

Substance Misuse in New Hampshire: An Update on Costs to the State's Economy and Initial Impacts of Public Policies to Reduce Them

May 2017

Prepared by:



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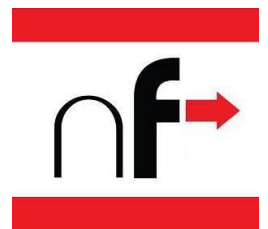


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Executive Summary

Since the release of PolEcon's 2014¹ report on the costs of substance misuse in New Hampshire, awareness of the damage that substance misuse inflicts on individuals, families, communities, and the state's economy has increased significantly. A dramatic rise in the number of drug-related deaths in New Hampshire has focused the state's attention on the dangerous rise in opiate and opioid abuse occurring, not only in New Hampshire, but across the nation and has prompted public policy efforts to address the problem. Headline news reports of heroin, fentanyl, and other drug-related deaths in the Granite State are startling and disturbing, but as horrific as the number of drug-related deaths are, they still represent only a fraction of the personal, economic, and social costs of drug and alcohol misuse in New Hampshire. Since our 2014 report, there is also an increasing awareness of the constraints that demographics and slow labor force growth are placing on New Hampshire's economy; highlighting the need to maximize labor force participation and the productivity of New Hampshire residents. Substance misuse both reduces labor force participation and reduces worker productivity.

In 2016, policymakers in the State of New Hampshire took a number of important steps to confront the increasing problem of substance misuse in the state. As a result of state and national policies enacted in recent years, there are now greater opportunities for New Hampshire residents to receive needed treatment and recovery supports for substance use disorders.

This report updates the 2014 analysis of the economic costs that substance misuse imposes on the State of New Hampshire. The report also documents the impact the Affordable Care Act (ACA) requirements for insurance coverage of substance use disorder and mental health treatment services, as well as the expansion of Medicaid, have had on substance misuse treatment rates in New Hampshire. Finally, the report examines how treatment capacity has expanded in response to ACA requirements for the inclusion substance use disorder treatment in health insurance coverage and the expansion of Medicaid in the state.

In updating our 2014 report on the cost borne by citizens, businesses, government, and the larger New Hampshire economy as a result of the misuse of alcohol and drugs, this report uses additional data and improved methodologies to again estimate the costs attributable to substance misuse in four broad areas: the productivity of individuals and businesses, criminal justice, health care, and other costs. The costs to New Hampshire of substance abuse have increased from \$1.84 billion to \$2.36 billion (not including \$604.6 million in costs related to premature deaths)

since our last report,² an amount equal to over \$21,000 annually for every individual in the state who is dependent upon or abuses alcohol or drugs. The annual cost of drug and alcohol misuse in New Hampshire is equal to over three percent (3.32%) of the state's annual gross state product.

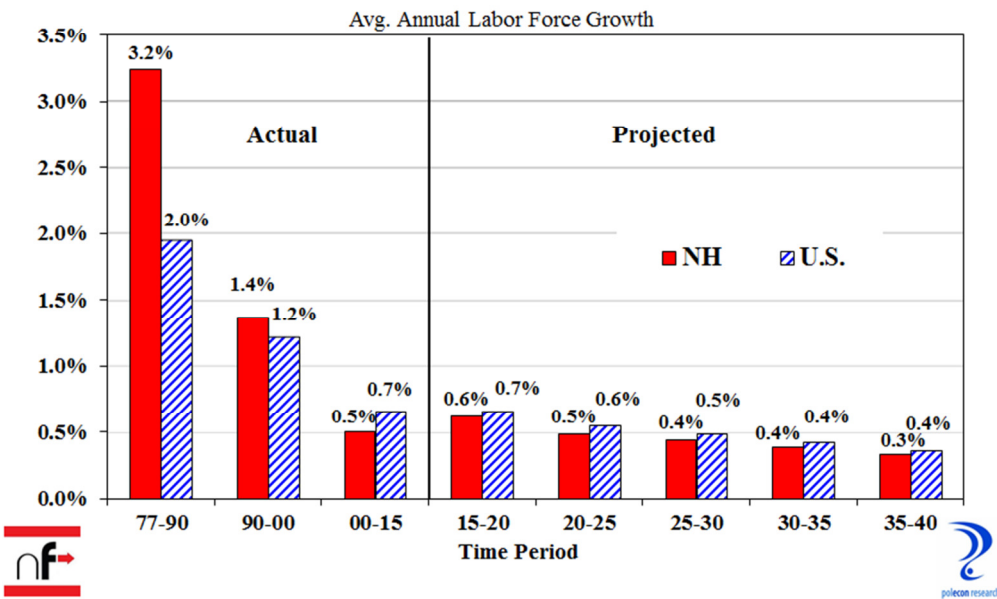
	Annual Costs	Lifetime Costs Related to Annual Impacts
Productivity		
Impaired Productivity	\$1,496.16	
Absenteeism	\$62.40	
Subtotal	\$1,558.56	
		\$604.66
Health Care		
Substance Misuse Treatment	\$44.74	
Medical Care Insurance Administration	\$269.78	
Subtotal	\$337.07	
Criminal Justice		
Police Protection	\$156.76	
Judicial System	\$33.14	
Corrections	\$101.70	
Cost to Crime Victims	\$10.09	
Victim Productivity Loss	\$4.85	
Subtotal	\$306.54	
Other Costs		
Motor Vehicle Crashes	\$72.62	
State and Local Tax Revenue	\$87.60	
Subtotal	\$160.22	
Grand Total	\$2,362.39	\$2,967.05
NH Gross State Product (\$ Millions 2014)	\$71,153	
Costs as a % of GSP	3.32%	

*Included in separate total because of difference in accounting

Although the total cost of substance misuse in New Hampshire continues to rise, there have been some encouraging developments since the release of our previous report in November 2014. Reductions in crime rates and automobile crashes have resulted in small reductions in a few substance misuse cost categories. In addition, there have been small reductions in reported substance abuse and dependency among younger subgroups of New Hampshire’s population. Reductions in youth substance misuse may be attributed to an increase in funding for prevention efforts throughout the state over the past several years and should encourage policymakers to continue New Hampshire’s investment in evidence-based prevention efforts. However, reductions in substance misuse rates among New Hampshire’s youth cannot discount the increases in substance abuse and dependency among older Granite Staters (age 26 and above) that have resulted in an overall increase in the rate of reported substance misuse and dependency among New Hampshire residents since our last report.

This report reiterates the fact that the greatest cost of substance misuse in New Hampshire is in the form of the lost productivity of individuals in the state who are dependent on or who abuse alcohol or drugs. Productivity losses attributable to substance misuse cost the state about \$1.6 billion in 2014. Nationally and in New Hampshire, the longer-term prospects for economic growth are being challenged by two primary forces, slow growth in the labor force and declining growth in productivity (output per worker). By reducing the number of individuals in New Hampshire’s labor force and by decreasing the skills and productivity of individuals who are in the labor force, substance misuse in New Hampshire exacerbates key demographic and human resource issues that contribute to slower economic growth in the state. The importance of maximizing labor force participation and the productivity of workers in New Hampshire is illustrated in Figure 1, which shows past and projected labor force growth in New Hampshire and the United States. As the chart demonstrates, slow labor force growth is the “new normal” for the New Hampshire and United States economies.

Figure 1
**Slow Labor Force Growth Will Contribute to Slower Growth in
 New Hampshire and the United States**



Since our 2014 report, the Affordable Care Act has been fully implemented, resulting in increased access to affordable health insurance and coverage for substance use disorder treatment for many New Hampshire residents. In addition, New Hampshire expanded its Medicaid program, which also provided increased opportunities for substance use disorder treatment in the state. Substance use disorder treatment in New Hampshire has increased sharply in response to these policies. Findings in this report suggest that changes in the availability of health insurance and coverage for substance use disorder treatment have also helped to expand substance use disorder treatment capacity in the state by contributing to an increase in the number of treatment providers. That said, this report also addresses concerns about how workforce issues may limit the ability of these providers to increase capacity and meet the growing need for treatment services in the state.

Key findings of this report include:

Economic and Fiscal Costs:

- At \$2.36 billion, substance misuse imposes a cost on New Hampshire equal to \$1,780 for every individual living in the state.
- Alcohol dependence and abuse reduces New Hampshire's labor force by over 12,000 individuals or by 1.65 percent.
- Productivity losses including reduced labor force participation and reduced earnings of alcohol dependent workers account for the largest share of costs associated with substance abuse in New Hampshire, an estimated \$1.56 billion in 2014.
- Nearly \$45 million was spent on substance use disorder treatment in New Hampshire in 2014 and increased substantially in 2015 as a result of the expansion of New Hampshire's Medicaid program.
- Health care costs attributable to substance misuse in New Hampshire were \$337.1 million in 2014.
- Crime and criminal justice costs attributable to substance misuse cost \$306.5 million in 2014, up from \$284.08 million in 2012.
- 80 percent of the policing costs attributable to alcohol and drug abuse are borne by local governments in New Hampshire.
- A reduction in crime rates and increased use of alternatives to incarceration resulted in a relatively small (less than 2%) increase in corrections costs from alcohol and drug abuse. Still over one-half (\$101.7 million) of New Hampshire's corrections costs are the result of substance abuse.
- Two-thirds of the crime and criminal justice costs of substance abuse in New Hampshire are the result of drug abuse, while one third is the result of alcohol abuse.
- The productivity cost of substance misuse (\$1.56 billion) reduces state and local revenue by \$87.6 million annually.

Public Policies

- At a minimum, using the most conservative assumptions, the benefit-to-cost ratio of substance abuse treatment in New Hampshire is approximately 3 to 1. Assuming 100 percent effectiveness for treatment would produce a benefit to cost ratio of 7.4 to 1.
- The Affordable Care Act and requirements for substance use disorder treatment coverage resulted in an increase in insurance claims for substance abuse treatment in New Hampshire from 63,000 in 2012 to over 390,000 in 2014.
- Private insurance reimbursement rates for substance use claims are comparable to reimbursement rates for other claims. However, recent research by Compass Health Analytics for the New Hampshire Insurance Department highlighted commercial reimbursement rates for substance use disorder that are substantially lower than Medicare rates.³ This New Hampshire trend is contrary to national norms; generally, private carrier reimbursement rates are higher than those paid through Medicaid and Medicare programs.⁴
- Private insurance denial rates for substance abuse claims are significantly lower than for other claims. However, a recent examination by the NH Insurance Department of the handling of substance use disorder treatment claims by insurance carriers in New Hampshire indicates that procedures for "prior-authorization" for SUD treatment in some cases differ between SUD and other claims.⁵
- Medicaid expansion in New Hampshire increased Medicaid funded substance use disorder treatment claims by 34,000, in 2015 (not including medically assisted treatments). Approximately 10,700 individuals received substance use disorder treatments as a result of Medicaid expansion. Because Medicaid expansion required no state government match in 2015 (or 2016), this increase in treatment came at no cost to New Hampshire.

Treatment Capacity in New Hampshire

- The number of mental health and substance use disorder service providers has increased in New Hampshire in response to the increased demand for services and the increase in insurance coverage for substance abuse treatment services.
- Uncertainty over the continuation of private and Medicaid insurance coverage for substance use disorders could shrink treatment capacity and reduce treatment rates in the future.
- The ability of substance use disorder treatment providers to expand capacity is challenged by the demographic characteristics of the industry's workforce, New Hampshire's long-term demographic trends, and an uncompetitive industry wage structure that will limit the industry's ability to capture a diminishing supply of skilled workers in the state.

I. Introduction

With media coverage of the nearly 500 drug induced deaths in 2016 contributing to public awareness of the problem of substance misuse in the state, residents of New Hampshire told public opinion pollsters in 2016 that the rise in opiate and opioid abuse, and the epidemic of drug induced deaths accompanying it, was the most important and pressing issue facing the State of New Hampshire. The shocking increase in drug overdoses in New Hampshire has created awareness among the public and policymakers of the need to confront substance abuse in the state. There is less awareness that deaths from substance abuse represent only a fraction of the cost of substance misuse in New Hampshire.

Since our last report in 2014, policymakers have taken significant action to address substance misuse in our state, but the rise in opiate and opioid related overdoses and deaths has overshadowed progress in the prevention and treatment of substance misuse in New Hampshire. The cost of alcohol and drug misuse in New Hampshire continues to rise. Updating our 2014 analysis of the economic costs of alcohol and drug misuse is important for at least two reasons. First, it is important to remind the public and policymakers of how much alcohol and drug abuse reduces prosperity in New Hampshire and to demonstrate that, despite its high profile, the current opiate and opioid crisis represents just a portion of the overall costs of substance misuse in the state. Reducing the burden that substance misuse imposes on New Hampshire's economy requires that the resources and infrastructure of substance misuse prevention, treatment and recovery be both sufficient and broadly available throughout the state. Second, it is important to consider the policy actions that have been undertaken in New Hampshire and nationally that may contribute to reducing the high cost of substance misuse in the future.

Figure 2
Drug Induced Deaths in New Hampshire Have More Than Doubled Just Since 2013

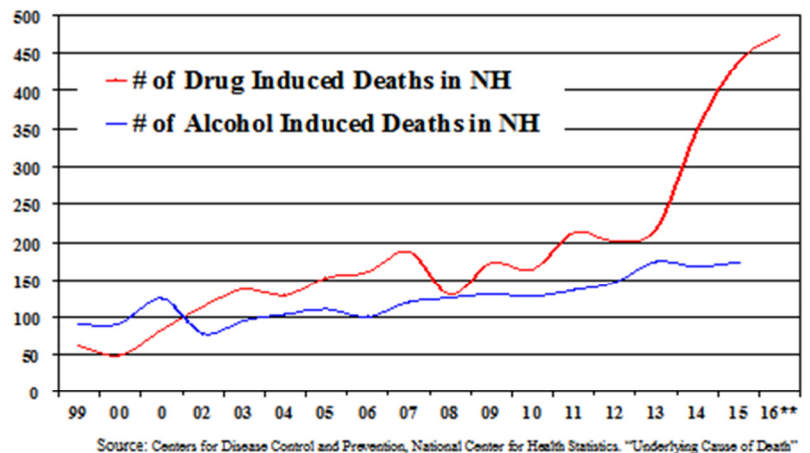
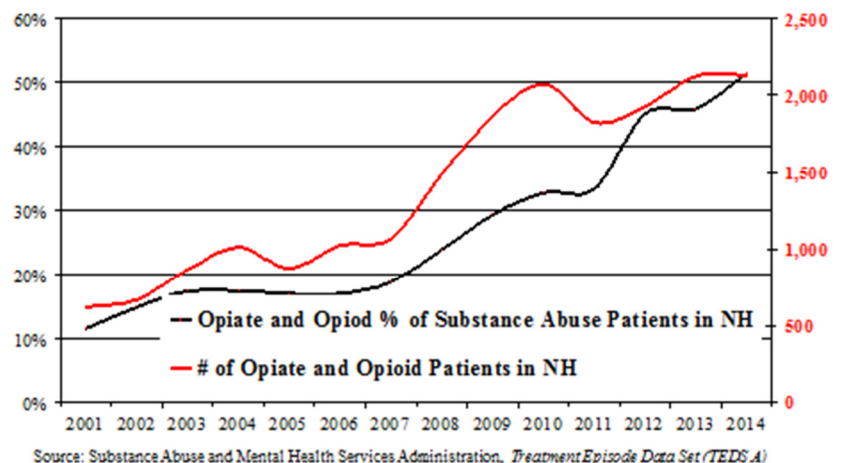


Figure 3
Over One-Half of Individuals in NH Receiving Substance Abuse Treatment are Now Doing So for Opiates and Opioids.



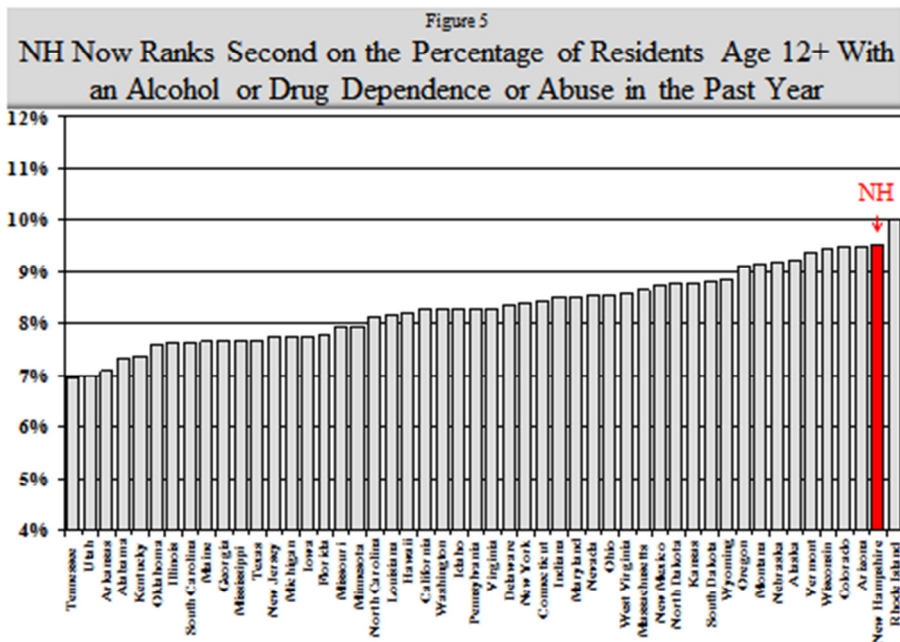
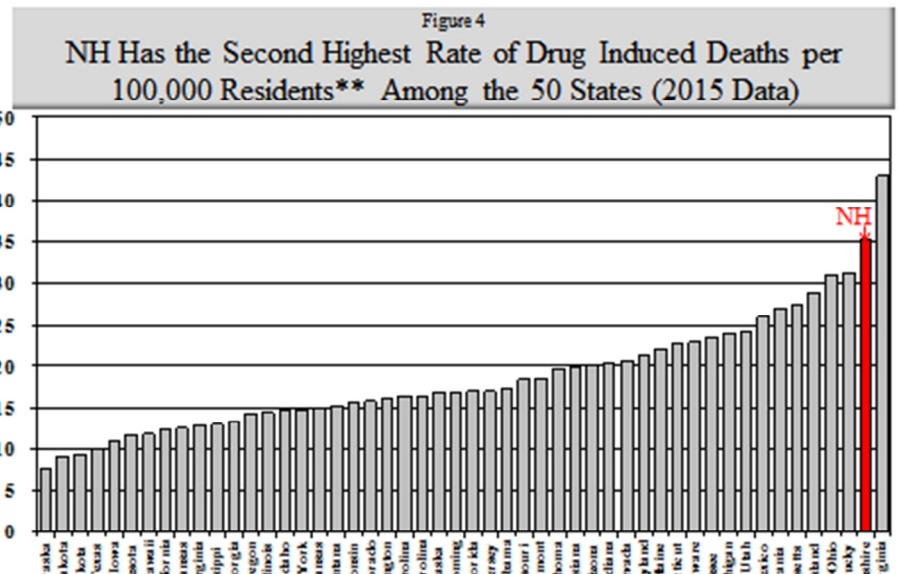
Policies such as extending health care coverage to more residents via the Affordable Care Act, requiring substance use disorder services to be included in health insurance coverage, and the expansion of Medicaid are actions that, in 2014, were thought to hold promise for expanding treatment options and increasing treatment rates in New Hampshire. These policies have not been in place long enough for a full evaluation of their impact on reducing the cost of substance misuse in New Hampshire but the analysis of early data from medical insurance and Medicaid claims presented in this report support initial optimism over the value that they can have in addressing substance misuse in New Hampshire.

Since 2014, there has been an explosion in the number of drug induced deaths in New Hampshire and nationally, with opiates and opioids accounting for most of the increase.⁶ According to the New Hampshire Medical Examiner's Office, 88 percent of the drug-induced deaths in New Hampshire in 2016 were associated with opiates and opioids. Since 2013, drug induced deaths have more than doubled in New Hampshire, rising from 217 in 2013 to a projected 476 in 2016 (Figure 2).⁷

The epidemic of opiate and opioids is increasingly reflected in substance use disorder treatment data. Figure 3 shows that as of 2014, opiates and opioids account for just over one-half of the admissions to substance abuse treatment facilities in the state, up from less than 20 percent a decade ago.⁸ The number of individuals entering treatment in New Hampshire for opiate and opioid misuse is now greater than the number seeking treatment for alcohol abuse in the state.⁹

Despite increases in the number of individuals seeking treatment for substance use disorders the state now (as of 2015) has the second highest rate among all states in the number of drug related deaths per 100,000 residents (Figure 4).¹⁰ Overall, rates of substance abuse and dependence have increased in New Hampshire since our 2014 report.

In 2014, using data from the 2012 National Survey on Drug Use and Health (NSDUH), New Hampshire ranked 24th among all states on the percentage of residents age 12 and above with an alcohol or drug abuse or dependence in the past year; in 2014 NH ranked second with 9.53 percent of residents age 12 and over with an alcohol or drug abuse or dependence in the past year. The increase in reported alcohol dependency and abuse in New Hampshire between 2012 and 2014 is not uniform across age groups. There have been small declines in dependency and abuse rates among young people (those age of 25 and under although NH rates remain higher than the U.S. average) in New Hampshire, highlighting the important impact that prevention efforts can have on substance abuse in the state. At the same time there has been a significant increase in the dependency and abuse rates among those age 26 and older in the state (Figure 6). This report updates the \$1.84 billion in substance



Source: SAMSHA, National Survey on Drug Use and Health, 2014

misuse related costs imposed on the New Hampshire economy in 2012 estimate in our 2014 report. Using data from 2014 (the most recently available for many of the measures used in estimating costs) we estimate substance misuse costs New Hampshire \$2.36 billion in 2014. In addition to estimating the cost impacts of substance misuse, this report examines data from Medicaid and private health insurance claims to see what impacts public policies expanding insurance coverage (the ACA and Medicaid expansion) are having on substance use disorder treatment in the state.

II. Methodology

The basic approach to estimating the economic costs of substance misuse in New Hampshire involves determining the prevalence of misuse in the state; identifying the adverse consequences associated with substance misuse; determining the degree of causality between substance misuse and adverse outcomes; and, finally assigning economic values to adverse outcomes. Figure 7 presents a schematic overview of the methodology used in this report. Readers interested in a more detailed explanation of the methodologies employed for calculating the economic impacts of substance misuse can review Appendix A contained in our 2014 report for a complete explanation of methods. Methods in this report that differ from our 2014 report are noted where appropriate.

One significant methodological difference in this report is the inclusion of estimates of the costs of lost productivity due to alcohol abuse among females in New Hampshire. As we noted in 2014, it is implausible that alcohol abuse and dependence does not negatively impact the labor force participation and productivity of women in New Hampshire, despite some studies that find negative impacts do not meet the test of “statistical significance.”¹¹ An extensive review of the literature on the employment and labor market impacts of alcohol abuse by women conducted for this study revealed several studies that, while differing in magnitude, each documented the negative impacts of alcohol on employment and earnings of women.¹² Results from those studies are the basis for the estimates in this report. The magnitude of impacts differs across studies and we chose to use the most conservative impacts in developing our estimates, a choice that is consistent with our practice of opting for more conservative estimates throughout this report.

Lags in the reporting of data required to estimate substance abuse costs only allow us to update our cost estimates for New Hampshire to calendar year 2014. In some cases publicly available data (such as hospital

Figure 6
Declines Among Young People With an Alcohol or Drug Dependency/Abuse is Offset by Increases Among Older Residents

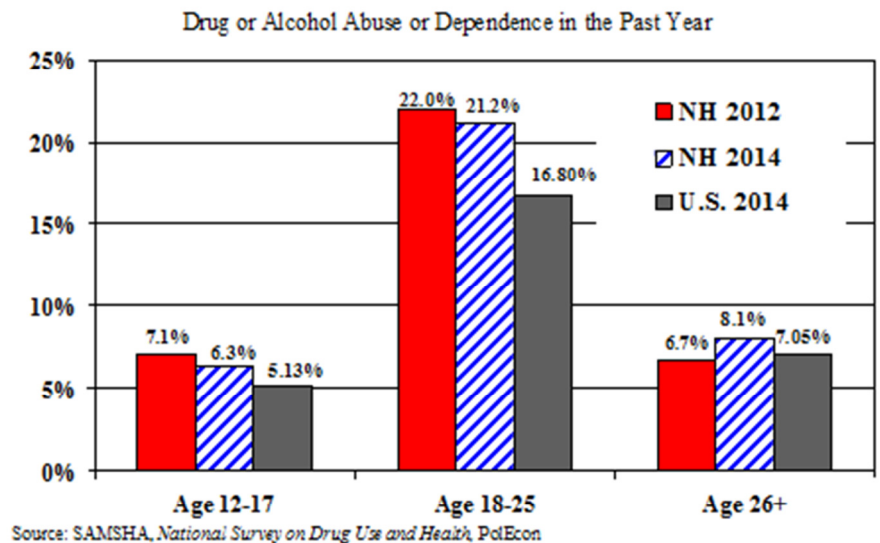
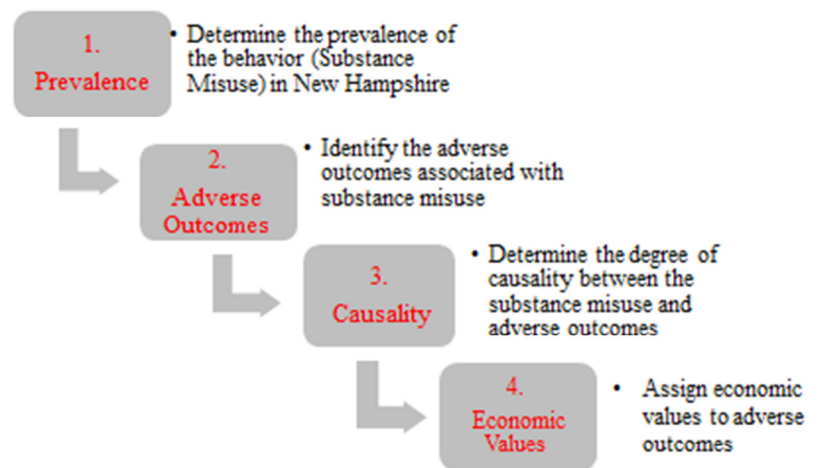


Figure 7
Determining the Economic Impact of Substance Misuse in New Hampshire



procedures, discharge, and treatment cost data) for New Hampshire has not been updated since our last report. Those instances are noted in the report along with the procedures used to produce estimates.

III. Productivity Costs

Lost productivity is, by far, the greatest cost of substance misuse to the New Hampshire economy. Substance misuse reduces the productivity of the labor force by reducing both the number of individuals in the labor force and the productivity of those individuals who are employed in the labor force. Substance misuse can interfere with an individual's ability to gain employment, result in some individuals leaving the workforce, and negatively affect an individual's productivity while at work. The value of lost productivity in this report is equivalent to what an individual would be expected to earn if they were fully functioning in the labor market. Market productivity includes cash wage and salary earnings and employer provided fringe benefits (i.e., insurance, retirement) and legally required employer costs (i.e., Social Security, Medicare, unemployment insurance, and workers' compensation). Table 2 presents a summary of the estimated decrease in total productivity in the New Hampshire economy resulting from substance abuse. These estimates do not include the costs associated with lost household productivity by those who misuse alcohol and drugs. Household services are not valued in a market, increasing uncertainty, subjectivity and the potential for errors in estimating their costs.

A. The Productivity Costs of Alcohol Misuse

Key Findings:

- Productivity losses account for the largest share of costs associated with alcohol abuse in New Hampshire, an estimated \$1.3 billion in 2014.

Total annual productivity impacts are the sum of labor force participation impacts, the earnings impacts of alcohol abuse by those employed in the labor force, and the impacts of absenteeism caused by one particular type of alcohol abuse: binge drinking. A significant difference between the labor force and earnings impacts estimate of alcohol abuse estimated in this report and our 2014 report is that we have developed estimates of the impact of alcohol dependence and abuse for females as well as males in this report.

Cost Category	Total Productivity Losses	
	Alcohol	Drugs
Labor Force Partic. & Reduced Productivity Impact on Earnings	\$1,284.11	\$212.05
Absenteeism	\$31.04	\$31.36
Mortality	\$123.05	\$481.61

➤ Reduced Labor Force Participation as a Result of Alcohol Abuse

Key Findings:

- Alcohol abuse resulted in an estimated 9,315 fewer male workers and 2,877 fewer female workers in New Hampshire's labor force in 2014, an overall reduction in the state's labor force of 1.65 percent
- The alcohol attributable reduction in the state's labor force resulted in an associated loss of earnings in the New Hampshire economy of \$707 million in 2014.

Results:

Alcohol abuse among males and females in New Hampshire results in an estimated reduction in labor force participation among men and women of 12,192 in 2014, an amount equal to 1.65 percent of the state's labor force that year.

Table 3 presents our estimates of the loss of earnings in the New Hampshire economy that results from lower labor force participation rates associated with male alcohol abuse. The table shows that the impact of 9,315 fewer workers in the New Hampshire labor force as a result of alcohol dependency is an associated productivity loss (as measured by earning loss) of \$594.54 million.

**Table 3
Labor Force Participation and Associated Earnings Effects of Excessive Alcohol Use Among Males in NH (2014)**

Age	Male Pop.	LF Partic. Rate	Labor Force	Mean Earnings	Total Wages (Millions)	# in Labor Force W/Alcohol Dependency ¹³	# Not in Labor Force Because of Alcohol Dependency ¹⁴	Labor Force W/O Dependency	Total Wages W/O Depend. (Millions)	Dependency Cost (\$ Millions)
18-19	19,138	49.9%	9,548	\$8,028	\$76.65	1,793	748	10,296	\$82.66	(\$6.01)
20-24	45,953	84.3%	38,730	\$28,992	\$1,122.87	9,342	1,279	40,009	\$1,159.94	(\$37.07)
25-34	78,539	88.9%	69,825	\$46,164	\$3,223.42	15,110	1,568	71,393	\$3,295.79	(\$72.37)
35-44	78,510	92.8%	72,876	\$73,380	\$5,347.64	14,488	1,311	74,187	\$5,443.84	(\$96.20)
45-54	103,730	88.6%	91,870	\$87,036	\$7,996.01	16,335	1,968	93,838	\$8,167.28	(\$171.27)
55-64	97,595	77.7%	75,790	\$86,712	\$6,571.87	9,860	2,440	78,230	\$6,783.48	(\$211.61)
Totals	423,465		358,639		\$24,338.46	66,927	9,315	367,953	\$ 24,932.99	(\$594.53)

Table 4 presents estimates of the loss of earnings that result from lower labor force participation among women in New Hampshire as a result of alcohol dependence and abuse in 2014. The table shows that an estimated 2,877 fewer women were in the labor force as a result of alcohol abuse, with an estimated reduction in earnings of \$112.5 million.

**Table 4
Labor Force Participation and Associated Earnings Effects of Excessive Alcohol Use Among Females in NH (2014)**

Age	Male Pop.	LF Partic. Rate	Labor Force	Mean Earnings	Total Wages (Millions)	# in Labor Force W/Alcohol Dependency ¹⁵	# Not in Labor Force Because of Alcohol Dependency	Labor Force W/O Dependency	Total Wages W/O Depend. (Millions)	Dependency Cost (\$ Millions)
18-19	19,113	49.6%	9,479	6,516	\$61.77	1,307	132	9,611	\$62.63	(\$0.86)
20-24	44,202	82.0%	36,245	21,828	\$791.16	6,417	391	36,636	\$799.70	(\$8.54)
25-34	75,543	81.2%	61,376	34,488	\$2,116.73	9,749	600	61,976	\$2,137.42	(\$20.69)
35-44	79,981	79.8%	63,793	46,512	\$2,967.15	9,309	584	64,377	\$2,994.29	(\$27.14)
45-54	106,205	80.3%	85,293	48,276	\$4,117.60	11,131	693	85,986	\$4,151.06	(\$33.46)
55-64	100,100	68.9%	68,967	45,576	\$3,143.23	6,586	478	69,445	\$3,165.01	(\$21.78)
Totals	425,144		325,153		\$13,197.63	44,498	2,877	328,030	\$13,310.10	(\$112.47)

➤ **Reduced Earnings of Workers Who Misuse Alcohol**

Key Findings:

- The alcohol impaired productivity of workers in the New Hampshire labor force costs the New Hampshire economy an estimated \$577.1 million in reduced earnings, with a mean earnings reduction of \$6,634 per year for every male alcohol-dependent worker and a mean earnings reduction of \$2,990 for every female alcohol-dependent worker.

Results:

Estimates of the prevalence (percentage of the population in each age group) of one type of alcohol misuse (alcohol dependency¹⁶) found to significantly impact productivity and earnings by age group from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) were applied to the population of males and females in New Hampshire to arrive at an estimate of alcohol dependency in NH's working-age population. This result of this procedure produces an estimate of almost 67,000 working age males and almost 45,000 working age females in the New Hampshire labor force with an alcohol dependency. Impaired productivity associated with alcohol dependency is estimated to cost these individuals over \$577 million in lowered earnings annually, with a mean reduction in earnings of \$6,634 for males and \$2,990 for females.

Table 5 provides details of the calculation of costs of the reduced earnings of alcohol dependent male workers in the New Hampshire workforce and Table 6 shows estimates of the earnings impact of alcohol dependence on females in the New Hampshire labor force. The adverse impacts of this form of alcohol misuse on earnings is greatest among workers age 35-54. This occurs because the cohort of workers between ages 35 to 54 include the highest percentage of alcohol dependent workers (both because alcohol dependency develops in individuals over time and because there are a large number of workers in this age group) at the same time earnings tend to peak during those years.

Table 5							
Earnings Impacts From Alcohol Dependency 2014							
(Males in the Labor Force)							
Age	Male Labor Force	Mean Earnings	Number Alcohol Dependent	Mean Earnings of Alcohol Dependent	Total Earnings of Alcohol Dependent	Total Earnings if Not Alcohol Dependent	Alcohol Dependency Cost
18-19	9,548	\$8,028	1,793	\$7,073	\$12,682,157	\$14,394,204	(\$1,712,047)
20-24	38,730	\$28,992	9,342	\$25,700	\$240,086,303	\$270,843,264	(\$30,756,961)
25-34	69,825	\$46,164	15,110	\$41,169	\$622,057,449	\$697,538,040	(\$75,480,591)
35-44	72,876	\$73,380	14,488	\$65,608	\$950,533,401	\$1,063,129,440	(\$112,596,039)
45-54	91,870	\$87,036	16,335	\$78,575	\$1,283,526,389	\$1,421,733,060	(\$138,206,671)
55-64	75,790	\$86,712	9,860	\$78,066	\$769,730,232	\$854,980,320	(\$85,250,088)
Totals	358,639		66,927		\$3,878,615,932	\$4,322,618,328	(\$444,002,396)

Table 6							
Earnings Impacts From Alcohol Dependency 2014							
(Females in the Labor Force)							
Age	Male Labor Force	Mean Earnings	Number Alcohol Dependent	Mean Earnings of Alcohol Dependent	Total Earnings of Alcohol Dependent	Total Earnings if Not Alcohol Dependent	Alcohol Dependency Cost
18-19	9,479	\$6,516	1,307	\$5,947	\$7,770,974	\$8,514,288	(\$743,314)
20-24	36,245	\$21,828	6,417	\$20,009	\$128,391,869	\$140,066,869	(\$11,674,999)
25-34	61,376	\$34,488	9,749	\$31,749	\$309,511,760	\$336,216,107	(\$26,704,348)
35-44	63,793	\$46,512	9,309	\$42,896	\$399,305,977	\$432,963,682	(\$33,657,705)
45-54	85,293	\$48,276	11,131	\$44,831	\$499,025,977	\$537,368,359	(\$38,342,382)
55-64	68,967	\$45,576	6,586	\$42,240	\$278,189,900	\$300,157,574	(\$21,967,674)
Totals	325,153		44,498		\$1,622,196,457	\$1,755,286,879	(\$133,090,422)

B. The Productivity Cost of Drug Abuse

Key Findings

- Over 30,200 New Hampshire residents age 15 and older abused drugs in 2014.
- An estimated 27,915 working age (15-64) men and women in New Hampshire experienced, on average, reductions in productivity (earnings) of 17 to 18 percent in 2014.
- The combined impacts of lower labor force participation and reduced earnings among individuals abusing drugs in New Hampshire resulted in drug attributable productivity losses of \$212 million in 2014, up from an estimate \$176 million in 2012.

Table 7			
Prevalence of Drug Abuse in NH During Past Year			
Age Category	NH Population	NSDUH 2013-2014 Prevalence	Est. # Individuals Abusing Drugs
15-17	51,147	4.01%	2,051
18-25	143,493	8.22%	11,795
26+	916,179	1.79%	16,400
Source: SAMHSA, 2016, American Community Survey 2014, PolEcon calculations			

Table 7 provides prevalence estimates from the 2013-2014 National Survey on Drug Use and Health (NSDUH) of past year drug abuse for New Hampshire.

Table 8 presents adjusted (for finer age categories) prevalence estimates and estimates of the number of males and females, by age category, who abused drugs in 2014.

Table 8						
Estimated Number of Drug Abusing or Dependent Individuals in NH - 2014						
	Male Population	Est. Prevalence	Est. Individuals With Drug Abuse or Dependence	Female Population	Est. Prevalence	Est. Individuals With Drug Abuse or Dependence
15-17	26,361	3.86%	1,017	24,786	4.18%	1,036
18-25	72,930	9.83%	7,170	70,563	6.55%	4,625
26-34	70,700	4.41%	3,115	68,295	2.48%	1,693
35-49	126,856	2.83%	3,589	129,348	1.60%	2,075
50-64	152,979	1.36%	2,077	156,938	0.97%	1,519
		Total	16,968		Total	10,947

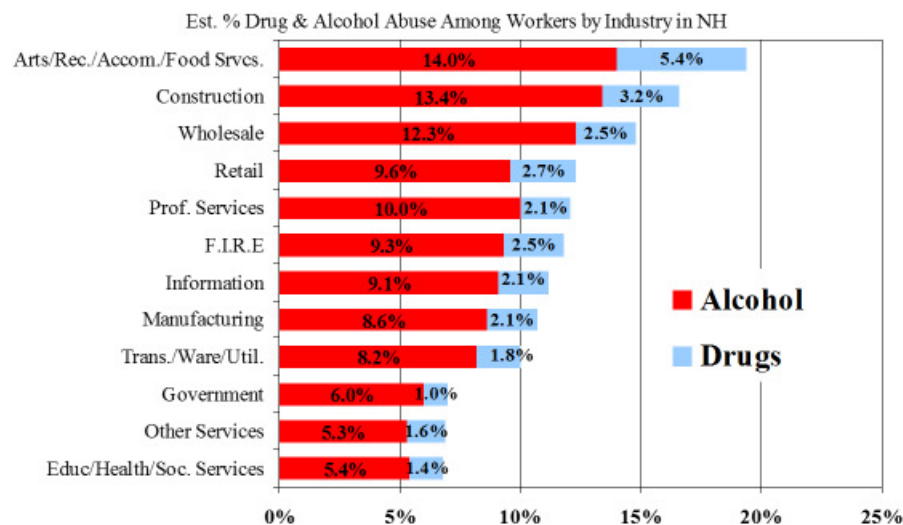
The total estimate of productivity loss associated with past year drug abuse is presented in Table 9. As the table shows, drug abuse among New Hampshire residents aged 18-64 resulted in a loss in productivity of approximately \$212 million dollars in 2012.

Table 9					
Productivity Losses Attributable to Drug Abuse in 2014					
	Estimated Prevalence	Estimated Prevalence	Per Person Productivity	Productivity With Drug Abuse	Total Prod. Loss
Male Losses @ 17%					
15-17	3.86%	1,017	\$3,252	\$2,699	(\$562,112)
18-25	9.83%	7,170	\$21,506	\$17,850	(\$26,213,369)
26-34	4.41%	3,115	\$57,781	\$47,958	(\$30,599,413)
35-49	2.83%	3,589	\$89,533	\$74,313	(\$54,634,320)
50-64	1.36%	2,077	\$94,035	\$78,049	(\$33,201,359)
		16,968		Sub Total	(\$145,210,573)
Female Losses @ 18%					
15-17	4.18%	1,036	\$3,725	\$3,055	(\$694,558)
18-25	6.55%	4,625	\$18,732	\$15,360	(\$15,593,916)
26-34	2.48%	1,692	\$44,545	\$36,527	(\$13,564,299)
35-49	1.60%	2,075	\$56,278	\$46,148	(\$21,018,550)
50-64	0.97%	1,519	\$58,398	\$47,887	(\$15,968,563)
		10,947		Sub Total	(\$66,839,886)
				Grand Total	(\$212,050,459)
Totals may not sum due to rounding					

Caveats

Caution is urged in making direct comparisons between the productivity losses associated with drug and alcohol dependency and abuse. The population of individuals abusing alcohol is currently much larger than is the population of abusing other drugs. This accounts for much of the difference in costs. Second, individuals abusing drugs are much more heavily concentrated among the youngest working age population. These are individuals early in their working lives with much lower earnings, on average, than older workers. In contrast, alcohol abuse becomes magnified and more pronounced among workers as they age, and a larger number of alcohol dependent workers among higher earning age groups accounts for a significant portion of the relative difference in costs. In addition, co-occurrence of various types of substance abuse (illicit drug, alcohol, etc.) can sometimes make it unclear under which substance the costs of abuse should be categorized. The co-occurrence problem is magnified by the fact that the availability and quality of data and research related to the adverse impacts of alcohol abuse is more extensive and thorough than it is for drug abuse. Because it is easier to identify and monetize the adverse impacts of alcohol abuse, more of the adverse impacts may be assigned to alcohol abuse where co-occurrence is present (automobile crashes is just one example where data is has not been collected on drug attributable crashes).

Figure 8
Industries in NH With More Younger and More Male Workers Bear a Greater Cost of Lost Productivity from Alcohol and Drug Abuse



Source: National Survey on Drug Use and Health, 2012, PolEcon

C. Direct Costs to Industry: Absenteeism

Key Findings:

Over \$31 million each in alcohol and drug attributed absenteeism costs are incurred by New Hampshire businesses because of alcohol and drug abuse for a total of over \$62 million of costs incurred due to substance abuse related worker absenteeism in 2014. The output (value of goods and services) of industries was reduced by more than \$173 million because of substance abuse attributable absenteeism in New Hampshire in 2014.

Almost 75 percent of adults who abuse alcohol work. Among adults that meet the diagnostic criteria for drug dependence, 65 percent work (48% work full-time and 17% work part-time). Even higher workforce participation rates are found among adults who meet the diagnostic criteria for drug abuse - 74 percent work.¹⁷ Employees with substance abuse problems miss substantially more workdays per month than other employees. Employees with a substance abuse problem miss an average of .98 days per month, while employees who do not abuse substances missed an average of .63 days per month.¹⁸ Estimates of the prevalence of binge drinking and drug abuse by industry developed by the Center for Integrated Behavioral Health Policy, using data from the NSDUH, were applied to substance abuse patterns in New Hampshire to estimate the number of employees in New Hampshire, by industry, who binge drink and who abuse illicit drugs and or prescription medications. The difference between the mean numbers of reported days missed from work between employees who abuse

substances and those who do not are the basis for our estimates. The estimates for substance abuse related absenteeism differ from our 2014 report in that we have excluded employed New Hampshire residents who work outside of the state. This significantly lowers the estimates of impacts from substance abuse related absenteeism than if all employed individuals were included as they were in our 2014 report.

Results:

Figure 8 shows the number and percentage of workers employed in each industry in New Hampshire estimated to abuse alcohol or other drugs. Data was not available to allow us to update the incidence of alcohol and drug abuse of workers by industry, or the difference in absenteeism rates of individuals abusing alcohol or other drugs and all workers since our 2014 report. Industries with higher percentages of male and younger workers (25 and under) can be expected to have higher rates of alcohol and drug abuse than industries that employ a higher percentage of female and older workers. Other demographic and socioeconomic factors also influence the rates of abuse across industries. Although the prevalence of alcohol abuse is greater than is the prevalence of drug abuse among employed individuals, the estimated total number of workdays missed due to drug abuse is greater. The employee compensation value of alcohol attributable absenteeism in New Hampshire is estimated to be \$31.04 million in 2014 and the cost of drug-related absenteeism is \$31.36 million.

Absenteeism reduces the earnings of employees but also has a broader impact on businesses and industries. The total cost to business is the lost productivity and output of goods and services that occurs when workers are absent. Employee compensation as a percentage of industry output is a measure of how much labor compensation goes into each dollar of industry output. Absenteeism may or may not result in lost earnings for all workers but a missing worker can produce no goods or services. Dividing the loss of compensation in each industry by the ratio of employee compensation in the industry in New Hampshire to industry output yields an implied loss of industry output (production of goods or services) resulting from substance abuse attributable absenteeism in New Hampshire.

Table 10
Industry Costs of Absenteeism From Binge Drinking & Drug Abuse in NH in 2014

Industry (Includes Self-Employed)	Emp.	Prod. per Day	Alcohol -Excess Days Absent/ Month per 1000 Emp.	Total Alcohol Excess Days Absent	Alcohol Aggregate Industry Cost (\$ Mil)	Drugs- Excess Days Absent /Month per 1000 Emp.	Total Drug Excess Days Absent	Drugs Aggregate Industry Cost (\$ Mil)	Earnings/ Output Ratio ¹⁹	Impact on Industry (Output)
Arts/Ent./Rec.	11,014	\$83.36	20	2,643	\$0.22	31	4,097	\$0.34	29.90%	\$1.88
Educ/Health/Soc. Services	104,922	\$195.66	15	18,886	\$3.70	12	15,109	\$2.96	51.00%	\$13.04
F.I.R.E	34,722	\$329.54	8	3,333	\$1.10	10	4,167	\$1.37	31.00%	\$7.97
Information	12,019	\$351.96	14	2,019	\$0.71	12	1,731	\$0.61	26.20%	\$5.04
Manufacturing	66,451	\$254.75	18	14,353	\$3.66	35	27,909	\$7.11	26.60%	\$40.48
Construction	23,202	\$208.40	28	7,796	\$1.62	53	14,756	\$3.08	26.80%	\$17.54
Other Services	76,168	\$86.60	23	21,022	\$1.82	10	9,140	\$0.79	35.00%	\$7.46
Prof. Services	73,604	\$264.44	28	24,731	\$6.54	9	7,949	\$2.10	48.30%	\$17.89
Government	85,126	\$181.02	12	12,258	\$2.22	17	17,366	\$3.14	43.60%	\$12.30
Retail	94,410	\$113.98	35	39,652	\$4.52	24	27,190	\$3.10	39.50%	\$19.29
Trans./Ware/Util.	15,010	\$191.19	20	3,602	\$0.69	11	1,981	\$0.38	40.70%	\$2.62
Wholesale	27,124	\$326.45	40	13,020	\$4.25	60	19,529	\$6.38	38.50%	\$27.60
Totals	623,772			163,317	\$31.04		150,925	\$31.36		\$173.11

Combined, the earnings loss associated with substance abuse-related absenteeism is estimated at \$62.4 million in 2014 (Table 10). The implied decrease in the value of goods and services produced by New Hampshire businesses associated with alcohol and drug attributable absenteeism in 2014 is \$173.11 million. To avoid double counting, the total implied loss of output due to absenteeism is reported here for informational purposes only and not included in total reported productivity impacts.

D. Mortality Costs

Key Findings:

- In 2014 there were 182 alcohol attributable deaths in New Hampshire. In 2015 there were 433 drug attributable deaths in the state.²⁰
- The present value of the lost productivity due to alcohol-related deaths is \$123 million and the present value of lost productivity due to drug-related deaths is \$481.6 million.

Premature death due to alcohol and drug abuse imposes economic losses on society. Premature death through illness or injury can occur as a result of a number of causes, including: auto accidents, suicide, through increasing the risk of disease, or through violence involving alcohol or drugs. When an individual dies prematurely there is an economic cost to society in the form of loss of that individual's productive capacity.

Although calculated as a productivity cost, our mortality estimates are not included in our estimates of the total annual cost to New Hampshire of alcohol and drug abuse. They are presented here to illustrate the earnings costs associated with one year of alcohol-related premature deaths. Table 11 shows the number of deaths in New Hampshire attributable to alcohol and drug use in 2014 (alcohol) and 2015 (drugs).

	Overall	Males	Females
Alcohol Causes (2014)	182	137	45
Drug Causes (2015)	<u>433</u>	<u>303</u>	<u>130</u>
Total	605	440	175

Source: Centers for Disease Control and Prevention

Results:

Table 12 shows that the estimated present value of lifetime costs associated with one year of premature deaths attributable to alcohol (2014 data) and drugs (2015 data) is \$604.7 million in 2014 dollars. Of that amount, \$481 million is attributable to drug deaths and \$123 million to alcohol deaths.

Drugs						
# of Deaths	0-19	20-34	35-49	50-64	65+	Totals
Male	18	137	100	48		303
Female	7	34	53	36		130
Alcohol						
Male	3	21	31	55	27	137
Female	1	7	9	12	16	45
					Total	615
Present Value of Lost Earnings						
	0-19	20-34	35-49	50-64	65+	Total
\$Per Male Death	\$1,390,011	\$1,700,577	\$1,246,599	\$510,287	\$48,697	
Total Male Deaths	21	158	131	103	27	440
Total Male Costs	\$29,190,226	\$268,691,226	\$163,304,430	\$52,559,532	\$1,314,829	\$515,060,243
\$Per Female Death	\$764,708	\$878,087	\$592,414	\$218,203	\$17,508	
Total Female Deaths	8	41	62	48	16	175
Total Female Costs	\$6,117,664	\$36,001,582	\$36,729,654	\$10,473,765	\$280,127	\$89,602,792
				Grand Total		\$604,663,035

IV. Medical Costs

Data on hospital discharges by primary diagnosis at admission in New Hampshire collected for the national Healthcare Cost and Utilization Project (HCUP) is the basis for our prior estimates of medical care costs associated with drug and alcohol abuse. However, that data has not been updated for New Hampshire since 2009 and the state is fully three years behind the state with next longest lag in reported data (Maine which last reported data for 2012). Most states have data available through 2014.

The estimates of medical care costs for 2014 in this report are based on our 2012 cost estimates contained in our 2014 report. For this report the 2012 estimates were adjusted for medical care cost inflation and the change in prevalence rates of alcohol and drug abuse and dependence in New Hampshire between 2012 and 2014. Although a sub-optimal solution, it is likely to be a reasonable estimate of the cost of medical care resulting from substance abuse in the state. To the extent that hospital stays for alcohol and drug attributable diagnoses increased between 2012 and 2014 at a rate in excess of the growth in the prevalence of drug and alcohol abuse in the state, or beyond medical care inflation, the estimates in this report will undercount medical expenditure for substance abuse. The dramatic rise in the incidences of drug overdoses in recent years, well above the rise in the prevalence of drug use in the state (according to the NSDUH), suggests that the estimates in this report may underestimate medical costs of substance abuse in 2014. Lacking more definitive information, however, we have adopted adjustment procedures likely to produce more conservative estimates.

Specialty Treatment	\$44.74
Medical Care Services	\$269.78
Insurance Administration	\$22.55
Medical Costs Totals	\$337.20

A. Specialty Treatment Costs

Key Findings:

- A total of \$68.9 million in claims for substance use disorder treatments in New Hampshire were billed to insurance companies in 2014. Insurers paid \$30.6 million in claims and another \$11.5 million was paid in the form of co-payments and deductibles.
- In 2014, a total of \$10.01 million in substance use disorder claims were submitted to Medicaid in New Hampshire. The Federal Centers for Medicaid Services reimbursements for these claims amounted to an estimated \$5.74 million. At a federal matching rate (FMAP) of 50 percent, this implies that the State of New Hampshire paid approximately \$2.87 million for Medicaid substance use disorder claims in 2014. These numbers are all prior to New Hampshire expanding its Medicaid program or formally extending a substance use disorder benefit to traditional Medicaid beneficiaries.
- In total, not including payments made by individuals “self-paying” for substance abuse treatment, approximately \$79 million in substance use disorder treatments were billed to private insurers and Medicaid in New Hampshire and approximately \$45 million was paid to providers of those services.

Treatment services available in New Hampshire to help persons with substance use disorders include inpatient residential programs, outpatient programs, detoxification, recovery support services and other special treatment programs. Resources, both public and private, used to support these services constitute one of the types of economic costs associated with excessive use of alcohol and drugs. This report differs in methodology from our 2014 estimates of the cost of specialty substance use disorder treatment services. For this report we obtained data on substance use disorder health insurance claims from the all payer claims database to determine both amounts billed and amounts paid for substance abuse treatments over a four year time period.²¹ In addition, we obtained amounts billed along with a schedule of reimbursement rates for substance use disorder treatments by New Hampshire’s Medicaid program.²² The impact of the ACA, as well as the expansion of Medicaid services, on substance use disorder treatment is discussed in Section VIII of this report. In this section we report only the amounts billed and paid by private insurers and by Medicaid in 2014. Beginning in

2015 the adoption of Medicaid expansion required a much lower match (initially a zero match rate) from New Hampshire for federal funds for the expansion of NH’s Medicaid program. Unlike our 2014 report, the estimates of treatment costs in this report do not capture “self-pay” or payments for treatment services made by individuals with no health insurance coverage for substance use disorder treatment. The requirement that substance use disorder treatment coverage be included in health insurance policies means that the absence of self-pay data in this report (compared to our 2014 report that used 2012 data) does not significantly alter our estimates of treatment costs in the state. Overall the ACA’s requirement for inclusion of mental health and substance use disorder benefits and the current methods ability to capture payments for services made to organizations that do not report to the SAMHSA (those that do not accept any state or federal government funds) results in a more complete and accurate measure of substance use disorder treatment spending than was available in our 2014 report. That report relied on SAMSHA and other data from 2012 for its estimates and likely missed a significant portion of payments by private insurers and relied on national estimates of costs for different substance use disorder treatments.

Results:

Table 14 shows the amounts paid by insurers, state government, and insured residents of New Hampshire for specialty treatment services for substance use disorder. These numbers are dramatically higher than the estimates for 2012 from our 2014 report. Estimates in earlier reports did not have access to the NH Health Care Information System or the state’s database of Medicaid payments and relied only on admissions and treatment data from facilities that accepted payments from federal or state government sources. The increase in treatment costs results from higher utilization of treatment services prompted by insurance coverage requirements. In 2012 less than \$10 million in insurance claims were filed for substance use disorder treatments, in 2014 that number had risen to over \$68 million.

Table 14 Substance Use Disorder Specialty Treatment Service Costs in NH (2014)				
	Amount Billed to Insurer	Amount Paid	Estimated Co-Pay & Deductibles	Total NH Payments
Private Insurance	\$68,863,538	\$30,365,608	\$11,503,423	\$41,869,031
Medicaid	\$10,014,318	\$5,740,036	N/A	\$2,870,018
			Totals	\$44,739,049

B. Medical Care Costs

Key Findings:

- Medical care costs attributable to substance use disorder were an estimated \$402.6 million and payments for medical services were estimated at \$269.78 million in 2014.
- The cost of insurance administration added another \$22.55 million to substance use disorder treatment costs in New Hampshire in 2014.

Alcohol and drug addiction increases the risk of illness or injury, increasing the use and cost of health care services. These services include hospital costs, inpatient and outpatient/emergency room care, physician’s charges, prescription drug costs and the costs of nursing home care. The estimated medical costs for inpatient hospital care and other medical services for primary diagnosis are presented in this section.

Results:

Our total estimate of the cost of medical care in New Hampshire that is attributable to excessive alcohol use in 2014 is \$402.6 million in charges for medical care, with \$269.78 in payments for services being made. For drug dependence and abuse, our estimate is \$69.19 million in charges and \$46.39 million in payments. The rise in drug related overdoses and deaths in New Hampshire between 2012 and 2014 suggests that this likely understates the true increase in medical costs of drug abuse in the state between 2012 and 2014. However, without updated HCUP data for New Hampshire we are forced to estimate these costs by adjusting 2012 costs for medical inflation and increases in the incidence of drug use in the state. This method may not fully capture

increases in the medical emergencies and health care impacts associated with the dramatic rise in drug overdoses and deaths in the state. In addition to direct medical expenditures, the insurance administration costs related to charges for drug and alcohol attributable medical costs are estimated to be \$19.6 million in 2012.

Table 15 Substance Abuse Attributable Medical Expenses (\$2014 Millions)				
Type of Service	Alcohol		Drugs	
	Charges	Payments	Charges	Payments
Hospital Inpatient	\$158.84	\$106.43	\$32.97	\$22.09
Other Health Professionals	\$33.36	\$22.35	\$6.92	\$4.64
Ambulatory/Outpatient	\$62.42	\$41.83	\$12.95	\$8.69
Prescription Drug/Non-Durables	\$56.54	\$37.89	\$11.74	\$7.87
Nursing Home	\$22.23	\$14.90	\$4.62	\$3.10
Subtotal	\$333.41	\$223.40	\$69.19	\$46.39
Insurance Administration		\$18.68		\$3.88
Totals	\$333.41	\$242.07	\$69.19	\$50.26

V. Crime, Justice, and Corrections Costs

Both alcohol and drug misuse significantly increase crime costs in New Hampshire. For 2014 we estimate that alcohol and drug abuse result in an additional \$305.4 million costs to the criminal justice system and to victims of crimes related to alcohol and drugs. The burden that substance misuse places on the criminal justice system is second only to the productivity costs of substance misuse in New Hampshire. Table 16 shows that drug abuse has a much larger impact on crime and the criminal justice system than alcohol abuse. Crime costs include victimization costs of crime (e.g., property loss or damage and productivity costs) and criminal justice system costs. Criminal justice system costs include policing costs, legal and adjudication costs, and corrections costs. Evidence accumulated over the past twenty years shows a strong link between drug and alcohol abuse and crime. Surveys of incarcerated populations provide further evidence of the link between crime and substance abuse. In 2004, approximately one in four federal inmates (26%) and one in three state inmates (32%) reported that they were under the influence of alcohol or illicit drugs at the time of their current offense (U.S. Department of Justice, 2007). According to a 2010 report by the National Center on Addiction and Substance Abuse, 65% of all inmates in the United States meet the medical criteria for substance abuse or addiction; alcohol is implicated in the incarceration of more than half of all inmates in the United States; and, illicit drugs are implicated in three-fourths of incarcerations.

Table 16 Substance Abuse Attributable Criminal Justice Costs (2014 \$ millions)			
	Alcohol	Drugs	Total
Policing	\$51.71	\$105.04	\$156.76
Judicial	\$13.33	\$19.81	\$33.14
Corrections	\$37.40	\$64.31	\$101.70
Property Losses	\$2.09	\$8.00	\$10.09
Victim Productivity	\$0.86	\$2.86	\$3.72
Totals	\$105.39	\$200.02	\$305.40

A. Policing Costs

Key Findings:

- Alcohol attributable offenses accounted for 31 percent of all arrests and about 12.8 percent of all crimes committed in New Hampshire.
- Drug attributable offenses in New Hampshire account for about 26 percent of all arrests in New Hampshire.
- Policing and public safety costs related to alcohol and drugs total an estimated \$156.8 million in New Hampshire in 2014, an amount equal to about 39 percent of all state and local government policing costs in the state.
- The largest portion of substance abuse attributable policing costs \$124.11 million is borne by local government in New Hampshire.

Results:

To calculate the percentage of police protection costs related to substance abuse, the total number of violent offenses, property offenses, and motor vehicle offenses attributable to alcohol and drugs were divided by the total number of offenses (reported crimes, motor vehicle offenses etc.) in the state. This percentage was then multiplied by state and local police protection expenditures in New Hampshire (as reported in the U.S. Census Bureau, “Census of State and Local Government Finance, 2013”) and inflated to 2014 values to arrive at our estimate of police protection costs of alcohol.

Table 16 shows that the estimated cost of police protection attributable to alcohol in New Hampshire is \$51.7 million in 2014, or about one-third of the total substance abuse attributable policing costs in 2014. The estimated costs of policing in New Hampshire that are attributable to drug use and abuse is more than twice the cost associated with alcohol abuse, totaling \$105.4 million in policing costs in the state. Combined, our estimate is that alcohol and substance abuse is responsible for almost \$157 million in policing costs in New Hampshire in 2014.

	Police Protection Costs	Alcohol Attributable @ 12.8%	Drug Attributable @ 26.0%	Total Costs
State	\$57.79	\$7.40	\$15.03	\$22.42
Counties	\$26.35	\$3.37	\$6.85	\$10.22
Municipalities	\$319.88	\$40.94	\$83.17	\$124.11
Total	\$404.02	\$51.71	\$105.04	\$156.76

B. Judicial Costs

Key Findings:

- The judicial costs to New Hampshire attributable to drugs and alcohol are estimated to be \$33.14 million in 2014, with alcohol accounting for \$13.33 million and drugs \$19.81 million.
- Almost one-quarter (23.4%) of judicial expenditures by state and local government are attributable to alcohol and drug use.

A majority of the offenses that are directly (by definition) attributable to alcohol, such as liquor law violations, drunkenness, driving under the influence of alcohol are resolved with a limited impact on judicial costs, while violent and property crimes are much more likely to involve extensive use of the resources of the state’s judicial system. A higher percentage of drug attributable offenses result in more extensive use of judicial resources. To estimate the judicial costs to state and local government associated with substance abuse we multiplied the percentage of criminal offenses by type of offense that are attributable to alcohol and drug abuse by the number of reported crimes in New Hampshire in 2014 (by type of offense) and multiplied that percentage by the percentage of all judicial cases that are criminal to arrive at an estimate of the percentage of judicial cases attributable to alcohol and drug abuse and multiplied that percentage by the reported judicial costs in the state.

Results:

Table 18 shows estimated judicial costs related to alcohol and drugs in New Hampshire in 2014. Overall, substance abuse increases judicial costs in the state by over \$33 million, accounting for over 23 percent of all judicial costs in the state. While this percentage may appear low relative to the percentage of policing costs attributable to alcohol and drug abuse (39%) in New Hampshire, it is important to remember that a significant portion of judicial costs are related to civil and not criminal law, and thus unrelated to most alcohol and drug abuse activities. In contrast, policing costs by definition involve criminal activity of which alcohol and drug offenses account for a large portion. Alcohol attributable judicial costs are estimated to be \$13.3 million and drug attributable judicial costs are estimated at \$19.8 million for 2014.

	Judicial Costs	Alcohol Attributable	Drug Attributable	Total Costs
State	\$112.12	\$5.72	\$16.15	\$21.87
Counties	\$17.90	\$4.66	\$2.24	\$6.90
Municipalities	\$11.34	\$2.95	\$1.42	\$4.37
Total	\$141.36	\$13.33	\$19.81	\$33.14

C. Corrections Costs

Key Findings:

- Alcohol and drug attributable incarcerations increased corrections costs by \$101.7 million in New Hampshire in 2014.
- Alcohol and drug abuse accounted for over one-half of all incarceration costs in New Hampshire in 2014.
- Corrections costs related to alcohol and drug abuse in New Hampshire increased by less than 2 percent between 2012 and 2014. In part, this reflects decreases in overall crime rates in New Hampshire as well increasing efforts to find alternatives to incarceration for drug law offenders in the state.

Surveys of inmate populations show that a large majority of prisoners abuse alcohol and/or other drugs and that their drug or alcohol use began prior to their criminal activity. A number of factors contribute to crimes that result in incarceration and in many cases consumption of alcohol or use of drugs are correlates rather than causes of criminal activity. Still, research overwhelmingly demonstrates a strong causal link between alcohol consumption, drug use and criminal activity. Crime-related alcohol attributable fractions (AAF's) reported by Bouchery, et. al. (2010) applied to the offenses for which inmates were sentenced suggests that about 21.2% of state inmates and 16.9% of local (county) inmates nationally, are incarcerated because of alcohol attributable offenses. Lacking more specific detail on the inmate populations of New Hampshire's state and county jails, we adopted these estimates for our analysis. Applying drug attributable crime fractions to New Hampshire criminal offense data suggest that between 26 and 28 percent of the crimes that result in incarceration in New Hampshire are the result of drug abuse. For this study the more conservative estimate of 26 percent was used. The estimates of incarcerations attributable to substance abuse were multiplied by corrections expenditure data to arrive at an estimate of substance abuse attributable corrections costs.

Results:

Corrections costs resulting from excessive alcohol consumption in NH are estimated at \$37.4 million in 2014, with \$25 million of that amount at the state level, and \$12.4 million at the county/local level. At an estimated \$64.3 million in 2014, drug attributable offenses account for an even larger portion of corrections costs in New

	Corrections Costs	Alcohol Attributable	Drug Attributable	Total Costs
State	\$117.75	\$24.96	\$39.58	\$64.54
Counties	\$73.58	\$12.43	\$24.73	\$37.16
Municipalities	-	-	-	-
Total	\$191.32	\$37.40	\$64.31	\$101.70

Hampshire. Alcohol and drug abuse are responsible for over one-half of all corrections costs in the State of New Hampshire. Alcohol abuse accounts for 19.5 percent and drug abuse accounts for 33.6 percent of total corrections costs (Table 19). Compared to our 2012 estimates, corrections costs related to alcohol and drug abuse in 2014 increased by less than 2 percent, increasing from \$100.06 million to \$101.7 million in 2014. Although not examined for this report, it may be that the modest increase in alcohol and drug related incarceration costs is a result of an overall decrease in crime rates in the state and perhaps increasing efforts to provide alternatives to incarceration for individuals convicted of drug-related offenses.

D. Victimization Costs

Key Findings:

- The cost to victims of substance abuse attributable crime in New Hampshire in 2014 was \$10.1 million, down from \$11.7 million in 2012.
- Drug attributable crime is responsible for \$8 million of the \$10 million of substance abuse related crime victimization costs in New Hampshire.
- A decline in the number of reported crimes from 33,159 to 28,707 is the primary reason for a decline in victimization cost related to alcohol and drug abuse.

Victims of crime suffer damage or loss of their property that can be assigned a monetary value. PolEcon estimated victims' costs (excluding medical and productivity costs) by multiplying the number of alcohol and drug attributable offenses, by type of offense, in New Hampshire by the average dollar value of victim losses reported by the U.S. Bureau of Justice Statistics' criminal justice statistical Table 82: "Total Economic Loss to Victims of Crime, by Type of Crime, 2007" and inflated the 2007 dollar values to 2014 values.

Table 20							
Victims' Costs (Property) of Substance Abuse Attributable Crime in 2014							
(Excluding Medical and Productivity Costs)							
			Alcohol		Drugs		Totals
Offense	# Reported	Loss per Victim	Attrib. %	Victim Costs	Attrib. %	Victim Costs	Total Costs
Forcible Rape	596	\$160	22.50%	\$21,409	12.00%	\$11,418	\$32,827
Aggravated Assault	1,469	\$135	30.00%	\$59,464	2.40%	\$4,757	\$64,221
Robbery	544	\$1,334	3.40%	\$24,671	27.20%	\$197,367	\$222,038
Burglary	4,191	\$1,759	3.60%	\$265,427	30.00%	\$2,211,892	\$2,477,320
Larceny	21,051	\$599	2.80%	\$353,339	29.60%	\$3,735,293	\$4,088,631
Motor Vehicle Theft	856	\$6,947	23.00%	\$1,367,794	31.00%	\$1,843,549	\$3,211,343
	28,707			\$2,092,103		\$8,004,276	\$10,096,380

E. Productivity Losses of Crime Victims

Key Findings:

- Productivity losses by the victims of alcohol and drug abuse attributable crimes are estimated to be \$4.85 million in 2014, a slight increase from \$4.8 million in 2012.
- Victims of drug attributable crimes experienced the majority of productivity losses (\$3.7 million) attributable to substance abuse.
- Despite a decline in crime rates in NH between 2012 and 2014, productivity losses among victims of alcohol and drug related crime did not fall because increases in the average wages and salary and benefits between 2012 and 2014 increased the productivity loss for each victim of an alcohol or drug related crime.

Victims of crime suffer productivity losses when they are unable to work because of judicial activity, injury, or for other reasons related to their victimization. The number of criminal offenses by type of crime in NH for 2014 from the Uniform Crime Reporting System of the federal Bureau of Investigation was multiplied by attributable drug and alcohol fractions to determine the number of offenses, and thus victims) attributable to alcohol or drugs by type of crime. Estimates of mean number of workdays lost for alcohol attributable and drug attributable crimes were obtained from data from the 2007 National Crime Victimization Survey (NCVS) statistical tables. Daily productivity estimates (the amount of productivity lost per day per crime victim) are the average annual salary of NH workers in 2014 divided by 52 weeks and 5 work days per week with 30 percent added for the average benefit and employer costs. The number of victims multiplied by the average number of days lost due to victimization times the average daily productivity of NH produced a total productivity loss of \$4.85 million.²³ Not all crime victims are employed, however the data on mean days of work lost includes both individuals who are employed and those who are not and thus no adjustment for employment status is necessary.

Table 21						
Productivity Losses of Crime Victims 2014						
Offense	# Reported	Avg. Work Days Lost	Mean Cost per Day	Alcohol Attributable Victim Productivity Costs	Drug Attributable Victim Productivity Costs	Total Productivity Losses
Forcible Rape	596	6.2	\$257	\$213,675	\$113,960	\$327,635
Aggravated Assault	1,469	3.8	\$257	\$430,388	\$34,431	\$464,819
Robbery	544	4.5	\$257	\$21,391	\$171,125	\$192,516
Burglary	4,191	2.1	\$257	\$81,428	\$678,565	\$759,993
Larceny	21,051	1.6	\$257	\$242,373	\$2,562,227	\$2,804,599
Motor Vehicle Theft	856	2.5	\$257	\$126,495	\$170,494	\$296,989
Totals	28,707			\$1,115,749	\$3,730,801	\$4,846,550

VI. Other Costs

Two other alcohol attributable costs, the cost of motor vehicle crashes and the reduction in state and local revenues from lower productivity attributable to alcohol, were estimated for this report.

A. Motor Vehicle Crashes

Key Findings:

- Reported motor vehicle crashes declined in NH between 2012 and 2014, resulting in a slight decrease in the cost of substance abuse misuse related automobile crashes between 2012 and 2014.
- The overall cost of all motor vehicle crashes in NH is conservatively estimated at \$788 million in 2014.²⁴
- After subtracting medical and productivity costs associated with alcohol attributable crashes from total costs (to avoid double counting from our prior medical and productivity/mortality cost analyses) the estimated cost of alcohol attributable motor vehicle crashes is \$63.9 million in NH in 2014.
- The cost of drug attributable crashes is estimated at \$8.7 million for 2014.

Use or abuse of drugs and alcohol is a significant risk factor for motor vehicle accidents. The National Highway Traffic Safety Administration estimates that 22 percent of all motor vehicle crashes are related to alcohol abuse. Costs resulting from alcohol or drug-related motor vehicle accidents result from premature death, medical care, vehicle damage, and legal and court costs. The costs related to premature death and the costs related to medical care are included in prior sections of this report and are excluded in the calculation of our substance abuse attributable motor vehicle accident costs. This section reports on other motor vehicle accident costs, including legal and court costs, insurance administration, and vehicle damage. Data on the cost per accident comes from a detailed study by Blincoe (2014).²⁵ While drug abuse is believed to contribute to some accidents, there is no published, reliable research on the frequency of drug-related accidents that do not involve alcohol. Because of this lack of data, studies of substance abuse costs limit their cost estimates to alcohol-related automobile accidents. It is unrealistic, however, to believe that drugs are not responsible for any automobile crashes in New Hampshire.

Table 22
Cost of All Motor Vehicle Crashes & Substance Abuse Attributable Crashes in
New Hampshire (\$ Millions - 2014)

	PDO	MAIS0	MAIS1	MAIS2	MAIS3	MAIS4	MAIS5	Fatal	Total
# of Crashes	15,192	4,406	6,122	1,731	619	156	73	89	28,387
INJURY COMPONENTS									
Medical	\$0.00	\$0.00	\$24.97	\$45.47	\$47.06	\$32.99	\$34.67	\$1.08	\$186.24
Emergency	\$0.46	\$0.10	\$0.58	\$0.36	\$0.28	\$0.14	\$0.07	\$0.09	\$2.07
Market Productivity	\$0.00	\$0.00	\$18.78	\$73.61	\$73.07	\$29.27	\$27.65	\$89.14	\$311.52
HH Productivity	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Insurance Admin.	\$3.12	\$0.68	\$25.85	\$17.40	\$13.21	\$6.26	\$6.28	\$2.71	\$75.50
Workplace Costs	\$1.01	\$0.22	\$2.24	\$4.91	\$3.83	\$1.07	\$0.87	\$1.13	\$15.28
Legal Costs	\$0.00	\$0.00	\$9.26	\$12.52	\$13.04	\$5.91	\$7.22	\$10.17	\$58.12
Subtotal	\$4.58	\$1.00	\$81.69	\$154.27	\$150.50	\$75.64	\$76.75	\$104.30	\$648.72
NON-INJURY COMP.									
Travel Delay	\$17.57	\$3.59	\$7.29	\$2.22	\$0.95	\$0.25	\$0.12	\$0.55	\$32.54
Property Damage	\$39.87	\$8.64	\$35.50	\$10.73	\$7.22	\$2.74	\$1.18	\$1.07	\$106.96
Subtotal	\$57.43	\$12.24	\$42.79	\$12.95	\$8.18	\$2.99	\$1.30	\$1.62	\$139.50
Totals	\$62.02	\$13.23	\$124.48	\$167.22	\$158.67	\$78.63	\$78.05	\$105.92	\$788.22
Totals Excluding Medical & Market Productivity \$290.46									
Alcohol Attributable x .22 =									\$63.90
Drug Attributable x .03 =									\$8.71
Total Substance Abuse =									\$72.62
Totals may not add due to rounding									
Note: MAIS is the maximum injury severity level experienced by the victim. PDO is property damage only									

A study for the State of Wyoming using data from the Wyoming Department of Transportation indicated that the percentage of drug attributable crashes was equal to about 10 percent of the alcohol attributable crashes.²⁶ We used that figure in our last report but since 2014 report there is increasing evidence regarding the number of automobile crashes that are attributable to drug use but there is still no definitive study of the percentage of crashes resulting from drug abuse. For this report we have increased the fraction of automobile crashes attributable to drug abuse from the 2.0 percent used in our 2014 study to 3.0 percent in this update.

Results:

Reported automobile crashes in New Hampshire, like reported crimes, declined between 2012 and 2014, from 32,306 in 2012 to 28,387 in 2014 according to the NH Department of Safety's annual *Highway Safety Report*. In 2014 motor vehicle crashes cost NH citizens an estimated \$ \$788 million (Table 22). When we subtract medical costs (shaded cells) that are included in our analysis of alcohol and drug attributable medical expenditures, market productivity costs (shaded cells) that are captured in our estimates of mortality costs, and productivity costs that may be partially captured in our analysis of productivity losses due to alcohol and drug abuse, and multiply the NHTSA determined percentage of all crash costs attributable to alcohol, the result is a conservative estimate of \$63.9 million in 2014. Drug attributable crash costs were estimated at three percent of total crash costs less productivity and medical costs of \$290.46 or \$8.71 million.

B. State and Local Tax Revenue**Key Findings:**

- Combined, the productivity losses attributable to drug (\$12.4 million) and alcohol (\$75.2 million) abuse reduced state and local revenues by an estimated \$87.6 million in 2014.

The productivity and earnings losses attributable to substance abuse in New Hampshire reduce the income of residents, their expenditures on goods and services, and the output of businesses and industries in the state of New Hampshire that otherwise would have yielded significant revenue for state and local government.

Methods and Results:

We used alcohol and drug attributable productivity losses of \$1.56 billion associated with lower labor force participation and reduced earnings of workers who are dependent or who abuse drugs or alcohol along with an economic model of the State of New Hampshire²⁷ to estimate the overall reduction in the volume of economic activity in New Hampshire resulting from drug and alcohol abuse.

Our estimate is that \$1.56 billion in lost productivity in 2014 resulted in a reduction of \$87.6 million in state and local tax revenue. The revenue impact estimated here is a ratio-based estimate based on the overall reduction in the volume of economic activity in NH resulting from drug and alcohol abuse. Using ratios derived from the U.S. Census Bureau's "Census of Government Finances" series for NH along with measures of the overall level of economic activity in the state and region (gross state product) from the U.S. Department of Commerce, Bureau of Economic Analysis, we can estimate the amount of state and local tax revenue likely to be lost as a result of the reduction in productivity attributable to substance abuse in New Hampshire.

VII. The Impact of increased Treatment Rates

Prevention is the most cost effective method of addressing substance misuse in New Hampshire. That said, increasing treatment rates for those already dealing with a substance use disorder is critical for reducing the costs of substance misuse to the New Hampshire economy. The benefits to productivity and the overall NH economy from increased substance use disorder treatment and prevention activities would accrue over time. Prevention and treatment programs are investments in the human capital of the state and like any human capital investment (like education and training), the benefits are not all realized immediately, but grow over time. There were an estimated 110,468 individuals in New Hampshire in 2014 with diagnosable alcohol or drug dependency.²⁸ The weighted (by type of treatment and utilization) mean cost of treatment per individual in NH that year is estimated at \$2,895 (with a high degree of variation depending on the type of treatment). Dividing the cost of substance abuse documented in this report (\$2.362 billion), by the number of individuals in the state who abuse alcohol or drugs, indicates that the average annual cost for every individual that abuses alcohol or drugs in New Hampshire in 2014 was \$21,385. This suggests that reducing substance abuse would have a benefit-to-cost ratio of 7.4 to one.²⁹

Table 23
Benefits of Increased Substance Use Treatment Rates in New Hampshire

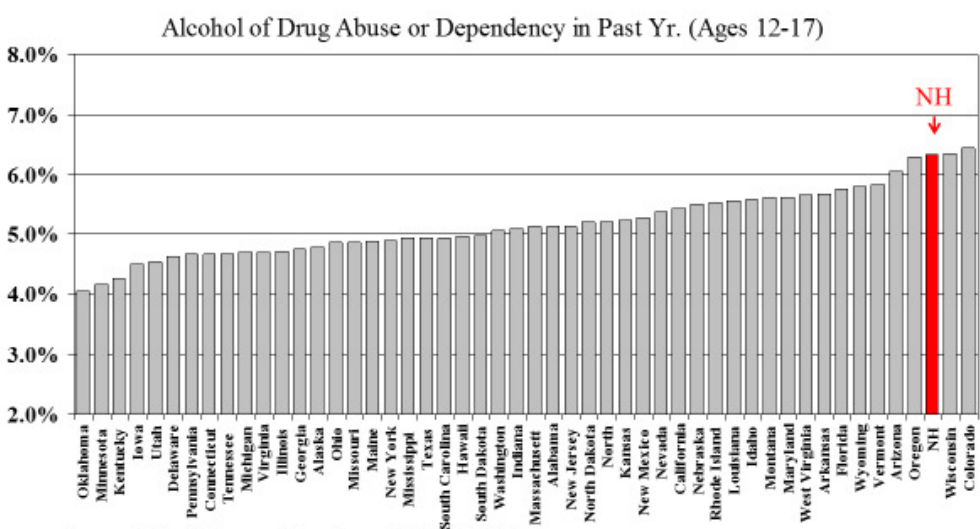
Newly Treated (% of Those in Need)	# Treated	Cost	Benefits @ 100% Effective	Net Benefits	Benefits @50% Effective	Net Benefits
0%	0	\$0	\$0.00	\$0	\$0	\$0
6.00%	6,628	\$19,189,617	\$141,743,400	\$122,553,783	\$70,871,700	\$51,682,083
8.00%	8,837	\$25,586,156	\$188,991,200	\$163,405,044	\$94,495,600	\$68,909,444
9.00%	9,942	\$28,784,426	\$212,615,100	\$183,830,674	\$106,307,550	\$77,523,124
10.00%	11,047	\$31,982,695	\$236,239,000	\$204,256,305	\$118,119,500	\$86,136,805
11.00%	12,151	\$35,180,965	\$259,862,900	\$224,681,935	\$129,931,450	\$94,750,485
12.00%	13,256	\$38,379,234	\$283,486,800	\$245,107,566	\$141,743,400	\$103,364,166
13.00%	14,361	\$41,577,504	\$307,110,700	\$265,533,196	\$153,555,350	\$111,977,846
14.00%	15,466	\$44,775,774	\$330,734,600	\$285,958,826	\$165,367,300	\$120,591,526
15.00%	16,570	\$47,974,043	\$354,358,500	\$306,384,457	\$177,179,250	\$129,205,207
16.00%	17,675	\$51,172,313	\$377,982,400	\$326,810,087	\$188,991,200	\$137,818,887
17.00%	18,780	\$54,370,582	\$401,606,300	\$347,235,718	\$200,803,150	\$146,432,568
18.00%	19,884	\$57,568,852	\$425,230,200	\$367,661,348	\$212,615,100	\$155,046,248
19.00%	20,989	\$60,767,121	\$448,854,100	\$388,086,979	\$224,427,050	\$163,659,929
20.00%	22,094	\$63,965,391	\$472,478,000	\$408,512,609	\$236,239,000	\$172,273,609

However, a benefit-cost-ratio of 7.4 would only occur if substance use disorder treatments were 100 effective, in reality the rate of effectiveness is considerable lower, with the best estimates in the range of 60 percent. Assuming a low-end rate of effectiveness for substance use disorder treatment of 50 percent the benefit-to-cost ratio of substance use treatment is almost 3 to 1. Even assuming effectiveness at the low end (50 percent effective), New Hampshire could be expected to realize net benefits (benefits minus costs of treatment) of over \$103 million dollars annually by having just 12 percent (approximately double the current treatment rate) of its residents who are dependent or who misuse alcohol or drugs receive treatment.

VIII. The Impact of Public Policies on Treatment Rates

Results from this study should make it clear that the most cost effective way to confront substance misuse in the State of New Hampshire is by avoiding costs through prevention. The most recent NSDUH suggests just how great is the need for additional substance abuse prevention in New Hampshire. As Figure 9 indicates, the rate of drug and alcohol abuse and dependency among individuals age 12-17 is higher in NH than in all but two states. NH’s 6.34 percent rate of drug and alcohol abuse and dependency among residents age 12-17 is nearly identical to the

Figure 9
 Prevention is the Most Cost Effective Way to Reduce Substance Misuse Costs – Unfortunately, NH Has the Third Highest Rate of Youth (Ages 12-17) Alcohol or Drug Abuse or Dependency in the Past Year



Source: National Survey of Drug Use and Health, 2013-2014

state with the highest rate, Colorado (6.44%). The need to reduce substance abuse among youth in New Hampshire may not be viewed as urgent by policymakers in light of the pressing need to stanch rising drug overdoses and deaths, but it is likely to be the most cost effective long-term strategy for lowering the rate of substance misuse and its costs in New Hampshire. Although prevention is the most cost effective approach to reducing substance misuse over the long-term, there is a clear and immediate need to increase treatment rates in NH. Increasing treatment for substance abuse is a well-documented way to reduce the social and economic costs of substance abuse. In recent years the primary focus of addiction policy in New Hampshire and nationally has been on increasing access to substance use disorder (SUD) treatment by expanding health insurance coverage. Our 2014 report on substance use cost noted that the Affordable Care Act (ACA), insurance coverage requirements for mental health and substance use disorder, and the expansion of NH's Medicaid program would likely increase SUD treatment rates in New Hampshire. While it is too soon to evaluate the overall impact of the ACA on substance SUD treatments and costs, early indicators are encouraging.

A. Health Insurance Mandates Have Increased SUD Treatments

For this study we examined health insurance claims from the NH Comprehensive Health Care Information System for the years 2012-2015 to determine the impact of the ACA and SUD coverage requirements had on substance use disorder treatments in New Hampshire. Our analysis shows a large (approximately five-fold) increase in substance use disorder³⁰ claims to private insurers beginning in 2013.³¹ Since that time, substance use disorder claims have not increased appreciably (Figure 10). The number of claims does not represent the number of individuals receiving treatment but the large increase in claims is an indicator that significantly more individuals are receiving treatment for substance use disorder, and/or that they are receiving treatment more often, in New Hampshire than were receiving treatment prior to 2013. Between 2012 and 2014, SUD claims increased by more than 300,000 in New Hampshire. Figure 11 shows that patient and family therapy sessions account for almost all of the increase in SUD claims in New Hampshire between 2012 and 2014.

Figure 10
Substance Use Disorder Claims Increased Dramatically in NH Prior to Full Implementation of the ACA

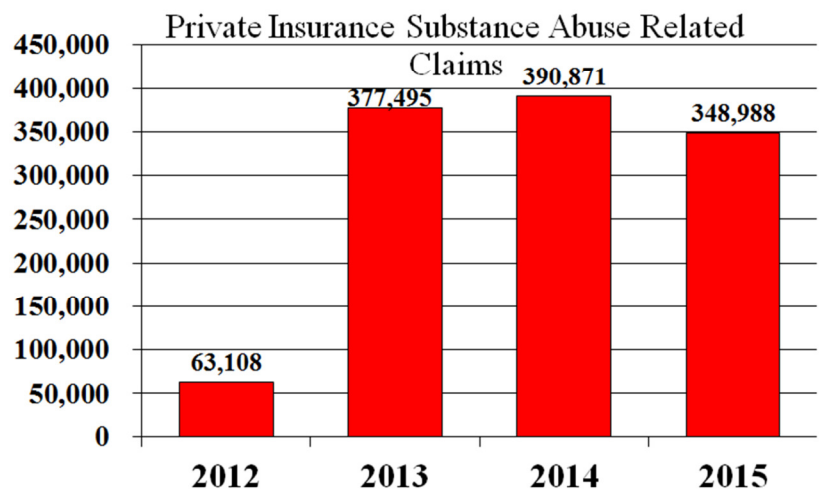
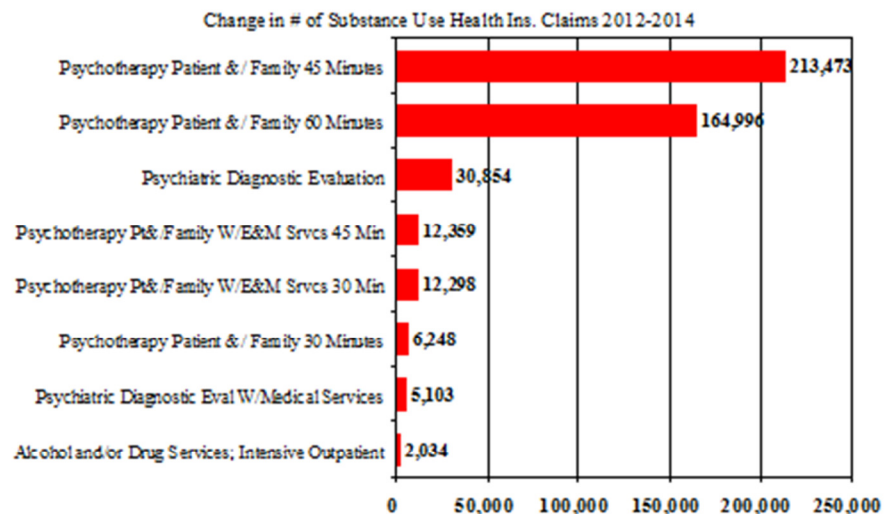


Figure 11
Therapy Sessions Account for Nearly all of the Increase in Substance Use Disorder Private Health Insurance Claims



Source: NH Comprehensive Health Care Information System, Author's calculations

B. Parity in Substance Abuse Coverage

Requiring insurance coverage for substance use disorders is an important step toward increasing New Hampshire's relatively low substance abuse treatment rate.³² Assuring that the treatment capacity (treatment centers and professional staff) is available to satisfy the increased demand for treatment in response to insurance coverage, however, will also require coverage that is stable and which covers a sufficient portion of service provider costs to sustain treatment providers.

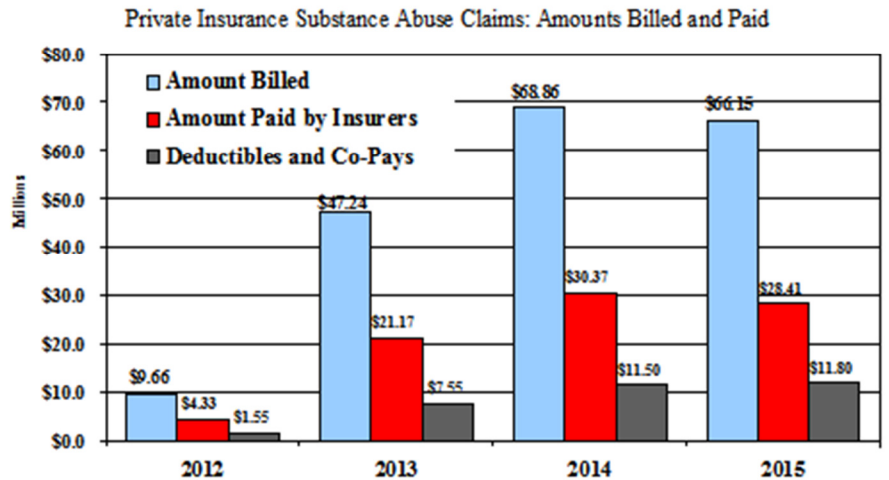
Issues related to substance use disorder coverage by health insurers in New Hampshire are being examined by the New Hampshire Insurance Department; it is not the purpose and it is beyond the scope of this report to fully evaluate those issues. Still, examining early insurance data could be helpful in highlighting potential impediments to increased access to treatment for substance abuse in New Hampshire.

➤ Insurance Payments Cover the Same Percentage of Substance Use Disorder Bills

If insurance coverage fails to pay substance use disorder treatment claims at rates sufficient to cover provider costs, then treatment options and the supply of treatment providers is unlikely to increase enough to satisfy the demand for treatment in New Hampshire. To assess the degree to which payments by insurers for SUD claims equal the amounts billed for service we examined a random sample of over 1 million health insurance claims in NH from 2015, using data from the NH CHIS. The sample included over 24,000 SUD claims or just over 2 percent of the sample. For claims that were paid, we compared amounts billed with amounts insurers paid for SUD and all non-SUD claims. Figure 12 shows the aggregate amount of SUD claims and amounts paid by insurers as well as aggregate deductibles and co-payments in NH for the years 2012 to 2015.

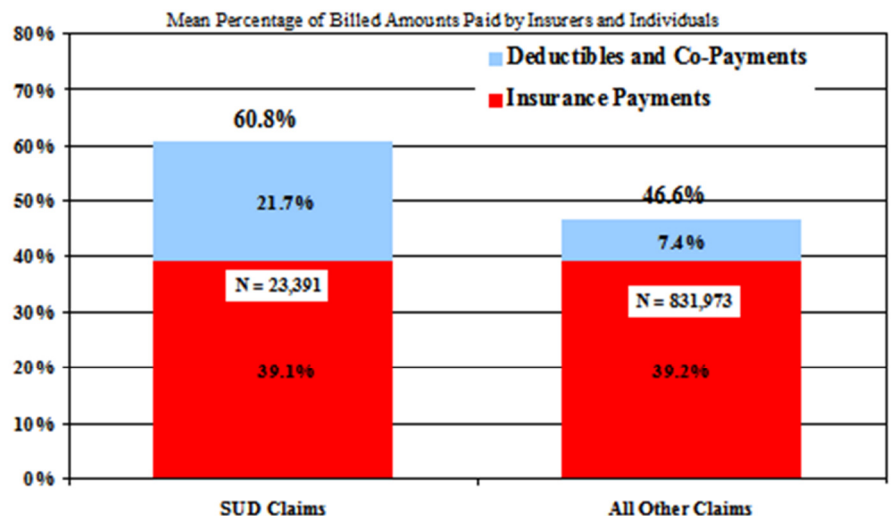
Comparing the percentage of billed amounts for SUD claims with reimbursement rates paid by insurers with the reimbursement percentages for other claims shows that, on average, insurers paid the same percentage for SUD claims as for all other claims (Figure 13). The mean percentage of SUD claims amounts that insurers paid was 39 percent, identical to the percentage for non-SUD claims. When individual deductibles and co-pay amounts are included, the mean percentage of amounts billed that is paid to service

Figure 12
On Average, Private Insurers in NH Paid About 43% of the Amount Billed For Substance Use Disorder Claims and Deductibles and Co-Pays Added Another 18%



Source: PoEcon analysis of claims data in the NH Comprehensive Health Care Information System (NHCHIS)

Figure 13
The Number of Substance Abuse Treatment Facilities Has Increased as Health Ins. Coverage for Substance Use Disorders Has Been More Available



Source: Author's analysis of 2015 insurance claims from the NH Comprehensive Health Care Information System

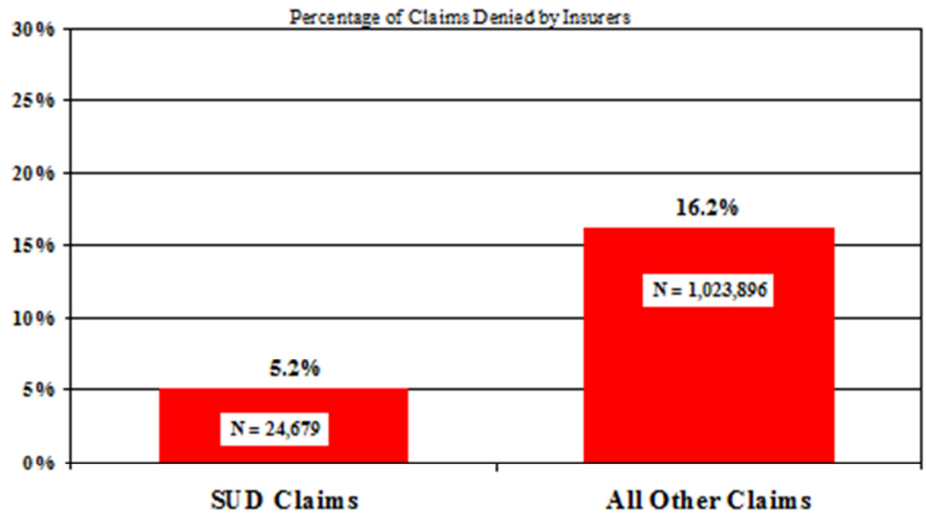
providers rises to 61 percent for SUD claims, compared to just 47 percent for non-SUD claims (Figure 13). There are a number of possible explanations for why the percentage of billed amounts that are paid by deductibles and co-payments differs for SUD and other insurance claims. The salient finding from this analysis is that the percentage of claim amounts paid by insurers does not differ for SUD claims compared to other claims, while the combined percentage of billed amounts that are paid by insurers and individuals appears to be higher for SUD than for other services. Whether the total percentage of billed amounts is sufficient to sustain and expand NH's SUD treatment capacity should be an area for additional research.

➤ **Denial Rates are Low but “Prior-Authorization” Likely Impedes Treatment**

Another way in which insurance coverage for SUD treatments could differ from other health care claims and limit the potential for the ACA and SUD coverage requirements to increase treatment rates is the rate at which SUD claims are paid or denied by insurers. Using the same sample of insurance claims from 2015 as was used in the prior analysis, results indicate that SUD claims were denied at significantly lower rates (5.2%) than were other claims (16.2%).

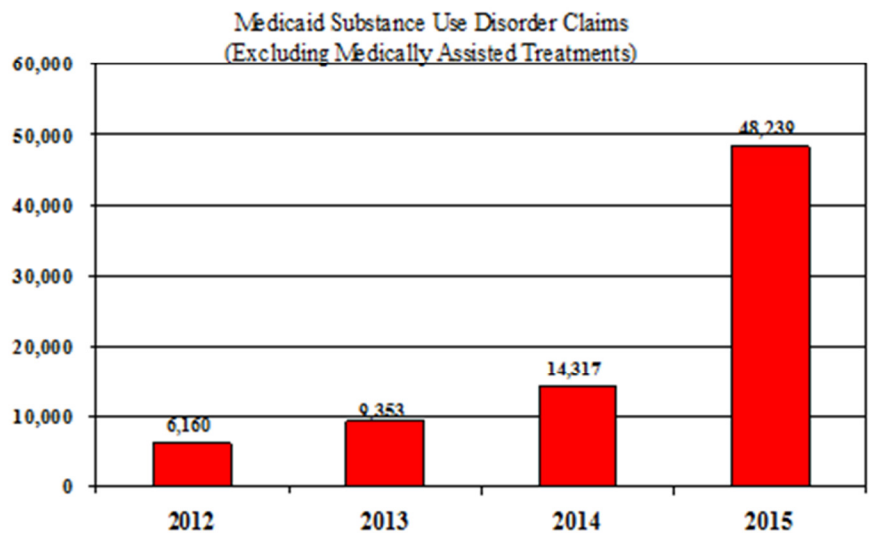
However, a recent examination by the NH Insurance Department of the handling of substance use disorder treatment claims by insurance carriers in New Hampshire indicates that procedures for “prior-authorization” for SUD treatment in some cases differ between SUD and other claims.³³ If an individual seeking SUD treatment coverage from an insurer is not given prior-authorization for a claim, no claim is submitted and thus no denial of an insurance claim would occur. The extent to which individuals seeking SUD are less likely to receive prior-authorization for SUD treatment may account for some of the difference in denial rates between SUD and other services and should be the subject of further research.

Figure 14
Insurance Claims for Substance Use Disorder Treatments Were Denied at Lower Rates Than Were Other Claims in 2015 – But “Prior-Authorization” Practices of Insurers May Be Impeding Access to Treatment



Source: Author's analysis of 2015 insurance claims from the NH Comprehensive Health Care Information System

Figure 15
Medicaid Expansion Has Dramatically Increased the Number of Medicaid Claims for SUD Treatments in New Hampshire and an Additional 10,700 Individuals Received Treatment Because of Expansion



C. Medicaid Expansion

The expansion of NH's Medicaid program in 2015 has significantly increased Medicaid claims for substance use disorder treatments. For this analysis we obtained Medicaid claims for SUD treatment for the years 2012 to 2015 from the NH Department of Health and Human Services. As Figure 15 shows that with the expansion of Medicaid in NH came a dramatic rise in the number of SUD claims. The claims data in Figure 15 does not include claims for "medically assisted treatment" – that is treatments using methadone or buprenorphine. Because medically assisted treatments are administered multiple times to individual patients, excluding those claims from this analysis provides a better indication of the growth in access to treatment due to Medicaid expansion. The expansion of Medicaid in 2015 resulted in approximately 34,000 more Medicaid payments for SUD treatments than in 2014. According to the NH Department of Health and Human Services, approximately 10,700 additional individuals received substance use disorder treatment as a result of the expansion of Medicaid in the state. The increase in treatments in 2015 as a result of Medicaid expansion came at little cost to the State of New Hampshire as the federal matching rate for expanded Medicaid services is 100 percent until 2016, leveling off thereafter to 90 percent by 2020.

Data for 2015 indicates that Medicaid in New Hampshire paid about the same percentage of amounts billed for SUD services as private insurers (43% for Medicaid to 39% for private insurers).³⁴ The difference between Medicaid reimbursements for SUD services and private insurance claims is the result of deductibles and co-payments which increase the total reimbursement rate with private insurance to 61 percent compared to 43 percent for Medicaid.

D. Impacts on the Treatment Capacity

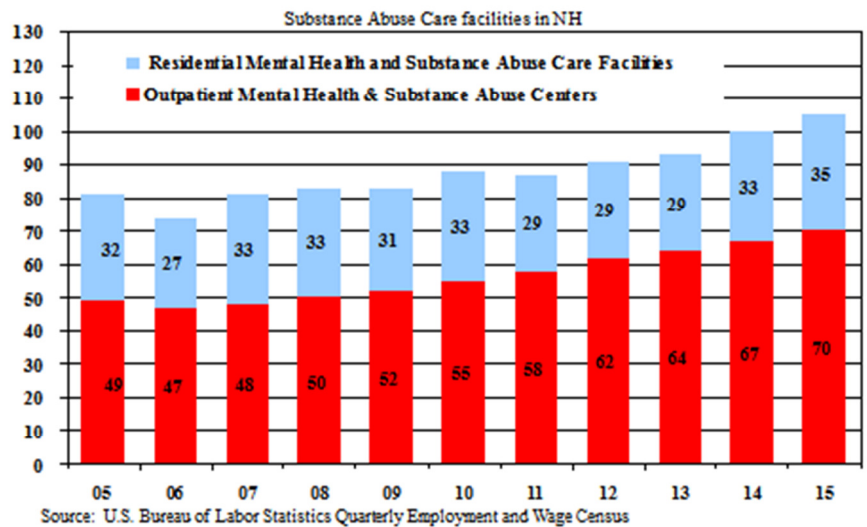
Trends in substance misuse and dependency in New Hampshire indicate an increasing need for treatment and a concomitant need to increase treatment capacity in the state. Treatment capacity will not expand to meet increasing demand for treatment unless accompanied by an increase in treatment funds. As we noted in our 2014 report, based on 2012 and earlier data, an extraordinarily high percentage of SUD treatments were from "self-payers." As long as self-payment was the dominant source of payment for SUD treatment in NH, it was unlikely that treatment providers would locate or significantly expand capacity in New Hampshire. The same is true if reimbursement rates for SUD treatments were significantly lower than reimbursement rates for other services.

The ACA, requirements for SUD coverage, and Medicaid expansion should, in theory, have signaled to SUD treatment providers that there is sufficient "effective demand," - that is demand that is accompanied by the ability to pay for services - to invest, locate or expand treatment capacity in New Hampshire. Figure 16 shows that, in fact, the number of centers that provide SUD treatments has increased in New Hampshire in recent years as public policies have expanded insurance coverage and coverage for SUD services to more individuals in the state.

As would be expected, the number of employees in two key industries that provide SUD treatments is also increasing along with the number of treatment centers.

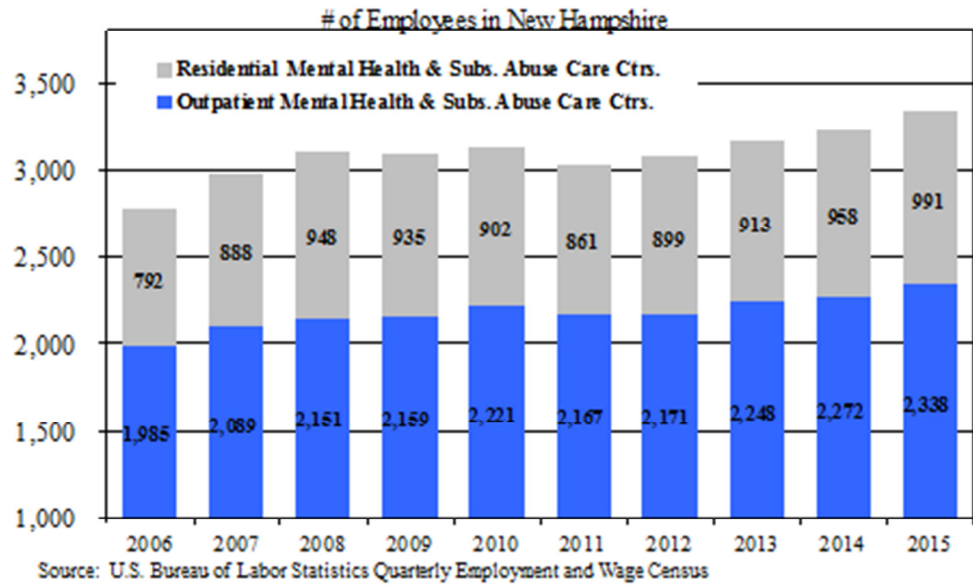
These data highlight the importance of available and stable funding in increasing both SUD treatment capacity and treatment rates in New Hampshire. The data also highlight how critical will be decisions about the

Figure 16
The Number of Substance Abuse Treatment Facilities Has Increased as Health Ins. Coverage for Substance Use Disorders Has Been More Available



future of the ACA and Medicaid expansion on the ability of New Hampshire to maintain and increase SUD treatment rates and effectively address the problem of substance misuse in the state.

Figure 17
Employment at Mental Health and Substance Abuse Care Facilities in NH is Also Rising



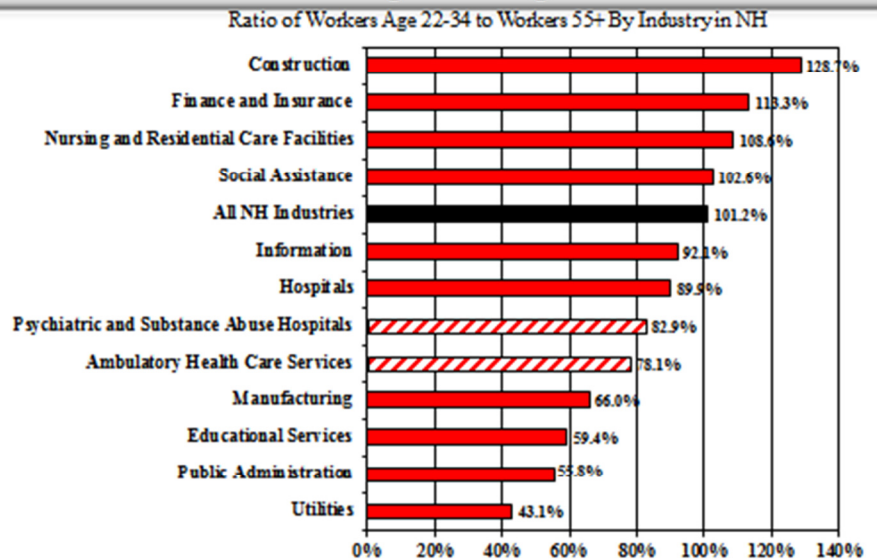
IX. Impediments to Increased Treatment Capacity and Rates

Substance use disorder treatment capacity has expanding in New Hampshire in response to increased demand and the adoption of public policies expanding insurance coverage for substance abuse. Changes in public policies could also reverse the trend of increasing treatment capacity in New Hampshire. But even in the event of no change in public policies (repeal of the ACA or Expanded Medicaid) NH will face challenges in developing the sufficient capacity for substance use disorder treatment to meet the rising demand for treatment.

➤ **Fewer Younger and Older Workers Than Most Industries in New Hampshire**

The State of New Hampshire is facing a long-term trend of slow labor force growth that will be compounded by the retirement of older workers and a limited supply of younger workers entering the workforce. The problem of retirements by older workers and relatively fewer younger workers varies greatly by industry in New Hampshire. Industries that have not attracted younger workers over the past few decades will be most negatively affected. As Figure 18 shows, two industries that include a large portion of substance use disorder treatment centers are among the industries that will be most affected. The chart shows the ratio of younger workers (age 22-34 to workers age 55+ who will be retiring over the next 15 years)

Figure 18
Industries that Will be Adding Workers in Coming Decades and That Have More Workers Nearing Retirement Than Workers Early in Their Careers Will Face the Greatest Potential Labor Shortages – Including SUD Treatment Facilities



for two industries that provide substance use disorder treatment services, along with several other industries for comparison. Growing industries that have a low ratio of younger to older workers that are growing will need to hire more workers in the future and will be more affected by demographic and workforce trends than will industries that have a low ratio of younger workers but which will have little need for additional workers (slow growth industries). Industries that provide substance use disorder treatment services combine both a relatively older workforce with an increasing demand for their services in NH and will face greater labor force constraints that potentially limit their ability to increase treatment capacity in the state.

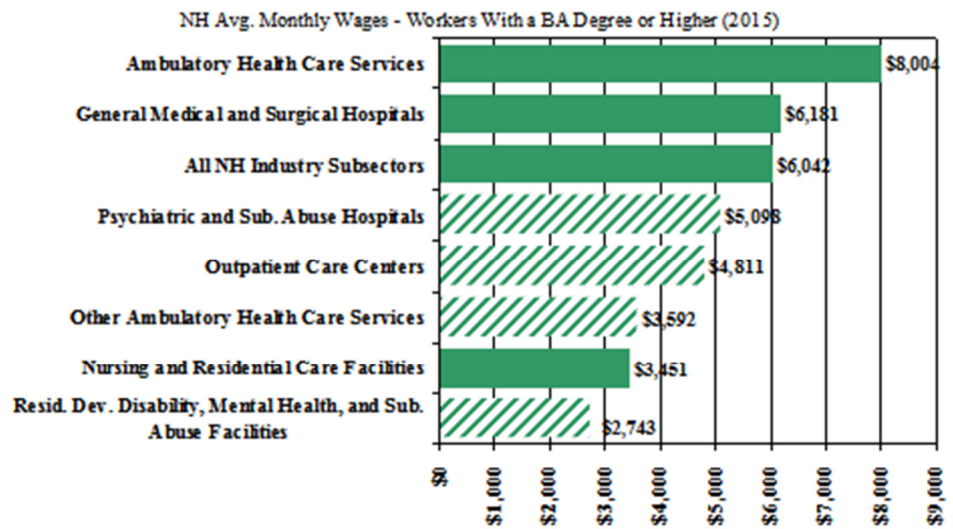
➤ **Wage Rates that are Uncompetitive for a Limited Supply of Workers**

In addition to the difficulties that all industries will face as a result of slow labor force growth, and the challenging demographics of the workforce in substance use disorder treatment centers, treatment providers, on average, have lower wage rates than

other health care industries as well as most industries in NH overall. Figure 19 shows the average monthly wage rates for workers with at least a bachelor’s degree employed in several health care industries, as well as the average for all NH workers with at least a bachelor’s degree. The hashed bars in the chart are industries that include some substance use disorder treatment centers, but may also include other types of facilities.³⁵

The chart shows that industries that provide substance use disorder treatments pay, on average, lower wages for individuals with at least a bachelor’s degree than do other health care industries and most industries in NH. In combination with workforce and demographic trends, wage rates in the industry that are less competitive will further limit the capacity of providers to meet the increasing demand for SUD services.

Figure 19
The Average Monthly Wage for Workers With at Least a BA Degree, Working In Industries that Provide SUD Treatment Services Have Lower Wages than Workers in other Health Care Industries



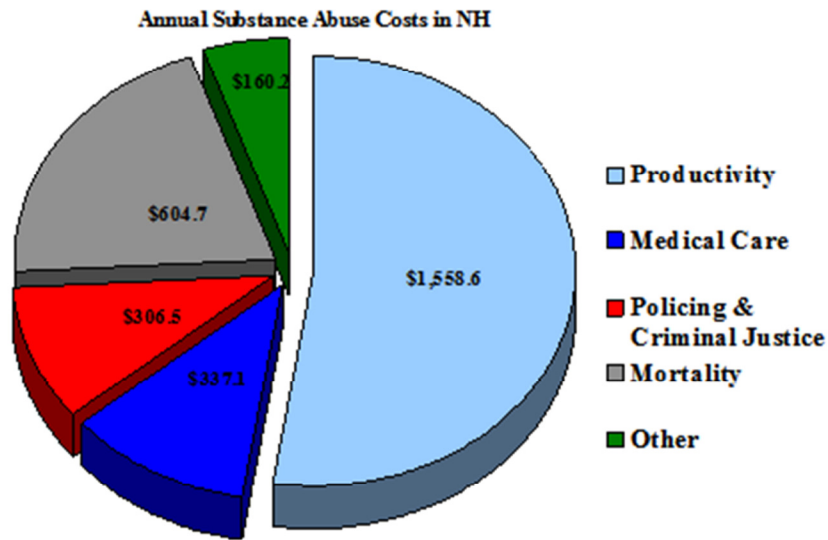
X. Conclusions

This study provides an update of the costs of substance misuse to the New Hampshire economy. Results of the study indicate that the cost of alcohol and drug misuse has risen to over \$2.36 billion in 2014. The percentage of New Hampshire’s population that has an alcohol or drug dependency, or that has misused alcohol or drugs in the past year has risen since we first reported on the costs of substance misuse in 2014. Since our 2014 report the constraints facing the New Hampshire economy resulting from slow population and labor force growth have become clearer and highlight the need to reduce the productivity costs of substance use on the New Hampshire economy. Drug and alcohol misuse costs the New Hampshire economy an amount equal to over 3 percent of the state’s gross state product, or \$1,780 for every resident of the state. Figure 20 summarizes the costs analyzed in this report.

Although substance misuse costs in NH increased between 2012 and 2014, there have been developments that should result a decrease in future costs. This report shows that expanded insurance coverage for substance use disorder treatment and the expansion of New Hampshire’s Medicaid program have each increased substance use disorder treatment in the state. Increased treatment rates conservatively will reduce substance misuse costs in NH by a minimum of over \$10,000 (and a maximum of over \$21,000) per year for every individual in need of treatment that receives treatment services. At the same time public policies that have increased insurance coverage for substance use disorder also appear to be increasing treatment capacity in the state.

The continuation of the public policies (the ACA and Medicaid expansion) that have increased treatments and treatment capacity in NH may not continue, however, greatly increasing the uncertainty over NH's ability to reduce substance misuse costs in the future.

Figure 20
Substance Abuse Cost NH \$2.36 Billion in 2014 Not Including the Cost of
Premature Death



End Notes

¹ New Futures, Inc., “*The Corrosive Effects of Alcohol and Drug Misuse on NH’s Workforce and Economy*,” November, 2014.

² Some of the increase in costs is attributable to refinements in methods that allow for estimates of productivity costs associated with alcohol dependency or abuse among women in NH, as well as the ability to review actual payments by insurers for substance use treatments in the state.

³ Compass Health Analytics, Inc, “*Analysis of New Hampshire Insurance Claim Data Related to Substance Use Disorder: Reimbursement Rates*,” August, 2016, available at https://www.nh.gov/insurance/reports/documents/080516_nh_id_analysis_of_claims_for_substance_use_disorder_pricing.pdf

⁴ Compass Health Analytics, Inc, “*Analysis of New Hampshire Insurance Claim Data Related to Substance Use Disorder: Reimbursement Rates*,” August, 2016, available at https://www.nh.gov/insurance/reports/documents/080516_nh_id_analysis_of_claims_for_substance_use_disorder_pricing.pdf

⁵ NH Insurance Department, “TARGETED MARKET CONDUCT EXAMINATION REPORT– SUD BENEFITS Docket No.: INS No. 15-072-MC,” 2016.

⁶ Opiates are naturally occurring opium-based narcotic substances such as morphine and codeine, while opioids are synthetic and semi-synthetic forms of opiates such as heroin, oxycodone, hydrocodone, and methadone.

⁷ The Office of the medical examiner has not completed toxicology reports on all cases but in December the office projected 476 drug induced deaths in the state for 2016.

⁸ U.S. Department of Health and Human Service, Substance Abuse and Mental Health Services Administration, “*Treatment Episode Data Set, Admissions (TEDS A), 2014*.”

⁹ The TEDS data include only data from facilities that receive funds from federal or state government sources (Medicaid, Medicare, grants etc.) and thus does not include facilities that accept only private health insurance or self-payers.

¹⁰ U.S. Dept. of Health and Human Services, Centers for Disease Control and Prevention, “Underlying Cause of Death Data”. The data are for age adjusted rates. NH’s ranking does not change using age adjusted or unadjusted data.

¹¹ Statistical significance here refers to a term that describe how certain research results are to reflect genuine differences in the labor force participation and productivity of women who abuse alcohol and those who do not. In general, to achieve statistical significance researchers must be at least 95% certain that results reflect true differences and did not occur by chance.

¹² These studies include: Chanvuth Sangchai, 2006. “*The Causal Effect of Alcohol Consumption on Employment Status*,” Dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy Department of Economics College of Business Administration University of South Florida. Smith, W. B., & Weisner, C. “*Women and Alcohol Problems: A Critical Analysis of the Literature and Unanswered Questions*,” *Alcohol in Clinical Experimental Research*, 24, (2000), 1320-1321. Mullahy, John, and Jody L. Sindelar, 1996. “*Employment, Unemployment, and Problem Drinking*,” *Journal of Health Economics* 15, no. 4:409-434.

¹³ These estimates are for one form of alcohol misuse “dependency” found to significantly impact labor force participation and earnings of those alcohol dependent workers in the labor force. Coefficient’s for the impact that alcohol dependency has on labor force participation, by age, are from: Ellen E. Bouchery, et. al “*Economic Costs of Excessive Alcohol Consumption in the United States, 2006*,” The Centers for Disease Control and Prevention, 2010.

¹⁴ The number of individuals not in the labor force is an estimate using national coefficients for labor force participation among individuals with and without alcohol dependency (by age) found in Bouchery et. al. . The age appropriate coefficient s were applied to the male population of NH population to determine the number of individuals not participating in the NH labor force because of alcohol dependency.

¹⁵ These estimates are for one form of alcohol misuse “dependency” found to significantly impact labor force participation and earnings of those alcohol dependent workers in the labor force. Coefficient’s for the impact that alcohol dependency has on labor force participation, by age, are from: Ellen E. Bouchery, et. al “*Economic Costs of Excessive Alcohol Consumption in the United States, 2006*,” The Centers for Disease Control and Prevention, 2010.

¹⁶ For this estimate alcohol impaired productivity refers to one type of alcohol misuse: alcohol dependency.

¹⁷ The Center for Integrated Behavioral Health Policy at George Washington University. A description of the methods they use to develop their estimates of alcohol dependency and misuse by industry sector is available online at: <http://www.alcoholcostcalculator.org/alcohol/about/?page=1>

¹⁸ Ibid.

¹⁹ For each industry, the amount of labor required to produce goods and services is different. Some industries use more capital (machinery, equipment, technology etc.) to produce their goods and services and those differences are

reflected in these ratios. In some industries such as health services, the value of the goods and services produced relies heavily on the input of the workers in the industry, while industries such as manufacturing, rely more heavily on capital to produce their goods.

²⁰ Centers for Disease Control and Prevention “*Underlying Cause of Death*” data for New Hampshire..

²¹ The claims for substance use disorder treatments in the database were identified using the same codes that were used by Compass Health Analytics in a 2016 analysis of reimbursements rates conducted for the NH Insurance Department, “*Analysis of New Hampshire Commercial Insurance Claim Data Related to Substance Use Disorder: Reimbursement Rates, August 2016*”.

²² This allowed us to estimate total payments by Medicaid for substance abuse treatment but a number of anomalies in the data (reimbursements that appear to be higher than amounts billed, treatment codes for which no reimbursement rate was provided, etc.) required some adjustment to the data provided and mean that our estimates may differ from reports on Medicaid expenditures prepared by The State of new Hampshire.

²³ This analysis includes only market-based measures of productivity. That is, only the earning of workers as valued in the labor market. Some studies include productivity measures that include “household productivity” (or the estimated value of services performed by individuals in their homes) in their estimate of the total productivity of individuals. To maximize the accuracy of our estimates, we believe only market-valued measures should be included in our estimates.

²⁴ A 2010 study for the National Highway Safety Administration estimated the cost of crashes in NH in 2010 at over \$1.5 billion. Our estimate excludes medical costs and market productivity to avoid double counting. Our total also excludes household productivity losses for consistency with other estimates in this report.

²⁵ Lawrence Blincoe, et. al.(2014) ” The Economic and Societal Impact of Motor Vehicle Crashes, 2010,” U.S. Dept. of Transportation, National Highway Safety Administration.

²⁶ Nanette Nelson, et. al.(2012), “The Cost of Substance Misuse in Wyoming, 2010,” Wyoming Survey and Analysis Center.

²⁷ The IMPLAN model of the State of NH (2012 Version) was used. Information about the IMPLAN model can be found at www.IMPLAN.com.

²⁸ NH’s rate of alcohol and drug dependency is 9.53% for individuals age 12 and older time a population age 12 plus of 1,159,159 equals 110,468 individuals with an alcohol or drug dependency or abuse.

²⁹ The costs associated with each individual who misuses alcohol or drugs vary greatly depending on which of the adverse outcome associated with substance misuse that occur. The estimate here is an average across all individuals. And is calculated as follows: Cost of substance misuse in 2014 = \$ 2,362,390,000 / Pop. Age 12+ (1,159,159) * % misusers (.0953) = 110,468 = \$21,385. Reduced cost of \$21,385 / cost of treatment (\$2,895) = 7.39

³⁰ “Substance use disorder” is the name given to the category of claims of that

³¹ The claims for substance use disorder treatments in the database were identified using the same codes that were used by Compass Health Analytics in a 2016 analysis of reimbursements rates conducted for the NH Insurance Department, “*Analysis of New Hampshire Commercial Insurance Claim Data Related to Substance Use Disorder: Reimbursement Rates, August 2016*”.

³² In our 2014 we cited research (Hahn, Beth, et. al., “State and Socio-Demographic Variations in Substance Use Treatment Need and Receipt in the United States,” Center for Behavioral Statistics and Quality, Substance Abuse and Mental Health Services Administration, U.S. Department of Health and Human Services, April, 2011) indicating that New Hampshire has the second lowest rate of treatment for individuals in need of treatment of any state in the nation. We are not aware of research that updates those relative treatment rates.

³³ NH Insurance Department, “TARGETED MARKET CONDUCT EXAMINATION REPORT– SUD BENEFITS Docket No.: INS No. 15-072-MC,” 2016.

³⁴ Anomalies in the Medicaid claims data from the NH Dept. Of Health and Human Services required us to exclude a number of claims and adjust payment rates for other so this figure is an estimate but is likely to vary no more +/- 1.5% from the actual percentage.

³⁵ These data are from payroll records available only at the four digit industry classification level. To obtain data for industries that only include substance abuse and mental health services providers we would need data at the six digit industrial classification level.