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TO: Oregon Health Authority
FROM: ECONorthwest
SUBJECT: Alcohol harms and economic burden – **Interim Report**

Summary

Excessive drinking causes harm that extends beyond alcohol users as family, friends, and entire communities all ultimately experience some of the consequences of excessive alcohol consumption. In 2013, excessive drinking resulted in approximately 1,300 deaths and 34,000 years of potential life lost (YPLL) in Oregon.³ The National Institute of Alcohol Abuse and Alcoholism determined in 2018 that Oregon was fifteenth in the nation for per capita alcohol consumption.⁴ While users may suffer more direct impacts like adverse health outcomes or arrests, the spillover effects of excessive alcohol consumption impose a significant economic burden on third parties. These indirect economic costs can materialize in a variety of forms ranging from public sector expenditures on research and treatment programs and to crime victim costs and lost labor productivity.

Since 2005, Oregon has seen substance-use-related expenditures grow rapidly, requiring scarce resources that could otherwise be used for other public services.² Based on the most recent available data, we find that Oregon’s total costs of excessive drinking were approximately **\$4.8 billion** in 2019. This total consists of four broad cost categories:

- **Labor productivity:** \$2.19 billion (45.6 percent of total costs) in lost earnings for businesses and employees due to excessive alcohol use. This includes both alcohol users and victims of crimes involving excessive drinking.
- **Criminal Justice and Motor Vehicle Crashes:** \$1.30 billion (27.2 percent of total costs) for alcohol-related offences including the cost to victims.
- **Health care:** \$702.06 million (14.6 percent of total costs) as a result of hospitalization and ambulatory care to address the adverse medical effects of excessive alcohol use.
- **Education and Social Welfare:** \$605.51 million (12.6 percent of total costs) in treatment, research, and human services programs related to managing issues related to excessive alcohol use.

To put these costs into context, the \$4.8 billion in economic losses stemming from excessive drinking represented roughly 2 percent of the 2019 gross state product. Averaged across the population, excessive alcohol use cost Oregon \$1,100 per person.

This updated cost estimate is the first step in a longer-term study to characterize the costs of excessive alcohol consumption in Oregon. Between now and the summer of 2021, ECONorthwest will also explore the economic and health benefits of alcohol pricing policies, including cost savings and equity considerations for communities affected by proposed policies.

Overview

The economic consequences of excessive alcohol consumption are well-established in the economic and social science literature. Excessive alcohol consumption can result in increased mortality, loss of productivity, and victimization. Because the costs associated with excessive alcohol use impact a broad range of economic and social systems, quantifying these costs is complicated. Despite the uncertainty embodied in any particular estimate, existing research nonetheless suggests that excessive alcohol use imposes large costs on the individual and on society more generally.

Our analysis synthesizes existing research, other estimates of the economic costs of alcohol, and data specific to Oregon to quantify the economic burden of excessive alcohol use for the state as a whole. The results are preliminary and may be refined for a broader study on alcohol policy for the Oregon Health Authority Public Health Division (OHA-PHD) to be completed in the summer of 2021. Our approach broadly follows that used for a similar ECONorthwest analysis conducted in 2008 that was based on an analytic framework developed by the Lewin Group, a health care consulting firm. For our current analysis, however, we build upon that approach by directly quantifying the components of costs for Oregon, rather than relying on national estimates.

We believe this approach more accurately captures the individual cost components used to calculate the economic burden of excessive alcohol use in Oregon. The magnitude of alcohol-related events for arrests, vehicle crashes, hospitalization, and other components rely on state-level reporting. Of course, the trade off with this approach is that it limits the utility of comparisons to previous studies. Similar to the previous studies, this analysis represents a snapshot of the costs imposed on society in a single year, rather than a multi-year or lifecycle analysis of economic costs.

Even with the methodological refinements, the results documented below remain approximations due to the relatively large number of assumptions required to assign an alcohol attributable fraction (AAF) of specific outcomes (e.g. alcohol-related arrests) and the unit costs of each event. We will provide a detailed methodology for each of the cost components we estimate in the technical appendix attached to the final report to be completed as part of a broader study in the summer of 2021.

Economic costs of excessive alcohol use in Oregon

Through our analysis we seek to capture the economic impacts of excessive alcohol consumption across a broad range of economic and social systems. Cost components include direct costs to the user, such as medical care, lost productivity and mortality. However, the costs of excessive alcohol use extend beyond the direct impact to the user. Consistent with the existing literature, we therefore also include costs imposed directly or indirectly on other individuals in society, such as crime victimization costs and use of the healthcare system.

Based on the available data, ECONorthwest estimates that excessive alcohol use cost Oregon **\$4.8 billion in 2019 (Table 1)**. While not all residents are directly impacted by excessive drinking, the consequences from excessive alcohol use may be felt statewide. For example, these indirect effects can materialize in the form of diverted public expenditures and higher taxes to pay for public services, or lower worker productivity that increases the cost of goods and services in the economy. In the sections below, we summarize the key findings for each of the primary categories of economic costs included in this study.

Health care

Excessive alcohol use increases health care expenditures. According to the CDC, there were 261 deaths per day (95,000 deaths per year) in the United States due to excessive drinking between 2011 to 2015. Over half of these deaths (53.7 percent) were attributable to chronic, alcohol-related health conditions including heart disease, cancer, pancreatitis, liver disease, among others.¹ In 2013, excessive drinking resulted in approximately 1,300 deaths and 34,000 years of potential life lost (YPLL) in Oregon.² The National Institute of Alcohol Abuse and Alcoholism determined in 2018 that Oregon was fifteenth in the nation for per capita alcohol consumption.³

ECONorthwest estimates that the state's aggregate health-care-related expenditures associated with excessive drinking totaled **\$702.06 million (14.6 percent of overall cost) in 2019 (Table 1)**. To estimate these expenditures, ECONorthwest included the following cost components using state-level data: ambulatory care; emergency care; health care for fetal alcohol syndrome spectrum disorders (FASDs); hospitalization; and nursing home care. Of these, FASD health care made up the largest share of health-care-related costs at \$569.00 million or 11.9 percent of total alcohol-related economic losses.⁴

Education and social welfare

Excessive alcohol use also imposes a substantial, potentially avoidable, burden on state and local education and social services budgets. Since 2005, the State's substance-use-related expenditures have more than quadrupled, from \$1.7 million to \$6.7 million, making up approximately 17 percent of Oregon's 2017 budget.⁵ According to the Alcohol and Drug Policy

¹ Esser, M.B., et al. 2020. "Deaths and Years of Potential Life Lost from Excessive Alcohol Use—United States, 2011-2015." *Morbidity and Mortality Weekly Report* 69, no. 39.

² Centers for Disease Control. 2014. *Prevention Status Reports 2013: Excessive Alcohol User—Oregon*. Atlanta, GA: U.S. Department of Health and Human Services.

³ Haughwout, S.P., and M.E. Slater. 2018. *Surveillance Report #110, Apparent Per Capita Alcohol Consumption: National, State, and Regional Trends, 1977-2016*. Bethesda, MD: National Institute on Alcohol Abuse and Alcoholism.

⁴ ECONorthwest relied on Oregon-level data for the total number of persons with FASD. DHS Public Health Division, Office of Family Health, Women's and Reproductive Health Section, Oregon FAS Prevention Program, January 2, 2009; According to the CDC, FASD includes a group of conditions that can occur from a mother drinking during her pregnancy. Centers for Disease Control. 2020. "Basics about FASDs." Atlanta, GA: U.S. Department of Health and Human Services. Retrieved from: [https://www.cdc.gov/ncbddd/fasd/facts.html#:~:text=Fetal%20alcohol%20spectrum%20disorders%20\(FASDs\)%20are%20a%20group%20of%20conditions,a%20mix%20of%20these%20problems.](https://www.cdc.gov/ncbddd/fasd/facts.html#:~:text=Fetal%20alcohol%20spectrum%20disorders%20(FASDs)%20are%20a%20group%20of%20conditions,a%20mix%20of%20these%20problems.)

⁵ Alcohol and Drug Policy Commission. 2020. *2020-2025 Oregon Statewide Strategic Plan*. p. 4.

Commission, instead of being used for prevention and treatment, the majority of those funds have been allocated toward addressing the acute impacts of substance abuse, such as increased hospitalization.

To capture the fiscal impacts of excessive drinking on education and social welfare, ECONorthwest estimated the following cost components based on assumptions from state-level data and the literature: alcohol treatment; children and family welfare; FASD special education; prevention and research; regulation and compliance; and training. ECONorthwest estimates that Oregon’s costs from education and social welfare associated with excessive alcohol use totaled **\$605.51 million (12.6 percent of overall cost) in 2019 (Table 1)**. Spending on alcohol-related children and family welfare programs exceeded that for all other cost components in this category at \$297.09 million (6.2 percent of total costs).

Criminal justice and Motor Vehicle Crashes

To capture the potential criminal justice costs related to excessive drinking, ECONorthwest included a variety of cost components based on state-level data and assumptions from the literature: crime victim costs (both tangible and intangible⁶); corrections expenditures; enforcement of alcohol-attributable crimes; fire losses; motor vehicle fatalities; private legal expenditures; and property damage losses.

ECONorthwest estimates that the criminal justice costs from excessive alcohol use totaled **\$1.3 billion (27.2 percent of total costs) in 2019 (Table 1)**. In ECONorthwest’s 2008 report, crimes and criminal justice costs were treated separately from motor vehicle crashes and alcohol-related fire losses. When these are aggregated, they total \$514.9 million (2019 dollars) or 35.9 percent of the estimated criminal justice costs in this analysis indicating that the criminal justice expenditures in this report are much larger in magnitude. This is likely due to differences in methodology and data as well as the inclusion of additional cost components (e.g., intangible crime victim costs, private legal expenditures).

Labor productivity

Excessive alcohol use negatively affects worker productivity through increased absenteeism, impaired worker productivity, and increased mortality, all of which reduce the productivity of Oregon businesses.⁷ The opportunity cost of lost productivity is a decrease in the supply of goods and services and ultimately, a less competitive business environment for Oregon.

These economic losses materialize in the form of foregone earnings of excessive alcohol users and victims of alcohol-related crime. At **\$2.19 billion (45.6 percent of total costs) in 2019**, lost

⁶ Tangible costs represent those borne directly by the victim through medical costs and lost earning. Intangible costs represent indirect costs to the victim from pain and suffering, or psychological distress.

⁷ From 2011 to 2015, there were 39,705 years of potential life lost (YPLL) or 1,008 YPLL per 100,000 residents in Oregon due to excessive drinking. Esser, M.B., et al. 2020. “Deaths and Years of Potential Life Lost From Excessive Alcohol Use—United States, 2011-2015.” *Morbidity and Mortality Weekly Report (MMWR)* 69, no. 39, 1428-1433.

worker productivity made up the largest share of Oregon’s total costs attributed to excessive drinking (**Table 1**).

Comparison to previous estimates

The 2008 analysis by ECONorthwest evaluated the societal costs of excessive drinking and drug use drawing on methodology outlined by The Lewin Group.⁸ The results revealed that drug and excessive alcohol use cost the state \$3.2 billion in 2006. When adjusted for inflation, this equates to **\$4.1 billion (2019 dollars)**. That study included three major cost components: cost of health care; cost of lost productivity (foregone earnings); and other costs.

In 2010, the Centers for Disease Control (CDC) evaluated the impact of excessive drinking on the national economy and found that excessive alcohol use cost the United States \$249 billion or \$2.05 per drink.⁹ Researchers estimated that over three-quarters of these costs (77 percent) were associated with binge drinking.¹⁰ At the state level, the CDC estimated that excessive drinking cost Oregon \$3.5 billion.¹¹ When adjusted for inflation, this equates to **\$4.2 billion (2019 dollars)**.

The **\$4.8 billion** calculated in this analysis is a 16.4-percent increase from ECONorthwest’s 2008 report and a 14.5-percent increase from the CDC’s estimate. As previously mentioned, a key difference is that this analysis focuses primarily on aggregating the state-level expenditures stemming from excessive drinking. However, in addition to changes in data sources, we believe that the changes in population, health care costs, and binge drinking intensity are all potential drivers of explaining the increasing costs. The strength or significance of any of these explanatory variables, however, is unknown without performing a detailed econometric analysis.

Conclusion

In summary, we estimate that excessive drinking cost Oregon’s economy **\$4.8 billion** in 2019. The economic losses stemming from excessive alcohol use represented approximately 2 percent of Gross State Product in 2019.¹² These costs were borne broadly across the population through the economic and social harm caused from excessive alcohol consumption. Individuals who themselves did not drink to excess may have still felt some harm indirectly through diverted public expenditures, increased costs of health care, crime, and lower worker productivity.

⁸ ECONorthwest. 2008. *The Economic Costs of Alcohol and Drug Abuse in Oregon in 2006*. Portland, OR: ECONorthwest.

⁹ See Sacks, J.J., et al. 2015. “2010 National and State Costs of Excessive Alcohol Consumption.” *American Journal of Preventative Medicine* 45, no. 5. e73-e79.

¹⁰ The CDC defines binge drinking as “four or more alcoholic beverages per occasion for women or five or more drinks per occasion for men.”

¹¹ Centers for Disease Control. 2019. “Excessive Drinking is Draining the U.S. Economy.” Atlanta, GA: U.S. Department of Health and Human Services. Retrieved from: <https://www.cdc.gov/alcohol/features/excessive-drinking.html#:text=Excessive%20alcohol%20use%20is%20known,to%20losses%20in%20workplace%20productivity>.

¹² U.S. Bureau of Economic Analysis. 2020. “Total Gross Domestic Product for Oregon [ORNGSP].” St. Louis, MO: FRED, Federal Reserve Bank of St. Louis. Retrieved from <https://fred.stlouisfed.org/series/ORNGSP>.

When averaged across the population, the costs associated with excessive alcohol consumption amounted to approximately \$1,100 per person in 2019.¹³ Importantly, this does not capture the distribution of harm by region, or within the population. Although consumption positively correlated with income, many social costs explored in this analysis such as medical care, criminal justice, and labor instability fall disproportionately on lowest income populations¹⁴.

Policy solutions seeking to minimize the harm associated with excessive drinking will need to wrestle both with the efficacy of those strategies, along with the inequitable distribution of social costs imposed across socioeconomic status. A subsequent phase of this study, to be completed in the summer of 2021, will seek to describe how various pricing strategies could be used to mitigate the social harm of excessive alcohol use, along with the equity considerations for communities affected by the proposed policies.

Table 1. Economic Costs of Excessive Drinking in Oregon, 2019 (Millions)

Major Cost Category	Cost (2019\$)	Cost Share
Total Economic Costs	\$4,796.72	100.0%
Lost Worker Productivity Total	\$2,185.95	45.6%
Impaired worker productivity	\$993.91	20.7%
Absenteeism	\$979.67	20.4%
Mortality	\$212.38	4.4%
Criminal Justice and Motor Vehicle Crashes Total	\$1,303.19	27.2%
Motor vehicle crashes	\$539.61	11.2%
Crime victims (intangible costs)	\$487.09	10.2%
Corrections expenditures	\$190.55	4.0%
Crime victims	\$33.16	0.7%
Property damage losses	\$24.19	0.5%
Enforcement for alcohol-attributable crimes	\$22.04	0.5%
Fire losses	\$5.87	0.1%
Private legal expenditures	\$.68	0.0%
Health Care Total	\$702.06	14.6%
FASD health care	\$569.00	11.9%
Nursing home care	\$57.24	1.2%
Hospitalization	\$50.48	1.1%
Ambulatory care	\$16.47	0.3%
Emergency care	\$8.86	0.2%
Education and Social Welfare Total	\$605.51	12.6%
Children and family welfare	\$297.09	6.2%
FASD special education	\$176.51	3.7%
Prevention and research	\$75.49	1.6%
Alcohol treatment	\$53.00	1.1%
Regulation and compliance	\$2.21	0.0%
Training	\$1.21	0.0%

Source: ECONorthwest

¹³ U.S. Census Bureau. 2020. "Total Population" Table B01003, 2019 ACS 1-Year Estimates.

¹⁴ Karriker-Jaffe, K., et al. 2013. "Income Inequality, Alcohol Use, and Alcohol-Related Problems." *American Journal of Public Health* 103, no. 4. 649-656.