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Payment for Alcohol and Other Drug Related Services by New Hampshire’s Medicaid Program

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About this paper

The New Hampshire Center for Public Policy Studies was commissioned by New Futures to examine the scope of alcohol and other drug related services paid for through the state's Medicaid program. .

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New Hampshire Center for Public Policy Studies

Payment for Alcohol and Other Drug Related Services by New Hampshire’s Medicaid Program

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Executive Summary

Medicaid is the state run program, funded through state and federal dollars, to provide healthcare coverage for vulnerable populations – the disabled, children of low-income families, and low-income elderly.¹ Currently, Medicaid does not have a specifically defined benefit for substance use treatment services. As evident with the data presented below, some Medicaid recipients are accessing care for substance use disorders in various healthcare settings.

Substance use disorders are characterized by the persistent use of drugs or alcohol despite deleterious effects caused by the drug use and can have a wide impact on an individual's livelihood and overall health. According to the Substance Abuse and Mental Health Services Administration (SAMHSA), roughly 10% of adults and adolescents in New Hampshire have reported a problem with alcohol or other drugs (AOD).²

Research has shown that treating substance use disorders can reduce overall healthcare costs, as substance use disorders increase the use of healthcare.³ Studies have showed treatment can have a cost-benefit ratio of up to 11 to 1 as well as reduced emergency department visits and costs.

This work was commissioned by New Futures⁴ to explore the available data of alcohol and other drug related services paid for through the state's Medicaid program. This report establishes a baseline of information so that policymakers and other stakeholders can understand the scope of services accessed by the Medicaid population with AOD issues. This understanding can help policymakers and advocates develop cost-effective strategies for services to treat these chronic and life-threatening conditions.

Major Findings

First, we examined claims specific for a diagnosis of an alcohol or drug use disorder in order to explore the scope of services these Medicaid enrollees accessed in 2005. As shown in Table 1, Medicaid expenditures for AOD claims were almost \$9 million, roughly 1% of total Medicaid expenditures, serving 2,600 individuals – less than 3% of all Medicaid enrollees – at an average cost of \$3,437 per person. To put this in context with other forms of coverage, in 2005, private insurance covered over \$19 million in AOD services for 6,100 individuals. What these results do not show, however, is whether these individuals have received sufficient and correct treatment, or whether these individuals were later successful in achieving long-term sobriety and better health outcomes.

¹ For the full list of Medicaid eligibility categories, see the Appendix.

² Substance Abuse and Mental Health Services Administration.

³ National Institutes of Health.

⁴ www.new-futures.org

Table 1

	AOD Services for Medicaid- Enrollees	AOD Services for Privately Insured
Avg. Cost per Person	\$3,437	\$3,177
Avg. Cost per Service	\$161	\$270
Avg. Services per Person	21	12
Total Expenditures	\$8,936,762	\$19,567,092
Total Services	55,391	72,517
Total Individuals	2,600	6,159

The second piece of the analysis compares two groups. The first group is comprised of all medical claims⁵ from those individuals with any claims for a substance use disorder. The comparison group is all medical claims for the other Medicaid beneficiaries. The table below shows the results for this comparison. In general, Medicaid recipients who have evidence of a substance use disorder used more services on average (96 versus 73) in 2005, and those individuals' average costs per person were higher (\$9,965 versus \$7,603).

Table 2

	AOD Medicaid Comparison Group	Non-AOD Medicaid Comparison Group
Avg. Cost per Person	\$9,965	\$7,603
Avg. Cost per Service	\$103	\$104
Avg. Services per Person	96	73
Total Expenditures	\$23,677,057	\$296,083,210
Total Services	229,008	2,851,691
Total Individuals	2,376	38,943

And, finally, we found a lack of data for children. Many of these children do receive AOD related services paid for via Medicaid. As reported by experts in the field, children with substance use disorders may be placed in a residential facility for care, paid for by Medicaid (over \$8 million in costs in 2005). Diagnostic information regarding children in placement is often missing from Medicaid claims, however. One cannot determine if a child is receiving care due to a substance use disorder. Improved data collection in this area is warranted in order to study AOD services for children in Medicaid.

⁵ These claims do not include dental services or prescription data.

Substance Use Disorders and Healthcare Costs

Substance use disorders are characterized by the persistent use of drugs or alcohol despite deleterious effects caused by drug use, by a physical dependence to the substance for which not taking the drug causes negative impacts, and by a tolerance of the substance where the individual requires higher doses to feel the drug's effect. Substance use disorders can have a wide impact on an individual's livelihood – impacting their family relationships, employment, and overall health. According the SAMHSA, in New Hampshire, 10% of adults and 8.8% of adolescents have a problem with alcohol or other drugs (AOD) reported within the past year.⁶

Research has shown that treating substance use disorders can reduce overall healthcare costs, as substance use disorders increase the use of healthcare.⁷ A study of California's Medicaid program showed a 30 percent decline in costs for beneficiaries struggling with a substance use disorder who received outpatient treatment. Outpatient treatment has been shown to have an 11 to 1 ratio of benefits to costs to society.⁸ Research also suggests that AOD treatment services reduce emergency department visit costs by \$200 per person as well as decrease inpatient services and mental health service needs. New Hampshire specific research has shown that emergency department use has been increasing for patients with mental health and substance use issues, especially among those aged 15 -49.⁹

⁶ Substance Abuse and Mental Health Services Administration.

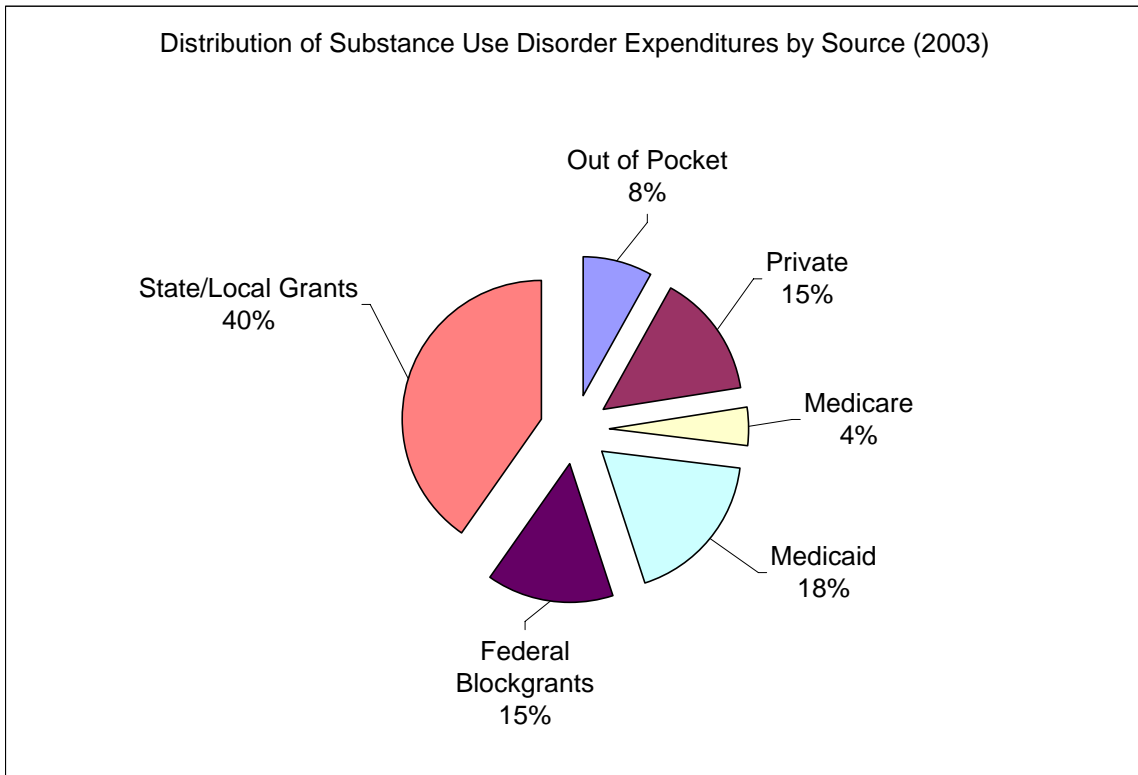
⁷ National Institutes of Health.

⁸ "Economic Benefit of Treating Substance Abuse Outweigh Costs." *Robert Wood Johnson Foundation*. Research Highlight Number 7. August 2006.

⁹ Antal, P. "Mental Illness and Substance Use Hospitalizations in New Hampshire, 1997-2006." University of New Hampshire Institute on Disability. May 2008.

Currently, many state residents access services to treat their substance use issues. To put this in context with other types of government spending on treatment programs, Table 1 shows how substance use disorder services are currently funded across all state budgets.¹⁰ State and local grants are the most common source of funding; whereas Medicaid represents 18% of total substance abuse services expenditures. New Hampshire specific data is not available to compare, but this chart is offered to put the role of Medicaid in perspective with other funding sources.

Figure 1



¹⁰ Chart based on national data. Mark, T.L., Levit, K.R., Vandivort-Warren, R., Coffey, R.M., et. al. Trends in Spending for Substance Abuse Treatment, 1986-2003. *Health Affairs*. July/August 2007; 26(4):1118-28.

Medicaid and Substance Use Disorder Treatment

Medicaid is the state run program, funded through state and federal dollars, to provide healthcare coverage for vulnerable populations – the disabled, children of low-income families, and low-income elderly. In New Hampshire, there are several pathways to be eligible for coverage, such as children from low income families, Medicare beneficiaries who are low-income, and pregnant women under 185% of the federal poverty level, among others.¹¹ Medicaid does limit some services, such as a 12 visit per year cap on psychotherapy services.

Currently, Medicaid does not have a specifically defined benefit for AOD treatment services. In general, Medicaid is designed to cover all services deemed medically necessary. And, as evident with the data presented below, some recipients are in fact accessing services for substance use disorders paid for via Medicaid. What is not clear from these data is whether these individuals are representative of the entire population of Medicaid-enrollees with a substance use disorder, whether those that engaged services received sufficient and correct treatment, or whether these individuals were later successful in achieving long-term sobriety and better health outcomes overall.

Medicaid Enrollees with Evidence of a Substance Use Disorder

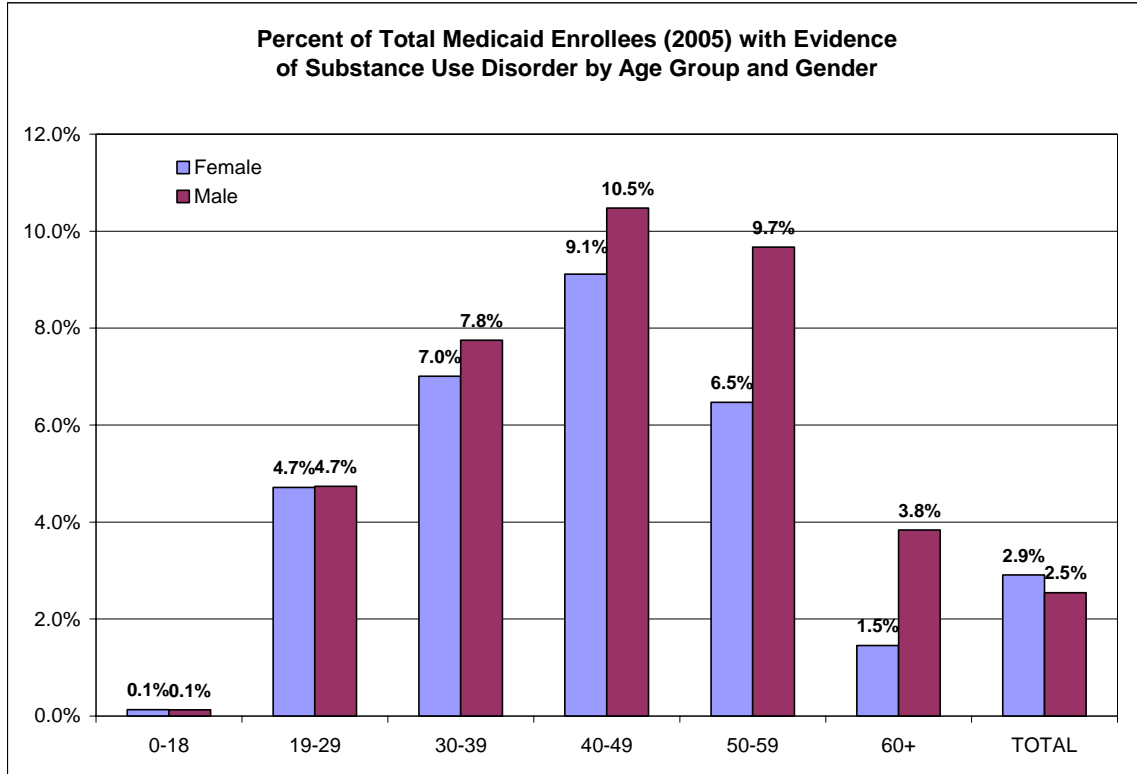
Less than three percent (2.8%) of Medicaid-enrollees in 2005 had evidence of a substance use disorder, which varied by age and gender.¹² Figure 2 shows the percent of Medicaid-enrollees who presented evidence of a substance use disorder.¹³ Across the age cohorts, substance use disorders was most commonly seen in ages 30 to 60 years, with a peak in 40-49, at 9.6% of Medicaid-enrollees overall.

¹¹ For the full list of Medicaid eligibility categories, see the appendix.

¹² For an explanation of the methods to determine evidence of a substance use disorder, see Appendix A.

¹³ Evidence of a substance use disorder is any Medicaid enrollee with at least one medical claim where a substance use disorder was noted in a diagnostic field.

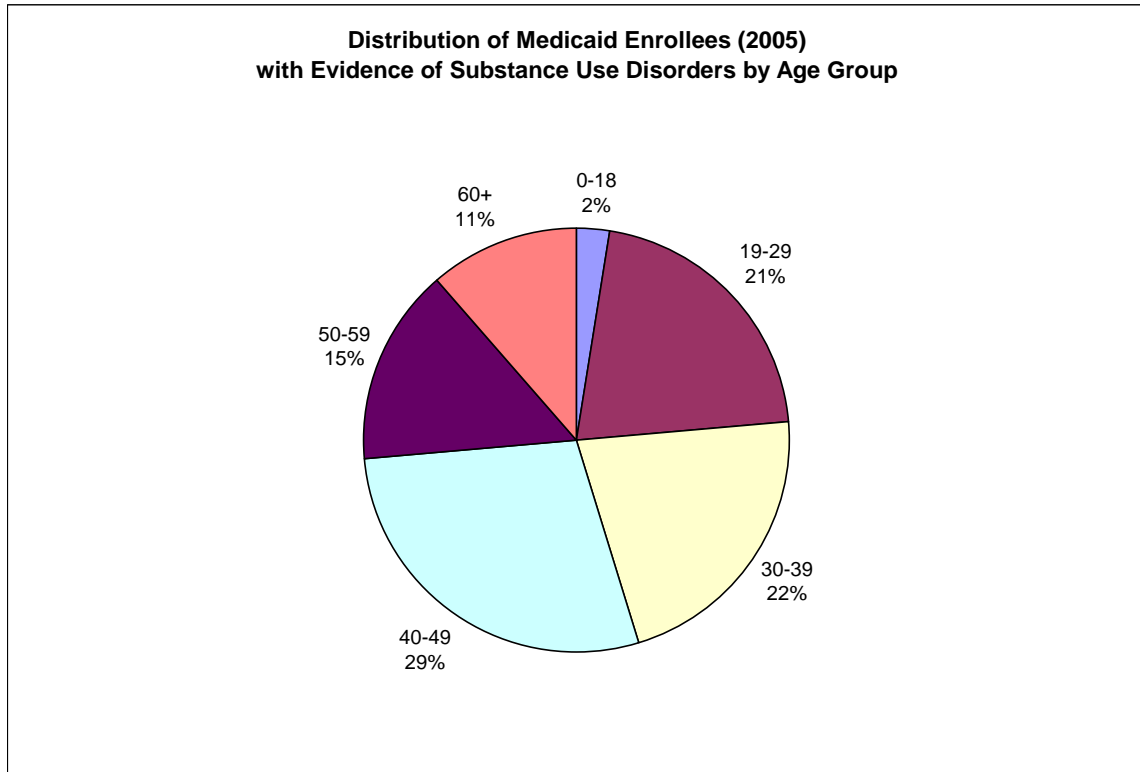
Figure 2



More women enrolled in Medicaid showed evidence of a substance use disorder compared to men overall. But, as the chart below shows, men over 30 years displayed a substance use disorder more often than women, with one of the greatest differences seen in 50-59 years of age cohort – 9.7% of men versus 6.5% of women. In the 60 years and older group, men were more than twice as likely as women to have evidence of a substance use disorder. Among all Medicaid-enrollees with evidence of a substance use disorder, almost one-quarter of enrollees were under the age of 30, and two-thirds of this population were in their “prime” adult years (between 30 and 60), considered to be the most economically productive.

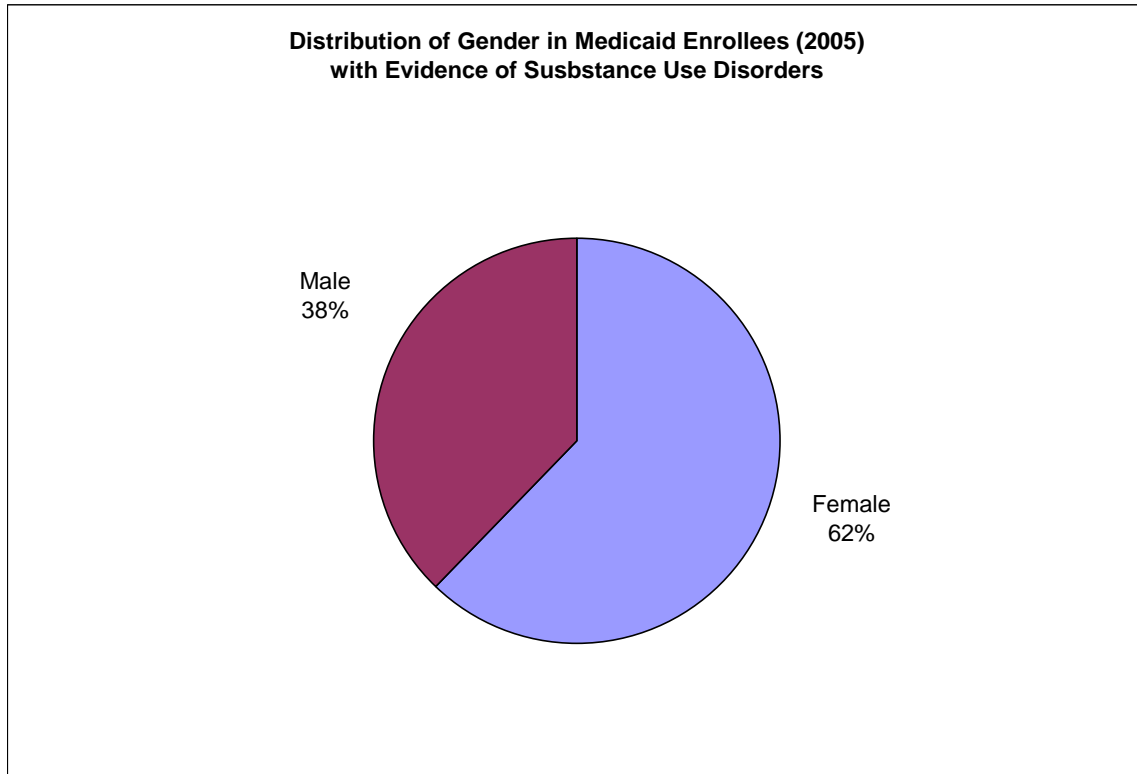
The low percent of children with evidence of a substance use disorder is most likely due to a lack of data. Many of these children, who represent roughly 60% of all Medicaid recipients, do receive AOD services paid for via Medicaid; although, children receive these services through several pathways in the public system, such as through child protection services or juvenile justice. As reported by experts in the field, children with substance use disorders may be placed in a residential facility for care, paid for by Medicaid. However, diagnostic information regarding children in placement is often missing from Medicaid claims; therefore, one cannot determine if a child is receiving care due to a substance use disorder.

Figure 3



One of the primary functions of Medicaid is to provide healthcare coverage to low-income pregnant women. So, it is not surprising that the majority of the population of enrollees with evidence of a substance use disorder is female, as shown in Figure 4.

Figure 4



What the above two figures show is that although substance use disorders seems to be less common among younger and female Medicaid-enrollees overall, women are the majority among those with substance use disorders and a substantial portion of enrollees with substance use disorders are young.

Substance Use Disorder Services by Age and Gender

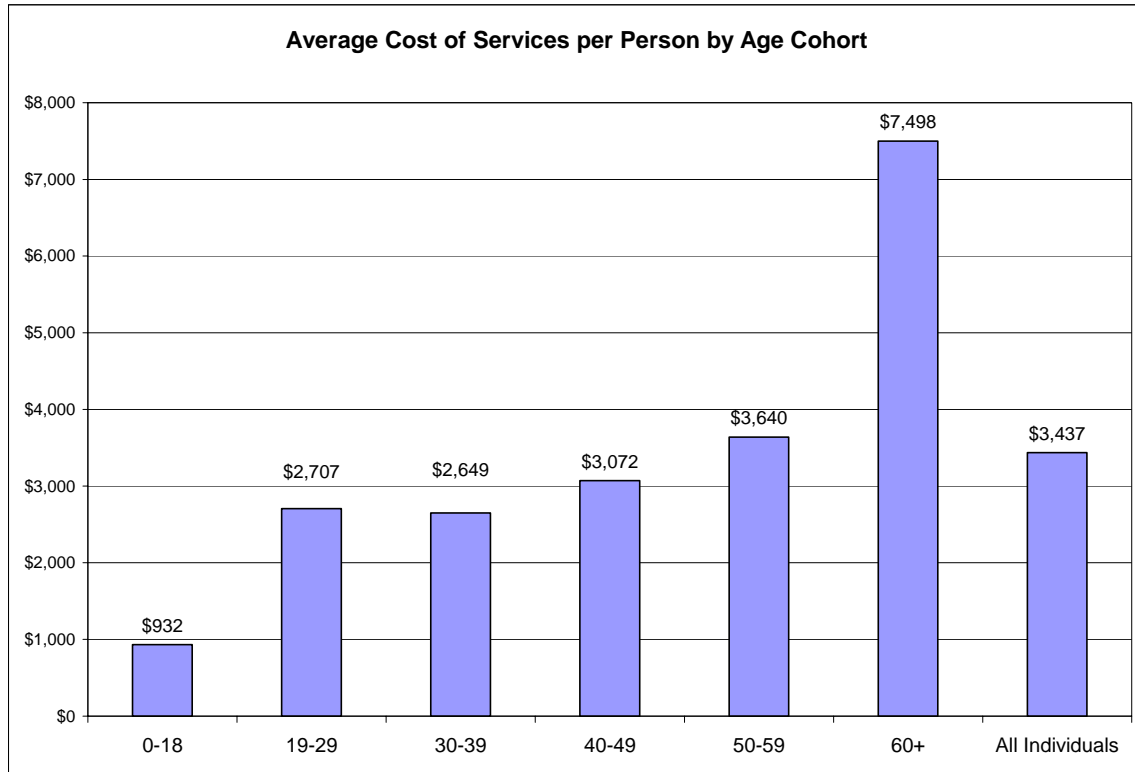
New Hampshire's Medicaid program spent almost \$9 million, roughly 1% of total Medicaid expenditures, on services to treat substance use disorders and related conditions for 2,600 enrollees in 2005. To put this in context with other forms of coverage, in 2005, private insurance covered over \$19 million in services for 6,100 individuals. Table 3 shows the breakdown of total expenditures, total services, and average costs for men and women by age group of substance use disorder services paid for via Medicaid. On average, Medicaid spent almost \$3,500 per person on substance abuse services.

Table 3
 Total Expenditures for Substance Use Disorder Services
 for Medicaid Enrollees (2005) by Age Group and Gender

Age Group by Gender	Total Expenditures	Service Count	Total Persons	Average Cost per Service	Average Cost per Person	Average Number of Services per Person
TOTAL INDIVIDUALS	\$8,936,762	55,391	2,600	\$161	\$3,437	21
0-18	\$58,738	288	63	\$204	\$932	5
19-29	\$1,494,050	15,447	552	\$97	\$2,707	28
30-39	\$1,496,655	16,598	565	\$90	\$2,649	29
40-49	\$2,248,808	15,380	732	\$146	\$3,072	21
50-59	\$1,434,163	5,046	394	\$284	\$3,640	13
60+	\$2,204,349	2,632	294	\$838	\$7,498	9
FEMALE	\$4,825,188	40,671	1,618	\$119	\$2,982	25
0-18	\$30,136	130	31	\$232	\$972	4
19-29	\$1,141,185	13,391	425	\$85	\$2,685	32
30-39	\$898,088	12,680	394	\$71	\$2,279	32
40-49	\$1,288,065	10,198	426	\$126	\$3,024	24
50-59	\$444,543	3,273	197	\$136	\$2,257	17
60+	\$1,023,170	999	145	\$1,024	\$7,056	7
MALE	\$4,111,574	14,720	982	\$279	\$4,187	15
0-18	\$28,601	158	32	\$181	\$894	5
19-29	\$352,865	2,056	127	\$172	\$2,778	16
30-39	\$598,567	3,918	171	\$153	\$3,500	23
40-49	\$960,743	5,182	306	\$185	\$3,140	17
50-59	\$989,620	1,773	197	\$558	\$5,023	9
60+	\$1,181,179	1,633	149	\$723	\$7,927	11

As the data shows, the average per person costs for men was greater than those for women, \$4,200 versus \$3,000 respectively, or 40%. However, women used more services on average. Across age groups, the average cost for services increases substantially in the older cohorts, as shown in Figure 5.

Figure 5



In general, healthcare costs rise as one ages, so it is not surprising that average costs rise among the older cohorts, especially in the 60 years and older group where long-term care is commonplace.

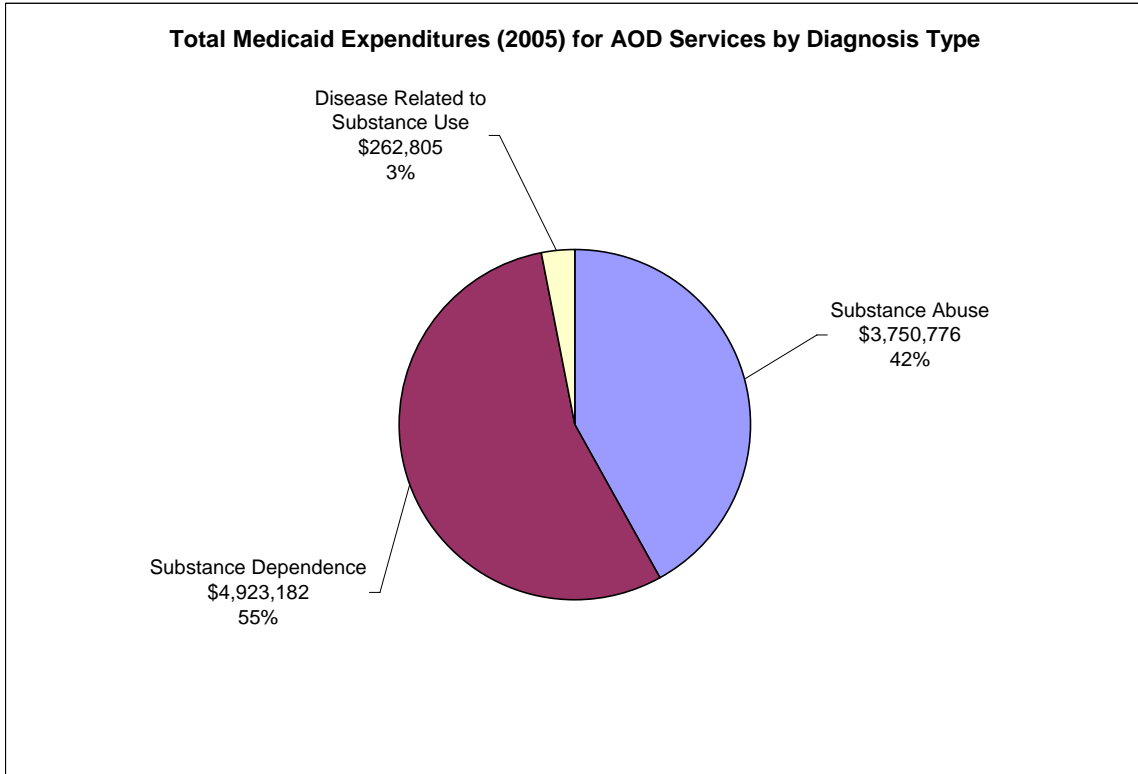
On the other end of the age spectrum, the youngest cohort appears to be relatively far less expensive. However, the data for children are not reflective of actual practice, and, therefore, these data underestimate the scope of substance use disorder services for children enrolled in Medicaid. As reported by experts in the field, substance use among teens is often seen as a symptom of a co-occurring mental health disorder, such as depression, and may not be coded as a diagnosis. This is especially true when a residential treatment facility is utilized for care; therefore, undercounting the true scope of services that minors may be receiving. To put this in perspective, Medicaid paid over \$8 million in residential treatment costs for 1,100 children in 2005. As stated earlier, experts report that many of these children have substance use disorders being cared for in these facilities.¹⁴ A lack of diagnostic information among residential claims makes it impossible to estimate the true scope of substance use disorder services for the Medicaid children population.

¹⁴ Given the removal of children placed in a residential facility without a diagnosis of substance use, the overall sample of children in this study group was small, which may also impact any results.

AOD Services by Diagnosis Type and Mental Health

Each claim was grouped into three categories according to the level of severity of the substance use diagnosis present.¹⁵ Substance Dependence is considered the most advanced form of a substance use disorder, followed by substance Abuse, which is often a precursor to dependence. Diseases related to substance use represent those conditions that are a result of substance use, such as cirrhosis of the liver. Figure 6 shows the distribution of total Medicaid expenditures by diagnosis category.¹⁶

Figure 6



Over half of Medicaid expenditures were for services to treat a substance dependence diagnosis. As Figure 7 shows, the vast majority of services are also for diagnoses of substance dependence. This reflects what is expressed by experts in the field, that substance users with a diagnosed dependence disorder are more likely to have consistent care service to treat and manage their disorder. Individuals with a diagnosed substance abuse disorder may not be receiving care frequently and often only seek care in emergency situations. Therefore, individuals with a substance dependence diagnosis would be accessing more services.

¹⁵ A table of these groupings can be found in Table A-1.

¹⁶ Claims were classified based on the most advanced. Therefore if a claim had a substance dependence diagnosis as well as a related disorder diagnosis, the claims was classified as substance dependence.

Figure 7

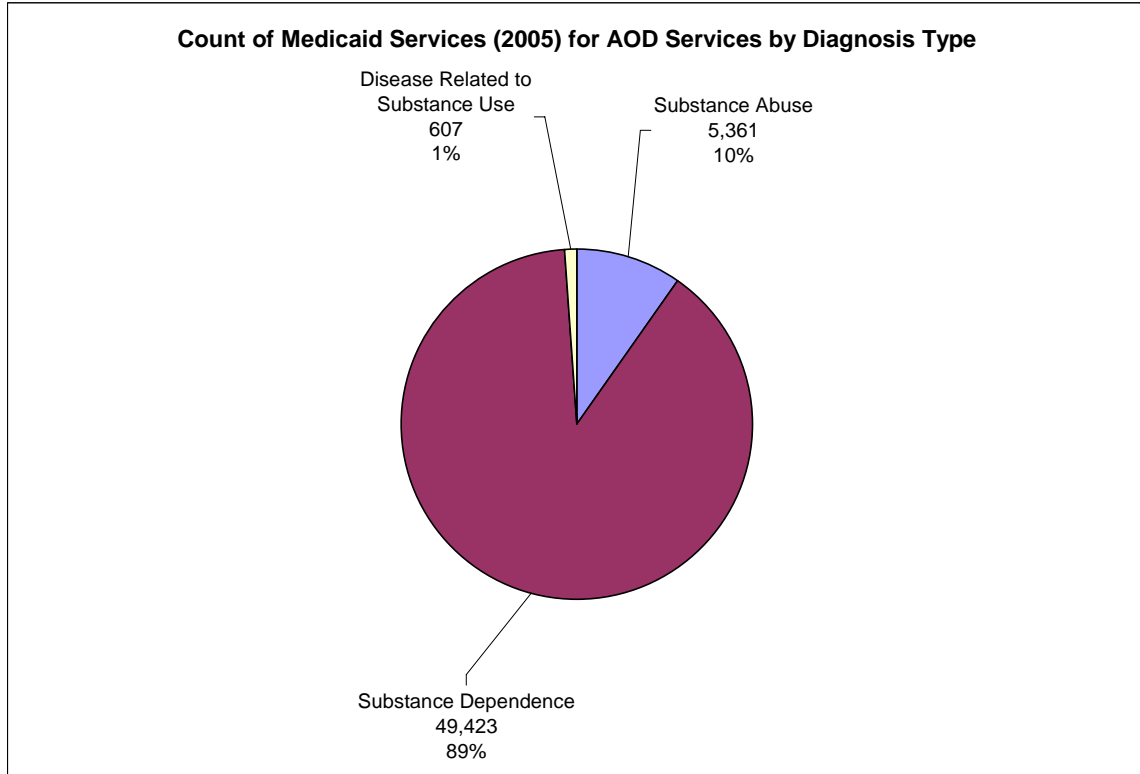


Table 4 presents a further breakdown of expenditures and service counts by diagnosis group. These data are further collapsed to represent the most severe diagnosis for each enrollee. For example, a case with a diagnosis of substance dependence will be considered a case with substance dependence even if there is a separate claim for a substance abuse diagnosis. Presenting the data in this fashion allows one to compare the costs and service use across substance use disorder types.

Table 4

Total Expenditures for Substance Use Disorder Services for Medicaid Enrollees (2005) by Diagnosis Group

Diagnosis Group (based on any field)	Total Expenditures	Service Count	Total Persons	Average Cost per Service	Average Cost per Person	Average Number of Services per Person
Substance Abuse	\$3,750,776	5,361	1,271	\$700	\$2,951	4
Substance Dependence	\$4,923,182	49,423	1,272	\$100	\$3,870	39
Disease Related to Substance Use	\$262,805	607	57	\$433	\$4,611	11

As the table shows, the average cost per person for related diseases is the highest, at \$4,600, followed by substance dependence. Table 5 shows a comparison of the average costs and service use of substance abuse versus substance dependence by age group.

Table 5

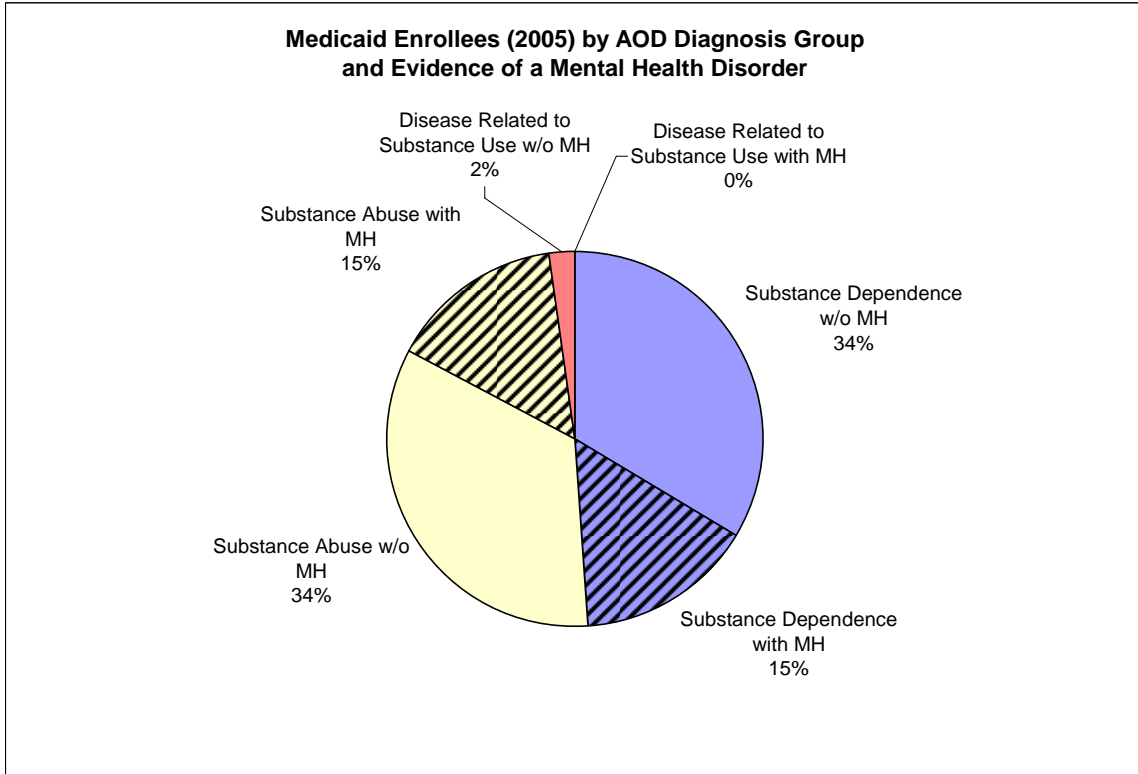
Age Group (years)	Substance Abuse		Substance Dependence	
	Avg. Cost per Service	Avg. Cost per Person	Avg. Cost per Service	Avg. Cost per Person
0-18	\$223	\$1,769	\$191	\$644
19-29	\$356	\$1,937	\$42	\$2,170
30-39	\$541	\$2,049	\$47	\$2,402
40-49	\$470	\$2,221	\$80	\$2,622
50-59	\$1,016	\$3,212	\$135	\$2,732
60+	\$905	\$6,387	\$917	\$6,830

Again, the average costs of the older group are the most expensive both in terms of the cost per person and the cost per service, with one exception. The average cost per service for 50-59 year olds is highest among all age brackets for those with a substance abuse disorder. Generally, there is an increasing trend across age groups that the older age groups are more expensive. Also notable, the average costs per service for those with substance abuse is lower than that for substance dependence, which is considered a more serious disorder. This reflects that people who are accessing care for substance dependence may have their dependence under control, and therefore, require less overall care than an individual with an substance abuse disorder who may not have consistent treatment.

The influence of co-occurring mental health disorders

Co-occurring mental health disorders are common among those with substance use disorders. The chart below shows the prevalence of co-occurring mental health disorders among each of the diagnosis categories. Overall, 30% of all Medicaid-enrollees with evidence of a substance use disorder also had evidence of a mental health disorder. By design, Medicaid covers services for a population often with special needs, like those with severe mental health disorders. Prior work by the Center noted that half of adults and one-quarter of children enrolled in Medicaid had evidence of a mental health disorder.

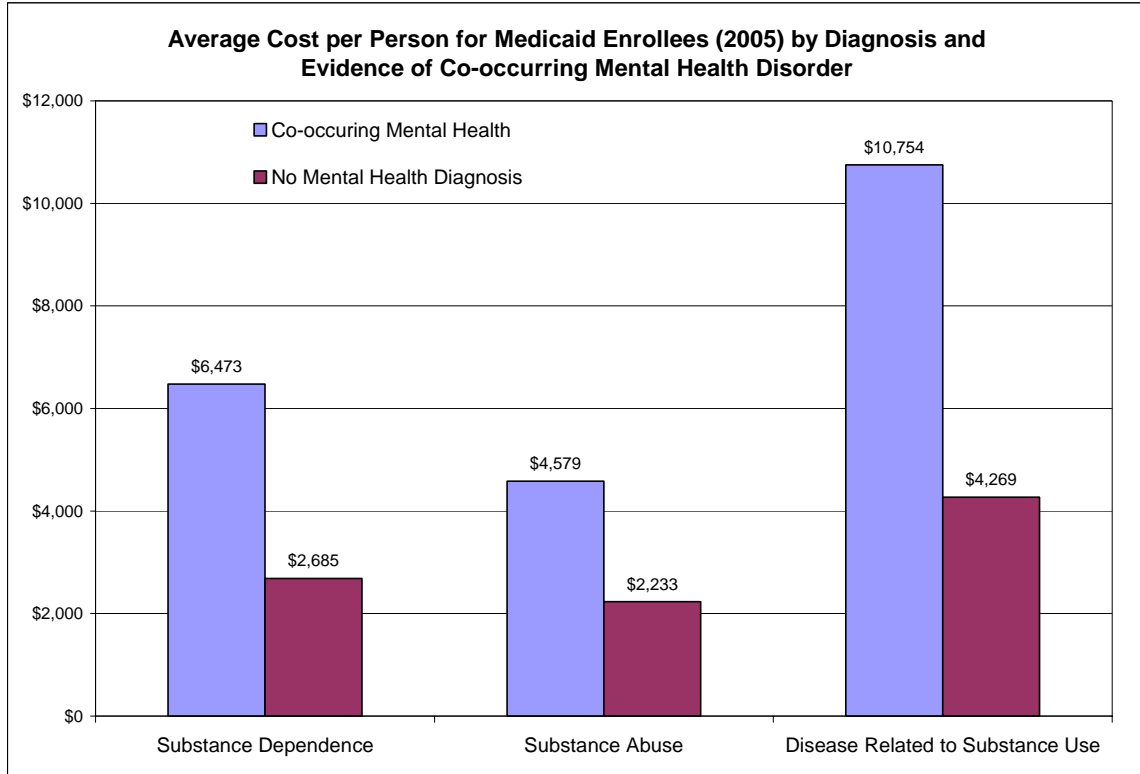
Figure 8



Mental health disorders can exacerbate a substance use disorder (and vice versa), and, in turn, increase the service use and costs to treat either one of the disorders. Figures 9 and 10 show that across all diagnosis categories, the cost per person for substance abuse services overall for those with also a mental health disorder were twice as much as the cost per person of those without.

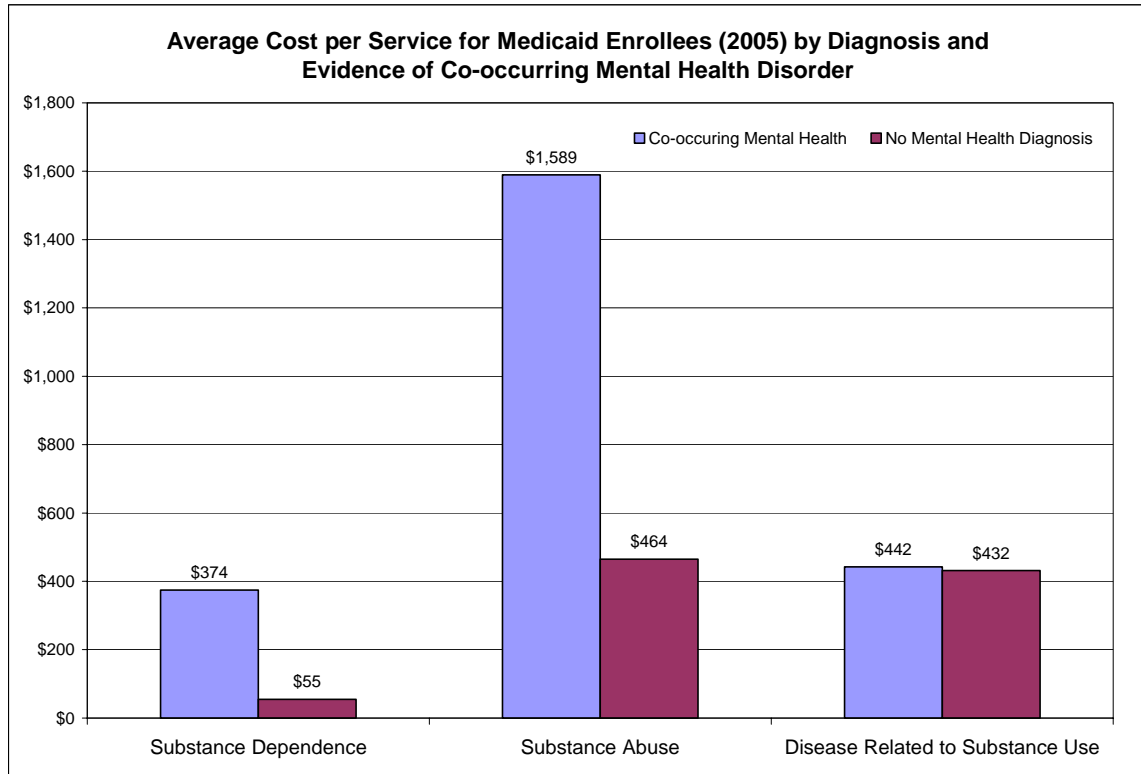
Figure 9 shows the average cost per person of services for each diagnostic category. Across all three categories, the average cost for care for individuals with a co-occurring mental health disorder was more than double the average cost for individuals with a substance use disorder alone.

Figure 9



The similar pattern emerges when comparing the average cost per service across diagnostic categories, as shown in Figure 10. One note, once the data was aggregated by the presence of a co-occurring mental health disorder, the category “disease related to substance use” yielding small numbers; therefore, these data may be skewed by only a few cases. Looking at the substance abuse category, one can see that the cost per service for providing services to those with a mental health disorder is triple that of individuals without the presence of a mental health issue.

Figure 10



Facilities and Services for Substance Use Disorder Services

The figure below shows the distribution of total costs for substance use disorder services by the type of facility. The majority of costs are either inpatient care or for long-term care services. We found that many claims for inpatient care had a non-substance use disorder diagnosis as the primary diagnosis, meaning that the substance use disorder was noted in the claim, but may not have been a direct cause for accessing inpatient care; however, one-fourth the expenditures were for inpatient care of patients with either a substance use disorder or a mental health disorder considered the primary condition. Also, nursing home care may have a substance use disorder diagnosis listed, but, generally speaking, long-term care services include multiple services for care, medical and non-medical.

Figure 11

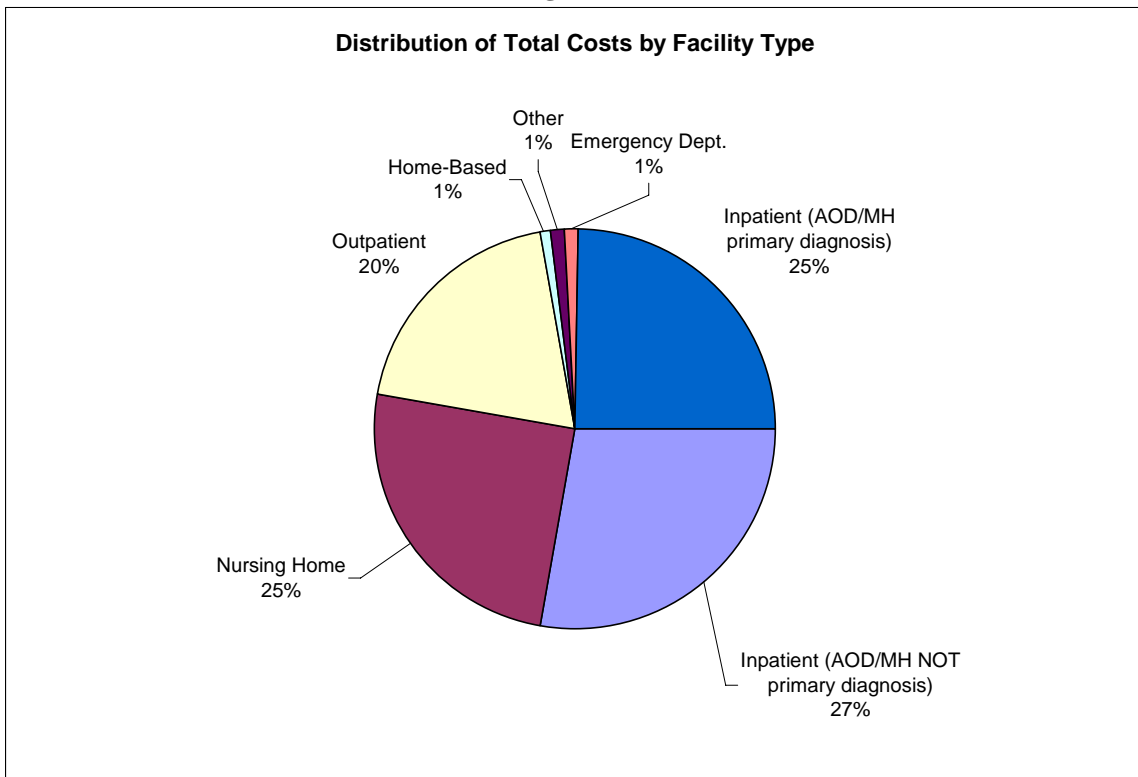
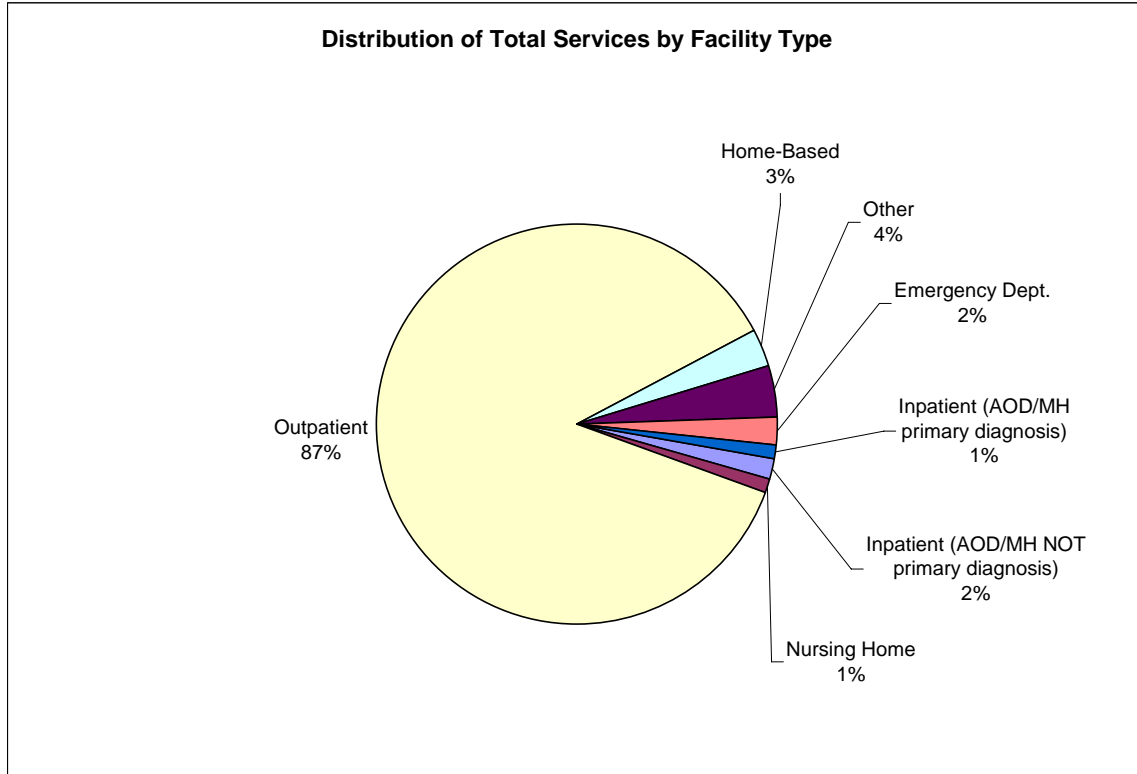


Figure 11 shows the different facility types utilized in 2005 for substance use disorder services. The vast majority of services (87%) were outpatient services. This suggests that the majority of services are relatively lower in cost and that very few individuals, who are accessing few services, are the most expensive to treat; this is not unlike the healthcare system as a whole.

Figure 12



A further breakdown of the differences between the facility types is shown in Table 6. Like the number of services, outpatient care treated the most individuals – and at the lowest average cost.

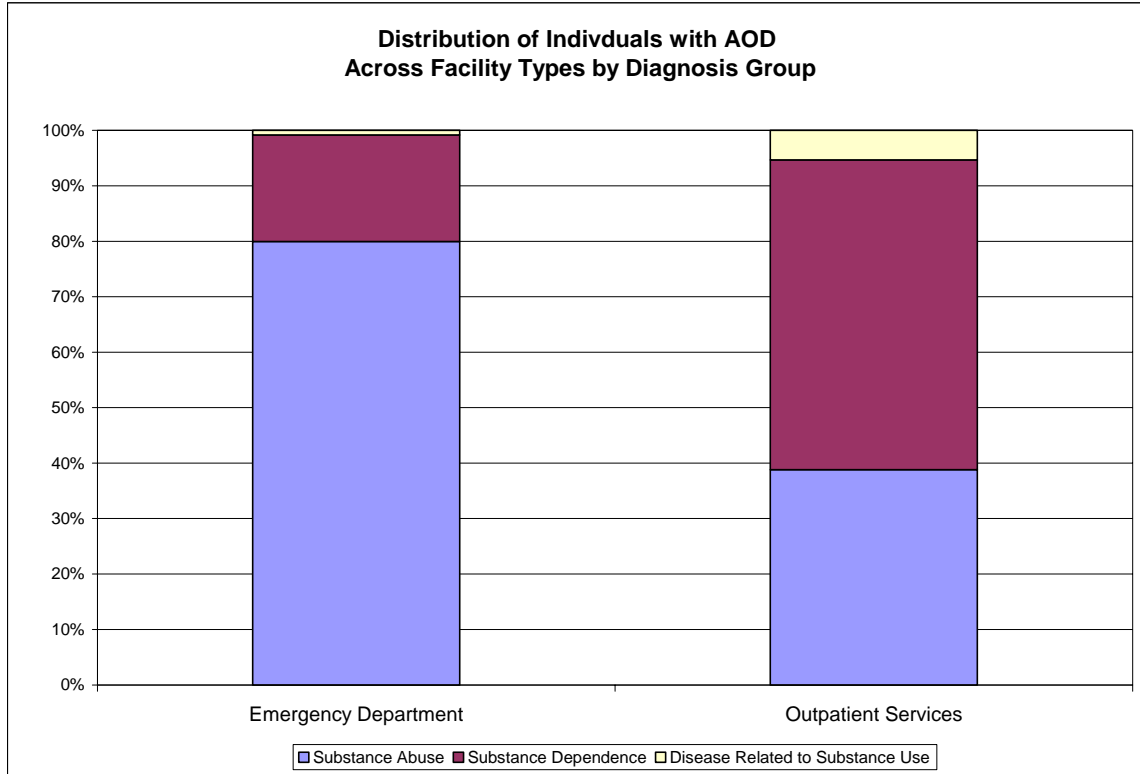
Table 6

Total Expenditures for Substance Use Disorder Services for Medicaid Enrollees (2005) by Facility Type

Description	Total Expenditures	Service Count	Total Persons	Average Cost per Service	Average Cost per Person	Average Number of Services per Person
Inpatient Service – AOD or MH diagnosis was primary	\$2,200,484	639	504	\$3,444	\$4,366	1
Inpatient Service – AOD or MH diagnosis was not primary	\$2,490,463	913	633	\$2,728	\$3,934	1
Nursing/Long-Term Care Facility	\$2,221,629	691	96	\$3,215	\$23,142	7
Outpatient Care	\$1,745,799	47981	1334	\$36	\$1,309	36
Home-Based Care	\$71,865	1705	26	\$42	\$2,764	66
Emergency Department (ED)	\$116,761	1252	663	\$93	\$176	2
Other	\$89,762	2210	409	\$41	\$219	5

Figure 13 shows how the different diagnoses use services differently. Comparing outpatient services to emergency departments, the emergency departments treated relatively more individuals with substance abuse diagnoses than outpatient services.

Figure 13



Implications exist for screening and prevention activities among those who are not clinically diagnosed with substance dependence. Many could be referred to outpatient services, since the vast majority of those using an ED?? for care are those who are sub-clinical to substance dependence. This also reflects the idea that patients with a substance dependence may have their illness well controlled through treatment in the community; whereas, those with substance abuse issues may not have their disorder under control and more often would access the ED for acute care needs stemming from their drug use.

Differences across Geography

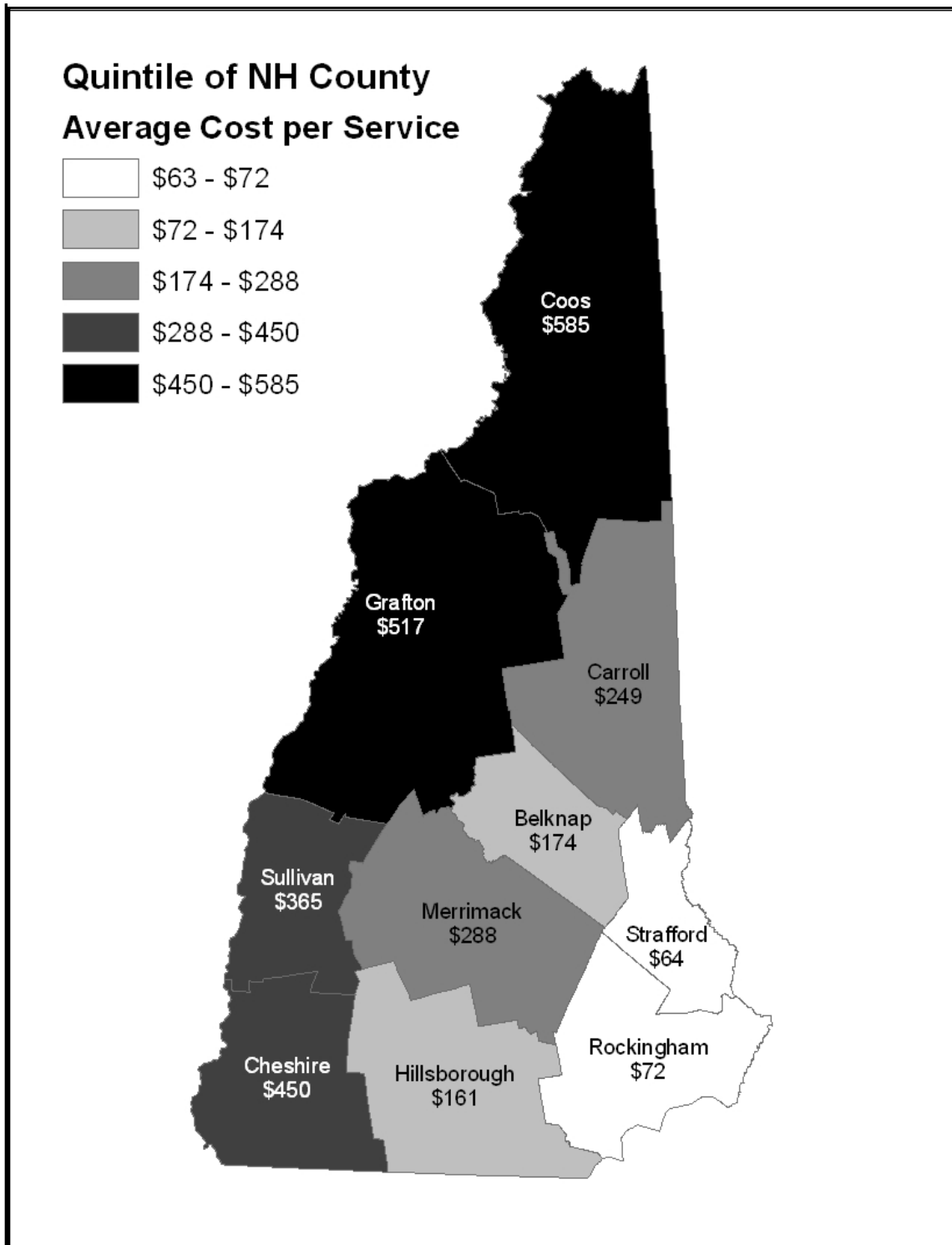
The table below shows the scope of costs and services across New Hampshire's counties. Average costs for services range from a high of \$5,333 in Carroll County to a low of \$1,415 in Belknap County. The map that follows (Figure 14) highlights where in the state services are, on average, more costly. The northern and western counties have the highest per service costs in the state.

Table 7
 Total Expenditures for Substance Use Disorder Services
 for Medicaid Enrollees (2005) by County

County	Total Expenditures	Service Count	Total Persons	Average Cost per Service	Average Cost per Person	Average Number of Services per Person	Percent of NH Population
BELKNAP	\$165,595	953	117	\$174	\$1,415	8	5%
CARROLL	\$490,623	1,967	92	\$249	\$5,333	21	4%
CHESHIRE	\$410,438	912	153	\$450	\$2,683	6	6%
COOS	\$566,263	968	183	\$585	\$3,094	5	3%
GRAFTON	\$686,575	1,329	133	\$517	\$5,162	10	6%
HILLSBOROUGH	\$2,987,808	18,583	802	\$161	\$3,725	23	31%
MERRIMACK	\$1,019,438	3,536	313	\$288	\$3,257	11	11%
ROCKINGHAM	\$866,047	11,964	289	\$72	\$2,997	41	23%
STRAFFORD	\$837,781	13,144	318	\$64	\$2,635	41	9%
SULLIVAN	\$535,259	1,466	158	\$365	\$3,388	9	3%

Comparing the geographic patterns of the map below to the data in the table above, one can see that the counties with the highest services per person are also to lowest cost, on average, per person. The wide variation between the numbers of services per person raises questions about the availability of services in some counties, particularly the more rural areas of the north and western parts of the state.

Figure 14



Eligibility Status

There are several pathways to becoming eligible for Medicaid services – having a long-term disability, being low-income, and being elderly are the most common examples. Table 8 presents the expenditures and service use for substance use disorder treatment services by eligibility status. Low income related enrollees utilize the most services while elderly enrollees cost the most on average.

Table 8
 Total Expenditures for Substance Use Disorder Services
 for Medicaid Enrollees (2005) by Eligibility

Eligibility Status	Total Expenditures	Service Count	Total Persons	Average Cost per Service	Average Cost per Person	Average Number of Services per Person
ADULT MENTALLY DISABLED	\$2,760,191	11,677	814	\$236	\$3,391	14
ADULT PHYSICALLY DISABLED	\$2,404,658	9,678	619	\$248	\$3,885	16
INCOME RELATED	\$2,053,781	32,310	914	\$64	\$2,247	35
ELDERLY	\$1,671,787	1,554	201	\$1,076	\$8,317	8
MISSING	\$21,402	28	5	\$764	\$4,280	6
MEDICARE RELATED	\$18,948	97	40	\$195	\$474	2
CHILD DISABLED	\$4,196	14	2	\$300	\$2,098	7
FOSTER CARE	\$1,798	33	5	\$54	\$360	7

Comparing Healthcare Services for Medicaid Enrollees with and without AOD Related Claims

The analysis that follows compares all medical claims of Medicaid-enrolled adults with evidence of a substance use disorder (AOD Group) and those without a substance use disorder (Non-AOD Group) to examine the scope of differences between medical care uses between the groups. In other words, this piece compares all healthcare services, both for substance use disorders and for other conditions, to the rest of the Medicaid population. Demographic differences between the groups exist, which both confounds and informs the comparison between the two cohorts.

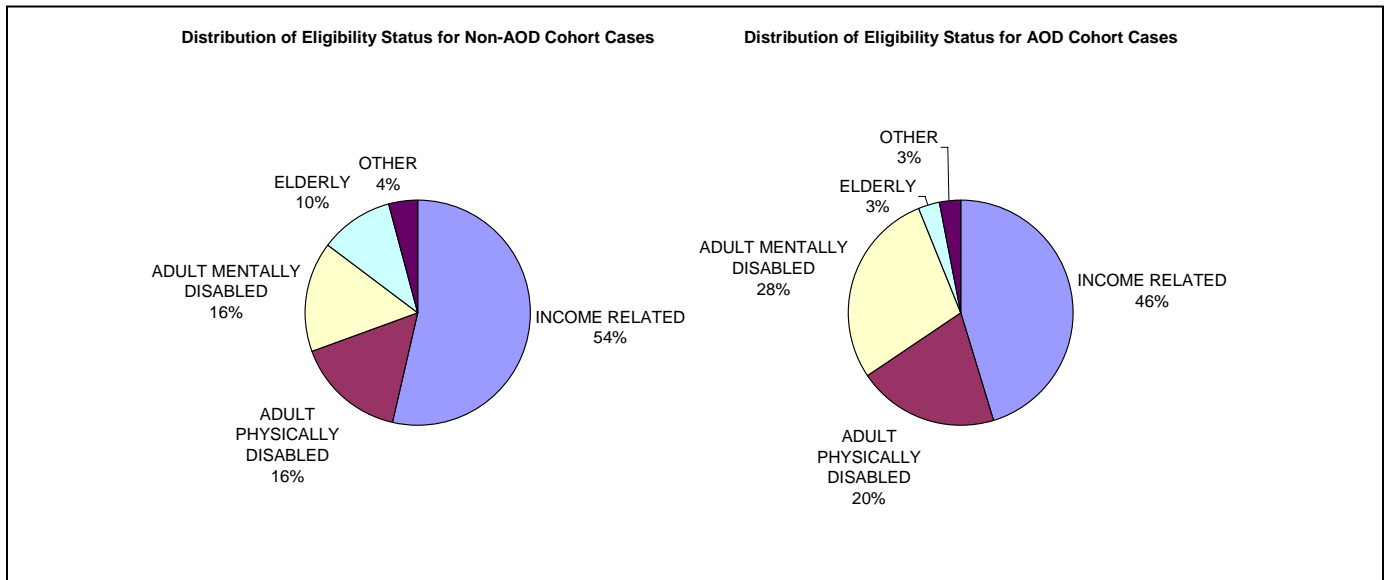
Therefore, this analysis adjusts for these differences in two ways. First, in order to minimize potential bias, children were removed from this comparison given the relatively few children in the AOD group. Second, many Medicaid recipients, particularly the elderly, are in long-term care environments. Long-term care facilities offer far more services than simple medical care. Presumably, if a long-term care resident is struggling with a substance use disorder, treatment would be additional to all the other services provided to the patient. Also, in general, those in long-term care have multiple conditions and would be in poorer health overall than their counterparts not under care, potentially clouding any comparison. Therefore, long-term care claims are also removed from this comparison. Table 9 shows how each of the groups compare on several characteristics.

Table 9

	AOD Group	Non-AOD Group
Total Adults	2,376	38,943
Percent Female	63.7%	70.0%
Average Age	41	45
Percent over age 60	8.0%	24.1%
Avg. Months of Enrollment	9.3	8.0
Percent Enrolled 12 months	45.7%	36.9%

The substance use disorder cohort (labeled AOD) have fewer females, are younger, and are enrolled in Medicaid longer than the non-AOD cohort. Also, as shown below, the AOD group has fewer enrollees eligible because of income or due to being elderly; whereas, the AOD cohort has slightly more adults with a long-term mental or physical disability. This phenomenon remains when aggregating eligibility by gender. And, like in the AOD analysis above, women have a higher percentage of income-related eligible enrollees than men.

Figure 15



The difference between the cohorts should be kept in mind when reviewing the results that follow. Also, one should remember that these individuals are those Medicaid recipients that are actually accessing healthcare services. Those who do not access services at all are not included in these results – raising questions of how barriers to care for this population impact the differences between the two groups.

Comparing services by age and gender

Table 10 shows the differences in service use and costs for Medicaid-enrollees with evidence of a substance use disorder and enrollees without. Men, in general, cost more on average than women, but men in the non-AOD are generally no different. Women in the AOD group, on the other hand, cost substantially more than their non-AOD counterparts.

Table 10
 Total Health Care Expenditures
 for Medicaid Enrollees (2005) by Cohort and Gender

	Total Expenditures	Service Count	Total Persons	Average Cost per Service	Average Cost per Person	Average Number of Services per Person
AOD Group						
Female	\$13,575,696	145,680	1,513	\$93	\$8,973	96
Male	\$10,101,361	83,328	863	\$121	\$11,705	97
TOTAL	\$23,677,057	229,008	2,376	\$103	\$9,965	96
Non-AOD Group						
Female	\$157,602,434	1,673,775	27,142	\$94	\$5,807	62
Male	\$138,338,206	1,176,084	11,631	\$118	\$11,894	101
Unknown	\$142,571	1,832	170	\$78	\$839	11
TOTAL	\$296,083,210	2,851,691	38,943	\$104	\$7,603	73

The figures that follow compare the AOD to the non-AOD group in terms of average costs and average services across age groups. Across the board, the AOD group cost more on average and accessed more services than non-AOD Medicaid-enrollees.

Figure 16

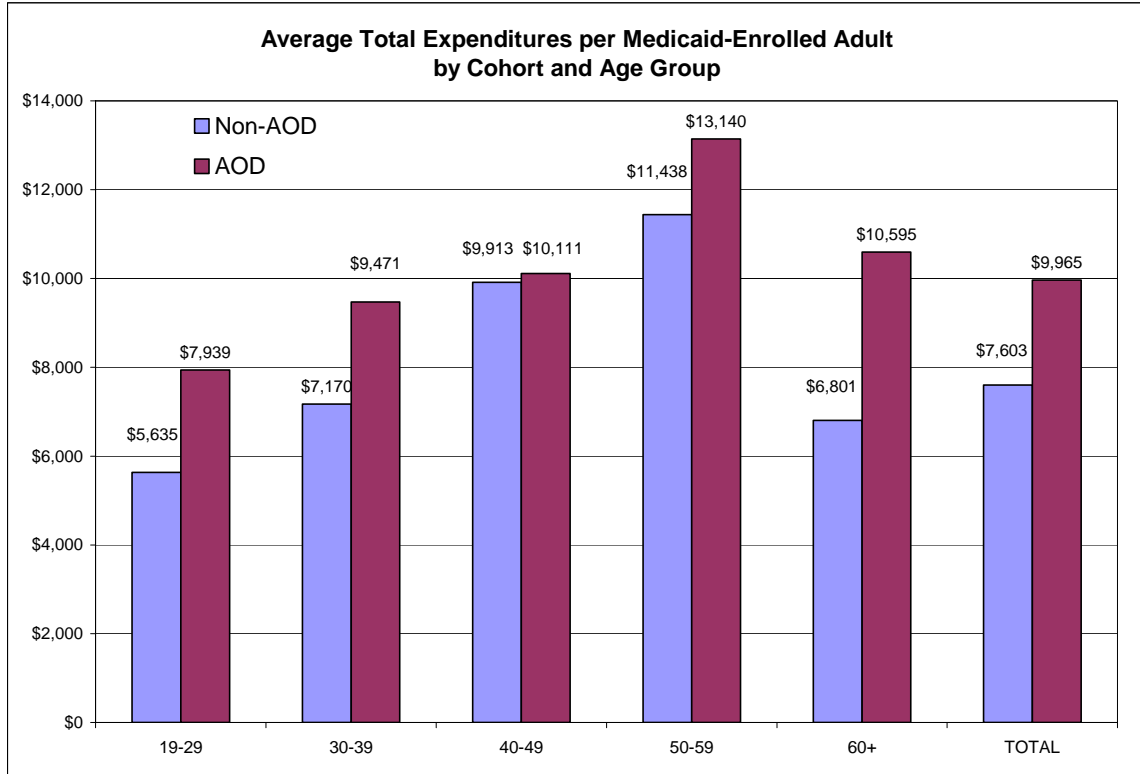
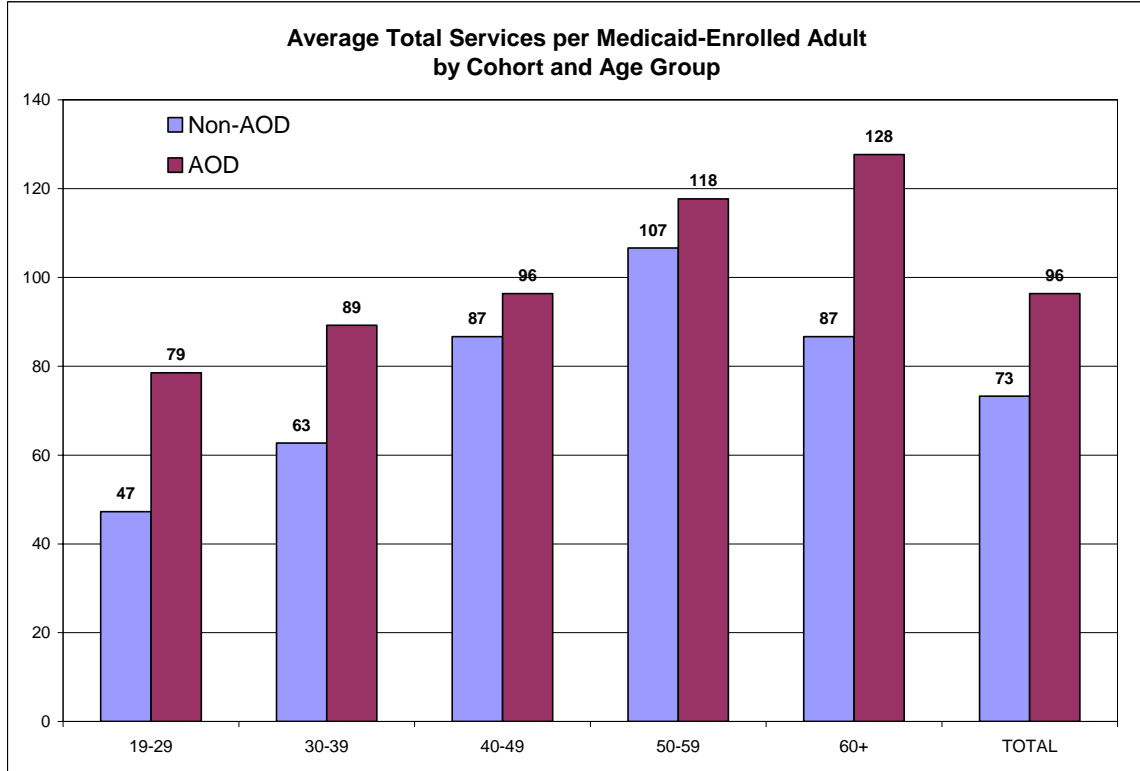


Figure 17



Comparing healthcare use by facility types

Similar to the cost difference seen in age, AOD Medicaid enrollees, on average, cost more per person across different facility types. AOD enrollees show twice the cost of non-AOD enrollees for inpatient and emergency department services.

Figure 18

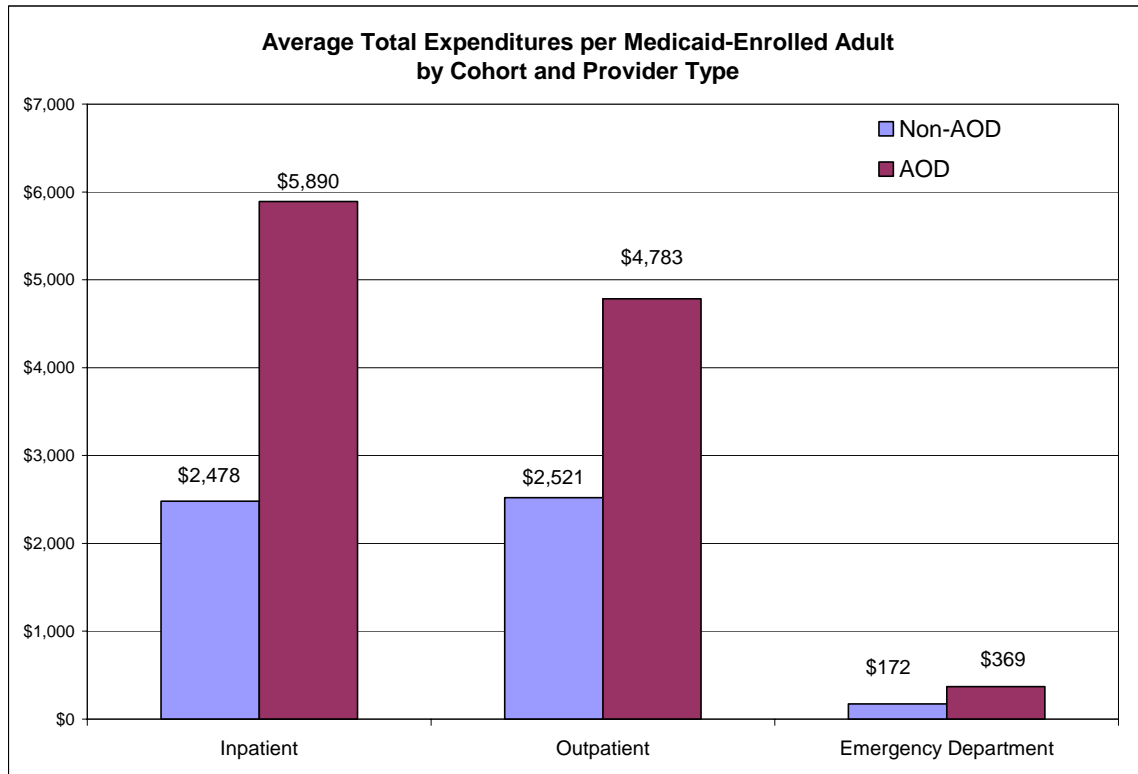
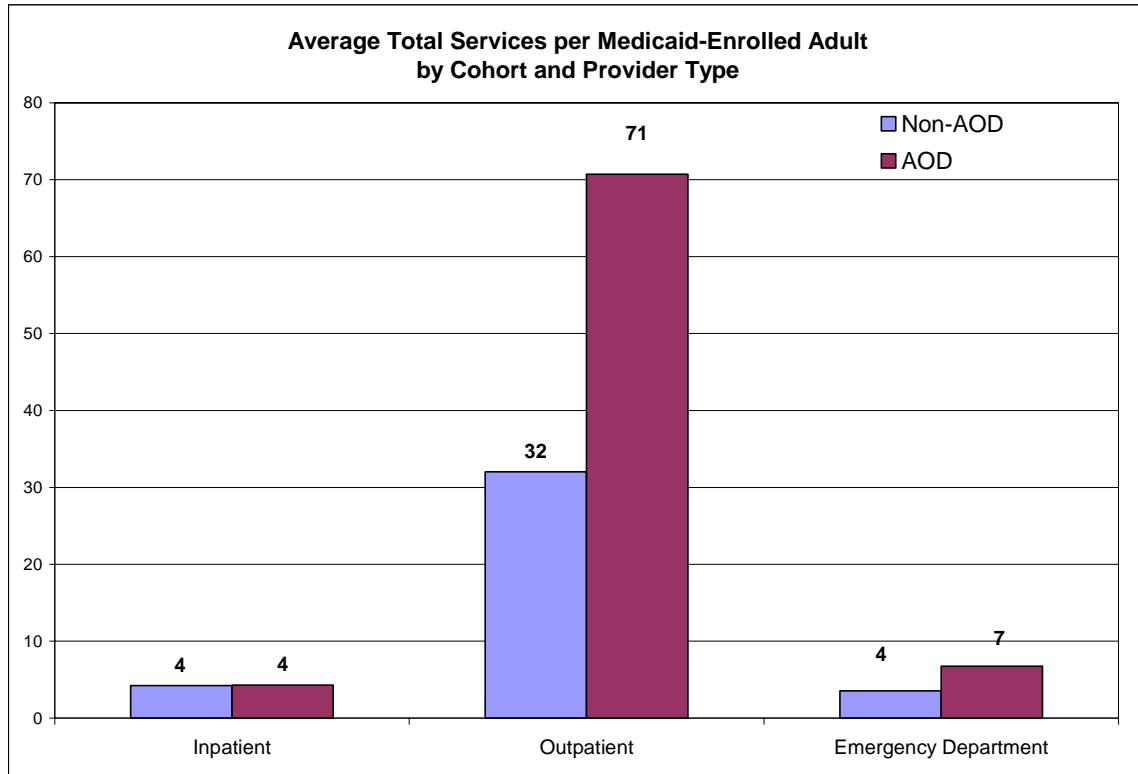


Figure 19



Given that no difference exists in the average number of services provided in an inpatient setting between the groups, Medicaid-enrollees with a history of a substance use disorder, on average, must have more costly services during their inpatient stays. And, Medicaid-enrollees with evidence of a substance use disorder, on average, accessed the emergency department almost twice as often as those without.

Comparing service use and costs by Eligibility Status

With the exception of Medicaid enrollees with a long-term mental disability, the average cost per AOD enrollee was higher than non-AOD enrollees. Income-related enrollees with evidence of a substance use disorder were more than twice their non-AOD counterparts in average costs and for the number of services they accessed overall.

Table 11
 Total Health Care Expenditures
 for Medicaid Enrollees (2005) by Cohort and Eligibility Status

	Total Expenditures	Service Count	Total Persons	Average Cost per Service	Average Cost per Person	Average Number of Services per Person
AOD Group						
INCOME RELATED	\$5,809,484	73,702	1,254	\$79	\$4,633	59
ADULT PHYSICALLY DISABLED	\$6,670,619	56,420	559	\$118	\$11,933	101
ADULT MENTALLY DISABLED	\$9,586,610	81,147	780	\$118	\$12,291	104
ELDERLY	\$1,022,877	13,978	85	\$73	\$12,034	164
OTHER	\$587,467	3,761	87	\$156	\$6,752	43
Non-AOD Group						
INCOME RELATED	\$51,830,903	579,439	23,801	\$89	\$2,178	24
ADULT PHYSICALLY DISABLED	\$83,098,092	741,005	7,101	\$112	\$11,702	104
ADULT MENTALLY DISABLED	\$116,332,555	942,037	7,075	\$123	\$16,443	133
ELDERLY	\$34,451,180	504,648	4,657	\$68	\$7,398	108
OTHER	\$10,370,481	84,562	1,832	\$123	\$5,661	46

Appendix A: About the Data and Methods

Data Sources - New Hampshire Medicaid

For the analysis of the public Medicaid system, the Center relied on claims files developed from the Dartmouth Psychiatric Research Center (PRC). The Department of Health and Human Services provided the PRC with claims level data for all Medicaid recipients receiving a service during calendar year 2005 and monthly eligibility files identifying who was eligible for Medicaid during that period. The Center used these files – and encrypted individual identifiers – to create analytic files at the claim level and the individual level, as well as creating analytic files which described eligibility across all Medicaid recipients.¹⁷ Neither pharmaceutical expenditures nor dental expenditures were included in the analytic files and, therefore, were not part of this analysis.

New Hampshire Medicaid Eligibility Categories
<i>Mandatory Eligibility Groups (all State Medicaid programs must cover)</i>
<ul style="list-style-type: none"> • Low-income Medicare beneficiaries
<ul style="list-style-type: none"> • Individuals who would qualify for Temporary Assistance to Needy Families (TANF) today under the state's 1996 AFDC eligibility requirements
<ul style="list-style-type: none"> • Children under age six and pregnant women with family income at or below 133% of federal poverty guidelines
<ul style="list-style-type: none"> • Children born after September 30, 1983, who are at least age five and live in families with income up to the federal poverty level
<ul style="list-style-type: none"> • Infants born to Medicaid-enrolled pregnant women
<ul style="list-style-type: none"> • Children who receive adoption assistance or who live in foster care, under a federally-sponsored Title IV-E program
<i>Optional Eligibility Groups (NH Medicaid has chosen to cover)</i>
<ul style="list-style-type: none"> • Low-income elderly adults or adults with disabilities
<ul style="list-style-type: none"> • Children and pregnant women up to 185% and parents up to 63% of the federal poverty level
<ul style="list-style-type: none"> • Individuals determined to be "medically needy" due to low-income and resources and large medical expenses
<ul style="list-style-type: none"> • Home Care for Children with Severe Disabilities (HC-CSD), commonly known as "Katie Beckett"; for severely disabled children up to age 19 whose medical disability qualifies them for institutional care but are cared for at home
<ul style="list-style-type: none"> • Medicaid for Employed Adults with Disabilities (MEAD) allows Medicaid-eligible disabled individuals between the ages of 18 and 64 who want to save money or work to increase their earnings while maintaining Medicaid coverage

¹⁷The Medicaid claim level files provided by the PRC were straightforward with one exception: They included administrative adjustments. The Center cleaned these files in two steps. First, to the extent possible given the data, the Center eliminated duplicate claims by matching each individual duplicate claim with its duplicate. In addition, any claim that had a zero paid amount was deleted, as these claims likely reflected administrative adjustments.

Methods

Searching for evidence of a substance use disorder

Diagnosis codes, used by medicine to group and categorize diseases for billing as well as research purposes, were the primary data source for finding evidence of a substance use disorder. In general, the Medicaid data contained up to 4 diagnosis codes per claim; CHS claims contained up to 13 codes. All claims were searched for evidence of these codes in any diagnosis field, and those claims were marked as a claim for substance use services, see Table A-1 below.

Table A - 1¹⁸

Description and ICD-9-CM Codes		
Description	Code	Group
Alcoholic psychoses	291	Abuse
Drug psychoses	292	Abuse
Acute alcoholic intoxication	303.0	Abuse
Nondependent alcohol use	305.0	Abuse
Nondependent cannabis use	305.2	Abuse
Nondependent hallucinogen use	305.3	Abuse
Nondependent barbiturate use	305.4	Abuse
Nondependent opioid use	305.5	Abuse
Nondependent cocaine use	305.6	Abuse
Nondependent amphetamine use	305.7	Abuse
Nondependent antidepressant use	305.8	Abuse
Nondependent mixed drug or unspecified drug use	305.9	Abuse
Alcoholic gastritis	535.3	Abuse
Excessive blood alcohol level	790.3	Abuse
Adrenal cortical steroid poisoning	962.0	Abuse
Opiates and related narcotics poisoning	965.0	Abuse
Sedative or hypnotics poisoning	967	Abuse
Depressants poisoning	968	Abuse
Psychotropic agents poisoning	969	Abuse
Stimulants poisoning	970	Abuse
Dietics poisoning	977.0	Abuse
Poisoning by alcohol deterrents	977.3	Abuse
Toxic effect of alcohol	980	Abuse
Unspecified alcohol dependence	303.9	Dependence
Opioid dependence	304.0	Dependence
Barbiturate dependence	304.1	Dependence
Cocaine dependence	304.2	Dependence
Cannabis dependence	304.3	Dependence
Amphetamine dependence	304.4	Dependence
Hallucinogen dependence	304.5	Dependence
Other specified drug dependence	304.6	Dependence
Opioid combination dependence	304.7	Dependence
Combination dependence (without opioids)	304.8	Dependence
Unspecified drug dependence	304.9	Dependence
Drug dependence in pregnancy	648.3	Dependence
Pellagra	265.2	Related
Alcoholic polyneuropathy	357.5	Related
Drug related polyneuropathy	357.6	Related
Alcoholic cardiomyopathy	425.5	Related
Alcoholic fatty liver	571.0	Related
Acute alcoholic hepatitis	571.1	Related
Alcoholic cirrhosis of liver	571.2	Related
Alcoholic liver unspecified	571.3	Related
Suspected drug related damage to fetus	655.5	Related
Noxious influences affecting fetus	760.7	Related
Drug withdrawal in newborn	779.5	Related

For diagnosis groups, New Future’s staff provided the Center with their groupings of substance abuse, substance dependence, and related disorders, which are highlighted in the table above. When cases were aggregated by the categories, the following hierarchy was utilized: substance dependence, substance abuse, related disorders.¹⁹ As stated previously in the report, this hierarchy was used to categorize individuals. For example, if

¹⁸ Diagnosis codes used are from the International Statistical Classification of Diseases and Related Health Problems, Version 9. Published by the World Health Organization.

¹⁹ For example, a case where a claim for a substance dependence diagnosis was noted, the claims was considered a claim for substance dependence regardless if there was a diagnosis from another category.

an individual had a claim of substance dependence, they would be categorized as such, even if they also had a claim for an AOD related disorder.

Furthermore, in order to capture possible services for a substance abuse disorder when the diagnosis codes were missing, the service code was searched for evidence of any substance use disorder services.²⁰ With the exception of out-of-home placements for children, as noted in the report, this step did not identify any additional substance use disorder cases.

Co-occurring mental health disorders were identified in a similar manner to substance use disorder claims. All substance use disorder claims were again searched by diagnosis code for evidence of a mental health disorder. It was also marked if the code present was the primary diagnosis (that is, found in the first listed diagnosis field). The ICD-9 codes included for mental health disorders in the analysis are shown in Table A - 2.

Table A - 2

Description and ICD-9-CM Codes	
Description	Code
Serious Mental Illnesses (SMI) and Other Mental Illnesses (OMI)	
Schizophrenic disorders	295
Major depressive disorder	296.2, 296.3
Other affective psychoses	
<i>Manic disorders</i>	296.0, 296.1
<i>Bipolar affective disorders</i>	296.4 - 296.7
<i>Other & unspecified manic-depressive psychoses</i>	296.8
<i>Other & unspecified affective psychoses</i>	296.9
Other psychoses	
<i>Transient organic psychotic conditions</i>	293
<i>Other organic psychotic conditions, chronic</i>	294
<i>Paranoid states or delusional disorders</i>	297
<i>Other non-organic psychoses</i>	298
<i>Psychoses with origin specific to childhood</i>	299
Stress & adjustment disorders	
<i>Acute reaction to stress</i>	308
<i>Adjustment reaction</i>	309
Personality disorders	301, excluding 301.13
Childhood disorders	
<i>Disturbance of conduct, not elsewhere specified</i>	312
<i>Disturbance of emotions, specific to childhood & adolescence</i>	313
<i>Hyperkinetic syndrome of childhood</i>	314
Other mood disorders & anxiety	
<i>Neurotic disorders</i>	300
<i>Cyclothymic disorder</i>	301.13
<i>Depressive disorder, not elsewhere specified</i>	311
Other mental disorders	
<i>Sexual deviations & disorders</i>	302
<i>Physiological malfunction arising from mental factors</i>	306
<i>Special symptoms or syndromes, not elsewhere specified</i>	307
<i>Specific non-psychotic mental disorders due to organic brain damage</i>	310
<i>Psychotic factors associated with diseases specified elsewhere</i>	316
<i>Mental disorders in pregnancy, ante partum & post partum</i>	648.4
Alzheimer's Disease	290. 331.0
Mental Retardation or Developmental Delays	315, 317-319

²⁰ “Substance Abuse HCPCS Code User’s Guide: Unofficial Standard Definitions.” [The National Association of State Alcohol and Drug Abuse Directors](#). Washington, DC. August 2007.

In Medicaid, the age of the case was their age as of July 1, 2005 to control for varying age at the time of service. Gender was checked against each ID and was corrected if missing. If both genders were reported for the same ID, the gender with the most claims was used. In conflicts, the gender was changed to reflect unknown.

When data is aggregated by other factors, such as county or facility, the number of cases will be higher than the actual number of cases. This is due to individuals seeking care at multiple facilities in many locations. Facilities and services are based on the standard financial billing codes used across all healthcare organizations and insurers and aggregated by the facility type or service setting.

Appendix B: Data Tables for AOD Services for New Hampshire's Medicaid Program

Table B - 1: Medicaid Claims for AOD Services by Gender, 2005

Gender	Total Expenditures	Service Count	Total Individuals	Avg. Cost per Service	Avg. Cost per Person	Avg. Services per Person	Percent of Total Persons	Percent of Total Expenditures	Percent of Total Services
Female	\$4,825,188	40,671	1,618	\$119	\$2,982	25	62%	54%	73%
Male	\$4,111,574	14,720	982	\$279	\$4,187	15	38%	46%	27%
TOTAL	\$8,936,762	55,391	2,600	\$161	\$3,437	21			

Table B - 2: Medicaid Claims for AOD Services by Age Group, 2005

Age Group	Total Expenditures	Service Count	Total Individuals	Avg. Cost per Service	Avg. Cost per Person	Avg. Services per Person	Percent of Total Persons	Percent of Total Expenditures	Percent of Total Services
0-18	\$58,738	288	63	\$204	\$932	5	2%	1%	1%
19-29	\$1,494,050	15,447	552	\$97	\$2,707	28	21%	17%	28%
30-39	\$1,496,655	16,598	565	\$90	\$2,649	29	22%	17%	30%
40-49	\$2,248,808	15,380	732	\$146	\$3,072	21	28%	25%	28%
50-59	\$1,434,163	5,046	394	\$284	\$3,640	13	15%	16%	9%
60+	\$2,204,349	2,632	294	\$838	\$7,498	9	11%	25%	5%

Table B - 3: Medicaid Claims for AOD Services by County of Service Provider, 2005

County of Service Provider	Total Expenditures	Service Count	Total Individuals	Avg. Cost per Service	Avg. Cost per Person	Avg. Services per Person	Percent of Total Persons	Percent of Total Expenditures	Percent of Total Services	Percent of State Population
HILLSBOROUGH	\$2,987,808	18,583	802	\$161	\$3,725	23	31%	33%	34%	31%
MERRIMACK	\$1,019,438	3,536	313	\$288	\$3,257	11	12%	11%	6%	11%
ROCKINGHAM	\$866,047	11,964	289	\$72	\$2,997	41	11%	10%	22%	23%
STRAFFORD	\$837,781	13,144	318	\$64	\$2,635	41	12%	9%	24%	9%
GRAFTON	\$686,575	1,329	133	\$517	\$5,162	10	5%	8%	2%	6%
COOS	\$566,263	968	183	\$585	\$3,094	5	7%	6%	2%	3%
SULLIVAN	\$535,259	1,466	158	\$365	\$3,388	9	6%	6%	3%	3%
CARROLL	\$490,623	1,967	92	\$249	\$5,333	21	4%	5%	4%	4%
CHESHIRE	\$410,438	912	153	\$450	\$2,683	6	6%	5%	2%	6%
OUT OF STATE	\$351,896	562	40	\$626	\$8,797	14	2%	4%	1%	N/A
BELKNAP	\$165,595	953	117	\$174	\$1,415	8	5%	2%	2%	5%
MISSING	\$19,037	7	2	\$2,720	\$9,519	4	0%	0%	0%	N/A

Table B - 4: Medicaid Claims for AOD Services by Diagnosis Category (based on primary diagnosis), 2005

Diagnosis Category (based on primary diagnosis)	Total Expenditures	Service Count	Total Individuals	Avg. Cost per Service	Avg. Cost per Person	Avg. Services per Person	Percent of Total Persons	Percent of Total Expenditures	Percent of Total Services
Co-occurring non-MH DX as primary	\$2,643,950	975	647	\$2,712	\$4,086	2	20%	30%	2%
Co-occurring MH DX as primary	\$2,055,912	637	415	\$3,227	\$4,954	2	13%	23%	1%
Substance Abuse	\$1,934,594	7,101	1,231	\$272	\$1,572	6	37%	22%	13%
Substance Dependence	\$1,610,198	45,659	915	\$35	\$1,760	50	28%	18%	82%
Disease Related to AOD Use Disorder	\$692,108	1,019	107	\$679	\$6,468	10	3%	8%	2%

Table B - 5: Medicaid Claims for AOD Services by Diagnosis Category (based on any diagnosis field), 2005

Diagnosis Category (based on any diagnosis field)	Total Expenditures	Service Count	Total Individuals	Avg. Cost per Service	Avg. Cost per Person	Avg. Services per Person	Percent of Total Persons	Percent of Total Expenditures	Percent of Total Services
Substance Abuse	\$3,750,776	5,361	1,271	\$700	\$2,951	4	55%	51%	14%
Substance Dependence	\$4,923,182	49,423	1,272	\$100	\$3,870	39	41%	40%	84%
Disease Related to Substance Use	\$262,805	607	57	\$433	\$4,611	11	4%	8%	2%

Table B - 6: Medicaid Claims for AOD Services by Diagnosis Category (based on any diagnosis field) and Co-occurring Mental Health Diagnosis, 2005

Diagnosis Category (based on any diagnosis field)	Total Expenditures	Service Count	Total Individuals	Avg. Cost per Service	Avg. Cost per Person	Avg. Services per Person	Percent of Total Persons	Percent of Total Expenditures	Percent of Total Services
Substance Dependence w/o MH	\$2,346,732	42,535	874	\$55	\$2,685	49	34%	26%	77%
Substance Dependence with MH	\$2,576,449	6,888	398	\$374	\$6,473	17	15%	29%	12%
Substance Abuse w/o MH	\$1,969,391	4,240	882	\$464	\$2,233	5	34%	22%	8%
Substance Abuse with MH	\$1,781,384	1,121	389	\$1,589	\$4,579	3	15%	20%	2%
Disease Related to Substance Use w/o MH	\$230,543	534	54	\$432	\$4,269	10	2%	3%	1%
Disease Related to Substance Use with MH	\$32,262	73	3	\$442	\$10,754	24	0%	0%	0%

Table B - 7: Medicaid Claims for AOD Services by Provider Type, 2005

Facility Type	Total Expenditures	Service Count	Total Individuals	Avg. Cost per Service	Avg. Cost per Person	Avg. Services per Person	Percent of Total Persons	Percent of Total Expenditures	Percent of Total Services
Inpatient (AOD/MH NOT primary diagnosis)	\$2,490,463	913	633	\$2,728	\$3,934	1	17%	28%	2%
Nursing Home	\$2,221,629	691	96	\$3,215	\$23,142	7	3%	25%	1%
Outpatient	\$1,745,799	47981	1334	\$36	\$1,309	36	36%	20%	87%
Home-Based	\$71,865	1705	26	\$42	\$2,764	66	1%	1%	3%
Other	\$89,762	2210	409	\$41	\$219	5	11%	1%	4%
Emergency Dept.	\$116,761	1252	663	\$93	\$176	2	18%	1%	2%
Inpatient (AOD/MH primary diagnosis)	\$2,200,484	639	504	\$3,444	\$4,366	1	14%	25%	1%

Table B - 8: Medicaid Claims for AOD Services by Eligibility Category, 2005

Eligibility Category	Total Expenditures	Service Count	Total Individuals	Avg. Cost per Service	Avg. Cost per Person	Avg. Services per Person	Percent of Total Persons	Percent of Total Expenditures	Percent of Total Services
ADULT MENTALLY DISABLED	\$2,760,191	11,677	814	\$236	\$3,391	14	31%	31%	21%
ADULT PHYSICALLY DISABLED	\$2,404,658	9,678	619	\$248	\$3,885	16	24%	27%	17%
INCOME RELATED	\$2,053,781	32,310	914	\$64	\$2,247	35	35%	23%	58%
ELDERLY	\$1,671,787	1,554	201	\$1,076	\$8,317	8	8%	19%	3%
MISSING	\$21,402	28	5	\$764	\$4,280	6	0%	0%	0%
MEDICARE RELATED	\$18,948	97	40	\$195	\$474	2	2%	0%	0%
CHILD DISABLED	\$4,196	14	2	\$300	\$2,098	7	0%	0%	0%
FOSTER CARE	\$1,798	33	5	\$54	\$360	7	0%	0%	0%

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