well as by cause of death. Due to smaller numbers for some counties, we have combined multiple years of data to avoid unstable or suppressed values. ME data and WONDER data are not directly comparable and comparisons between the two systems should be made with caution. The definitions used for CDC WONDER data are as follows:

- Total opioid: Underlying cause of death X40-X44, X60-X64, X85, Y10-Y14 (drug poisoning), plus any multiple cause of death T40.0 (opium), T40.1 (heroin), T40.2-T40.4 (opioid pain relievers), T40.6 (other and unspecified narcotics).
- Heroin: drug poisoning as above, plus multiple cause of death code T40.1.
- Opioid pain reliever (prescription): drug poisoning as above, plus multiple-cause of death codes T40.2-T40.4.

Data are age-adjusted to the U.S. Standard 2000 population, which removes any differences in underlying mortality due only to differences in age composition (see Glossary of Terms for more information on age adjustment).

⁴ The Multiple Cause of Death data available on CDC WONDER are county-level national mortality and population data. Data are based on death certificates for U.S. residents.

Results

Total opioid-related deaths

Between 2009 and 2015, there were a total of 1,298 deaths related to opioids in Clackamas, Multnomah, and Washington counties. Overall, around two thirds of deaths occurred in Multnomah County (Table 1). The number of opioid-related deaths in 2015 was not significantly different from the 2009-2014 median value in Clackamas (26 deaths, median 27) and Washington (30 deaths, median 35) counties, but was significantly lower than the median value in Multnomah County (103 deaths, median 121).

Table 1: Number and percentage of opioid-related deaths, Clackamas, Multnomah, and Washington counties, State Medical Examiner’s Office Database, 2009-2015

	Clackamas		Multnomah		Washington		Total	
	Number	%*	Number	%*	Number	%*	Number	%*
2009	38	19	124	14	34	15	196	15
2010	23	11	117	14	33	14	173	13
2011	40	20	156	18	36	15	232	18
2012	27	13	131	15	39	17	197	15
2013	26	13	118	14	23	10	167	13
2014	24	12	112	13	38	16	174	13
2015	26	13	103	12	30	13	159	12
Total**	204	16**	861	66**	233	18**	1,298	100**

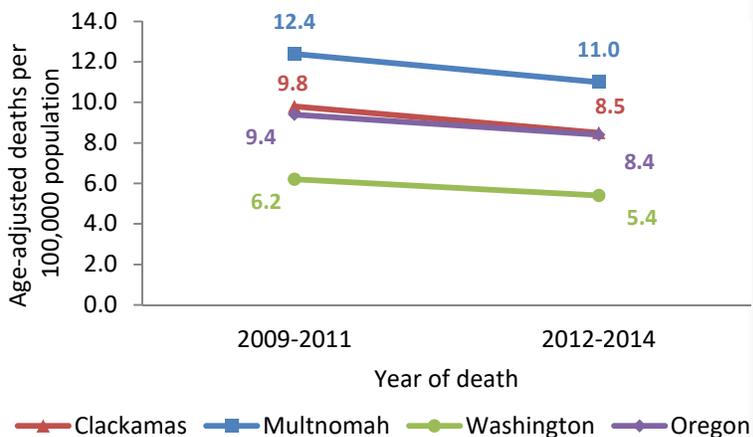
* Percent of county six-year total opioid-related deaths

**Percent of Tri-County total, six-year total opioid-related deaths

Using CDC WONDER to calculate death rates due to total opioids, all three counties reflect the statewide trend of a decreasing rate of deaths related to any opioid between 2009 and 2014 (Figure 1).

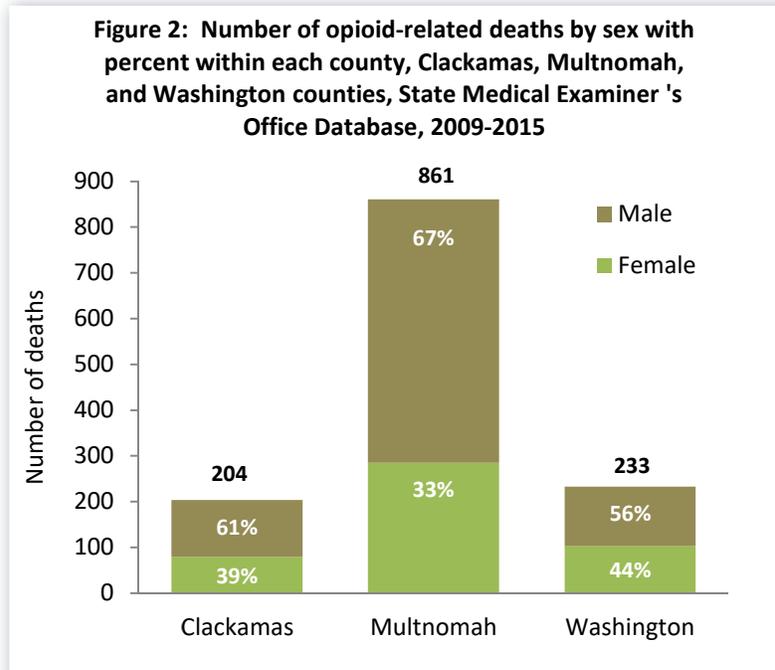
For all counties, as well as statewide, death rates from total opioids were higher in 2009-2011 than they were in 2012-2014.

Figure 1: Age-adjusted opioid-related death rates (per 100,000 population), Clackamas, Multnomah, and Washington counties, plus Oregon total, CDC WONDER, 2009-2014



Sex and total opioid-related deaths

Men accounted for a larger proportion of total opioid-related deaths between 2009 and 2015 in each of the three counties, ranging from 56% in Washington County to 67% in Multnomah County (Figure 2).



Total opioid deaths by age and sex

Decedents in Washington County were slightly older (mean, 43 years) than those in Clackamas (mean, 41 years) or Multnomah (mean, 42 years) counties (data not shown).

Female decedents were significantly older than male decedents in all three counties. From 2009 to 2015, females were about eight years older than males in Clackamas County, on average; two years older in Multnomah County; and five years older in Washington County (Table 2).

Table 2: Mean (minimum, maximum) age at death* by county and sex, total opioid deaths, Clackamas, Multnomah, and Washington counties, State Medical Examiner's Office, 2009-2015

	Female	Male
Clackamas	46 (21,74)	38 (16,76)
Multnomah	44 (19,89)	42 (15,87)
Washington	46 (15,84)	41 (18,86)

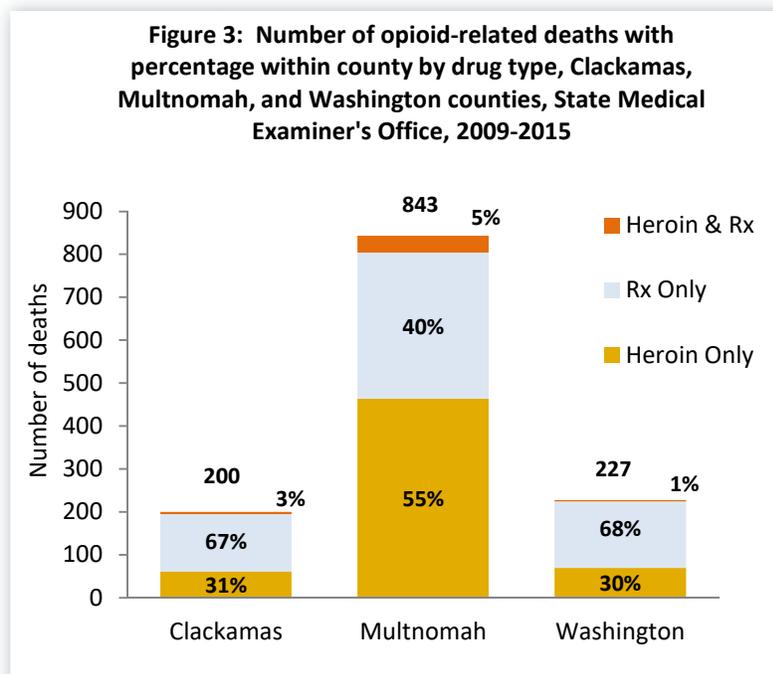
*Excludes one death in a one-year-old and one death in a two-year-old

Race and total opioid deaths

From 2009 to 2015, there was minimal fluctuation in the proportions of opioid-related deaths accounted for by different racial and ethnic groups in all three counties. Overall, 94% of deaths investigated during this time period in Clackamas and Washington counties were in White decedents, compared to 90% in Multnomah County. Black/African American decedents accounted for 5% of all deaths in Multnomah County between 2009 and 2015 (data not shown). According to Census 2010 demographic data, Multnomah County was 5.6% Black/African American alone (7.1% for Black/African American alone or with another race) and 76.5% White. These data suggest that Whites are overrepresented among decedents; however, there are not enough data to be conclusive. Thirty-five decedents (~5%) in total had no race listed.

Drug-specific opioid trends

From 2009 to 2015, the two thirds of opioid deaths that occurred in Clackamas and Washington counties were attributed to prescription drugs (Figure 3). In contrast, the majority (55%) of opioid deaths in Multnomah County during this time were attributed to heroin.



Heroin deaths

In Clackamas and Washington counties, heroin deaths varied between 2009 and 2015, and the number of deaths in 2015 is not significantly different from the six-year median value in either county. In contrast, in Multnomah County, the number of deaths in 2015 (54) is the lowest during this entire time period and is significantly different from the six-year median value (Figures 4a-c).

Figure 4a: Number of heroin deaths by year, Clackamas County, State Medical Examiner's Office Database, 2009-2015

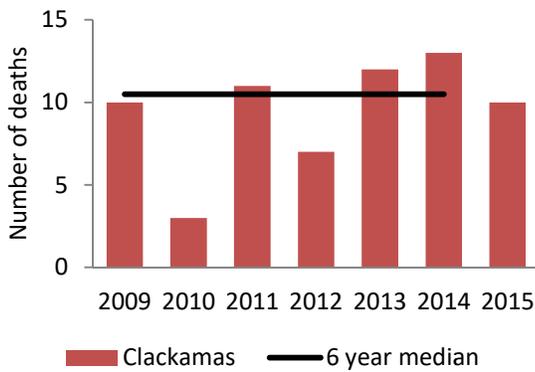


Figure 4b: Number of heroin deaths by year, Multnomah County, State Medical Examiner's Office Database, 2009-2015

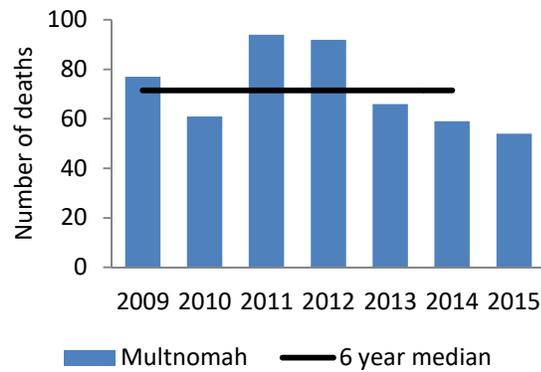
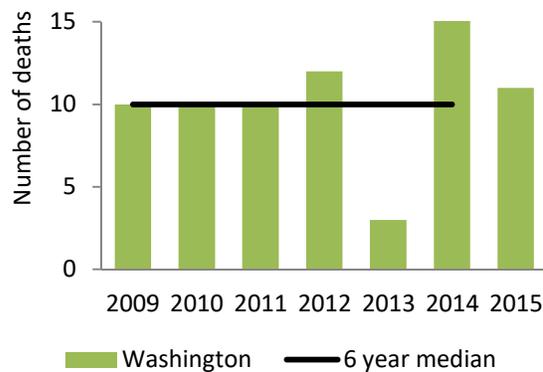
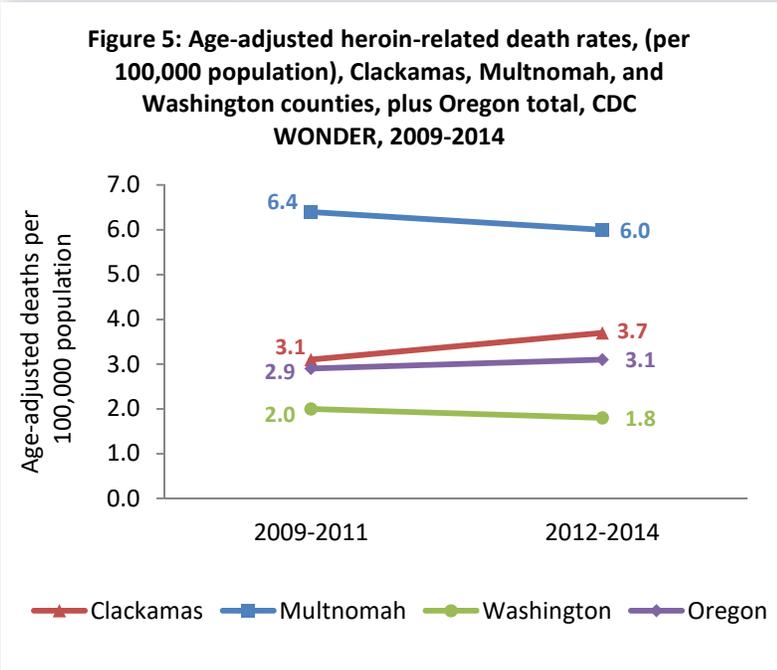


Figure 4c: Number of heroin deaths by year, Washington County, State Medical Examiner's Office Database, 2009-2015

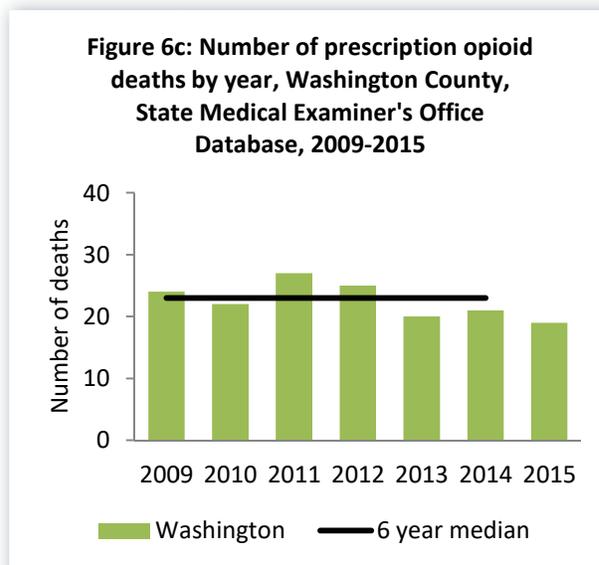
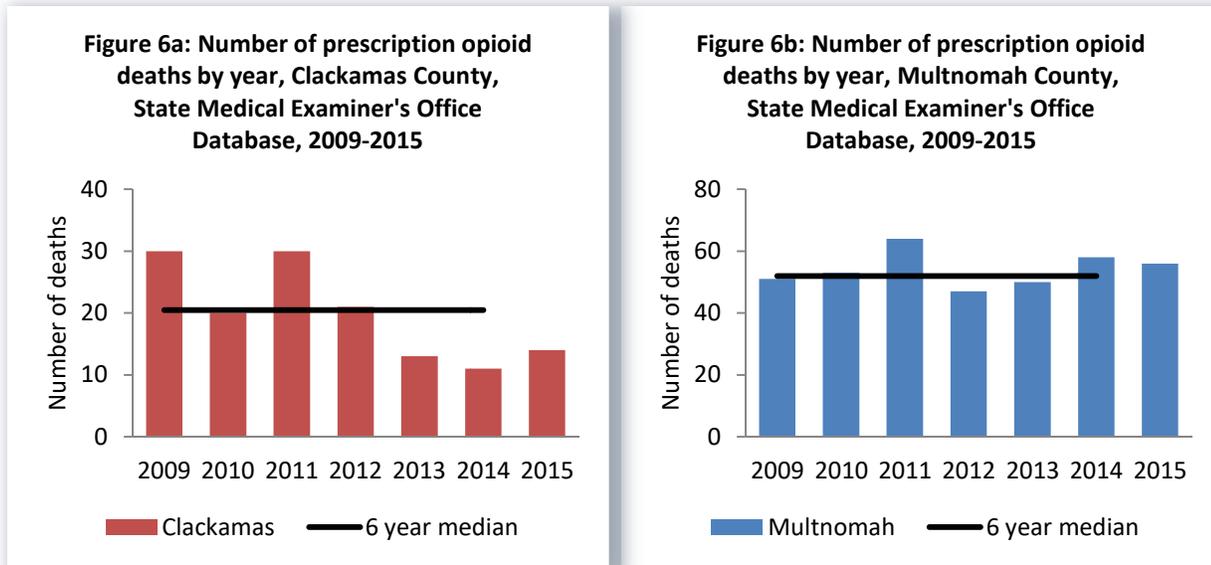


Examining CDC WONDER data, the age-adjusted death rate from heroin in Multnomah County decreased between 2009-2011 and 2012-2014 (Figure 5). Clackamas County showed an upward trend in the age-adjusted death rate from heroin between 2009-2011 and 2012-2014, while Washington County showed a slight downward trend. Overall, Multnomah County still has a higher age-adjusted death rate than Clackamas and Washington counties, as well as Oregon as a whole.

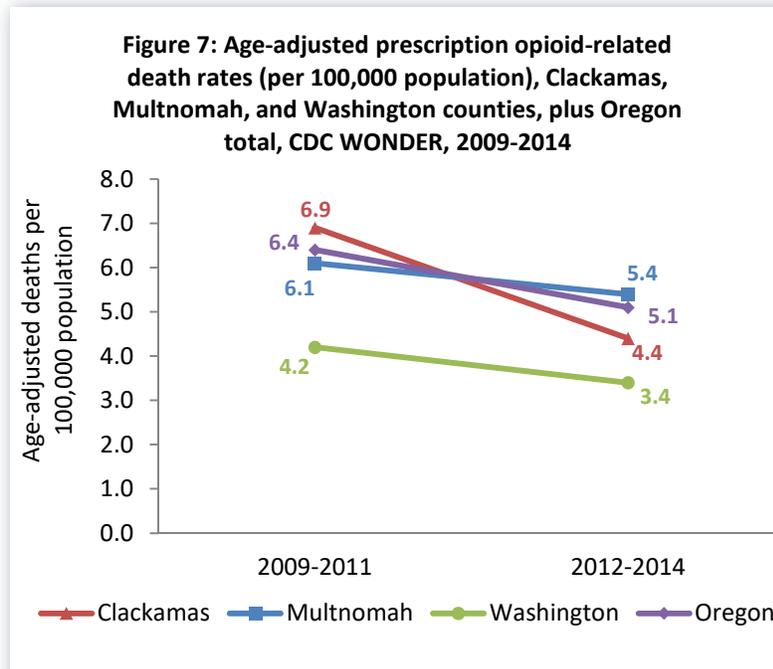


Prescription opioid death rates

Clackamas and Washington counties have both seen a decrease in prescription opioid-related deaths (Figures 6a-c). The number of prescription opioid deaths in 2015 is significantly lower than the six-year median in Washington County but not in Clackamas County. For Multnomah County, prescription-related deaths have remained fairly steady, and the number of prescription opioid deaths in 2015 is not significantly different from the six-year median.



Examining CDC WONDER data, the age-adjusted death rate due to prescription opioids declined in all three counties between 2009-2011 and 2012-2014 (Figure 7).



Age and heroin/prescription opioid deaths

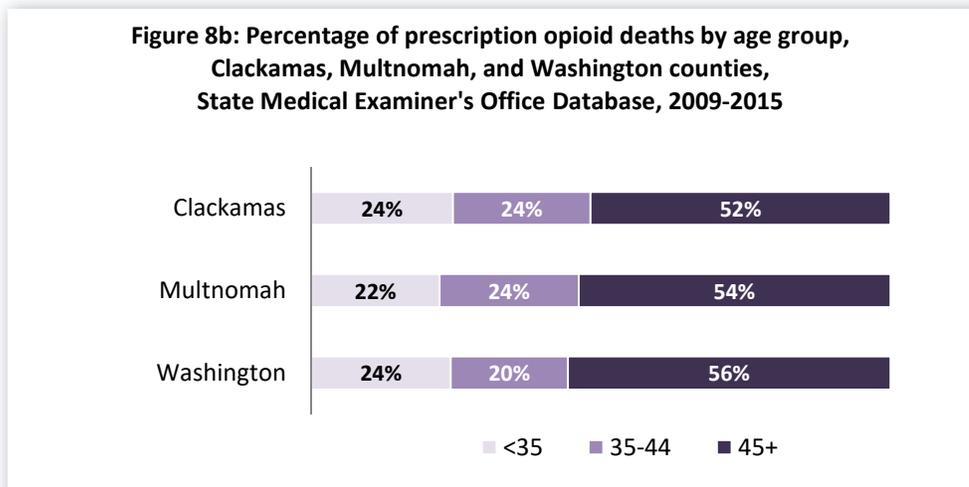
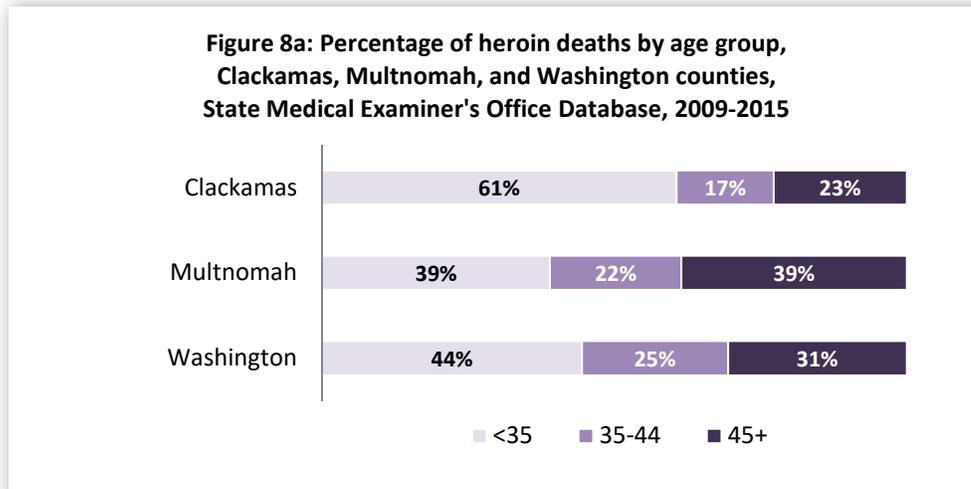
The mean age of individuals whose deaths involved prescription opioids was, on average, older than that of individuals whose deaths involved heroin: 10 years higher for Clackamas County, five years higher for Multnomah County, and eight years higher for Washington County (Table 3).

Table 3: Mean (minimum, maximum) age at death* by county and drug type, Clackamas, Multnomah, and Washington counties, State Medical Examiner’s Office Database, 2009-2015

	Any heroin	Any prescription
Clackamas	34 (17,63)	44 (16,74)
Multnomah	40 (17,71)	45 (15,89)
Washington	37 (19,63)	45 (15,86)

*Excludes one death in a one-year-old and one death in a two-year-old

Persons younger than 35 years old accounted for nearly two thirds of the heroin deaths in Clackamas County (61%), but less than half in Multnomah and Washington counties (39% and 44%, respectively) (Figure 8a). The distribution of deaths due to prescription opioids was similar in the three counties, with persons 45 years and older accounting for 52% of the total in Clackamas County and 56% of the total in Washington County (Figure 8b).



Key Findings

- Two thirds of opioid-related deaths occurred in Multnomah County.
- More opioid-related deaths in Multnomah County were caused by heroin (55%) compared to Washington County (30%) and Clackamas County (31%).
- Males died younger than females in all three counties.
- Heroin users died at a younger age in all three counties.
- Prescription opioid deaths have declined in Clackamas County over the time period, but not significantly.
- Prescription opioid deaths have declined significantly in Washington County.
- Prescription opioid deaths in Multnomah County have stayed steady.
- Heroin deaths in Multnomah County have declined significantly over the time period.
- Heroin deaths in Clackamas and Washington counties have not changed significantly over the time period.

A photograph of an American Medical Response (AMR) ambulance. The ambulance is white with red and blue accents. The text "AMR" is visible in large blue letters on the side, with "American Medical Response" written below it in smaller red letters. The number "428" is visible on the front of the ambulance. The ambulance is parked on a street.

9-1-1 Overdose Responses (Non-Fatal Overdoses)

Background

Although the most severe outcome of opioid overdose is death, there are far more instances of non-fatal overdose. One way to track the number of non-fatal overdoses is to review ambulance responses related to overdose, usually distinguishable by documentation of naloxone administration. Naloxone is a synthetic antagonist of narcotic drugs that is typically administered to reverse the effects of opioids—especially in the emergency treatment of opioid overdose. In July of 2013, Oregon passed legislation to allow laypersons to administer naloxone, and in 2015, many law enforcement agencies began carrying naloxone. Also in 2015, Oregon expanded its *Good Samaritan Law*,⁵ which protects overdose bystanders from being prosecuted for drug-related crimes in the event that they call 9-1-1 for medical assistance. In 2015, the total number of 9-1-1 calls (not just drug-related) was 27,638 in Clackamas County and 88,727 calls in Multnomah County. The total number of 9-1-1 calls was not available for Washington County.

Methods

Multnomah and Clackamas counties both use American Medical Response (AMR) as the transport agency for 9-1-1 emergencies, while Washington County uses Metro West. For Multnomah and Clackamas counties, we used a series of queries to filter data collected for AMR responses from 2013 to 2015 to assess the number, location, age, and sex of the individuals experiencing an overdose. This method of counting non-fatal overdoses only identifies those instances in which an ambulance arrived on scene and measures severe cases where opioid overdose caused respiratory and/or central nervous system depression responsive to naloxone. The case definition used for identifying non-fatal overdoses in Multnomah and Clackamas counties includes 9-1-1 overdose calls when naloxone was administered and the patient became more alert and responsive after administration.

We initially included instances where the paramedic's impression was indicative of an opioid overdose. However, upon completion of a chart review of 5% (n=204) of the cases, we determined that 97% of the paramedic impression-based cases did not meet the case definition for an opioid overdose. The query was, therefore, revised to only include cases where naloxone was administered—and *the patient improved*. With the new methodology, the positive predictive value, or the probability that the 9-1-1 calls were true overdoses, was 74% (range: 64-82%). The final methodology outlined in this analysis includes the case definition outlined above and does not include paramedic impression.

⁵ <https://public.health.oregon.gov/ProviderPartnerResources/EMSTraumaSystems/Pages/rules.aspx>

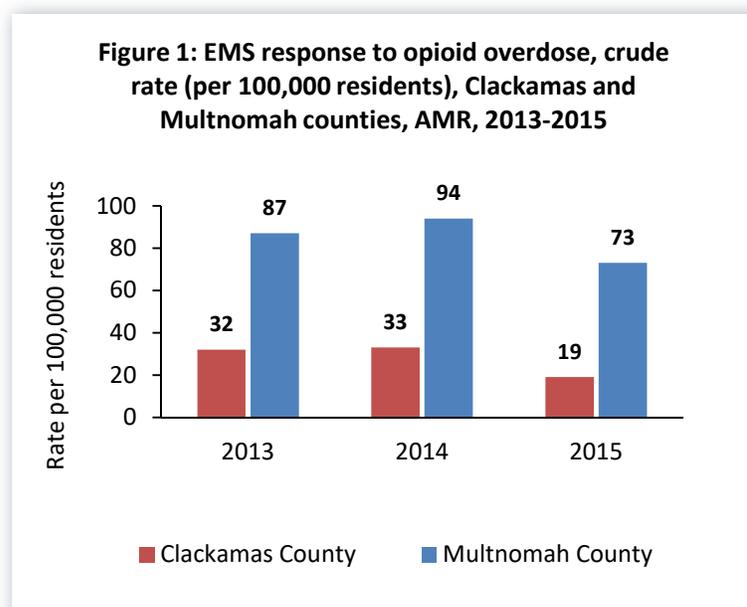
In Washington County the case definition differed, defined as 9-1-1-overdose calls where an ambulance arrived and naloxone was administered to the patient (non-fatal cases). This is in contrast to the case definition used in Clackamas and Multnomah counties, as the case definition in Washington County did not include whether the patient responded to naloxone, the location of the response, and age. However, sex of the patient was included. A chart review was not possible for Washington County data.

This methodology may not reflect the actual number of overdoses for multiple reasons. First, if the patient was unconscious or in a state of cardiac arrest, and the paramedics were not able to determine whether the patient's condition was the result of an opioid overdose (and naloxone was not administered), then the event would not be coded as an overdose. Second, 9-1-1 is not always called for overdoses. Third, the algorithms used to capture naloxone administration may identify false positive cases, meaning the events were not true overdoses. The positive predictive value suggests if naloxone is administered, and the patient improves, there is approximately a 74% chance the case is a true overdose. In other words, approximately 26% of cases may have been inaccurately categorized as an overdose. Finally, the data available and methodologies used in Washington County differed from those in Multnomah and Clackamas counties, and therefore, the counts and rates were not directly comparable. The false-positive counts in Washington County were likely higher compared to those in Clackamas and Multnomah counties because the algorithm used in Washington County was less sensitive.

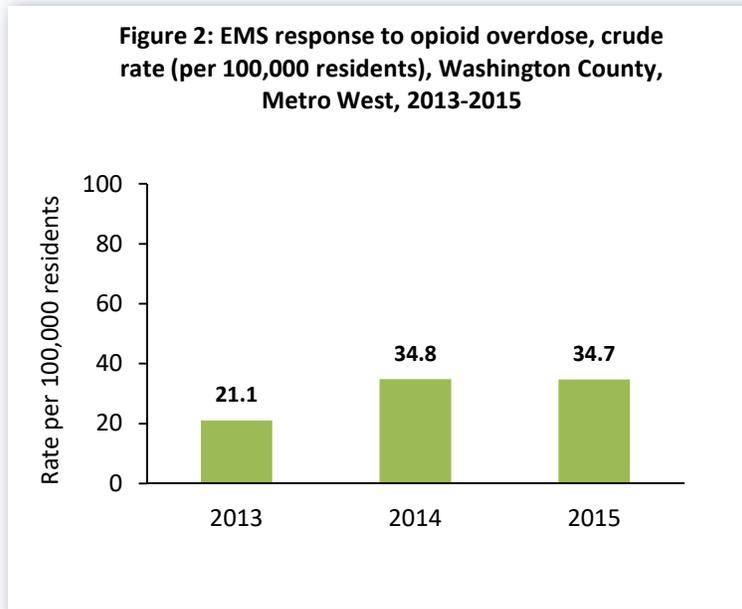
Another limitation is that the results may not include overdoses where naloxone was administered by a bystander instead of EMS. Changes in state law that occurred in 2013 increased the availability of naloxone to laypersons. In other words, using only EMS data most likely undercounts the number of overdoses.

Results

The rate of EMS response to opioid-overdose calls per 100,000 residents between 2013 and 2015 decreased in Multnomah and Clackamas counties.⁶ The rate has remained stable since 2014 in Washington County (Figures 1 & 2). In 2015, the crude rate of EMS response to opioid-overdose calls was nearly four times higher in Multnomah County compared to Clackamas County (Figure 1) ($p < 0.001$).

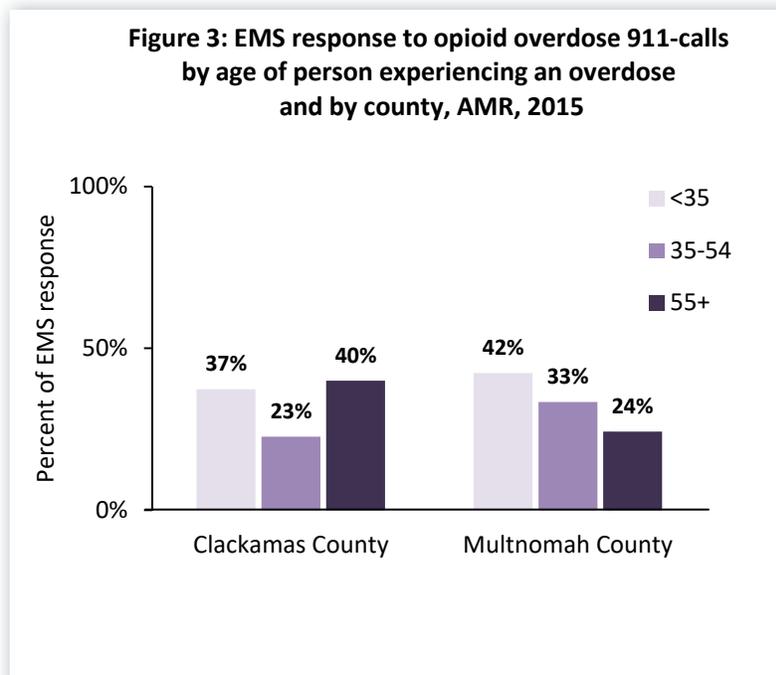


⁶ This decrease may be due, in part, to the administration of naloxone by bystanders before AMR response.



In Multnomah County, the proportion of overdoses among males was higher compared to the proportion in Clackamas and Washington counties. In all three counties and years, there were more overdoses among males except in Washington County in 2015, where 56% of the overdoses were among females (data not shown).

In Clackamas County, the proportion of overdoses was highest among those younger than 35 years old and 55 years and older. In 2015, non-fatal opioid overdoses among adults between the ages of 35 and 54 represented less than one quarter (23%) of all of the potential overdose calls received by AMR. This same trend is not seen in Multnomah County, but rather the proportion of overdoses decreased with increasing age. The proportion of overdoses in Clackamas County was significantly higher among the older population, ages 55 and older, compared to Multnomah County (Figure 3) ($p = 0.048$). (These data were not available for Washington County.)



In 2015, AMR responded to 569 non-fatal opioid overdoses in Multnomah County, a decrease from 660 in 2013. Clackamas County also experienced a decrease (122 non-fatal opioid overdoses in 2013, to 75 in 2015.) The most common location of an AMR response to a non-fatal overdose in Clackamas County was a private residential setting, while in Multnomah County, private residential setting and public area were reported with equal frequency (Table 1).

Table 1: Location of EMS response to 9-1-1 calls during which naloxone was administered, Clackamas, Multnomah, and Washington counties, 2013-2015

Clackamas County (AMR Response)						
Response Location	2013		2014		2015	
	Count	% of all calls	Count	% of all calls	Count	% of all calls
Business/Commercial	7	6%	7	5%	9	12%
Medical setting/Skilled nursing facility/Assisted living	12	10%	16	12%	5	7%
Other	3	2%	4	3%	3	4%
Private Residence	81	66%	84	65%	51	68%
Public Area	19	16%	18	14%	7	9%
Total calls	122	100%	129	100%	75	100%

Multnomah County (AMR Response)						
Response Location	2013		2014		2015	
	Count	% of all calls	Count	% of all calls	Count	% of all calls
Business/Commercial	96	15%	109	15%	86	15%
Medical setting/Skilled nursing facility/Assisted living	48	7%	48	7%	37	7%
Other	12	2%	13	2%	22	4%
Private Residence	260	39%	266	37%	218	38%
Public Area	244	37%	284	39%	206	36%
Total calls	660	100%	720	100%	569	100%

Washington County (Metro West Response*)						
	2013		2014		2015	
	Count	% of all calls	Count	% of all calls	Count	% of all calls
Total calls	116	100%	195	100%	198	100%

*Response location for Washington County was not available.

Key Findings

- Multnomah County had the highest rate of EMS response to opioid-overdose calls in the Tri-County area; however, EMS responses are tracked by the location of the emergency, which is not necessarily the patient's county of residence.
- Multnomah and Clackamas counties experienced a decrease in the number of EMS responses to opioid overdoses. This decrease may be due to more law enforcement personnel and lay people carrying and administering naloxone. During a chart review of 2015 cases, we observed a trend of naloxone having already been administered prior to AMR arriving on site. In such cases, improvement in the patient's condition was not noted from AMR's standpoint and, therefore, did not meet our case definition.
- Opioid overdoses were more equally distributed across all ages in Clackamas County, compared to Multnomah County. This distribution is consistent with other findings in this report (e.g., prescription opioids). In Multnomah County, a higher proportion of non-fatal overdoses occurred among those aged 35 and younger.



Opioid Prescribing Trends

Background

The Oregon Prescription Drug Monitoring Program (PDMP) is a web-based data system containing information on controlled-substance prescription medications dispensed by Oregon-licensed retail pharmacies. Oregon law requires pharmacies to submit data every three days for all Schedule II–IV controlled substances⁷ dispensed. Controlled substances reported include opioids, benzodiazepines, sedative hypnotics, stimulants, and other drugs.

Opioids account for approximately 54% of the prescriptions in the PDMP database. Opioids are a class of medication that has a high potential for overdose, misuse, dependence, and abuse. Benzodiazepines are the second most commonly prescribed class of medication in the PDMP data system. Combining opioids with benzodiazepines increases the risk of overdose.

Methods

We included information on opioid prescriptions dispensed, opioid prescription recipients, opioid and benzodiazepine combination prescriptions, and opioid prescriptions by opioid type. Overlapping opioid and benzodiazepine prescriptions were identified if the date dispensed for one drug was within 30 days of the other being dispensed. The prescription rates are presented by sex in 2015 and by age between 2012 and 2015 for Clackamas, Multnomah, and Washington counties, as well as for the state of Oregon as a whole. Age-adjusted rates are presented for overall recipient rates; crude rates are used when the rates are presented by age.

Rates are based on population estimates (denominator data) from the *Oregon Population Report* published by Portland State University's Population Research Center.⁸ Poisson regression was used to test whether changes in counts and rates over time were statistically significant. Proc StdRate was used to age-adjust to the 2000 U.S. Standard Population⁹ and to test if age-adjusted opioid rates were significantly different compared to the 2012 rates. All analyses were conducted in SAS 9.3 using a significance level of 0.05. Dosage was not explored in this report.

Tramadol, an opioid, was rescheduled from Schedule V to Schedule IV in mid-2014, making it reportable to the PDMP. Tramadol prescriptions were included in the analysis for the second half of 2014 and all of 2015, representing 2.8% and 6.9% of all opioid prescriptions, respectively, in 2014 and 2015.

⁷ Definitions of Schedule I-V controlled substances can be found here: <https://www.deadiversion.usdoj.gov/schedules/>

⁸ Oregon Population Report published by Portland State University's Population Research Center: <https://www.pdx.edu/prc/population-reports-estimates>

⁹ 2000 US Standard Population: <https://www.cdc.gov/nchs/data/statnt/statnt20.pdf>

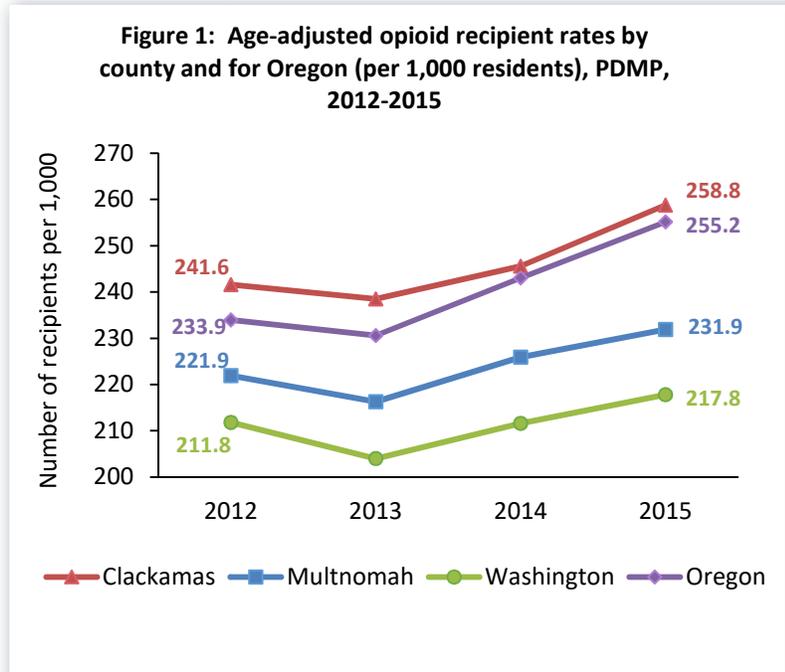
Illicit fentanyl, which often receives media attention for its potent effects, is not captured by the PDMP, but prescription fentanyl is included. All schedules and forms (in combination with other drugs) of codeine are included in this analysis. Sex was not captured in the PDMP until 2014 and, therefore, is only included for years 2014 and 2015 in this report (PDMP APPENDIX Table 1). In future reports, we hope to include the Morphine Equivalent Doses (MED), which is a way to calculate the strength of an opioid prescription.

Results

Across the Tri-County region in 2015, retail pharmacies dispensed over 1.5 million opioid prescriptions to a population of 1.7 million people; on average, there was nearly one opioid prescription per person living in the region. In Oregon, the rate of people receiving opioid prescriptions per 1,000 residents in 2015 represented a 9.1% increase compared to the rate in 2012. However, this increase could be explained by the addition of tramadol, which was rescheduled from Schedule V to Schedule IV in mid-2014, making it reportable as an opioid to the PDMP. All three counties within the Tri-County region experienced similar increases, with the largest increase in Clackamas County (7.1%) and the smallest increase in Washington County (2.8%). See Table 1 for opioid-recipient and prescription counts and rates from 2012 to 2015. Age-adjusted opioid-recipient rates are shown in Figure 1.

Table 1: Opioid recipient and prescription counts and rates, PDMP, 2012-2015

	Year			
	2012	2013	2014	2015
Clackamas County				
Prescription recipient count	95,761	96,411	101,463	109,410
Prescriptions dispensed	384,910	394,449	395,922	417,480
Prescriptions dispensed per prescription recipient	4.0	4.1	3.9	3.8
Number of people per 1,000 residents receiving prescriptions, age-adjusted	241.6	238.5	245.6	258.8
Multnomah County				
Prescription recipient count	174,896	172,558	183,432	191,825
Prescriptions dispensed	666,798	658,299	669,620	680,800
Prescriptions dispensed per prescription recipient	3.8	3.8	3.7	3.6
Number of people per 1,000 residents receiving prescriptions, age-adjusted	221.9	216.3	225.9	231.9
Washington County				
Prescription recipient count	115,941	113,704	120,738	127,044
Prescriptions dispensed	403,112	389,465	385,194	412,669
Prescriptions dispensed per prescription recipient	3.5	3.4	3.2	3.3
Number of people per 1,000 residents receiving prescriptions, age-adjusted	211.8	204.0	211.6	217.8
Oregon				
Prescription recipient count	956,192	957,393	1,027,350	1,099,771
Prescriptions dispensed	3,801,042	3,853,531	3,930,024	4,137,673
Prescriptions dispensed per prescription recipient	4.0	4.0	3.8	3.8
Number of people per 1,000 residents receiving prescriptions, age-adjusted	233.9	230.6	243.1	255.2
<ul style="list-style-type: none"> • Prescription recipient count: the number of unique individuals who received prescriptions. • Number of prescriptions per prescription recipient: dispensed per prescription recipient (original and refills). • 2014 and 2015 data include tramadol. 				



Across the Tri-County region and in Oregon, females were significantly more likely to receive opioid prescriptions compared to males in 2014 (data not shown) and 2015 (Figure 2, *p*-value <0.0001). For more data on opioid prescriptions by sex, see PMDP APPENDIX Table 1.

In Clackamas County, recipient rates by age were more evenly distributed among those 25 years and older, with higher rates among younger recipients in Clackamas County compared to Multnomah and Washington counties, and to the state as a whole. In Multnomah and Washington counties, opioid prescriptions increased as recipients aged. Recipients 55 years and older had higher rates of opioid prescriptions than those 54 years and younger. This same trend by age can be seen across Oregon (data found in PDMP APPENDIX Figures 1-4).

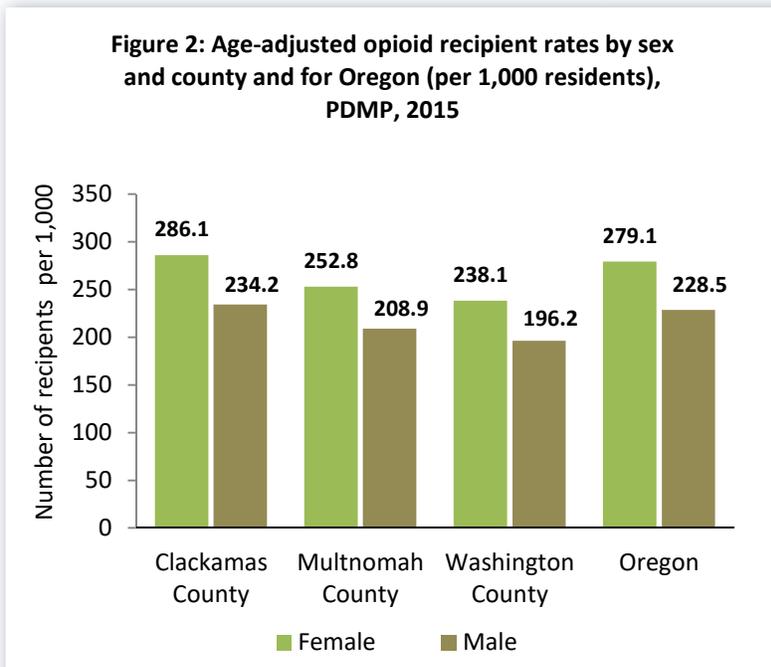


Table 2 displays rates of opioid prescriptions by opioid type. Hydrocodone was the most prescribed opioid for all three counties and the state, followed by oxycodone.

Table 2: Number of people receiving opioid prescriptions per 1,000 residents (age-adjusted), by prescription type, PDMP,¹ 2012-2015

	2012	2013	2014	2015
Clackamas County				
All opioids (total)	241.6	238.5	245.6	258.8
Opioids & benzodiazepines (combination) ²	41.7	41.0	41.3	39.9
Hydrocodone	164.0	161.4	159.8	151.1
Oxycodone	98.8	97.3	98.4	102.1
Morphine	10.6	12.2	12.0	11.5
Methadone ³	5.6	7.5	8.1	6.6
Hydromorphone	6.5	7.1	7.5	8.0
Codeine ⁴	15.0	14.3	13.1	15.1
Fentanyl	5.6	5.4	6.6	8.6
Multnomah County				
All opioids (total)	221.9	216.3	225.9	231.9
Opioids & benzodiazepines (combination) ²	37.6	36.4	35.7	33.9
Hydrocodone	153.1	148.0	149.9	149.9
Oxycodone	85.6	83.6	87.8	88.4
Morphine	9.6	9.4	9.1	8.7
Methadone ³	3.4	3.3	2.9	2.7
Hydromorphone	4.8	4.7	5.1	5.1
Codeine ⁴	13.8	12.5	12.4	12.9
Fentanyl	2.8	2.5	2.4	2.0
Washington County				
All opioids (total)	211.8	204.0	211.6	217.8
Opioids & benzodiazepines (combination) ²	34.7	33.7	32.8	31.6
Hydrocodone	146.5	138.4	137.3	126.3
Oxycodone	80.8	78.7	78.4	80.9
Morphine	8.3	8.3	8.2	8.5
Methadone ³	2.4	2.2	2.0	2.0
Hydromorphone	5.4	5.4	5.7	5.8
Codeine ⁴	13.1	12.5	11.5	12.4
Fentanyl	3.0	2.7	2.6	2.4

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Oregon				
All opioids (total)	233.9	230.6	243.1	255.2
Opioids & benzodiazepines (combination) ²	41.4	40.5	41.0	39.6
Hydrocodone	169.2	166.1	165.6	156.0
Oxycodone	83.7	82.5	85.0	85.6
Morphine	9.4	9.5	9.6	9.6
Methadone ³	4.0	3.6	3.4	3.2
Hydromorphone	5.6	5.6	5.7	5.8
Codeine ⁴	13.9	13.0	12.5	14.2
Fentanyl	3.5	3.5	3.3	3.1

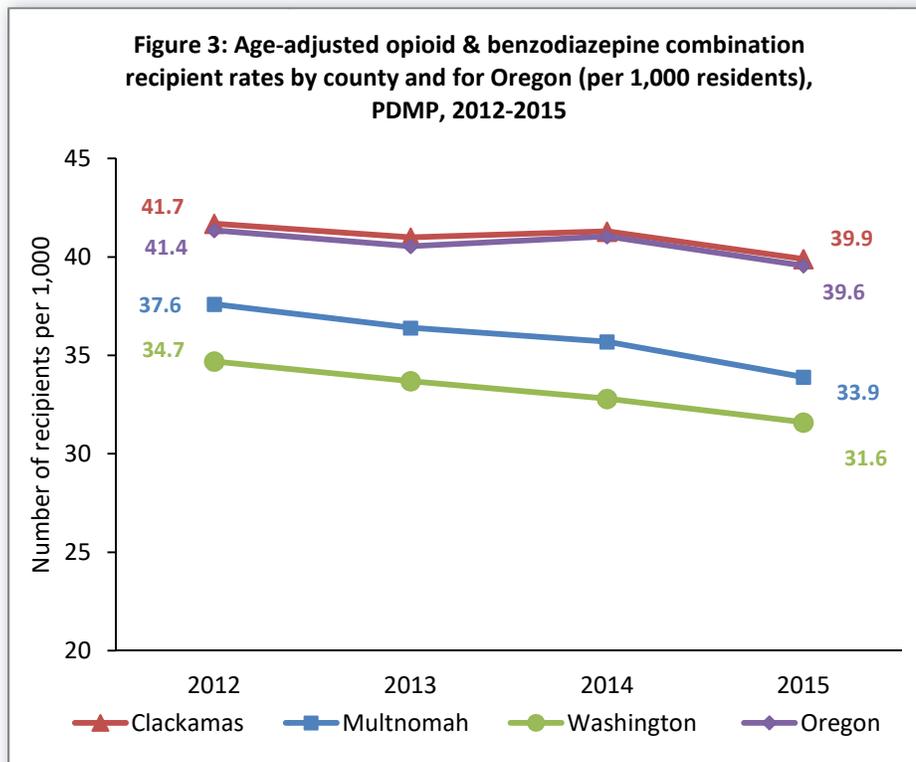
¹ Prescription types are not mutually exclusive, meaning that a recipient can have a prescription for multiple opioid types.

² Calculating overlapping prescriptions: Overlapping opioid and benzodiazepine prescriptions were identified if the date dispensed for one drug was within 30 days of the other.

³ Does not include methadone used to treat addiction

⁴ All schedules and forms (in combination with other drugs) of codeine are included.

Figure 3 displays rates of prescriptions for both opioids and benzodiazepines by county and statewide. The rate of recipients receiving a combination of opioids and benzodiazepines in the Tri-County region and in Oregon as a whole remained stable, with the highest rates consistently seen in Clackamas County and in Oregon.



Key Findings

- In each of the three counties and Oregon as a whole, the rate of people receiving opioid prescriptions increased between 2012 and 2015. This increase could, in part, be explained by the 2014 rescheduling of tramadol that made it reportable to the PDMP.
- Between 2012 and 2015, Clackamas County had the highest age-adjusted opioid-recipient rates in the Tri-County region. Clackamas County opioid-recipient rates were also higher than the state recipient rates.
- Females were more likely to receive an opioid prescription than males.
- Opioid-recipient rates increased with age in Multnomah and Washington counties.
- Opioid-recipient rates in Clackamas County were more evenly distributed among those 25 years and older.
- Hydrocodone was the most prescribed opioid for all three counties and the state.
- Combination-prescription rates of opioids and benzodiazepines remained stable in the Tri-County region and Oregon, with the highest rates seen in Clackamas County (similar to the rates seen across Oregon as a whole).



This chapter is divided into two sections. The first reports on syringe exchange program data and naloxone distribution data. The second presents findings from a syringe exchange program client survey.

I. Syringe Exchange Client and Naloxone Distribution Data

Background

Syringe exchange programs (SEPs) are part of a comprehensive public health approach to prevent the spread of HIV, hepatitis C, and other blood-borne pathogens among injection drug users, their families, and the larger community. Data from these programs provide insight into trends of injection drug use, including but not limited to heroin and prescription-type opioids. When demand for syringe exchange services increases, it may signal that the population of injection drug users has grown.

In Multnomah County, there are two organizations operating SEPs: Multnomah County Health Department and Outside In, a community-based organization that provides health and self-sufficiency services to homeless youth and other marginalized people. These SEPs provide clients with new, sterile syringes in exchange for used ones. They also provide safer-sex supplies and referrals to medical care, social services, and substance use treatment. To have the greatest public health impact, SEPs incorporate harm-reduction education, counseling based on readiness for change, and motivational interviewing skills to help guide people to improve individual and community health.

Outside In's and Multnomah County Health Department's SEPs are different from one another in a number of ways. Outside In serves the majority of its clients through an indoor site open 25 hours per week in southwest (downtown) Portland. They also provide syringe exchange services three hours per week in Clackamas County. Until 2016, Multnomah County operated two van-based sites and one indoor site for a total of eight hours per week over four shifts. In 2016, MCHD opened a new indoor site that is open 10 hours a week. All of the Multnomah County sites are on the east side of Portland.

Methods

Outside In and Multnomah County have shared a data system since July 2011. Clients create an anonymous registration code during their first visit and use the same anonymous code for all subsequent visits so that both programs can track the number of unique clients served.

At the time of their first visit, staff collect information on client age, race/ethnicity, gender, primary drug injected, housing status, and zip code or area of residence. No identifying information is collected, such as name, address, or date of birth, and clients do not show any form of identification at registration. In about 0.1% of visits each year, clients choose not to create a registration code (range of 48-66 visits per year). Clients are asked every year to update their zip code and housing status—permanent, temporary/unstable, or homeless. If a client does not know their zip code, they are asked what city or neighborhood they live in. At each visit, staff record the number of syringes clients exchanged and ask clients whether they are exchanging for anyone else and, if so, how many other people.

Clients are only asked the drug they primarily inject at their first visit. It is possible that a client’s drug of choice changes over time, but any change is not captured. If a client reported that they primarily injected speedballs (heroin combined with cocaine), goofballs (heroin combined with methamphetamine), or any other combination of heroin and another drug—they were counted among “heroin-using” or “opioid-using” clients in the following tables.

Results

Table 1 shows number of visits and clients served from 2012 to 2015. During that time, there was a 59% increase in the number of syringes distributed, a 26% increase in the number of visits to syringe exchange sites, and a 28% increase in the number of unique clients served. For comparison, Seattle-area exchanges gave out almost six million syringes in 2014—up from about four million in 2011.¹⁰

Table 1: Syringe exchange clients and drug of choice, 2012-2015

	2012	2013	2014	2015
Total syringes distributed	1,946,782	2,116,883	2,565,026	3,098,895
Total visits to syringe exchange*	40,261	47,250	50,348	50,857
Total unique clients served	4,864	5,371	5,805	6,236
New clients registered	2,877	2,556	2,452	2,434
% of all syringes distributed to primary opioid injectors**	78%	77%	78%	74%
% of all visits by primary opioid injectors**	83%	80%	76%	75%
% of all clients who were primary opioid injectors**	75%	73%	72%	69%
% of all new clients who were primary opioid injectors**	73%	70%	67%	64%

*Only includes visits where a client received syringes; between 1%-3% of visits each year did not involve syringe exchange and are not included in these totals.

**Opioids include heroin, prescription opioids, and combinations of heroin with cocaine or methamphetamines; clients for whom primary drug injected was unknown were excluded from percentage calculation (8%-10% of total each year).

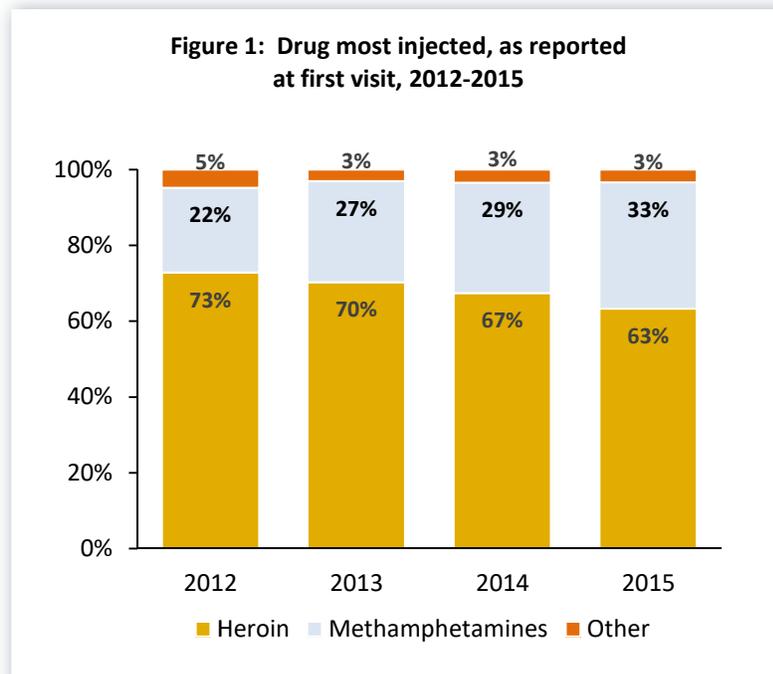
¹⁰ [http://adai.washington.edu/pubs/
http://adai.washington.edu/pubs/cewg/Drug%20Trends 2014 final.pdf](http://adai.washington.edu/pubs/http://adai.washington.edu/pubs/cewg/Drug%20Trends%202014_final.pdf)

We track the volume of services and number of clients who say they primarily inject opioids. The bottom four rows of Table 1 present the percentage of total syringes distributed, visits, clients, and new clients represented by this subset. The overwhelming majority were heroin injectors, with only 0 to 15 clients served each year reporting that they primarily injected prescription opioids. Between 18% and 21% of visits involved secondary exchange, or exchange on behalf of other people.

Clients who reported secondary exchange were exchanging for anywhere from one to 300 other people; the median number of other people increased from one to two people from 2014 to 2015.

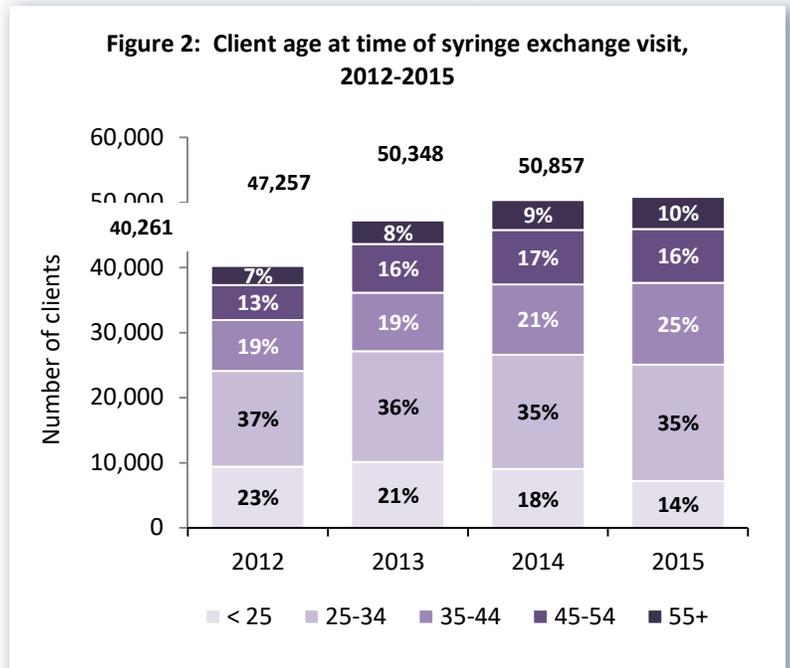
Syringe Exchange Client Data

As Figure 1 shows, the majority of clients reported heroin as their primary drug injected. However, this response has decreased every year. Conversely, the number of clients reporting that they inject methamphetamines as their primary drug has increased.

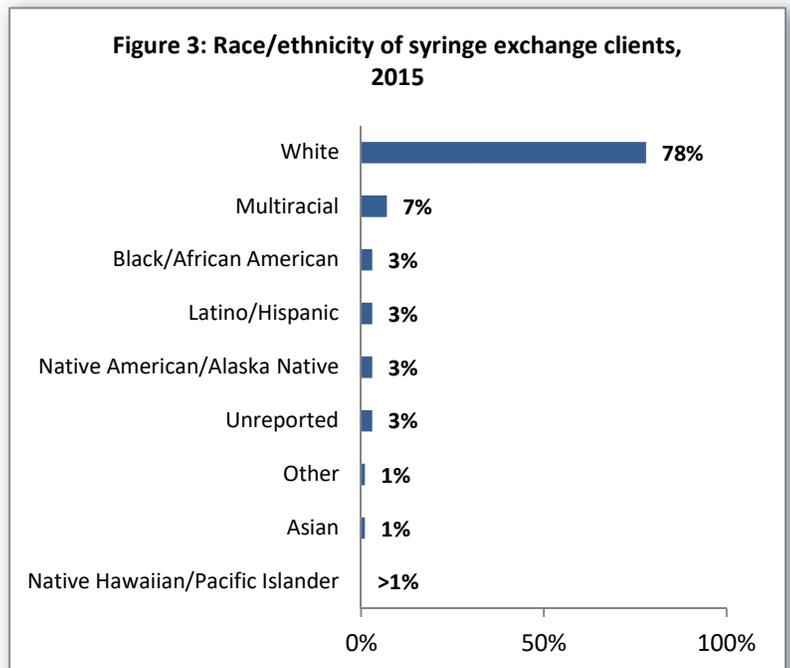


Overall, the percent of visits among clients who said they primarily inject opioids has decreased from 83% in 2012 to 75% in 2015. At the same time, visits among primary methamphetamine injectors almost doubled from 5,601 in 2012 to 10,841 in 2015 (15% to 23% of total visits, among clients for whom primary drug injected was known—data not shown). The number of syringes distributed to methamphetamine injectors also almost doubled from 349,513 in 2012 to 677,252 in 2015 (from 19% to 24% of total syringes, among clients with data on drug most injected).

In 2012, the median age of clients was 31 years old, compared to 35 years old in 2015. This trend cannot be completely explained by the aging of clients over time since 39%-48% of clients served each year after 2012 were new clients. Figure 2 shows a sizable decrease in the percent of clients who were younger than 25 years at the time of the visit, from 23% of all visits in 2012 to 14% in 2015. Clients 35 years and older increased from 39% in 2012 to 51% in 2015. Figure 2 shows the age associated with each visit (individual clients may be counted more than once).

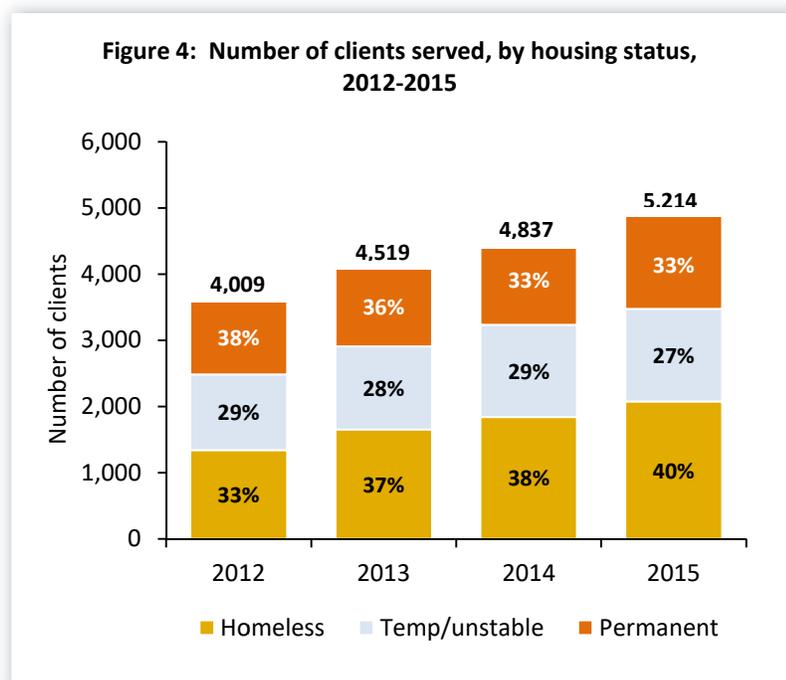


In 2012, 73% of clients identified as male and 26% as female versus 70% male and 28% female in 2015 (data not shown). Less than one percent of clients identified as transgender. The majority of syringe exchange clients served each year identified as White, non-Hispanic, as shown in Figure 3. There has been little to no variation across races/ethnicities from 2012 to 2015.



At their first visit and annually afterward, clients are asked whether their housing situation is permanent, temporary/unstable, or homeless. They are also asked to provide a zip code or city where they live. About three quarters of clients reported that they lived in Multnomah County at the time of their annual housing update. About 10% lived in Washington County, 8% in Clackamas County, and the rest lived in other parts of Oregon, Washington, and beyond. This distribution was consistent over 2012-2015 (data not shown).

As Figure 4 illustrates, in 2015, 40% of syringe exchange clients reported being homeless. This has increased from 33% in 2012. Another 27% reported in 2015 that their housing situation was temporary or unstable. Overall, the percent of clients reporting that they have permanent housing has declined since 2012.



Among homeless clients, 83%-85% lived in Multnomah County each year, 4%-6% in Washington County, and 5%-6% in Clackamas County. The rest said they lived outside of the Tri-County area (data not shown).

Naloxone distribution data

In July 2013, Outside In began their naloxone training program. Multnomah County Health Department began its program in May 2014. Both agencies offer naloxone training during all syringe exchange shifts and locations. In addition, the programs have trained 126 people outside of syringe exchange sites, (e.g., social service agency staff, friends, and family of drug users). At the time of training, clients complete an enrollment form with overdose risk behaviors and history. When clients return for a refill kit, staff interview them and collect information on any overdose rescues (Table 2).

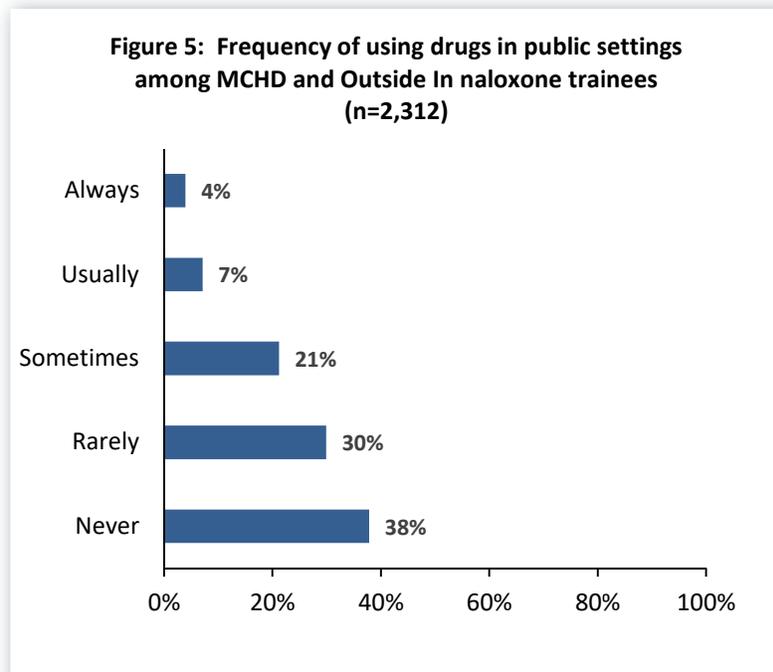
Table 2: Individuals trained in naloxone administration and reported overdose rescues, 2013-2015

	2013	2014	2015	Total
Syringe exchange clients trained in naloxone administration	464	969	829	2,262
Individuals trained outside of SEP	18	44	64	126
Overdose rescues reported by naloxone trainees	142	467	554	1,163
% of rescues where 9-1-1 was called	34%	31%	34%	33%
% of rescues where 9-1-1 was not called due to fear of arrest	37%	38%	26%	32%

Among clients who completed naloxone training, 18% had overdosed in the last year. Eighty percent of trainees had witnessed an overdose. While 48% reported that they were currently homeless, 59% had spent the night on the street or in a shelter in the last year.

Injecting in public has been associated with increased risk for fatal overdose.¹¹ Because there may be a fear of detection, injectors may rush through their usual safety precautions. Figure 5 shows the percent of naloxone trainees who used drugs in public settings. The majority of trainees had used drugs in a public setting at least some of the time—with about one third reporting they did so sometimes or more often.

Note that Outside In and Multnomah County Health Department use slightly different scales for this question. Outside In forms *do not* include a “rarely” choice, which may have inflated the number of respondents reporting “sometimes” to this question. Refer to the Appendix for specific wording and counts.



¹¹ Bohnert AS, Tracy M, Galea S. (2009). *Circumstances and witness characteristics associated with overdose fatality.* Ann Emerg Med, 54: 618-624.

Key Findings

- In the last four years, demand for syringe exchange services has increased every year.
- Every year, a greater percentage of clients served report methamphetamines as the drug they inject most often.
- The percent of clients reporting that they are homeless has increased each year, with a high of 40% in 2015.
- From 2014 to 2015, the number of clients under 25 years old has decreased.

II. Syringe Exchange Client Survey Data

Methods

Protocol

For two weeks in August 2016, staff and volunteers approached syringe exchange clients in line or after completing an exchange to participate in a survey. Participants were only allowed to complete the survey once. If a participant agreed to complete the survey, interviewers went through the consent with participants verbally. Interviews took about five minutes to complete, and participants received a candy bar or chips for their time. Similar surveys were conducted in 2010 and 2011, but participation was anonymous all three years, so we are unable to link responses from participants across years.

Before interviewing clients, staff and volunteers attended an interviewers' training and were provided a survey guide. The guide provided information on interviewing techniques, the intent of each question, and possible scenarios that might arise.

Instrument

Many of the questions overlapped with the 2010 and 2011 surveys, including basic demographics, drug use, previous dependency on prescription-type opioids,¹² injection history, and overdose history. We added questions on access to medical care and interest in treatment this year. We piloted two earlier iterations of the survey with seven clients in July 2016 and then piloted the revised version with four clients.

¹² The client's own prescription or someone else's.

Data analysis

Data were analyzed using SAS Enterprise Guide 5.1. Results included in this report are univariate or bivariate only and were not adjusted for confounding factors. We used the chi-square statistic and the two-sample *t* test when testing for statistical significance.

To estimate how recently participants had initiated injection drug use, we subtracted their age at which they reported their first injection drug use from their current age. This calculation represents considerable rounding, as a participant could report that they were 21 years old and had begun injecting at age 20. In this example, the participant would appear to have begun injecting one year ago. However, if the participant started injecting the day they turned 20 and completed the survey the day before they turned 22, then it would be more accurate to say they had been injecting for two years. As such, data on length of injection history should be treated with caution.

Response rate

During the two-week survey period, there were 1,263 unique clients served across sites. Interviewers completed 570 surveys out of 812 attempts to recruit clients who had not already completed the survey, for a response rate of 70%. Twenty surveys were excluded from this analysis because the participant had not injected drugs in the last three months. Of the remainder, 473 reported opioid use in the last three months (Table 3).

Table 3: Recruitment summary for syringe exchange client survey, 2016

Stage	n
Unique clients served during survey period	1,263
Clients approached for survey (who had not already completed it)*	812
Completed surveys	570
Indicated injection drug use in last three months	550
Indicated both injection drug use and opioid use in last three months	473
*106 recruitment attempts were not included in this number because they were among participants who had already completed the survey.	

Results

Demographics

Table 4 shows basic demographics of all survey respondents reporting recent injection drug use (any drug) compared to the subset of survey participants who had specifically used opioids in the last three months. The average participant was about 37 years old; the median was 35 years old. Among participants who provided their race or ethnicity, about 18% were persons of color. Over two thirds were male (69%).

Table 4: Demographics of syringe exchange client survey participants, 2016

	All clients served during survey period, n = 1,263	Survey sample, All IDU,* n = 550	Survey sample, Opioid users only,** n = 473
Age (years)			
Mean	37.7	37.2	36.7
Median	36	35	35
Range	18-81	18-75	18-75
Race***	n (%)	n (%)	n (%)
White	991 (78)	438 (81)	382 (82)
Multiracial	88 (7)	31 (6)	26 (6)
Latino/Hispanic	44 (3)	31 (6)	25 (5)
Native American/Alaska Native	43 (3)	25 (5)	20 (4)
Black/African American	37 (3)	8 (1)	6 (1)
Asian	10 (1)	6 (1)	6 (1)
Native Hawaiian/Pacific Islander	3 (0)	1 (0)	1 (0)
Gender***	n (%)	n (%)	n (%)
Male	847 (67)	373 (68)	325 (69)
Female	392 (31)	167 (31)	140 (30)
Other/unreported	21 (2)	4 (1)	4 (0)
Transgender female to male	2 (0)	1 (0)	1 (0)
Transgender male to female	1 (0)	2 (0)	0 (0)
*Indicated injection drug use in last three months			
**Indicated both injection drug use and opioid use in last three months			
***Race and gender do not add up to totals due to missing data.			

Participants were asked what best described their current living situation. As shown in Table 5, the majority of participants reported that they were homeless (51%). Almost 40% had been continuously homeless for a year or more (or three quarters of homeless overall, n=186 of 242).

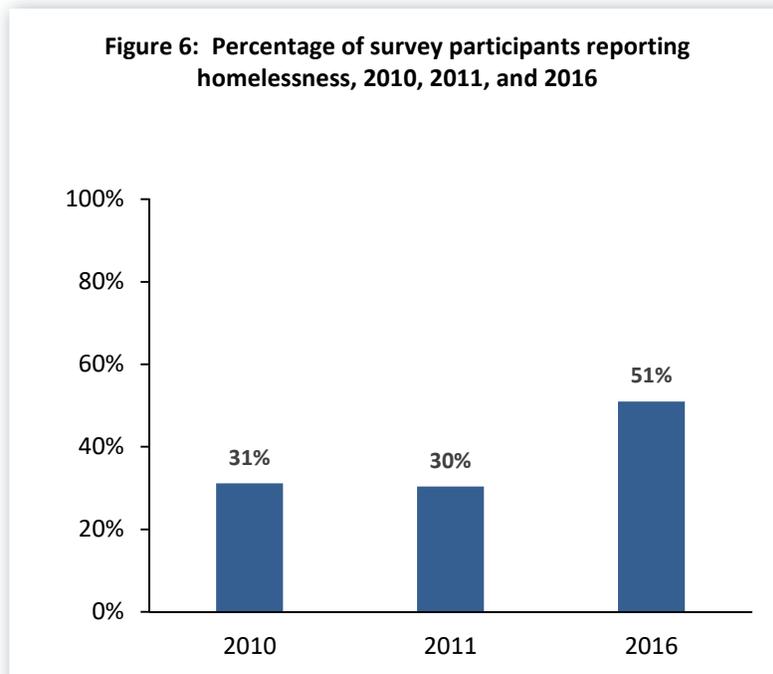
In the syringe exchange section of this report, it was reported that only about 40% of clients served in 2015 said they were currently homeless. (See Figure 5 in section preceding this one). The wording for both data sources is the same; “What best describes your current living situation?” It is unclear whether homelessness has increased rapidly in 2016 or whether clients were more likely to disclose it on this survey than to staff during a routine syringe exchange visit (Table 5).

Table 5: Housing, residence, and transportation mode of syringe client survey participants (n=550), 2016

	n (%)		n (%)
Current living situation*		Transportation to exchange (check all that apply)	
Homeless	280 (51)	Walked	245 (45)
Temporary or unstable housing	141 (26)	Public transit	129 (23)
Permanent housing	128 (23)	Drove	115 (21)
		Got a ride	64 (12)
		Bicycle	48 (9)
County of residence*			
Multnomah County	448 (83)		
Washington County	42 (8)		
Clackamas County	26 (5)		
Other Oregon counties	12 (2)		
Washington state	8 (2)		
Out of state (not OR or WA)	6 (1)		

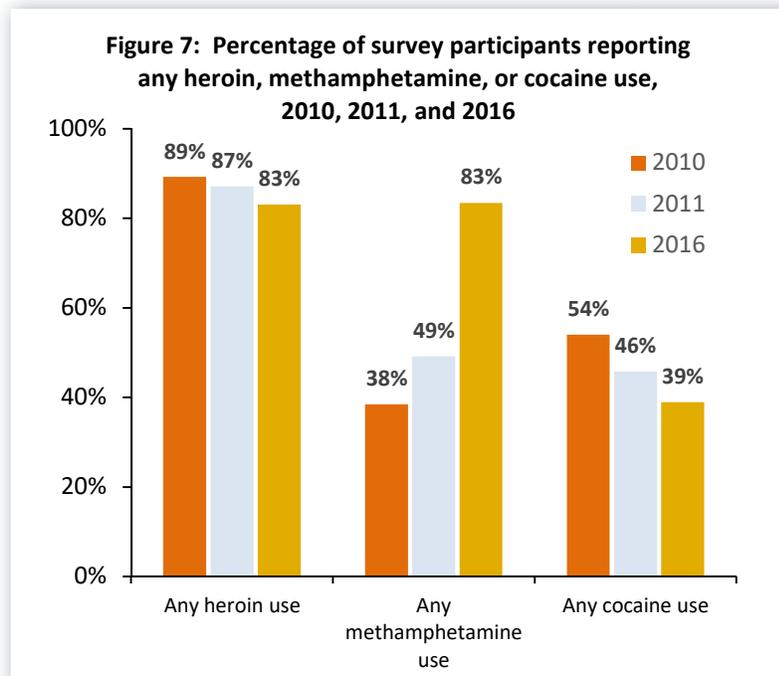
*Current living situation and county of residence do not add up to totals due to missing data.

Compared to 2010 and 2011, survey participants in 2016 were much more likely to report being homeless, as shown in Figure 6.

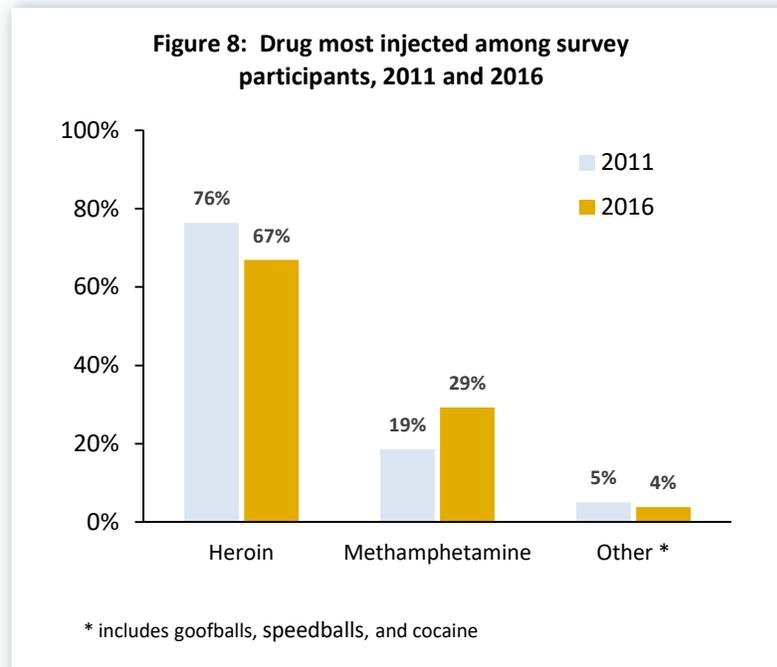


Drug use

Across all injection drug users who completed the survey (n=550), there were significant differences in drug use compared to survey samples from 2010 and 2011. Figure 7 shows the percentage of participants reporting any heroin, methamphetamine, or cocaine use in each year. While heroin use decreased slightly in 2016, methamphetamine use increased from 49% to 83%. Reported cocaine use decreased in both 2011 and again in 2016.



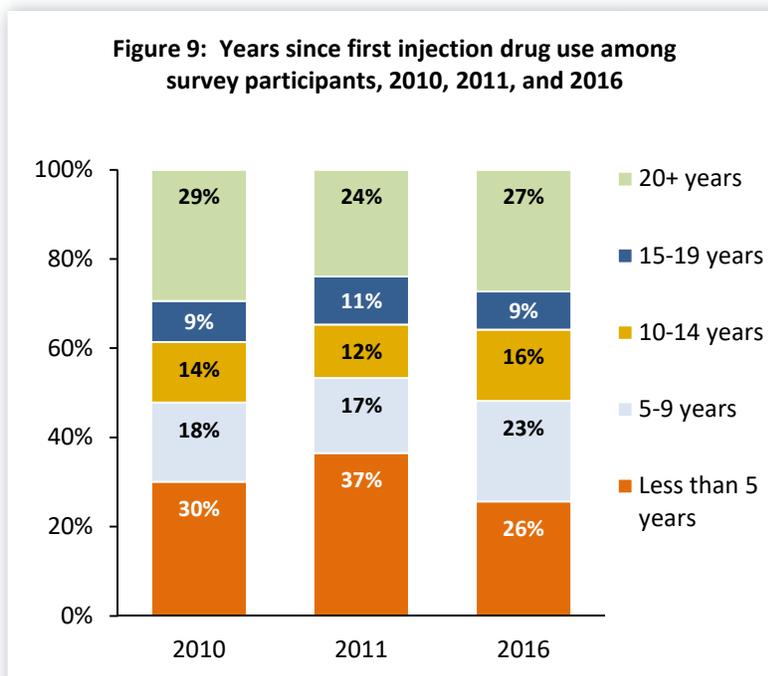
A similar trend emerged when participants were asked what drug they inject most often. The percentage who reported heroin decreased from 2011 to 2016, while the percent who reported methamphetamines increased (Figure 8). Data for 2010 is not shown because the question wording was too different to allow for comparison to subsequent years.



Participants started injecting at a median age of 21 years old, with a range of ages from six to 57 years old at first injection drug use. Total length of time that participants had injected drugs could not be calculated because breaks in use are common and vary in length. To estimate how recently participants began injecting, we subtracted the age they started injecting from their current age. See the Data Analysis section under Methods for limitations on this data. The median was 10 years since participants started injecting (range of 0-52 years).

Figure 9 shows participants by how recently they began injecting. Participants who had started injecting in the last five years made up the largest group in 2010 and 2011. By 2016, newer injectors decreased as a proportion of the total sample and were surpassed by participants who began injecting 20 or more years ago.

Primary methamphetamine injectors began injecting at a later age and more recently than those who injected heroin most (Table 6).

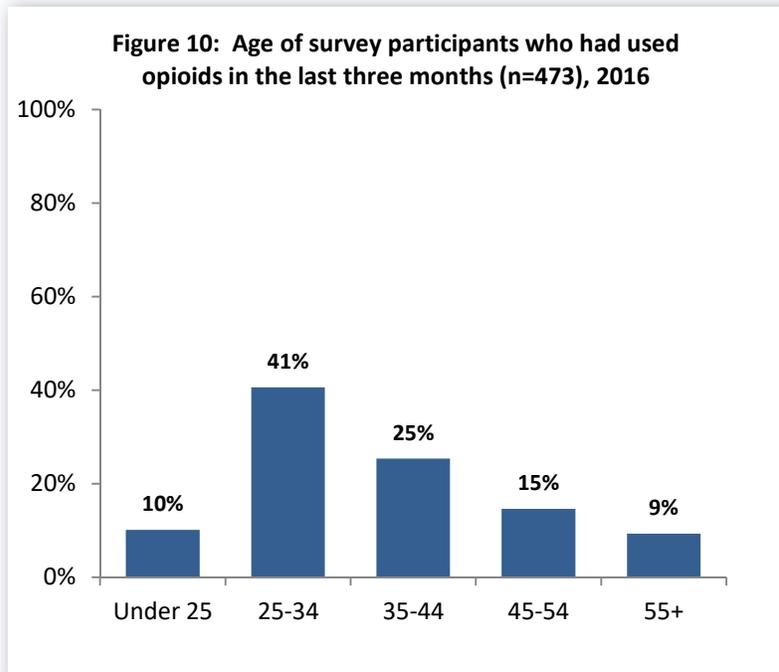


	Heroin	Methamphetamines
Median age at first injection drug use	20	23
Median years since first injection drug use	10	9

Thirty-one percent of primary methamphetamine injectors had begun injecting in the last five years, compared to 24% of primary heroin injectors.

Focus on opioid users

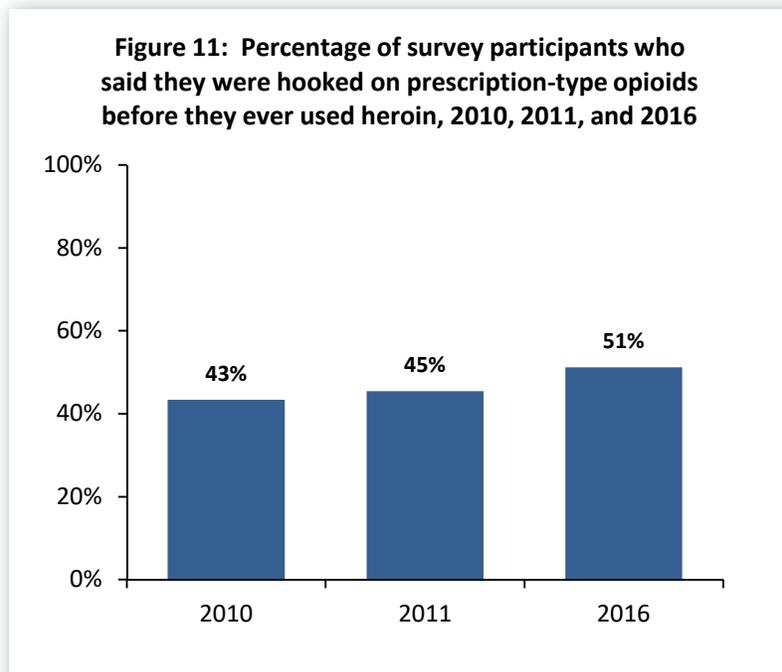
In this section, data are limited to participants who had had used opioids in the last three months, such as heroin, prescription opioids, or a combination of heroin with cocaine or methamphetamines (n=473 of 550 total injection drug users). Over three quarters of opioid users (78%) reported heroin as the drug they injected most often, while 18% reported methamphetamines. Among opioid users, the largest group of participants were between 25 years and 34 years old, as show in Figure 10.



Transition from prescription-type opioids to heroin

We borrowed survey language for this question from a similar survey done at Seattle syringe exchange sites: “Before you began using heroin, were you hooked on prescription-type opiates¹³ (like OxyContin or Vicodin)?” Among those who had used heroin in the last three months (n=457), 51% said they were hooked on prescription opioids before ever using heroin.

Figure 11 shows this number increased from 43% in 2010 and 45% in 2011. Those who were hooked on prescription opioids first were significantly more likely to identify as White, be 25 years to 34 years old, and to have started injecting in the last 10 years.



¹³ This report uses the term “opioids”; the survey used the term “opiates.”

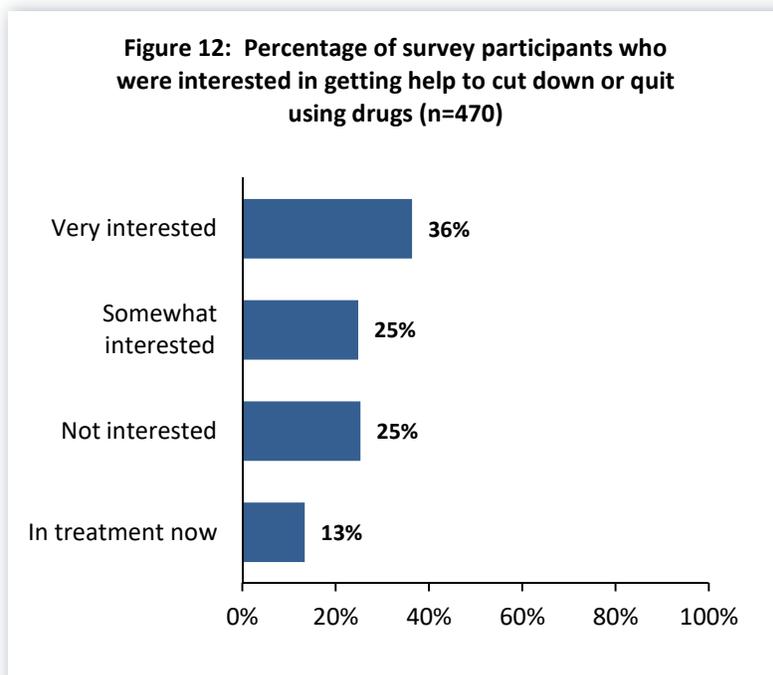
For comparison, similar results were found in the Seattle-area syringe exchanges. During 2009-2013, 40% of Seattle-area participants said they were hooked on prescription-type opioids before using heroin. In 2015, 57% of participants across the entire state of Washington said they were using prescription-type opioids before using heroin.¹⁴

Overdose

Almost one third of opioid users had overdosed in the last year (n=144 of 460, or 31%). Those participants used and injected more drugs than participants who had not overdosed in the last year. They were also more likely to share syringes or other injection-related equipment.

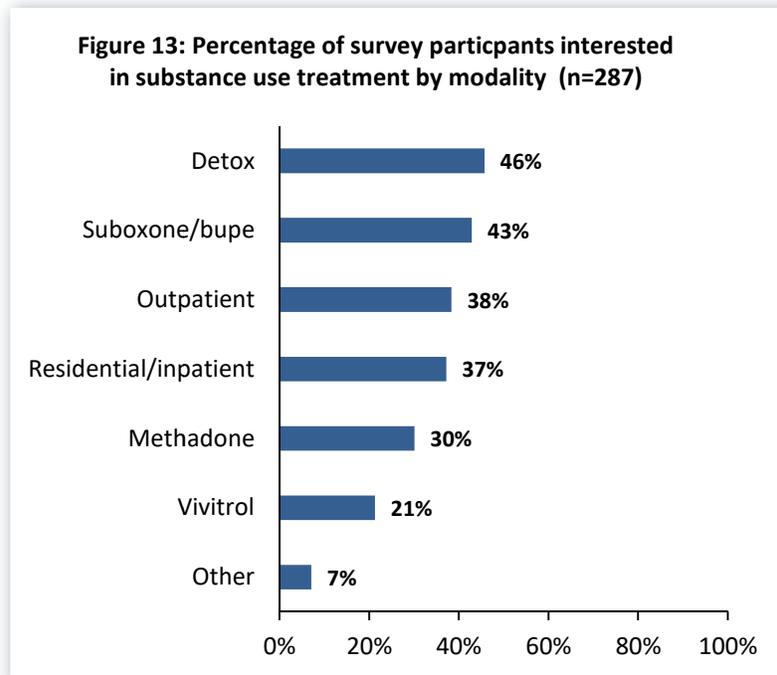
Interest in treatment

When asked, “How interested are you in getting help to cut down or quit using drugs?” the majority said that they were interested to some degree. The largest group responded that they were “very interested” (36%). A quarter of participants said they were somewhat interested, and another quarter said they were not interested. Thirteen percent said they were currently in treatment (Figure 12).

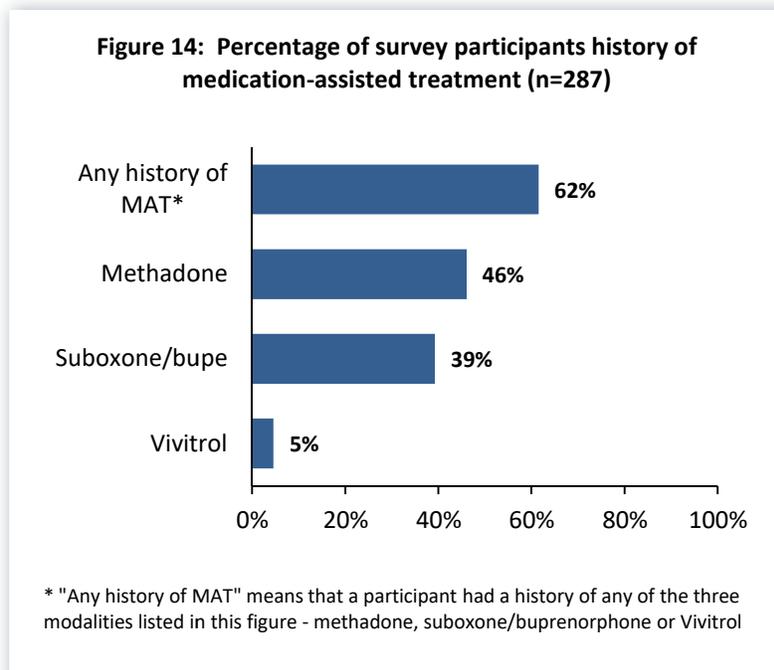


¹⁴ Adai.uw.edu/pubs/infobriefs/2015DrugInjectorHealthSurvey.pdf

If a participant responded that they were very or somewhat interested in getting help to cut down or quit using drugs, interviewers read a list of treatment modalities and asked what types the participant was interested in. Detoxification (detox) treatment was most popular, with 46% of participants interested. Suboxone/buprenorphine followed at 43% (Figure 13).

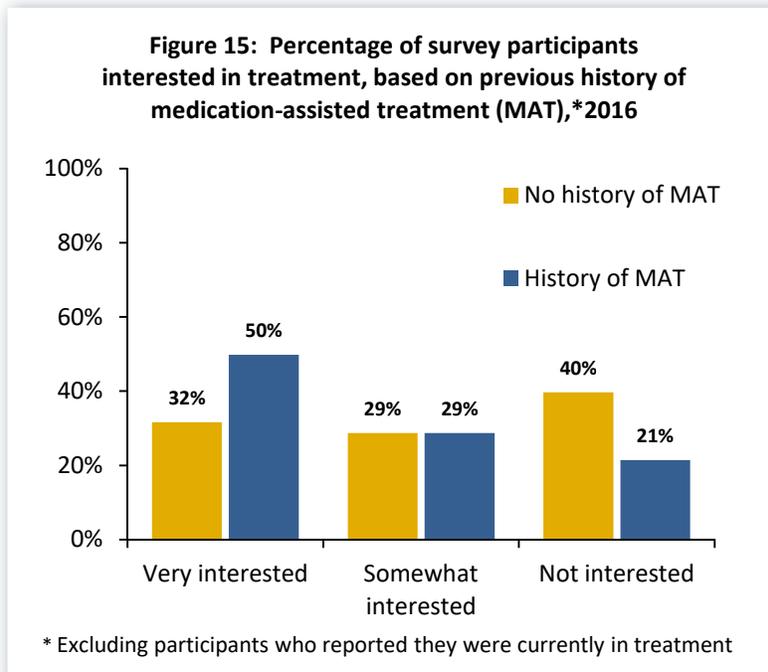


More than half (62%) of opioid users had been in a medication-assisted treatment (MAT) program involving methadone, suboxone/buprenorphine, or Vivitrol (Figure 14).



Participants were significantly more likely to express interest in getting help with their drug use if they had a previous history of MAT ($p < .0001$), as shown in Figure 15.

Twenty-four participants said they were very or somewhat interested in getting help to cut down or quit using drugs, but were not interested in any of traditional treatment modalities listed in Figure 15. Some cited that they wanted to quit “cold turkey” or needed other support like housing, employment, or mental health counseling. Six of these 24 participants had a history of MAT.



Twenty-one percent of opioid users had tried to access some form of MAT in the last 12 months, but were unable to enroll ($n=98$). Among those participants, there were a wide variety of barriers cited (Table 7).

Table 7: Reasons for not getting into MAT reported by syringe exchange client survey participants, 2016

Reason	n	%
Insurance/cost issue	34	35%
Wait list/no openings	28	29%
Eligibility issue	18	18%
Logistical issues	12	12%
Legal issues	10	10%
Couldn't find what I wanted	8	8%
No stable housing	7	7%
Didn't know where to go	6	6%
Disagreement with staff	2	2%
Lack of support from others	1	1%
Personality conflict with staff	1	1%

Insurance issues included being uninsured or having insurance that did not cover the preferred form of treatment. Legal issues included being on probation and having a probation officer who did not support enrollment in MAT, and getting arrested and losing a spot in a treatment program. Eligibility issues include a participant's inability to detoxify, having a urine drug screen that was positive for benzodiazepines, and a history of expulsion at a particular facility. Logistical issues included not having a legal form of identification, not having a phone, missing the intake appointment, or being in a relationship where the other person was unable to enroll in the treatment program.

Key Findings

- A much larger percentage of participants reported being homeless in 2016 compared to both 2010 and 2011.
- In 2016, a much higher percentage of survey participants reported methamphetamine use compared to participants in 2010 and 2011 surveys.
- A higher percentage of participants reported methamphetamines as the drug they inject *most often*, compared to previous years.
- The percentage of heroin users hooked on prescription opioids before ever using heroin continued to increase—from 45% in 2011 to 51% in 2016.
- The majority of opioid users were interested in getting help to cut down or quit using drugs. More than one in five had attempted to get into MAT treatment in the past year, but faced barriers to accessing services. Many participants had a previous history of MAT treatment.



Background

When discussing opioid use, it is also helpful to discuss the substance use treatment system. Unfortunately, a comprehensive count of persons in substance use treatment in our region is currently unavailable. Federal regulation 42 CFR Part 2 greatly restricts the use of substance use treatment data, even for public health purposes; as such, there is no centralized data source that includes every client in treatment in our region.¹⁵ While some publicly managed datasets exist for clients served with federal, state, and local dollars, such as those enrolled in Medicaid or uninsured, recent transitions and gaps necessitated a different approach.

As a proxy source of data, we partnered with Health Share of Oregon (Health Share), one of two coordinated care organizations (CCOs) serving the Medicaid population in the Tri-County region and the largest in the state of Oregon. Health Share currently serves approximately 220,000 enrolled Medicaid members across the three counties—nearly 13% of the estimated population in the region.¹⁶ Clackamas, Multnomah, and Washington counties have worked in partnership with Health Share to serve clients in need of behavioral health care services since Health Share began in the fall of 2012.

Due to the rapidly changing health care landscape of the last few years, we cannot estimate how the numbers we do have would or would not have changed in recent years *apart* from the impact of health care reform. Increased utilization of services, in the wake of the Medicaid expansion and other changes, does not necessarily equal an increase in the true demand for services in our population. However, what we can do with the available information is compare the prevalence of opioid use to other substances that bring people into treatment to examine how it currently compares as a drug of choice in the region among those using substances.

¹⁵ Oregon Health Authority (OHA) recently changed its policy on submission of substance use treatment claims to the All Payers All Claims database. If a payer's consent processes allowed re-disclosure under the federal rule, payers were mandated to start including substance use treatment claims beginning in 2016, and were allowed to begin submitting in 2015. Payers are exempt from this new requirement if their consent processes are not adequate under 42 CFR Part 2, however, and some payers have filed these exemptions. OHA is prohibited from re-disclosing identifiable data in any form, to any entity, under this system. It is unknown if these data will be available in aggregate in future years or how comprehensive they will be, given the exemptions.

¹⁶ The State switched to a new data collection system for publicly funded treatment in 2014, but not all providers have been able to fully transition as of this time, leading to reporting gaps in certain populations.

Methods

Using Medicaid-approved service codes for substance use treatment and diagnoses from the ICD-9 and ICD-10 diagnostic codes, behavioral health claims were analyzed for Health Share members aged 12 years and older. It can be difficult to distinguish mental health treatment codes from substance use treatment codes in non-medication-assisted treatment (MAT) outpatient settings, where multiple codes overlap; thus, service codes had to be paired with a valid primary substance use diagnosis to qualify for inclusion. Encounters were stratified by age at time of service and by county of residence. Members were divided into two groups:

- Those having any substance use disorder primary diagnosis, including opioids, and
- Those with an opioid-related primary diagnosis.

The passage of the Affordable Care Act, and subsequent Medicaid expansion, resulted in a significant increase in Medicaid enrollees. This rapidly increasing enrollment in 2013 and early 2014 likely impacts the number of those entering treatment under Medicaid coverage. Consequently, we relied on the relative percentages of opioids to overall substance use to determine if and how opioid use specifically has changed over the last several years relative to other substances—with the exception of raw counts of MAT clients. The raw counts of clients are presented in the Appendix, but must be interpreted with caution.

All data stratified by county is by county of residence, not the county where services may have been received. MAT was defined as clients receiving methadone, naltrexone, or buprenorphine services in any setting, including being prescribed by primary care physicians. Opioid users were defined as clients having an opioid-use disorder as their primary diagnosis in at least one claim within the time period of analysis, and omits those who had it as secondary to another diagnosis.

Client counts for different levels of care, (e.g., residential, outpatient, etc.) are not independent of each other. A single client could move through detoxification (detox), residential, and outpatient within the same year. However, multiple episodes at the same level of care were only counted once. For example, a client with three detox episodes in 2014 would be counted as one client in detox in 2014.

Levels of care are determined by the client's specific needs. The American Society of Addiction Medicine (ASAM) criteria¹⁷ are the most widely used and comprehensive set of guidelines for placement, continued stay, and transfer or discharge of patients with addiction and other co-occurring conditions. The criteria are used to continually assess stability in six different biopsychosocial dimensions. While there are currently 10 specific ASAM levels of care, there are four widely known categories that are identifiable within claims data:¹⁸

¹⁷ Mee-Lee D, Shulman GD, Fishman MJ, Gastfriend DR, Miller MM; eds. (2013). *The ASAM Criteria: Treatment Criteria for Addictive, Substance-Related, and Co-Occurring Conditions*. 3rd edition. Carson City, NV: The Change Companies.

¹⁸ In claims data, distinctions such as regular outpatient versus intensive outpatient are not always visible; we used the broader groupings to capture all substance use-related claims.

- *Withdrawal management*, often known as detox services, are short-term and are usually provided in a sub-acute medically monitored setting to facilitate the completion of safe withdrawal—usually, although not always, from alcohol or opioids—and to increase the likelihood of continuing treatment or recovery at a different level of care.
- *Residential treatment* is 24-hour, on-site care providing structured clinical services to address multiple types of instability. Behavioral health issues are addressed in the context of the therapeutic community, and care is ideally followed by a “step down” into another level of care, such as outpatient.
- *Outpatient services* provide scheduled clinical services, which may include individual and/or group behavioral health services, case management, and so forth, to address the individual’s personal goals for change, behavioral health concerns, and/or ongoing recovery journey. As the name suggests, it takes place on an outpatient basis, with clients coming in for services around their normal work/life schedule.
- *Opioid treatment services* is an umbrella term for a variety of pharmacological treatment methods that use opioid agonist and antagonist medications for those with severe opioid-use disorders (MAT, described above). Opioid treatment services can be delivered in two federally authorized settings: 1) office-based opioid treatment prescribing, which may be the sole intervention or may be paired with behavioral health interventions, such as counseling; and 2) specialized addiction treatment providers, designated as Opioid Treatment Programs (OTPs), which provide both medication and behavioral health counseling services to achieve stability, as well as the option of ongoing maintenance services. For the purposes of this report, both models are paired together as “MAT.”

There are several limitations to be noted. The first is that there have been significant changes in substance use treatment over the last several years. The expansion of Medicaid under the Affordable Care Act implemented in January 2014 and the mandate to cover substance use treatment, among other behavioral health interventions, greatly increased the number of people able to access services. Although this is an excellent development in the world of health care, from a data perspective, any trends from this era in terms of increasing or decreasing numbers must be interpreted cautiously.

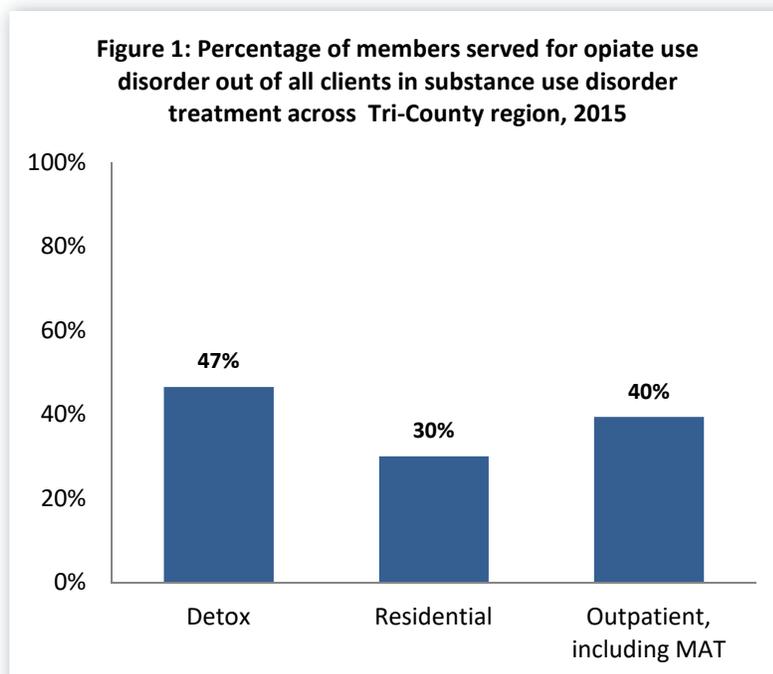
Additionally, the data used here are only available for the last several years, since the creation of the CCOs. As described earlier, there is currently no true count of those in substance use treatment in our region. The Tri-County region’s partnership with Health Share made it possible to utilize Health Share’s large Medicaid member base as a proxy for the Medicaid population in treatment facilities. Finally, January to June 2013 residential data are omitted, due to the timing of the residential benefit transition to the counties.

Results

Opioid use across the substance use treatment continuum

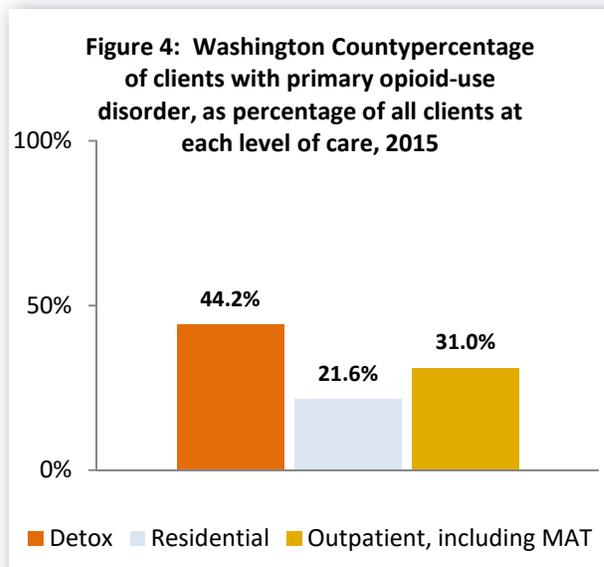
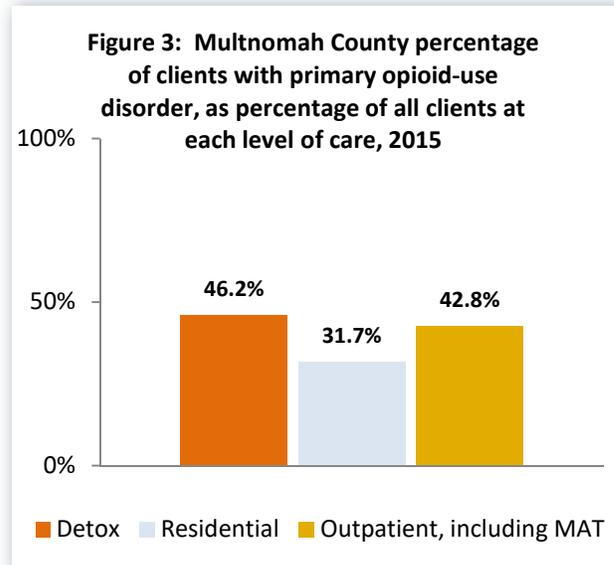
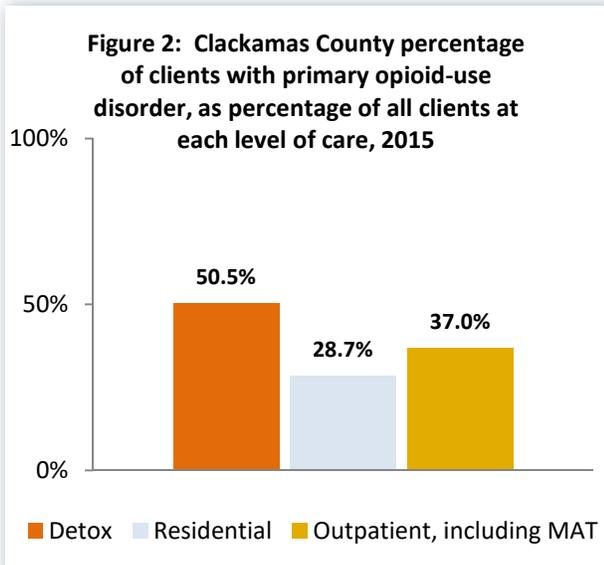
In 2015, 4,960 Health Share members across the three counties had a primary opioid diagnosis in at least one medical claim.

Opioid-use disorders comprise approximately 45% of treated substance use disorders across the Tri-County region in detox services; 40% in outpatient services (when including MAT, approximately 22% without MAT); and 30% in residential services (Figure 1). (The percentage of members with a primary opioid diagnosis does not include those who may have an opioid-use disorder secondary to another substance.) These proportions have remained relatively consistent over the last several years.



Comparing the counties and levels of care

In the most recent year (2015), Clackamas County had the highest proportion of members in detox services with opioid-use disorder, while Multnomah County had the highest proportion in residential treatment and in combined outpatient/MAT (Figures 2-4).



Clients frequently move between levels of care, and a client may engage in different types of treatment throughout a single course of care or through multiple episodes of care over time. While the levels of care are often considered a continuum, the actual path of clients through the system is often not linear, both due to client preference/need and to varying capacity in each level of care.

However, it may also be important to consider what differing prevalence of opioid-use clients at each level of care mean—if there is a significantly higher proportion of opioid-use disorder in one level of care versus another, what are the potential implications? For example, since the proportion of clients with opioid-use disorder in detox is significantly higher than residential and outpatient, does that point to a greater difficulty in engaging these clients in long-term treatment?

It should first be noted that detox services are primarily for clients who use alcohol and opioids, rather than other substances, due to medical necessity criteria. From that perspective, one would reasonably expect to see a higher proportion of clients with opioid-use disorder (relative to other substances) in detox than in residential or outpatient, as we do across all three counties (Figure 4). The question is at what point this difference becomes significant. The medical necessity factor, as well as different system capacities, complicates a simple analysis of proportions, and further investigation is necessary.¹⁹

There is precedent, however, for considering what barriers may exist for clients with opioid-use disorder in accessing continued care; for example, gaps in transitioning into lower levels of care have been noted in the past in our community. In 2001, Central City Concern, one of the largest treatment providers in the Tri-County region, implemented a peer-mentoring and supportive housing program specifically to address the needs of Multnomah County clients with heroin addiction, a population that had demonstrated difficulty in transitioning from detox to outpatient services and in subsequently completing outpatient services, and who were at high risk for relapse and overdose. Slightly more than 85% of mentored clients engaged in outpatient after detox, as opposed to 51% at baseline, and the average length of time spent in outpatient care was about 68 days for mentored clients, as opposed to about 27 days at baseline.²⁰

However, these are only two possible explanations. We cannot currently say with certainty whether the current differences seen in opioid prevalence at different levels of care are attributable to the natural prevalence of opioid use in detox under medical necessity criteria, gaps in engaging clients with opioid-use disorder in ongoing treatment, policy barriers (such as policies against clients using MAT in some traditional treatment programs), some treatment modalities being more appropriate for opioid clients than others, client preference, or other unseen factors. However, these differences do call for further investigation, especially where discovering the answer has the potential to lead to improved access and services.

¹⁹ For example, undertaking a cohort study of members and following their pathways through the system of care.

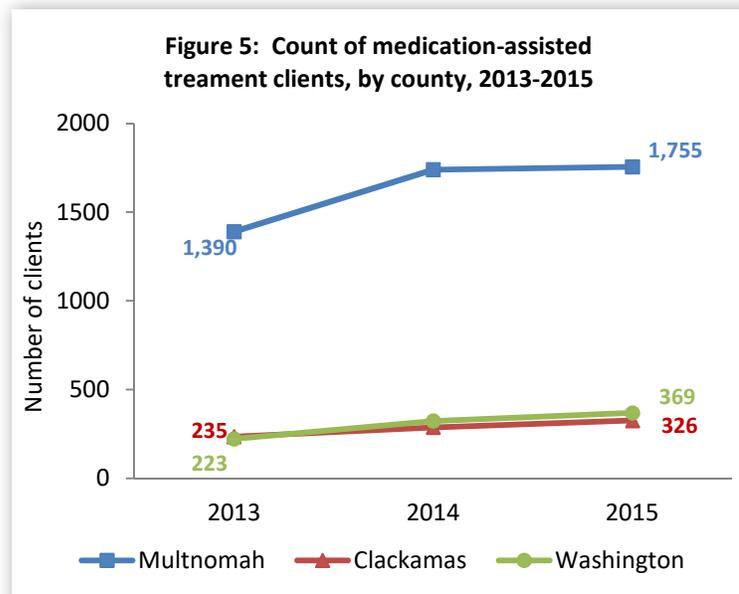
²⁰ Moore T. (2001). *Addictions Recovery Mentor Program - Bridging the gap: detox to treatment service engagement*. Portland, OR: Central City Concern.

Medication-assisted treatment (MAT)

MAT includes methadone, naltrexone, and buprenorphine services. Methadone is only dispensed via licensed opioid treatment programs (OTPs).²¹ Buprenorphine products can be prescribed by physicians, physician assistants, and nurse practitioners who have received authorization from the Drug Enforcement Agency (DEA), as well as by OTPs. Naltrexone can be prescribed by any physician or OTP. For the purposes of this analysis, these services were rolled into the general “outpatient treatment” category to reduce duplication (many OTPs offer additional behavioral health services, such as counseling or group therapy; members receiving medication from their physicians may or may not be enrolled in these types of services elsewhere). Further review in future years will seek to separate these services further.

The Medicaid expansion rapidly increased the number of people newly eligible for services in 2013 and throughout 2014; a significant rise in the numbers of those in MAT is, therefore, to be expected. However, increased access to treatment is not necessarily equivalent with increased demand for treatment, and this fact should always be considered when interpreting treatment data. The years 2014 and 2015 demonstrated a slight increase in MAT-enrolled clients. Multnomah County had approximately five times as many clients in MAT as either Clackamas or Washington County.

This disproportion, relative to the populations of the three counties and their representation in the Health Share member base, bears further investigation. Demographic differences between the three counties, access issues, different distributions of substance use across the Tri-County area, or other factors could be explanatory but have not yet been thoroughly investigated. Looking beyond the raw counts, Multnomah County also has the highest proportion of clients in MAT of the three counties: 52.5% of Multnomah County Health Share members identified as having a primary opioid-use disorder²² at some point in 2015 were receiving MAT services, compared to 48.4% in Washington County and 38.1% in Clackamas County (Figure 5).

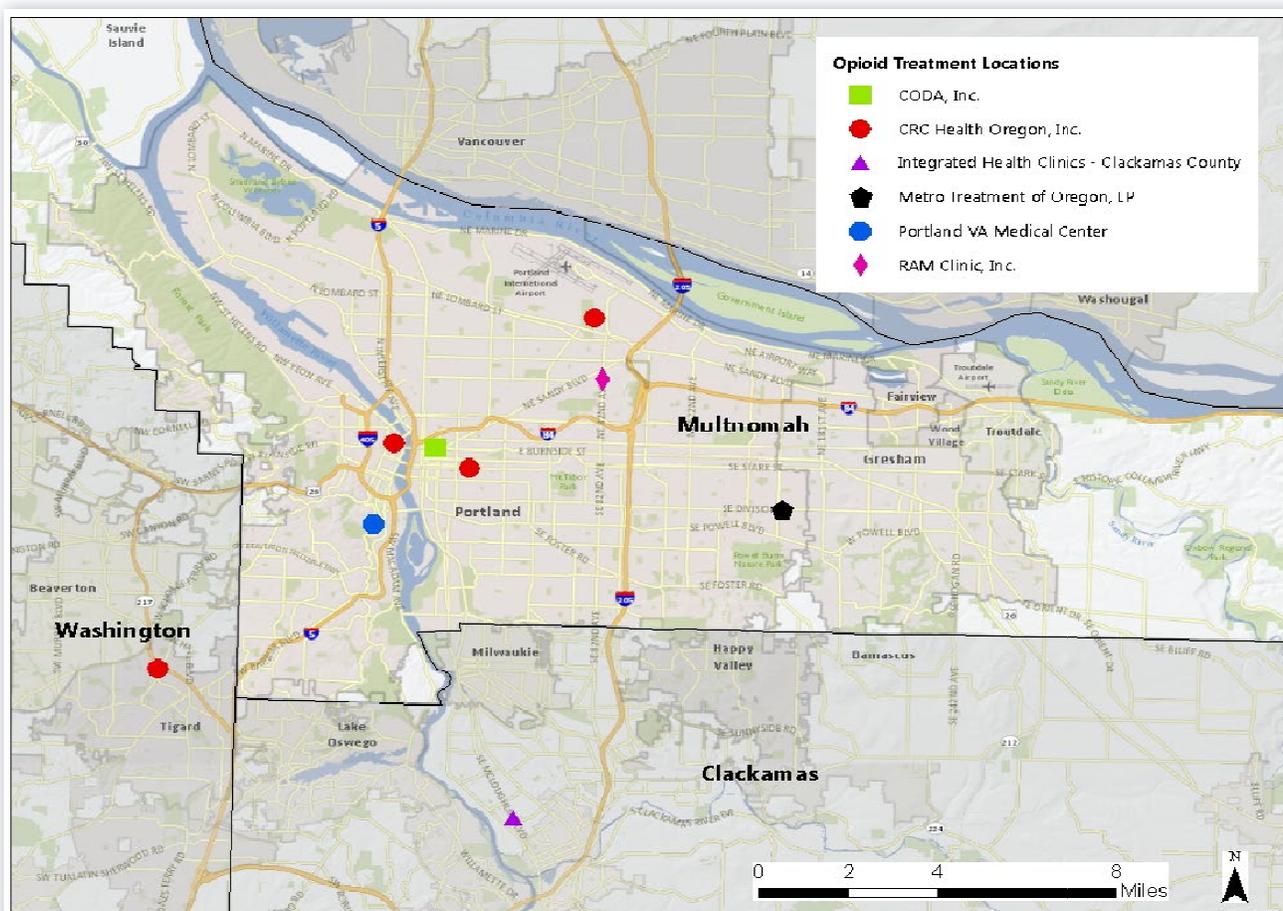


²¹ For the purpose of treating addiction; it may be prescribed by physicians in low dose for pain management.

²² Due to the nature of claims data, primary diagnoses of opioid-use disorder are most likely to be identified in a treatment setting; therefore, this should not be construed to be 52.5% of all opioid users, or even all who may qualify as having an opioid addiction. This is because primary diagnoses in claims data often refer to the primary reason for the health care visit, (e.g., a skin abscess may be directly caused by injection drug use, but it is the primary ailment being treated in an emergency room visit, and may therefore receive the primary diagnosis designation, with opioid-use being reported as a lower diagnosis). However, it is possible that a primary diagnosis of opioid-use disorder could be noted in other health care settings.

As mentioned earlier, geographic access may be one consideration for this difference; while clients can travel outside of their immediate region to seek care where it is not otherwise available, distance can be a barrier, especially where clients may rely on public transportation or ride-sharing. Of the nine OTPs in the region, seven are in Multnomah County; four are within minutes of downtown Portland. Two thirds of the sites are in a 25-square mile section at the center of a 3,075-square mile region—indicating potential access issues, especially with a form of treatment that generally requires daily visits (Figure 6). Information is lacking for individual authorized buprenorphine prescribers at this time, both in terms of location and in how many are actively utilizing their ability to prescribe. We hope to include information on this in a future report.

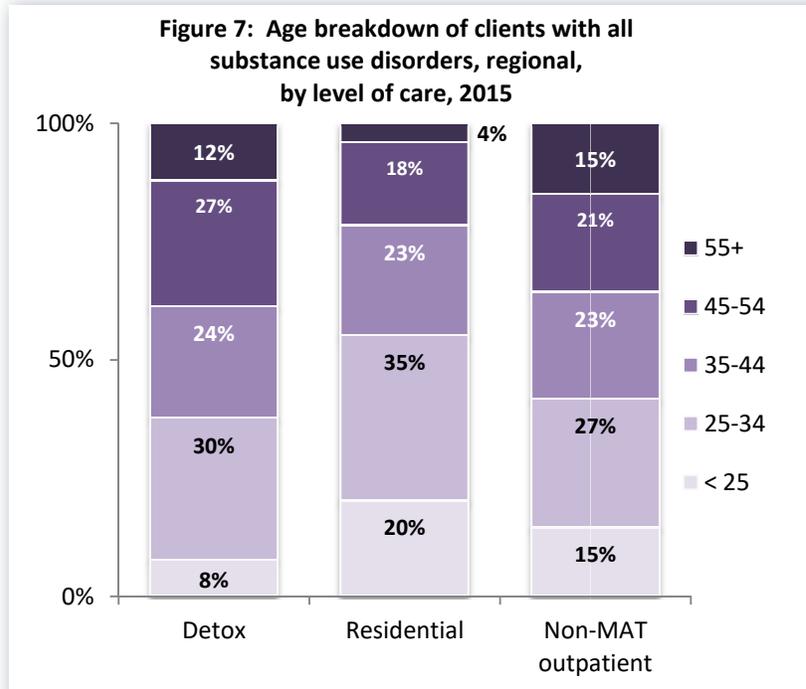
Figure 6: Opioid treatment locations in Tri-County region, 2016



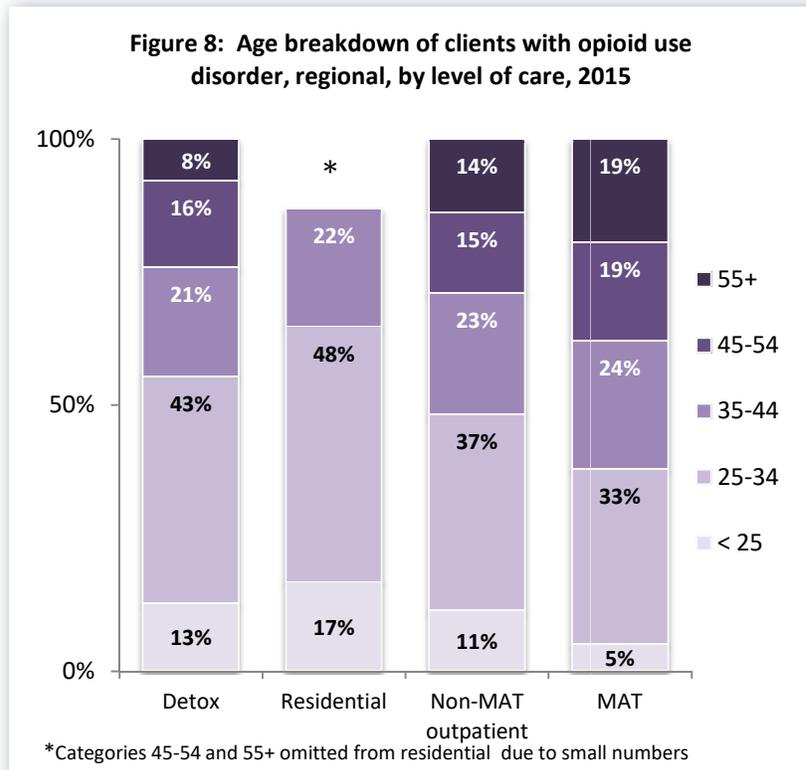
Age trends

While 25 to 34 year-olds make up the largest single group of Health Share members with substance use disorders, the difference is even more pronounced among members with opioid-use disorder (Figures 7-8).

- In detox: 43% of opioid use clients were in this age bracket; only 30% of substance use clients overall.
- In residential: 48% of opioid clients, as opposed to 35% of overall members.
- In (non-MAT) outpatient: 37% of opioid clients, as opposed to 27% of overall clients.
- In MAT: 33% of clients (no comparison group for overall substances).



The 25 to 34 year-old demographic has been increasing each of the last three years for both clients with opioid-use disorder and all substance use clients—from 30% in 2013 to 35% in 2015 for the former, and from 25% to 28% for the latter. When comparing levels of care, the 55 year-old and older age group makes its strongest appearance in MAT services, perhaps indicating that this method of treatment, which can be primary care-based, may be more appealing to older members. Twenty-five to 34 year-olds still constitute the single largest age group, at 33%.



Key Findings

- While comparable data on the prevalence of other kinds of substance use are necessary to determine with certainty, opioids may be approaching the single largest primary drug of choice for Health Share members in substance use treatment in the Tri-County region.
- There is evidence that Health Share members with opioid-use disorder may struggle with access to certain types of treatment.
- Multnomah County's high count of residents in MAT may indicate access issues for residents of the other counties, as well as prompt further investigation into demographic differences across the region.
- Young adults—25 to 34 years old—are the single largest age group among members with opioid-use disorders in treatment. However, older members (age 55 and older) may be more attracted to MAT as an option than other, more traditional therapies.

Discussion and Limitations

Introduction

This report summarizes available Tri-County regional data on some of the causes and consequences of opioid misuse. Many other drivers and outcomes are beyond the scope of this report but will need to be identified and measured to help reduce the many preventable deaths and overdoses documented here. Since 2008, the total number of drug overdose deaths has exceeded motor vehicle deaths in Oregon as well as nationally. Because opioid deaths occur at a mean age of just 40 years, each death accounts for up to 40 years of potential life lost. In Oregon the greatest number of years of life lost is from cancer and heart disease followed by accidental causes which includes drug overdose. Since opioids are cheap, abundant, and addictive, Oregon and the Tri-County area will need on-going cross-sector collaboration, policy development, and monitoring to make further progress.

Fatal overdose

Fatal opioid overdose deaths in the region decreased sharply from a peak in 2011, but there has been little additional decline since 2013. Although the region has seen only a slow decline in overall opioid fatalities in the last three years, many other parts of the county have watched deaths increase during the same time period. Also, in contrast to many other parts of the United States, heroin deaths have continued to decline in the Tri-County region rather than increasing.²³

One strength of this report is the use of medical examiner records, which allow us to provide up-to-date fatality statistics in contrast to national data which is often delayed. One challenge of the current mortality analysis is that new 'synthetic opioids' such as fentanyl derivatives do not cleanly fit into the two simple categories of heroin versus prescription opioid; this distinction will hopefully be made in future reports. There is also a lack of national consensus on whether to include both accidental and suicide *manner*s of death when the *cause* of death is drug overdose. While the Centers for Disease Control and Prevention combines both opioid-related suicides and accidental opioid overdose deaths in its reports, others think that since the interventions to prevent suicides versus accidents are different, data summaries should also make the distinction. While in this report both suicide and accidental drug overdoses are combined, in the future we will include a summary that distinguishes total, accidental, and suicide opioid overdose deaths.

Non-fatal overdose

There are two different emergency ambulance providers operating in the Tri-County region. The two providers use different data systems and consequently most of information on paramedic naloxone administration is limited to Clackamas and Multnomah counties.

²³ Rudd, R.A., Aleshire, J.D., Zivbell, J.E., et al. (2016). *Increases in Drug Overdose Deaths-United States 2000-2014*. MMWR Morb Mortal Wkly Rep 2016;64:1378-1382 or

To prepare this report we validated our non-fatal opioid overdose case definitions from 9-1-1 responses. Using the validated case definition we found that likely opioid overdose EMS responses decreased between 2014 and 2015 in Clackamas and Multnomah counties. Because of extensive outreach and training, it is possible that during the period covered by this report, bystander administration of naloxone for suspected overdose increased. If bystanders provided more naloxone in 2015 than the number of paramedic attended overdoses we identified might be an underestimate of the actual total. We hope that more refined paramedic records in the future will contain enough detail to determine whether naloxone given before paramedic arrival was successful in reviving patients so that the overdose count can be more accurately estimated.

Opioid prescribing

This report includes prescribing trends from 2012 to 2015 and illustrates the high frequency of opioid prescribing in the region. For example, we know from the Prescription Drug Monitoring Program (PDMP) that more than one in five of all residents in the Tri-County region received an opioid prescription in 2015. This report also shows that the rate of opioid prescribing generally increases with age and follows the pattern of prescription opioid overdose deaths occurring in older age groups compared with heroin. Although the absolute rate of prescribing is highest in the elderly, in the teenage to young adults (15-24 years), approximately one in six individuals receives a prescription each year.

The prescribing trends section is subject to several limitations. First, the PDMP only includes opioids dispensed from retail pharmacies, so drug dispensed from hospitals, institutional pharmacies, and residential treatment facilities are not included nor are drugs given in hospital emergency departments. Second, the data made available to analysts in the Tri-County area from the PDMP is incomplete because of what is reported to the Oregon Health Authority (OHA), and because of legal limitations on what OHA can share. For example, it is not possible to distinguish those opioid prescriptions for acute pain, such as a broken bone, from those for chronic pain or for end-of-life pain. In addition, the data provided to counties does not include the name or type of clinicians, foreclosing any opportunity to determine which specialties provide the most prescriptions and subsequently limiting our ability to target drug safety education. Until more detailed information becomes available, the PDMP provides only a high-level overview about the total amounts and types of opioids dispensed by retail pharmacies.

Another important limitation of this section of the report is that the drug tramadol was reclassified as a schedule 4 opioid in mid-2014. Consequently, at that point tramadol was added to the counts of opioid prescribed in PDMP data; unfortunately the trends we identified may not be accurate unless tramadol is removed. Since tramadol accounted for approximately 5% of opioid prescriptions in the last of 2015, it is possible that the trend of increased prescribing identified in this report can be explained by the change in reporting.

Data available currently available on the OHA interactive website allows opioid trends to be analyzed with and without tramadol; data through quarter four of 2015 excluding tramadol shows that the number of opioid prescription recipients, the number of prescriptions, and the number per 1,000 residents were flat between 2011 and the end of 2015 in the Tri-County.²⁴

Thankfully, results recently posted on this website, after this report was completed, show that in the first three quarters of 2016 there has been a steady decline in all measures of opioid prescribing in the Tri-County region.

Injection drug use patterns

The syringe exchange programs run by Outside In and Multnomah County are a critical part of an overall opioid harm reduction strategy. Observations from these programs also provide insights into the magnitude of substance misuse and opportunities to learn from those living with opioid dependence. In 2015, these programs distributed over three million syringes to more than 6,000 unique individuals—a large increase over the last four years. While syringe exchange is not a complete measure of the number of people injecting drugs, these trends suggest there may be more, not fewer, people suffering from opioid misuse now than in the past.

A survey of over 500 individuals visiting the syringe exchange sites in 2016 identified several important findings and trends including an increase in methamphetamine use and more frequent housing challenges. Additional points highlighted by the survey include that most (67%) of respondents reported that heroin is the most frequently injected drug. Second, compared with 2010 there was a slight decline in the number of people reporting ‘any heroin’ use from 89% of respondents to 83%. In contrast, ‘any methamphetamine’ use increased from 38% of respondents in 2010 to 83% in 2016. Third, 51% of survey respondents were homeless and 26% lived in temporary or unstable housing situations; less than a quarter (23%) had permanent housing. Fourth, the median age at which injection starts was 21 years—reinforcing the importance of youth outreach and prevention. Fifth, approximately 50% of heroin users reported first being hooked on prescription opioids—strongly suggests that the availability of pills contributes to initiation of heroin.

Opioid substance use disorder

The survey conducted among injection drug users provides a glimpse of the need for and accessibility of substance use disorder treatment. If those already in substance use treatment are excluded, the majority (71%) of survey respondents report being interested in substance use treatment but find multiple barriers to getting the type of treatment they want. Another data source suggesting that there is inadequate capacity for opioid substance use disorder treatment is the National Survey on Drug Use and Health (NSDUH). The most recent summary of this national survey found that fewer than 20% of respondents with opioid substance use disorder received treatment in the preceding year.²⁵

²⁴ <https://public.health.oregon.gov/PreventionWellness/SubstanceUse/Opioids/Pages/data.aspx>

²⁵ Saloner, B and Karthiekeyan, S. (2015). *Changes in Substance Abuse Treatment Use Among Individuals With Opioid Use Disorders in the United States, 2004-2013*. JAMA 314; 14:1515-1517.

Both the 2016 syringe exchange client survey and the NSDUH have strengths and weaknesses. The population surveyed locally is a convenience sample and is not necessarily representative of all injection drug users or all heroin users in the Tri-County. The timeliness, local focus, large sample size, and the response rate to the survey (44%) however are major strengths that are not easily replicated in national data.

The NSDUH provides a broad national view of the civilian, non-institutionalized population but likely excludes important groups suffering from high rates of substance use disorder including some military personnel, those in substance use treatment, and people experiencing homelessness. While both our local survey and the NSDUH have limitations, together they paint a similar picture; many people with opioid dependence receive no treatment.

While the surveys mentioned above provide some insight, physical dependence on and addiction to opioids is difficult to measure accurately. Our partnership with Health Share provides some understanding from medical claim data into the magnitude of the problem, services currently provided, and the characteristics of those in treatment. These data suggest that there may be geographic gaps in the availability of recovery services in the Tri-County region. Additionally, this analysis suggests that opioid drugs are one of, if not the largest, single reason for substance use disorder treatment in our region. Since this analysis was limited to claims data from a single payer, it cannot be considered comprehensive or necessarily representative of the treatment system in the region; however, Health Share's size makes it a helpful starting point for considering questions related to opioids' prevalence within treatment centers.

Between analysis of Health Share claims data and responses to the survey conducted at syringe exchange sites, we are concerned that addiction treatment is not uniformly accessible and many suffering from this condition do not receive treatment. We need to better understand the barriers to access that may include cost, insurance coverage, transportation, childcare, and social supports.

Since this opioid substance use disorder treatment section only had data from a single health care payer, it is subject to multiple limitations and cannot be generalized to the entire Tri-County region population. This limitation starkly illustrates the need for more comprehensive and detailed data on this topic to guide resource allocation, system planning, and measurement of outcomes. Such information would benefit health systems, health care and addiction payers, and treatment providers.

Regional efforts to prevent harms from opioids

Since early 2014, Clackamas, Multnomah, and Washington counties, together with hospitals and health systems have been working collaboratively to reduce harms from opioid misuse. Under the umbrella of the Healthy Columbia Willamette Collaboration, a task force convened to develop, publicize, and implement a safe prescribing guideline for the region.

The output of the 2014 effort, was a concise, one-page prescribing recommendation that was endorsed in late 2015 by all major hospitals, health systems, Federally Qualified Health Centers, and counties in the Tri-County region.

With support from the Oregon Public Health Division and the Centers for Disease Control and Prevention, our current effort –the Tri-County Opioid Safety Coalition was launched in 2016. This new effort expanded to include sectors beyond health care including law enforcement, substance use treatment, drug courts, mental health, and health care payers. Most importantly, the group has expanded its scope beyond prescribing guidelines to also address the complicated problems of both chronic pain and drug dependence.

In June 2016, the Tri-County Opioid Safety Coalition adopted as its mission to:

- Decrease opioid misuse and harms by coordinating the efforts of public health, medical, behavioral health, payer, and patient communities

And to work toward three outcomes:

- Decrease harms and overdose deaths from opioids in the Tri-County region.
- Improve the quality of life for people with chronic pain in the Tri-County region.
- Improve the quality of life for people with opioid use disorder in the Tri-County region

The Coalition chose to organize by seating a central coordinating committee responsible for setting goals and aligning the many concurrent efforts addressing this problem. Subgroups are focused on several broad areas including:

- Improving access to quality care for chronic pain and for opioid substance use disorder
- Improving access to the opioid antidote naloxone and increasing the number of pharmacies that will take back unused medication
- Increasing public, patient, and health care provider awareness and understanding of chronic pain and drug safety
- Monitoring and sharing health outcomes, policies, and safety implementation efforts across the region

The many measures included in this report help the Tri-County Opioid Safety Coalition to monitor progress toward reaching its goals and also to identify areas in need of resources, data, and advocacy.

Glossary of Terms

Adjusted rates: used to compare estimates between counties and with the state. Rates were adjusted to the 2000 U.S. Standard Population. When comparing rates between counties and to the state, age-adjusted rates are used because they remove the differences in the age composition of the populations.

AMR: American Medical Response is a medical transportation company and serves Clackamas and Multnomah counties.

Benzodiazepines: are a class of psychoactive drugs whose core chemical structure is the fusion of a benzene ring and a diazepine ring. They enhance the effect of the neurotransmitter gamma-aminobutyric acid (GABA) at the GABA receptor, resulting in sedative, hypnotic (sleep-inducing), anxiolytic (anti-anxiety), anticonvulsant, and muscle relaxant properties. This class includes drugs such as alprazolam, clonazepam, diazepam, and lorazepam. Excludes zolpidem (and zaleplon), which represents a chemically different class of drugs than benzodiazepines.

Buprenorphine: Buprenorphine is a partial-agonist drug used to treat opioid addiction. It works by blocking the impact (the “high”) of other opioids and suppressing withdrawal and cravings. One well known form is Suboxone, which is a combination of buprenorphine and naloxone, an antagonist, and which can be prescribed by primary care physicians holding a specialized waiver or by licensed opioid treatment programs. (An amendment to the Drug Addiction Treatment Act, under the 2016 Comprehensive Addiction and Recovery Act, now also allows certain qualified nurse practitioners and physician assistants to prescribe.) Brand names include: Suboxone (combined with naloxone), Subutex, Zubsolv, Bunavail, Probuphine.

Codeine: Codeine is a narcotic pain-reliever and cough suppressant similar to morphine and hydrocodone. Codeine frequently is combined with acetaminophen (Tylenol) or aspirin for more effective pain relief.

Crude rates: are calculated by dividing the number of individuals who met the case definition year by the total population in that year; these rates reflect the actual burden in the population.

EMS: Emergency Medical Services ambulance services or paramedic services are a type of emergency service dedicated to providing out-of-hospital acute medical care, transport to definitive care, and other medical transport to patients with illnesses and injuries that prevent the patient from transporting themselves.

Fentanyl: Fentanyl is a powerful synthetic opioid analgesic similar to but more potent than morphine. It is typically used to treat patients with severe pain or to manage pain after surgery. It is also sometimes used to treat people with chronic pain who are physically tolerant to opioids. Fentanyl is in a class of medications called opioid narcotic analgesics. It works by changing the way the brain and nervous system respond to pain. Brand names: Abstral, Actiq, Duragesic, Fentora, Onsolis, Sublimaze.

Hydrocodone: Hydrocodone is available only in combination with other ingredients, and different combination products are prescribed for different uses. Some hydrocodone products are used to relieve moderate to severe pain and others are used to relieve cough. Hydrocodone is in a class of medications called opioid narcotic analgesics and in the class of medications called antitussives. Hydrocodone relieves pain by changing the way the brain and nervous system respond to pain. Hydrocodone relieves cough by decreasing activity in the part of the brain that causes coughing. Brand names: Vicodin, Lorcet, Lortab, Norco.

Hydromorphone: Hydromorphone is used to relieve moderate to severe pain. It also may be used to decrease coughing. Hydromorphone is in a class of medications called opioid narcotic analgesics and in a class of medications called antitussives. Brand names: Dilaudid, Exalgo, Hydrostat, Palladone

Medical Examiner: The purpose of the Medical Examiner Office is to provide direction and support to the state death investigation program. The Medical Examiner manages all aspects of the state medical examiner program and has responsibility for technical supervision of county offices in each of the 36 counties of Oregon. The division is staffed by four full-time forensic pathologists, supported by four staff personnel located in the Portland Metropolitan area. Further administrative support and oversight are provided by the Department of Oregon State Police. The main activity of the division is to certify the cause and manner of a death requiring investigation within the authority of ORS Chapter 146. This activity includes postmortem examination and alcohol and drug analyses. The division also maintains appropriate records and provides lectures and training on legal medicine and death investigation to medical school students and physicians, attorneys, law students, police officers, emergency medical technicians, and other persons associated with the death investigation system.

Medication-assisted treatment: Medication-assisted treatment, often abbreviated as MAT, involves the use of opioid agonist and antagonist medications such as methadone, buprenorphine, buprenorphine/naloxone, or naltrexone to help control drug cravings, manage withdrawal symptoms, and/or block “highs.” They may be prescribed in two settings: office-based opioid treatment prescribing, which may or may not be paired with other behavioral health services, or in specialized addiction treatment providers known as Opioid Treatment Programs, which provide both medication and behavioral health counseling.

Methadone: Methadone is used to relieve moderate to severe pain that has not been relieved by non-narcotic pain relievers. It also is used to prevent withdrawal symptoms in patients who were addicted to opioid drugs and are enrolled in licensed opioid treatment programs in order to stop taking or continue not taking the drugs. Methadone is in a class of medications called opioid narcotic analgesics. Methadone works to treat pain by changing the way the brain and nervous system respond to pain. It also works as a substitute for opioid drugs of abuse by producing similar effects and preventing withdrawal symptoms in people who have stopped using these drugs. Methadone has a very long half-life (i.e., stays in the body a long time). Brand names: Dolophine, Methadose.

Metro West: is a medical transportation company and serves Washington County.

Morphine: Morphine is used to relieve moderate to severe pain. Morphine long-acting tablets and capsules are only used by patients who are expected to need medication to relieve moderate to severe pain around-the-clock for longer than a few days. Morphine is in a class of medications called opioid narcotic analgesics. It works by changing the way the body senses pain. Brand names: Avinza, Kadian, MS Contin, Oramorph, Roxanol.

Naloxone: a synthetic antagonist of narcotic drugs that is typically administered to reverse the effects of opioids, especially in the emergency treatment of opioid overdose.

Naltrexone: Naltrexone is an antagonist drug used to help prevent relapse after full opioid detox by blocking the impact of other opioids. It can also be used in treating alcohol dependence, and can be prescribed by any physician. Brand names include: Vivitrol, Revia.

Opioids: Opioids include full opioid agonist, partial opioid agonist, and combination opioid agonist/antagonist pharmacological classes. This includes buprenorphine/naloxone combinations as well as codeine antitussives. Opioids are used to relieve pain and are used to treat other conditions.

Oxycodone: Oxycodone is used to relieve moderate to severe pain. Oxycodone is in a class of medications called opioid narcotic analgesics. It works by changing the way the brain and nervous system respond to pain. Brand names: Dazidox, Endocet, ETH-Oxydose, Endocodone, Oxecta, Oxy IR, Oxycontin, Oxyfast, Percocet, Percolone, Roxicodone.

Tramadol: Tramadol is an opioid narcotic analgesic used to treat moderate to severe pain. It binds to the mu-opioid receptors to block pain and also inhibits the reuptake of serotonin and norepinephrine.

WONDER: An acronym for Wide-ranging Online Data for Epidemiological Research, WONDER is a public health query system by the Centers for Disease Control and Prevention. The Multiple Cause of Death data available on CDC WONDER are county-level national mortality and population data. Data are based on death certificates for U.S. residents.

Appendix

Overdose Deaths

ME APPENDIX Table1: Medical Examiner's Office Database Search Terms

Search terms used to create opioid categories in the Medical Examiner's Office Database:

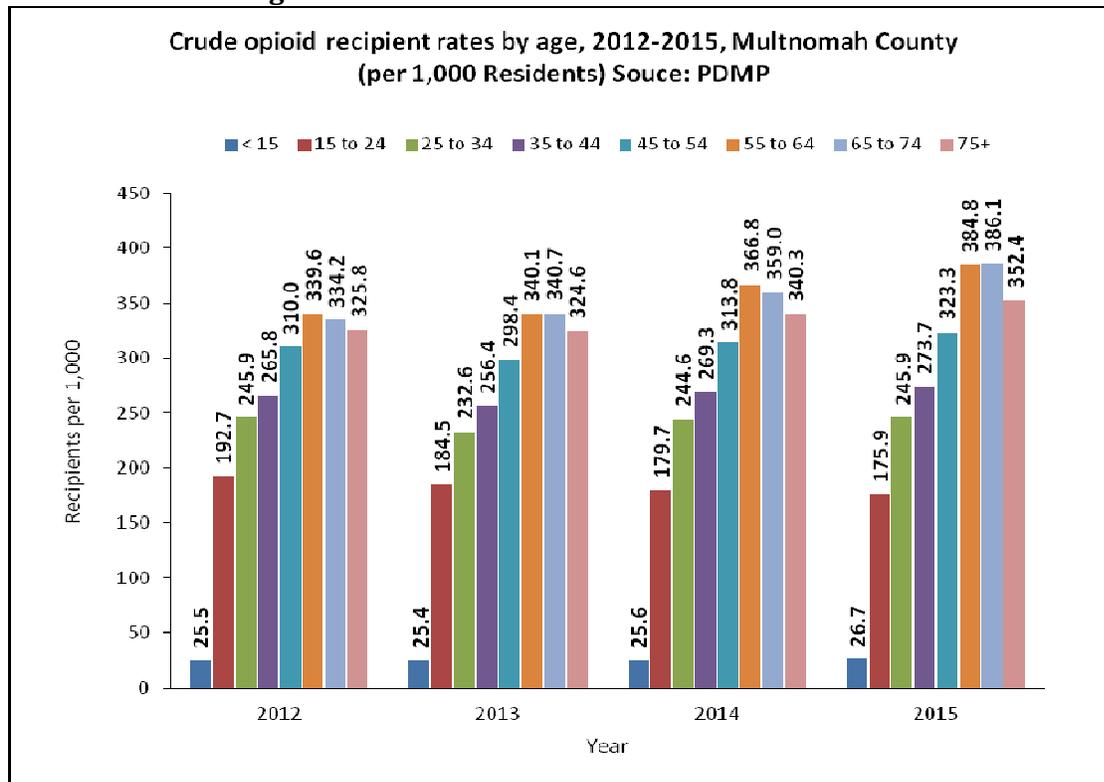
- Anoxic encephalopathy
- Buprenorphine
- Demerol
- Diamorphine
- Dihydrocodeine
- Fentanyl
- Heroin
- Hydromorphone
- Hydromorphone
- Injection
- Intoxication
- Intravenous
- Lorcet
- Methadone
- Morphine
- Narcotism
- Norco
- Opiate(s)
- Opioid(s)
- Opium
- Overdose
- Oxycodone
- Oxycontin
- Polypharm
- Polysubstance
- Suboxone
- Toxicity
- Tramadol
- Vicodin

Opioid Prescribing Trends

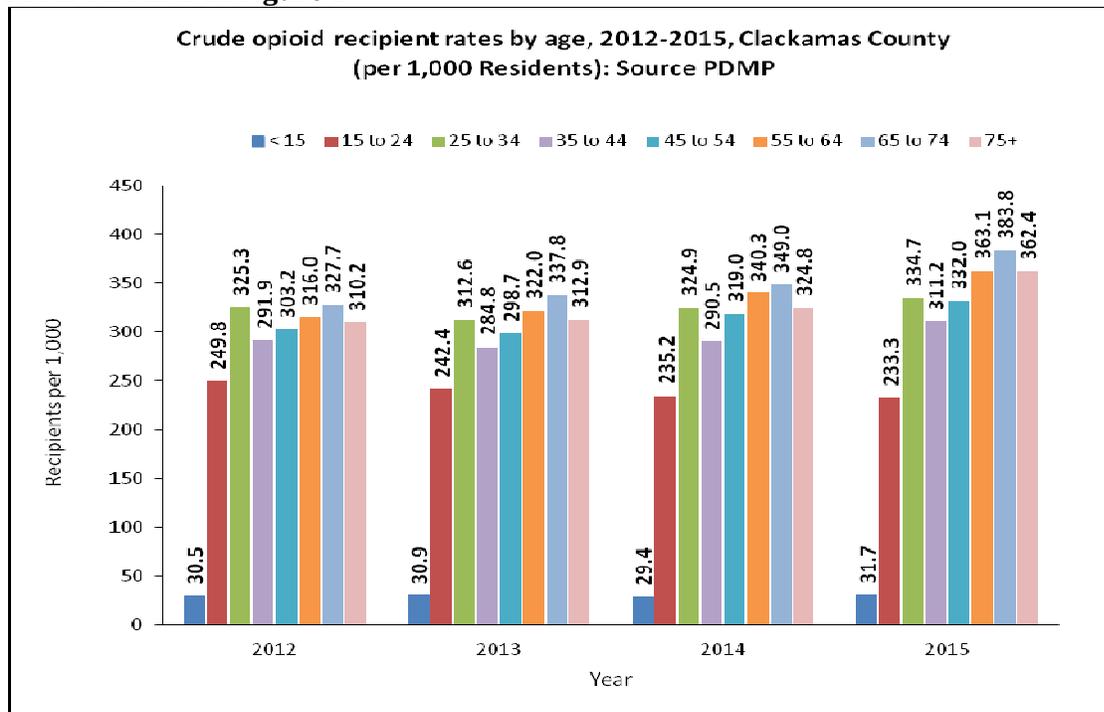
PDMP APPENDIX Table 1: Opioid Recipient and Prescription Counts and Rates by Sex, 2012-2015

		Year			
		2014		2015	
		Female	Male	Female	Male
Clackamas County					
	Prescription recipient count	56,978	44,104	61,027	48,242
	Prescriptions dispensed	233,976	161,276	242,880	173,934
	Prescriptions dispensed per prescription recipient	4.1	3.7	4.0	3.6
	Number of people receiving prescriptions, age-adjusted	269.6	219.0	286.1	234.2
Multnomah County					
	Prescription recipient count	103,195	79,149	105,623	82,682
	Prescriptions dispensed	396,394	271,394	391,111	274,103
	Prescriptions dispensed per prescription recipient	3.8	3.4	3.7	3.3
	Number of people receiving prescriptions, age-adjusted	248.0	200.5	252.9	208.9
Washington County					
	Prescription recipient count	69,142	50,986	72,247	54,643
	Prescriptions dispensed	231,003	153,205	244,383	167,575
	Prescriptions dispensed per prescription recipient	3.3	3.0	3.4	3.1
	Number of people receiving prescriptions, age-adjusted	233.3	186.5	238.1	196.2
Oregon					
	Prescription recipient count	577,783	444,292	612,527	482,219
	Prescriptions dispensed	2,313,967	1,606,096	2,386,403	1,733,817
	Prescriptions dispensed per prescription recipient	4.0	3.6	3.9	3.6
	Number of people receiving prescriptions, age-adjusted	268.4	214.8	279.1	228.5
<p>Prescription recipient count: the number of unique individuals who received prescriptions. Number of prescriptions: the number of prescription medications dispensed in Clackamas, Multnomah, and Washington counties and across the state of Oregon. Number of prescriptions per prescription recipient: dispensed per prescription recipient (original and refills). The introduction of tramadol to the PDMP in mid-2014 may explain the increases in opioid count and rates.</p>					

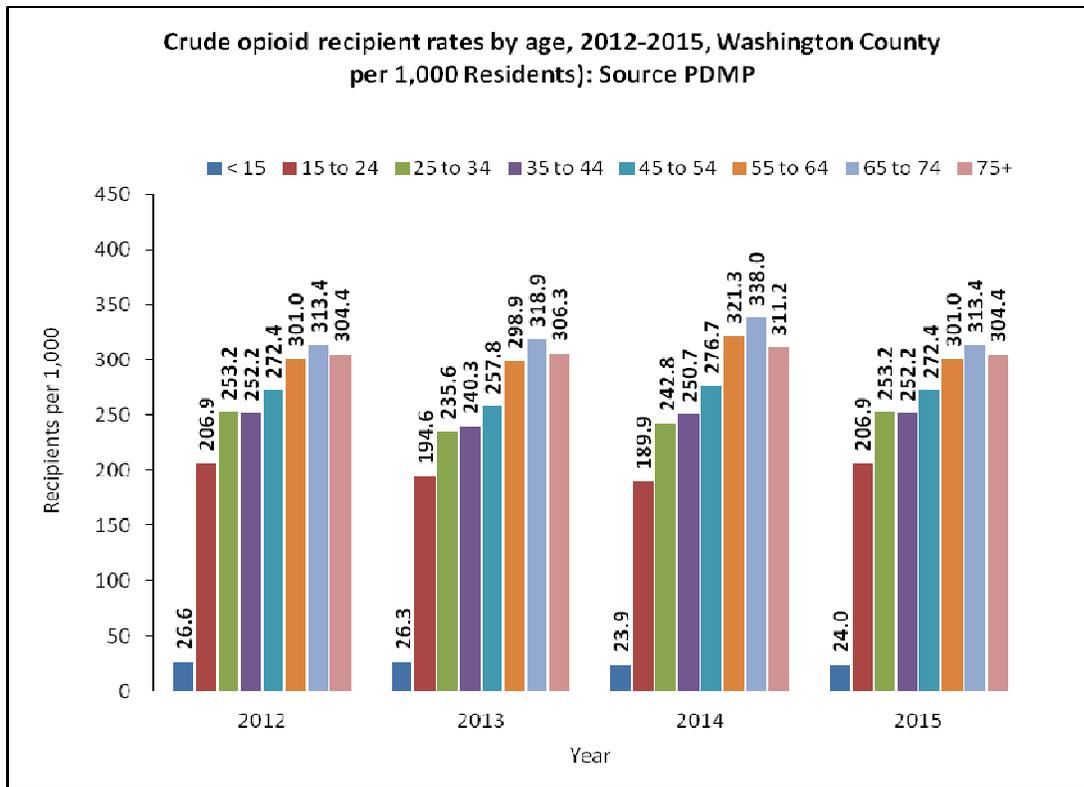
PDMP APPENDIX Figure 1



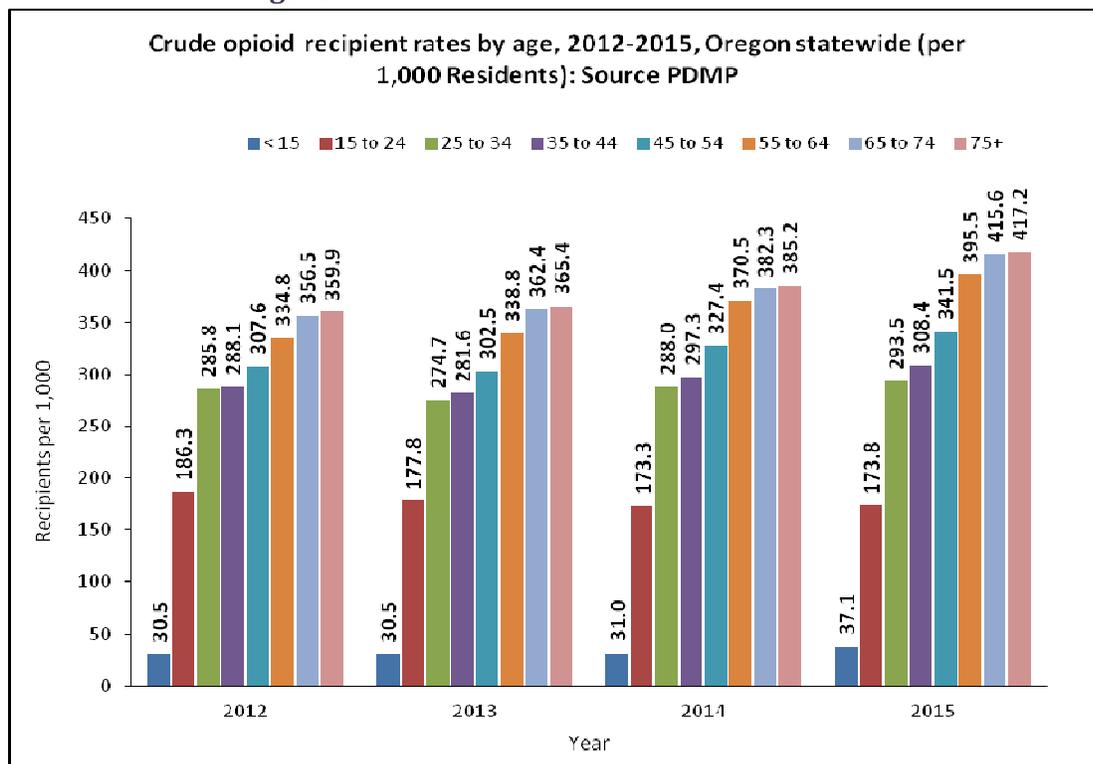
PDMP APPENDIX Figure 2



PDMP APPENDIX Figure 3



PDMP APPENDIX Figure 4



Syringe Exchange Trends and Client Survey (SET)

SET APP Table 1: Syringe Exchange Client and Naloxone Distribution, 2012-2015

Drug most injected, as reported at first visit	2012	2013	2014	2015
Heroin	1,943	1,643	1,495	1,383
Methamphetamines	595	623	646	728
Pharmaceutical ²⁶	63	32	36	30
Cocaine	41	27	31	19
Prescription opioids	4	1	1	12
Hormones	7	5	5	5
Other	8	3	3	4
Steroids	2	2	1	3
Ketamine	3	2	0	2
Total	2,666	2,338	2,218	2,186
Gender of syringe exchange clients, by visit	2012	2013	2014	2015
Male	29,261	33,453	35,715	35,624
Female	10,553	13,108	14,062	14,469
Transgender male to female	88	49	63	79
Transgender female to male	84	68	34	71
Unreported	275	572	474	614
Total	40,261	47,250	50,348	50,857
Gender of syringe exchange clients, unduplicated	2012	2013	2014	2015
Male	3,285	3,625	3,874	4,037
Female	1,397	1,587	1,767	1,947
Transgender male to female	6	9	10	10
Transgender female to male	5	6	5	9
Unreported	72	93	81	115
Total	4,765	5,320	5,737	6,118
County of residence at annual housing update, unduplicated	2012	2013	2014	2015
Multnomah	2,649	3,526	3,873	4,312
Washington	350	470	479	490
Clackamas	239	378	408	431
Other	321	397	357	436
Total	3,559	4,771	5,117	5,669
Housing status of syringe exchange clients, updated annually	2012	2013	2014	2015
Homeless	1,341	1,653	1,844	2,076
Temporary/unstable	1,145	1,256	1,391	1,399
Permanent	1,523	1,610	1,602	1,739
Total	4,009	4,519	4,837	5,214
Unreported (not included in total)	55	98	96	605

²⁶ From June 2010 to July 2011, there was a "Pharmaceutical" option in the database. In July 2015, this option was removed and an option for "Prescription opioids" was added instead.

Race/ethnicity of syringe exchange clients	2012	2013	2014	2015
White	3,707	4,128	4,426	4,747
Multiracial	366	413	431	435
Black/African American	155	173	192	205
Latino/Hispanic	164	197	213	199
Native American/Alaska Native	168	178	202	192
Asian	34	38	50	56
Other	33	24	42	56
Native Hawaiian/Pacific Islander	19	21	25	29
Unreported	119	148	156	199
Total	4,765	5,320	5,737	6,118
Frequency of using drugs in public settings among naloxone trainees	MCHD*	OI*		
Never	357	373		
Rarely	282	n/a		
Sometimes	200	681		
Usually ("Most of the time" at OI)	67	224		
Always	37	91		
Total	943	1,369		
* MCHD = Multnomah County Health Department; OI = Outside In.				

SET APP Table 2: Syringe Exchange Client Survey Participants, 2010, 2011, and 2016

Homelessness among survey participants	2010 n (%)	2011 n (%)	2016 n (%)
Homeless	136 (31)	151 (30)	280 (51)
Permanent	185 (42)	204 (41)	141 (26)
Temporary/unstable	116 (27)	142 (29)	128 (23)
Total	437	497	549
Drugs used in last 3 months	2010 n (%)	2011 n (%)	2016 n (%)
Any heroin	390 (89)	434 (87)	457 (83)
Any methamphetamines	168 (38)	245 (49)	459 (83)
Any cocaine	236 (54)	228 (46)	214 (39)
Total clients surveyed	437	498	550
Drug most injected		2011 n (%)	2016 n (%)
Heroin		378 (76)	366 (67)
Methamphetamines		92 (19)	160 (29)
Goofballs (heroin combined with methamphetamine)		0 (0)	12 (2)
Speedballs (heroin combined with cocaine)		16 (3)	4 (1)
Other		9 (2)	2 (0)
Total responses		495	544
Unreported (not included in total)		3	6
Age of survey participants who had used opioids in the last three months			2016 n (%)
Under 25			48 (10)
25-34			192 (41)
35-44			120 (25)
45-54			69 (15)
55+			44 (9)
Interest in getting help to cut down or quit using drugs (opioid users only)			2016 n (%)
In treatment now			63 (13)
Not interested			119 (25)
Somewhat interested			117 (25)
Very interested			171(36)
Total responses			470
Unreported (not included in total)			3
Had history of treatment (opioid users only)			2016 n (%)
Methadone			212 (45)
Suboxone/buprenorphine			181 (38)
Vivitrol			21(21)
Any history of MAT ²⁷			291 (62)

²⁷ “Any history of MAT” means the participant had a history of any of the three modalities listed in this table—methadone, suboxone/buprenorphine, or Vivitrol

Overdose in last year (opioid users only)	2010	2011	2016
No	317 (80)	336 (77)	316 (69)
Yes	80 (20)	102 (23)	144 (31)
Total responses	397	438	460
Unreported	4	4	13
"Before you began using heroin, were you hooked on prescription-type opiates?"	2010	2011	2016
No	218 (57)	235 (55)	221 (49)
Yes	167 (43)	196 (45)	232 (51)
Total responses	385	431	453
Unreported	5	3	4
Interest in treatment (2016 survey)			
	No history of MAT	History of MAT	Total
Very interested	55 (32)	116 (50)	171 (42)
Somewhat interested	50 (29)	67 (29)	117 (29)
Not interested	69 (40)	50 (21)	119 (29)
Total not currently in treatment	55 (32)	116 (50)	171 (42)

SET APP Table 3: Comparison of heroin users hooked & not hooked on Rx opioids before using heroin

	Not hooked, n = 221	Hooked, n = 232	Total, n = 453	
	n (%)	n (%)	n (%)	p value
Gender¹				
Male	154 (71)	159 (69)	313 (70)	NS
Female	62 (29)	70 (31)	132 (30)	
<i>Other/missing</i>	5	3	8	
White vs. person of color				
White	169 (78)	201 (88)	370 (83)	0.0055
Person of color	48 (22)	28 (12)	76 (17)	
<i>Missing</i>	4	3	7	
Age²				
Mean (SD)	38.3 (12.3)	35.0 (9.9)	36.6 (11.3)	0.002
Under 25	32 (14)	15 (6)	47 (10)	<.0001
25-34	68 (31)	117 (50)	185 (41)	
35-44	55 (25)	58 (25)	113 (25)	
Over 44	66 (30)	42 (18)	108 (24)	
Current living situation				
Permanent housing	51 (23)	59 (26)	110 (24)	NS
Temporary or unstable housing	48 (22)	58 (25)	106 (23)	
Homeless	122 (55)	114 (49)	236 (52)	
<i>Missing</i>	0	1	1	
Number of different drugs used, last 3 months (not including alcohol)²				
Mean (SD)	4.2 (2.0)	4.6 (2.1)	4.4 (2.0)	0.043
Mean (SD)	2.7 (1.4)	3.1 (1.3)	4.9 (2.2)	0.012
Any methamphetamine use, last 3 months				
No	48 (22)	42 (18)	90 (20)	NS
Yes	173 (78)	190 (82)	363 (80)	
Age at first injection drug use²				
Mean (SD)	21.8 (8.2)	23.8 (8.2)	22.8 (8.3)	0.008
Years since first injection drug use²				
Mean (SD)	16.5 (13.4)	11.2 (9.8)	13.8 (12.2)	<.0001
Less than 5 years	45 (20)	68 (29)	113 (25)	<.0001
5-9 years	50 (23)	58 (25)	108 (24)	
10-14 years	26 (12)	49 (21)	75 (17)	
15-19 years	20 (9)	18 (8)	38 (8)	
20+ years	80 (36)	39 (17)	119 (26)	
Had overdosed in last year				
No	152 (70)	156 (67)	308 (68)	NS
Yes	66 (30)	76 (33)	142 (32)	
<i>Missing</i>	3	0	3	

SD = standard deviation; NS = not significant (p > 0.05); % may not add up to 100 due to rounding. Missing values were not included in p value calculations. 1 Because of low numbers (some cells = 0), participants in other gender categories were excluded. 2 Two-sample t test used.

Substance Use Treatment (SU)

The Substance Abuse and Mental Health Services Administration (SAMHSA) periodically conducts national surveys to estimate substance use in different regions, by state and by sub-state regions, using interviews with a sample of the population.

The following table shows estimated substance use for residents age 12 or older; regions were defined as clusters of counties. Multnomah County comprised its own region; Clackamas and Washington together comprised their own region. Both regions reported a decreased estimate of both non-medical pain reliever use between 2010-2012 and 2012-2014; Multnomah reported a decrease in the estimated percentage of abuse or dependence of alcohol and/or illicit drugs, whereas the Clackamas and Washington region saw an increase. However, it should be noted that these are estimates and that the 95% confidence intervals for each of these overlap, meaning we may be seeing decreases in estimates due to chance alone.

SU APPENDIX Table 1: Regional substance-use estimation

	2010 to 2012		2012 to 2014	
	Multnomah	Clackamas & Washington	Multnomah	Clackamas & Washington
Non-medical use of pain relievers	7.1%	5.9%	5.5%	4.8%
Abuse/dependence of alcohol/illicit drugs in prior year*	12.5%	7.7%	9.4%	8.4%

*Heroin was not called out separately from illicit drug use in the published aggregates.

SU APPENDIX Table 2: Health Share member data, opioid dependence, 2013 to 2015

Opioid dependence/abuse													
# unique Health Share members with primary opioid abuse/dependence diagnosis who received detox services	Age range	Clackamas County			Multnomah County			Washington County			2013 TOTAL	2014 TOTAL	2015 TOTAL
		2013	2014	2015	2013	2014	2015	2013	2014	2015			
	<25 years	*	*	*	*	32	33	*	*	*	18	52	44
	25-34 years	*	25	27	35	80	102	*	11	18	54	116	147
	35-44 years	*	*	*	21	51	53	*	*	*	26	66	71
	45-54 years	*	*	*	15	37	48	*	*	*	16	43	56
	55+ years	*	*	*	*	28	26	*	*	*	12	29	27
	Total	21	56	49	92	228	262	13	22	34	126	306	345
# unique Health Share members with primary opioid abuse/dependence diagnosis who received outpatient substance use treatment (including MAT) services	Age range	Clackamas County			Multnomah County			Washington County			2013 TOTAL	2014 TOTAL	2015 TOTAL
		2013	2014	2015	2013	2014	2015	2013	2014	2015			
	<25 years	42	76	90	81	151	176	39	72	72	162	299	338
	25-34 years	141	227	280	487	778	922	122	237	292	750	1242	1494
	35-44 years	99	138	163	415	609	693	80	129	161	594	876	1017
	45-54 years	49	78	96	375	510	553	46	80	90	470	668	739
	55+ years	55	71	99	438	524	569	38	45	65	531	640	733
	Total	386	590	728	1796	2572	2913	325	563	680	2507	3725	4321
# unique Health Share members with primary opioid abuse/dependence diagnosis who received methadone, naltrexone, or buprenorphine services	Age range	Clackamas County			Multnomah County			Washington County			2013 TOTAL	2014 TOTAL	2015 TOTAL
		2013	2014	2015	2013	2014	2015	2013	2014	2015			
	<25 years	18	19	26	41	67	68	20	29	31	79	115	125
	25-34 years	86	106	125	367	498	523	82	132	156	535	736	804
	35-44 years	62	74	81	317	411	416	58	86	93	437	571	590
	45-54 years	33	45	50	300	368	352	32	49	54	365	462	456
	55+ years	36	44	44	365	396	396	31	28	35	432	468	475
	Total	235	288	326	1390	1740	1755	223	324	369	1848	2352	2450
# unique Health Share members with a primary opioid abuse/dependence diagnosis who received residential services**	Age range	Clackamas County			Multnomah County			Washington County			2013 TOTAL	2014 TOTAL	2015 TOTAL
		2013	2014	2015	2013	2014	2015	2013	2014	2015			
	<25 years	*	*	*	10	37	29	*	*	*	17	62	47
	25-34 years	*	33	21	16	86	102	*	20	12	28	139	135
	35-44 years	*	*	*	*	30	49	*	*	*	15	51	62
	45-54 years	*	*	*	*	*	*	*	*	*	*	*	*
	55+ years	*	*	*	*	*	*	*	*	*	*	*	*
	Total	12	64	45	40	179	212	15	41	24	67	284	281

An asterisk * indicates data was redacted due to small numbers.

Residential numbers for 2013 only reflect the second half of the year, due to transitioning benefits. Annualizing by doubling the number may be problematic, due to the rapid enrollment of newly-eligible Medicaid clients throughout this period.

SU APPENDIX Table 3: Health Share member data, all substance dependence/abuse, 2013 to 2015

All substance dependence/abuse													
# unique Health Share members with a primary substance abuse/dependence diagnosis who received detox services	Age range	Clackamas County			Multnomah County			Washington County			2013 TOTAL	2014 TOTAL	2015 TOTAL
		2013	2014	2015	2013	2014	2015	2013	2014	2015			
	<25 years	*	*	*	*	40	38	*	*	*	20	63	57
	25-34 years	13	34	35	53	120	158	10	22	29	76	176	222
	35-44 years	*	18	27	45	130	133	*	13	15	64	161	175
	45-54 years	*	24	23	57	132	155	*	14	19	69	170	197
	55+ years	*	*	*	*	81	83	*	*	*	44	87	90
	Total	40	96	97	206	503	567	27	58	77	273	657	741
# unique Health Share members with a primary substance abuse/dependence diagnosis who received outpatient substance use treatment (including MAT) services	Age range	Clackamas County			Multnomah County			Washington County			2013 TOTAL	2014 TOTAL	2015 TOTAL
		2013	2014	2015	2013	2014	2015	2013	2014	2015			
	<25 years	199	286	305	515	609	686	294	359	372	1008	1254	1363
	25-34 years	267	493	590	892	1589	1818	325	596	707	1484	2678	3115
	35-44 years	243	367	432	816	1421	1588	211	428	494	1270	2216	2514
	45-54 years	173	306	360	814	1372	1481	153	296	375	1140	1974	2216
	55+ years	142	215	280	801	1111	1236	112	168	224	1055	1494	1760
	Total	1024	1667	1967	3838	6102	6809	1095	1847	2192	5957	9616	10968
# unique Health Share members with a primary substance abuse/dependence diagnosis who specifically received methadone, naltrexone, or buprenorphine services	Age range	Clackamas County			Multnomah County			Washington County			2013 TOTAL	2014 TOTAL	2015 TOTAL
		2013	2014	2015	2013	2014	2015	2013	2014	2015			
	<25 years	18	19	26	41	68	68	20	29	31	79	116	125
	25-34 years	86	106	125	367	498	524	82	132	156	535	736	805
	35-44 years	62	74	81	318	411	417	58	86	93	438	571	591
	45-54 years	33	45	50	300	368	353	32	49	54	365	462	457
	55+ years	36	44	44	365	396	399	31	28	35	432	468	478
	Total	235	288	326	1391	1741	1761	223	324	369	1849	2353	2456
# unique Health Share members with a primary substance abuse/dependence diagnosis who received residential services**	Age range	Clackamas County			Multnomah County			Washington County			2013 TOTAL	2014 TOTAL	2015 TOTAL
		2013	2014	2015	2013	2014	2015	2013	2014	2015			
	<25 years	12	47	38	36	124	110	12	41	41	60	212	189
	25-34 years	11	65	61	58	202	235	12	39	31	81	306	327
	35-44 years	*	30	*	36	132	162	*	35	*	58	197	218
	45-54 years	*	*	*	23	107	129	*	*	*	28	136	164
	55+ years	*	*	*	13	27	32	*	*	*	16	36	38
	Total	45	158	157	166	592	668	32	137	111	243	887	936

An asterisk * indicates data was redacted due to small numbers.

Residential numbers for 2013 only reflect the second half of the year, due to transitioning benefits. Annualizing by doubling the number may be problematic, due to the rapid enrollment of newly-eligible Medicaid clients throughout this period.