

The Potential Economic and Social Effects of an Alcohol Tax Increase in Hawai‘i

Alicia Sparks, PhD, MPH

Layne Nakano

Bobby Do

Amelia Arechy

Richard Collins, MS, CPS

David Jernigan, PhD

Victoria Fan, ScD

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Correspondence to:

Pacific Health Analytics Collaborative (phac@hawaii.edu)

Contents

Executive Summary	3
Introduction.....	4
Alcohol Consumption and Related Harm in Hawai‘i	4
National Trends.....	4
Hawai‘i Data	4
Costs of Harmful Use of Alcohol Use	6
Underage Drinking.....	6
Why an Alcohol Tax	6
Economic Effects of a Ten Cent Increase in Hawai‘i’s Alcohol Excise Tax	8
Modeling Public Health Effects of a \$0.10 per Drink Tax Increase	9
Consumption	9
Revenue Impact	11
Impact on Productivity.....	11
Impact on Jobs	12
Health Effects.....	12
Conclusion	15
References.....	16
Appendices.....	19
Methodology.....	19
Definitions.....	20

Executive Summary

- Alcohol use is associated with 304 deaths in Hawai‘i each year,¹ and it is estimated that excessive alcohol use shortened the lives of those who died in Hawai‘i by an average of 27.2 years.²
- Alcohol costs the state of Hawai‘i \$937M per year, with the government responsible for \$369M of those costs (the equivalent of \$0.62 per drink) in lost productivity, premature death, illness, crime, and more. Binge drinking alone accounts for 75% of total costs (\$702M).³
 - According to the latest CDC estimates, alcohol costs the U.S. nearly \$250 billion each year in health care, lost productivity, crime, motor vehicle crashes, and more.³
 - Hawai‘i lost \$675M in productivity costs due to excessive alcohol use in 2010⁴ – adjusting for inflation, this is approximately \$856M in 2021.
- Science says alcohol taxes reduce alcohol-related harm, including underage drinking, traffic crashes, violence, crime, and more.⁵
- Hawai‘i’s alcohol taxes have not been raised since 1998, and do not keep pace with inflation. As a result, alcohol excise taxes account for just 0.29% of total state tax revenue.
- A ten-cent increase in the tax on alcohol sold in off-premise establishments will lead to \$58M in new revenue for the state of Hawai‘i, and 6.9% decrease in alcohol consumption among adults.
- The increase will reduce alcohol use disorders by 7% or 5 people each year in Hawai‘i.
- The decrease in alcohol consumption associated with the tax increase will result in an annual increase in economic productivity of \$59M; this is a conservative estimate.
- A ten-cent increase in the alcohol tax will lead to a net *increase* of 1,500 jobs in Hawaii.
- A ten-cent increase in the alcohol tax will cost non-drinkers (47% of Hawaii's population) nothing, non-excessive drinkers \$4.64 cents per year, and excessive drinkers \$26.70 per year.

Introduction

Hawai‘i last raised its alcohol tax in 1998, when Bill Clinton was President and Ben Cayetano was re-elected to his second term as Governor.

A rigorous body of scientific literature make it clear that alcohol excise tax increases reduce excessive drinking rates, save lives, reduce costs associated with excessive alcohol use¹, create and preserve jobs, and prevent and reduce alcohol-related harms.⁵ Increasing the alcohol tax can greatly benefit the state of Hawai‘i – it reduces high-risk alcohol consumption, including underage drinking, provides additional revenue for the state, and creates new jobs for further economic development.

Alcohol Consumption and Related Harm in Hawai‘i

National Trends

Alcohol use has been rising across the United States, with a seven-point increase in past year drinkers between 2001 and 2012, with a simultaneous increase in frequency of the number of days people reported drinking each year.⁶ There has been an accompanying increase in alcohol-related harm. For example,

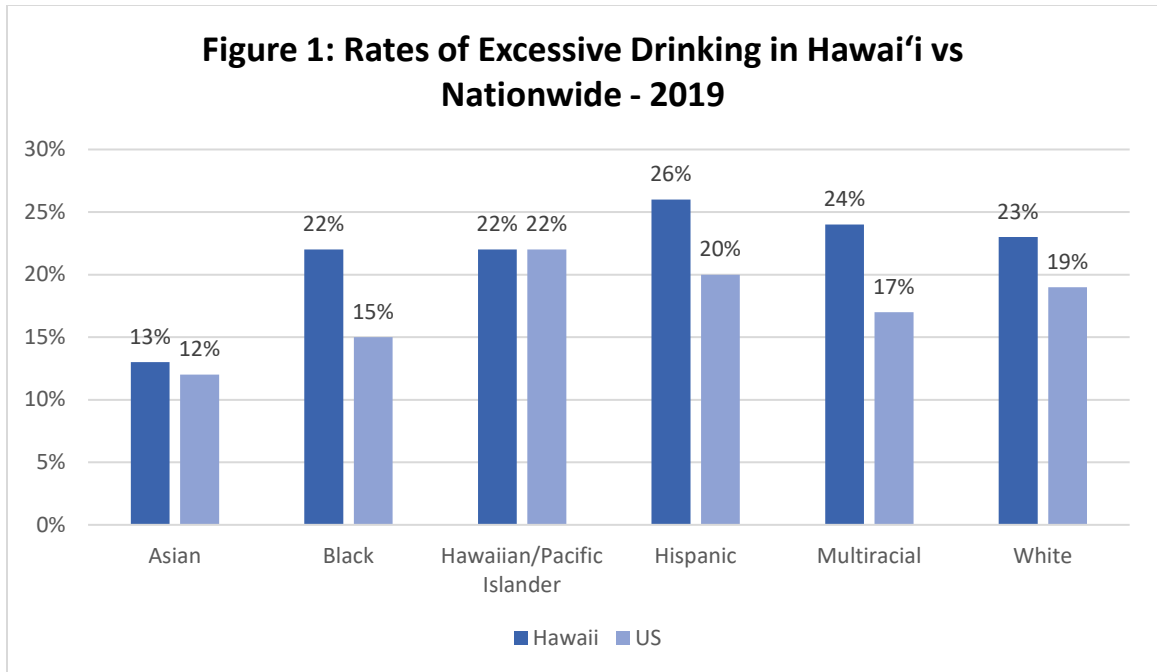
- Between 1999 and 2017, death rates from alcohol more than doubled.⁷ Across the same time period, age-adjusted death rates for alcoholic liver disease increased by 41%, particularly among women (3.4 times higher for women than men) and young adults (157% increase among those ages 25-34 years old).⁸
- Between 2006 and 2014, there was a 62% increase in alcohol-related emergency department visits, costing the U.S. \$15.3 billion.⁹

These rates have continued to increase, particularly during the COVID-19 pandemic. A study of U.S. adults in May 2020 found that 60% of respondents reported an increase in their alcohol consumption since the pandemic began.¹⁰ A study of the number of drinking days between May 2019 and May 2020 also found in an increase in alcohol consumption, particularly for women and adults ages 30-59. Again, trends in harms followed, with a 39% increase in women reporting alcohol-related problems between 2019 and 2020.¹¹

Hawai‘i Data

Alcohol use in Hawai‘i is somewhat similar to national rates, with some key exceptions regarding excessive drinking.¹² Men in Hawai‘i drink excessively slightly more than the national average (25% compared to 23%), as do people over the age of 65 (10% compared to 8%). Across most racial/ethnic categories, rates of excessive drinking are higher in Hawai‘i than the US average. Figure 1 provides the rates across each category.

¹ Excessive drinking is defined by the CDC as binge drinking (defined as consuming 4 or more drinks on an occasion for a woman or 5 or more drinks on an occasion for a man); heavy drinking (defined as 8 or more drinks per week for a woman or 15 or more drinks per week for a man); and any alcohol use by pregnant women or anyone younger than 21.



Source: United Health Foundation¹²

According to the Centers for Disease Control and Prevention, in 2019 5% of middle school students in Hawai'i reported binge drinking in the past 30 days, as did 11% of high school students. When analyzing any alcohol consumption in the past 30 days, rates were higher: 7% among middle school and 20% for high school students.

The negative effects of excessive alcohol use are numerous, and such use directly affects Hawai'i's residents, their families, their communities, and the state overall. Excessive alcohol use has negative effects on health, including high blood pressure, heart disease, liver disease, seven different types of cancer, a weaker immune system, depression and anxiety, learning and memory problems, and much more. Additional risks include motor vehicle crashes, drownings, falls, violence (homicide, suicide, sexual assault, and intimate partner violence), alcohol poisoning, risky sexual behaviors, and poor fertility/pregnancy outcomes.¹³

Underage drinking is associated with its own set of harms, including school, legal, and social problems; unwanted, unplanned, and/or unprotected sexual activity; physical and sexual violence; suicide and homicide; motor vehicle crashes; misuse of other substances; and more.¹⁴

In Hawai'i, specific harms include:

- **Driving Under the Influence:** Driving under the influence accounted for 31% of all non-traffic related arrests in 2020.¹⁵
- **Fatal Car Crashes:** Of the 146 drivers who were involved in fatal crashes in 2019, 30% had alcohol in their system, and 24% of them had a blood alcohol content over the legal limit of 0.08.¹⁶
- **Sexual Assault:** In 2004 (the latest year data were available), 54% of all sexual assault perpetrators in Honolulu used alcohol prior to the assault; this number is likely an underestimation based on ability to collect data from the perpetrator.¹⁷

Costs of Harmful Use of Alcohol Use

In the U.S., alcohol costs \$249B, \$100B of which is paid by the U.S. government. Of that \$249B, \$191B can be attributed to binge drinking and \$24B to underage drinking. These costs can be further broken down by category, as shown in Figure 2.³

Figure 2: Costs of Alcohol in the United States, 2010

Cost Category	Total Costs	Government Costs	Binge Drinking	Underage Drinking
Health care ¹	\$28,379,100,000	\$16,915,100,000	\$16,273,800,000	\$3,795,800,000
Lost productivity ²	\$179,084,900,000	\$57,219,000,000	\$134,035,400,000	\$13,666,600,000
Other ³	\$41,562,500,000	\$26,540,700,000	\$40,817,700,000	\$6,806,000,000

¹Health care costs include specialty care for alcohol misuse/use disorders, hospitalization, ambulatory care, nursing home care, drugs/services, fetal alcohol syndrome, prevention and research, training, and health insurance administration

²Lost productivity costs include impaired productivity at work and at home, absenteeism, impaired productivity while in specialty care, impaired productivity while in the hospital, mortality, incarceration of perpetrators, crime victims, and fetal alcohol syndrome

³Other includes crime victim property damage, corrections, alcohol-related crimes, violent and property crimes, private legal expenses, motor vehicle crashes, fire losses, and special education related to fetal alcohol syndrome.

Source: Sacks et al³

The most recent data from CDC indicates that excessive alcohol use in Hawai‘i costs the state \$937,400,000 or \$1.58 per drink, for which the state government pays 39% of these costs or \$369,200,000 (\$0.62 per drink).³ Binge drinking accounts for 75% of total alcohol costs in Hawai‘i.

Underage Drinking

Alcohol consumption among those under the age of 21 years cost the United States \$24 billion in 2010, with an average cost of \$350M to states.³ Alcohol companies gain significant revenues from underage consumption. In 2016, underage drinkers consumed alcohol worth an estimated \$17.5 billion nationwide.¹⁸

Why an Alcohol Tax

Data on alcohol taxes has been mounting for over fifty years. A review of 50 studies found statistically significant reductions in alcohol-related disease and injury (35%), traffic crashes (11%), sexually transmitted infections (6%), violence (2%), and crime (1%) as a result of a doubling of the alcohol tax.⁵ These trends also affect underage drinkers – as the price increases, consumption and alcohol-related harms among those under the age of 21 years decrease.^{19,20}

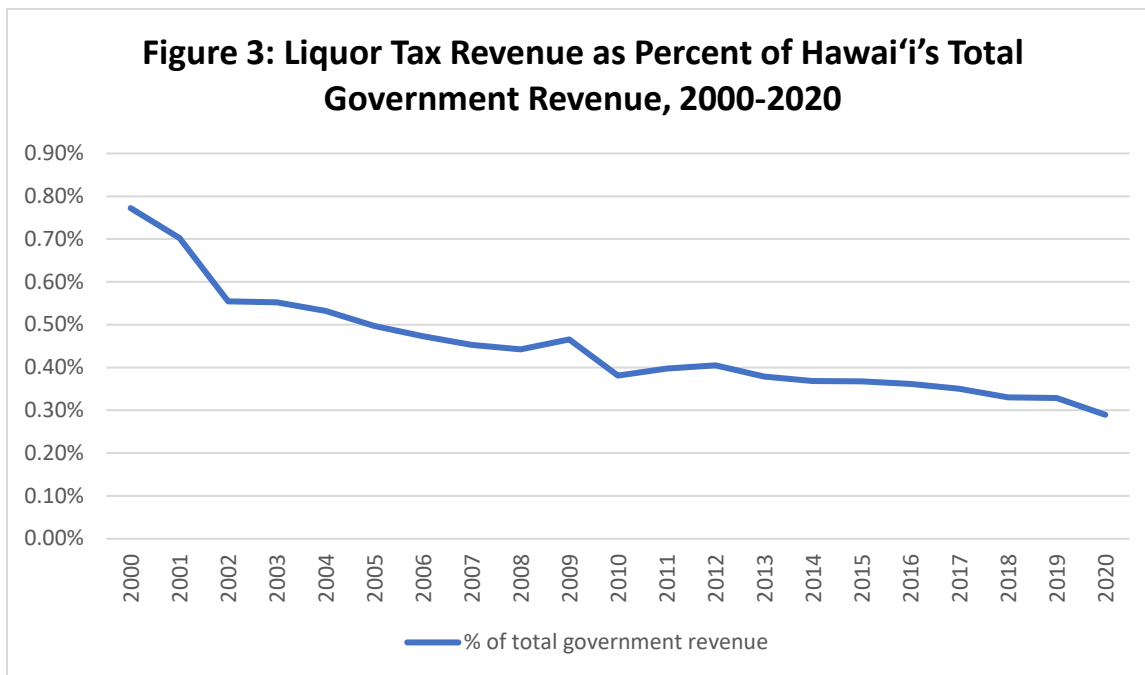
Excessive drinkers pay the most for increases in alcohol taxes, not those who drink occasionally or moderately. One study found that if the alcohol tax were increased by \$0.25, those who engage in risky drinking patterns would pay almost 83% of the total tax increase. This study also found that those who paid the most in net tax increases were white, male, between the ages of 21 and 50 years, earning equal to or more than \$50,000 per year, employed, and had a college degree.²¹ This means that drinkers with higher household incomes pay more alcohol costs when alcohol taxes are raised than those with lower incomes, suggesting that the taxes are much less regressive than they may appear. In fact, a study specifically on whether alcohol taxes are regressive found that if there are regressive effects, they are small and primarily concentrated among the heaviest drinking populations.²² In addition, the benefits of alcohol taxes – more funding for government services – are clearly progressive, since lower-income people are far more likely to use those services.

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As an additional benefit, taxes raise revenue. A Congressional Budget Office Report identified raising the price of alcohol as a mechanism for reducing the deficit and found that even a modest increase in alcohol taxes could raise more than \$70 billion over a ten-year period. This does not account for the money saved due to decreased costs associated with excessive alcohol use, as discussed above.²³

Importantly, the price of alcohol in the U.S. has actually decreased over time when accounting for inflation. Between 1991 and 2015, alcohol excise taxes declined 30% for beer, 32% for distilled spirits, and 27% for wine. Tracking all the way back to when states first implemented their alcohol excise taxes, the percentage decline was more than twice the 1991-2015 numbers, suggesting taxes have declined up to 60% over time.²⁴

Hawai'i's data tell a similar story, with a substantial decrease in the percent of total government revenue resulting from liquor taxes between 2000 and 2020. As Figure 3 shows, in 2000 liquor accounted for .77% of total government revenue; by 2020, this decreased to .29%. This is largely due to the tax not keeping pace with inflation.

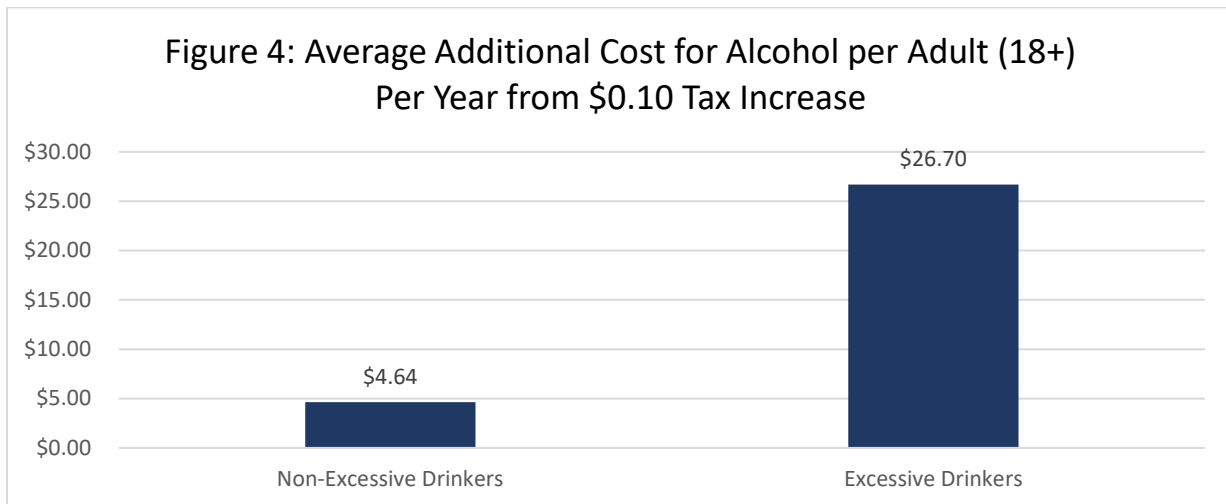


Source: Authors' calculation using State of Hawaii Department of Taxation Liquor Tax Collections and Permits 2000-2020 and State of Hawaii Annual Financial Report 2000-2020

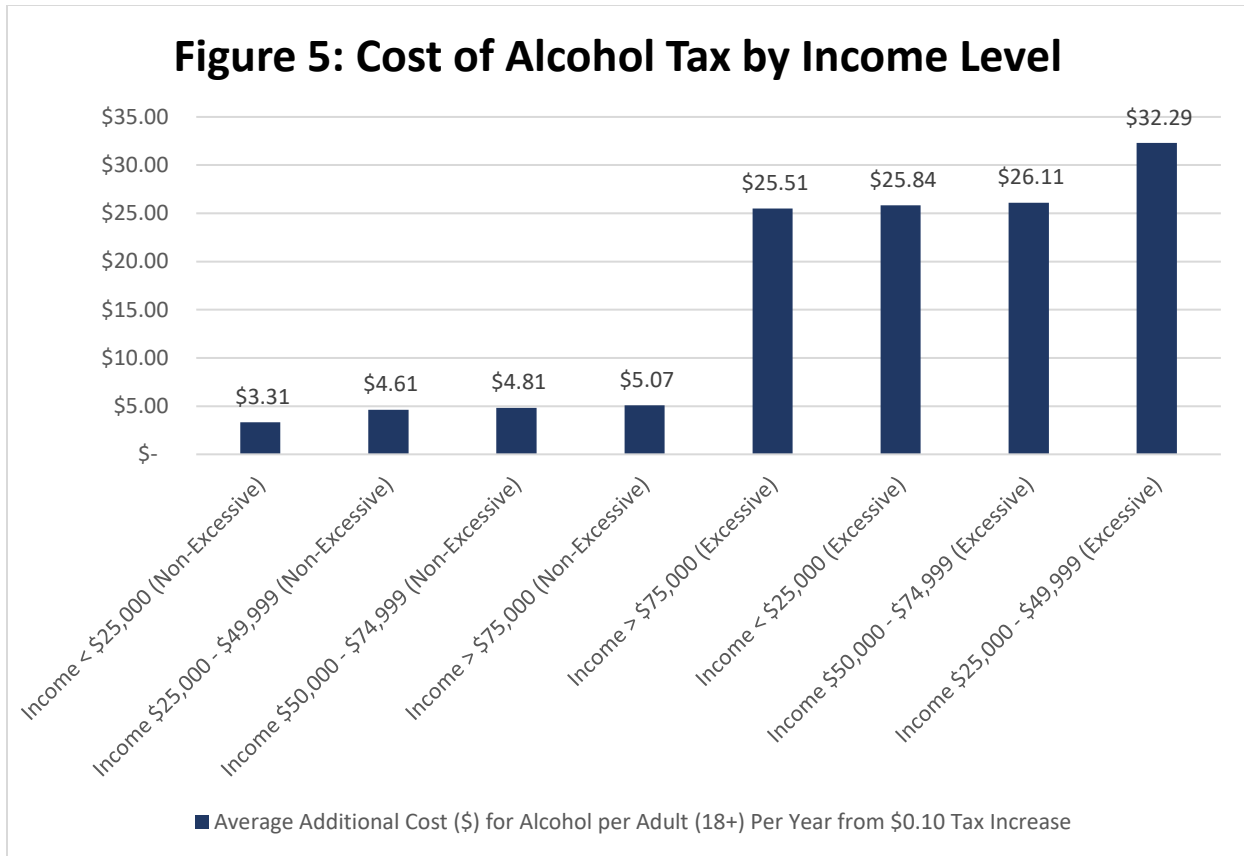
Economic Effects of a Ten Cent Increase in Hawai‘i’s Alcohol Excise Tax

Excessive drinkers would pay substantially more than non-excessive drinkers. The average additional amount spent on alcohol each year if the tax were raised \$0.10 per drink would be \$4.64 among non-excessive drinkers, compared to \$26.70 among excessive drinkers (Figure 4). These patterns hold when comparing employment status of those who drink excessively and those who don’t. Employed non-excessive drinkers would pay an additional \$4.53 while unemployed non-excessive drinkers would pay \$4.82 more annually. Among excessive drinkers, those who are employed would pay an additional \$26.06 annually and those not employed would pay \$28.06 (Figure 5). These data make it clear that the tax burden of a dime a drink increase will be predominantly absorbed by those drinkers at the highest risk of excessive alcohol use and related harm.

Analyzing additional costs by income level show that level of drinking is a greater driver of cost than income, and that even among excessive drinkers who will pay the most, differences in expenditure are minimal across income levels, ranging from \$25.51-\$32.29.



Source: The Center on Alcohol Marketing and Youth³⁷



Source: The Center on Alcohol Marketing and Youth³⁷

Though excessive drinkers with incomes less than \$25,000 and between \$25,000 and \$49,999 will pay more because of the tax than other income levels, the additional revenue that this tax will provide the government can be put into programs that are specifically focused on lower income populations. Additionally, lower risk drinkers from lower income groups would see an economic benefit from the alcohol tax increase if the revenue were utilized in this way.²¹ Importantly, the health improvements resulting from an alcohol tax are likely to disproportionately effect lower income residents, given that this population experiences the greatest risk of alcohol-related harm.^{22,25} Thus, the potential benefits of this tax policy far outweigh the slightly regressive nature of the tax among excessive drinkers.

Modeling Public Health Effects of a \$0.10 per Drink Tax Increase

Consumption

Research consistently shows that increasing the price of alcohol results in decreases in consumption. A review of 110 studies concluded that when the price of alcohol goes down, sales increase, and that the reverse is also true: as taxes and prices rise, sales and consumption fall.¹⁹ This relationship holds true for all alcohol consumption, heavy drinking, and, importantly, underage drinking. Youth are highly price-sensitive, meaning that their purchasing behavior is very likely to change as price changes.²⁶⁻²⁸ Studies have shown that based on price elasticity, a 10% increase in price or tax is associated with a 3% decrease in drinking among high school students,²⁹ a 5% decrease in heavy drinking among 16-21 year olds,³⁰ a 10% decrease in binge drinking for men aged 18-21 and a 35% decrease in binge drinking among women of the same age.³¹

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Price elasticity is the amount that consumption will decline as a result of tax increases. The U.S. Community Preventive Service Task Force (Task Force) estimated the price elasticities for the three categories of alcohol and for alcohol overall:³²


- Beer consumption: -0.50, which means beer consumption would be expected to decrease 5% for every 10% increase in price.
- Wine consumption: -0.64, which means wine consumption would be expected to decrease 6.4% for every 10% increase in price.
- Spirits consumption: -0.79, which means spirits consumption would be expected to decrease 7.9% for every 10% increase in price.
- Total alcohol (ethanol) consumption: -0.77, which means total alcohol consumption would be expected to decrease 7.7% for every 10% increase in price.

Figure 6 shows the number of drinks purchased in 2018 and 2019 and changes in consumption. Based on DOTAX data, estimates suggest there were a total of more than 656M alcoholic drinks sold in 2019: 286M beers (266.92 per-capita), 250M servings of distilled spirits (233.79 per-capita), and 120M servings of wine (112.56 per-capita). It is important to note that these totals include all alcohol purchased in the state of Hawai‘i, and represents both residents and tourists.

Figure 6: Changes in Drinks Purchased, Hawai‘i, 2018-2019


Type of Alcohol	Number of Drinks per-capita 2018	Number of Drinks per-capita 2019	Difference	Changes in Overall Purchases 2018-2019
Beer	266.63	266.92	0.29	0.11%
Wine	114.57	112.56	-2.01	-1.76%
Distilled Spirits	221.35	233.79	12.44	5.62%
Totals	602.55	613.27	10.72	3.97%

Source: Authors’ calculations



18 months after Maryland passed their alcohol tax, the state saw a 3.8% decline in the total alcohol sold. Liquor sales decreased by 5.1%, beer sales were 3.2% lower, and wine was 2.5% lower.³³

A dime a drink increase in the alcohol tax may also reduce the number of middle and high school youth who report binge drinking by 428, and the number of adults by 12,614 in Hawaii. These are substantial numbers given the costs of high risk drinking among these populations.



Between 2011 and 2016, there was a 17% reduction in binge drinking by Maryland adults – this was much greater than the 6% reduction nationally. There was also a 26% reduction in the percentage of Maryland high school students reporting drinking in the past 30 days and a 28% reduction in binge drinking.³⁴

Figure 7 summarizes the projected increase in the price per drink, the tax per drink, and the overall price increase as a result of a time a drink increase. Though the tax increase appears large in terms of the percentage, it still represents a small percentage of the overall consumer price, between 5 and 13 percent. This discrepancy is due to the fact that inflation has steadily chipped away at the real dollar value of Hawai‘i’s alcohol tax.

Figure 7: Modeling Results – Increase in Price per Drink

Type of Alcohol	Number of Drinks 2019	Current price per drink	New tax per drink	New price per drink	Tax as % of price	Price Increase
Beer	285,555,693	\$0.91	\$0.19	\$1.01	18.52%	10.98%
Wine	120,418,486	\$1.76	\$0.15	\$1.86	8.26%	5.67%
Distilled Spirits	250,105,935	\$0.79	\$0.17	\$0.89	19.06%	12.62%
Totals	656,080,114					

Source: Authors' calculations

Figure 8 shows the results of changes in alcohol consumption and tax revenues as a result of a dime a drink alcohol excise tax increase. We used the elasticities identified by the Task Force above (-0.50 for beer, -0.64 for wine, and -0.80 for distilled spirits). The table illustrates the win-win nature of alcohol tax increases: alcohol consumption and problems are likely to decrease, at the same time that the State is able to raise more revenues. A dime a drink increase in the alcohol excise tax would lead to \$58M additional revenue for the State, with an overall decrease in alcohol consumption of 6.9%.

Figure 8: Modeling Results – Consumption and Revenues

Type of Alcohol	Price Increase	Elasticity	Consumption Decrease	New Number of Drinks	New Tax Revenue	Increase in Annual Revenues
Beer	10.98%	-0.50	-5.49%	269,874,143	\$50,517,066	\$25,620,179
Wine	5.67%	-0.64	-3.63%	116,049,563	\$17,860,753	\$11,369,443
Distilled Spirits	12.62%	-0.80	-10.09%	224,859,902	\$38,243,750	\$20,716,795
Totals			-6.90%	610,783,608	\$106,621,570	\$57,706,419

Source: Authors' calculations

Revenue Impact

An increase of \$0.10 in the alcohol excise tax would not only have health benefits for the state of Hawai‘i, but economic benefits as well. As shown in Figure 8, Hawai‘i would receive an additional \$58M each year in tax revenue. These funds can be used to curb existing costs associated with health care; the prevention of, treatment for, and recovery from substance use disorders; underage drinking prevention; primary and secondary education; and more. As discussed further below, these additional funds would likely maintain and generate new jobs in Hawai‘i.

Impact on Productivity

Excessive alcohol consumption leads to lost productivity from alcohol-related disability, institutionalization, crime, and illness.³⁵ A study of nearly 3,300 Norwegian workers found that those who reported binge drinking were nearly four times as likely to report impaired daily activities at work as those who never or rarely had binge drinking episodes.³⁶ In the U.S., the lost productivity of workers due to alcohol dependence was estimated at \$61.3 billion dollars in 2010.³⁷ This does not account for missed work, crime, and other losses in productivity associated with alcohol misuse. In fact, the CDC estimates that the vast majority alcohol-related costs are due to losses in workplace productivity – 72% of the \$249 billion that excessive alcohol use costs the US each year.⁴ In Hawai‘i, this resulted in \$675M in lost productivity costs due to excessive alcohol use – adjusting for inflation, this is approximately \$856M in 2021.

As a result of a dime a drink increase in the alcohol excise tax, the decrease in alcohol consumption would result in an increase in economic productivity in the state equivalent to over \$59M. This is likely an underestimate in overarching productivity gains resulting from this tax.

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A \$0.10 alcohol tax would raise approximately \$58M in revenue. Although this is but a fraction of the overarching costs of excessive alcohol use in the state, this tax revenue could begin to reduce this economic burden.

Impact on Jobs

A common argument against increasing alcohol taxes is that the alcohol industry creates and maintains jobs that would be lost if the price of alcohol increases.³⁸ However, analysis shows that the revenue raised as a result of this tax increase can actually result in the preservation of existing jobs and the creation of new ones.³⁹ According to a study that used macroeconomic modeling to assess the impact on employment across the entire state economy, a dime a drink increase in the state's alcohol tax would result in a *net* increase of 1,556 new jobs were the funds to support general government services such as education and law enforcement, or 434 jobs if funds paid for health care workers such as doctors or nurses.⁴⁰

Health Effects

The estimated 6.9% decrease in alcohol consumption in Hawai‘i has the potential to have a substantial impact on health. Nationwide, reviews have shown that a 10% increase in the price of alcohol would result in a 7% decrease in the motor vehicle rate, a 6% drop in suicides, and a 32% decline in cases of liver cirrhosis.²⁸ Below are the estimated reductions in morbidity and mortality associated with a \$0.10 increase in the alcohol tax in Hawai‘i. It is important to note that decreases in morbidity and mortality would likely be greater than these estimates, because the impact of the tax would not be evenly distributed and excessive drinkers would experience greater effects than occasional drinkers. Overall, research has shown that alcohol taxes reduce:⁵

- Sexual assault
- Child abuse
- Probability of victimization
- Fights
- Violent injury
- Suicide
- Alcohol-related motor vehicle crashes
- Crash fatality rates
- Probability of drink driving
- Rates of sexually transmitted infections
- Probability of detention
- Alcohol-related property damage
- Probability of being a robbery victim
- Robbery
- Excessive and non-risky drinking
- Adult and youth drinking

Below we estimate the reduction in some of these harms as a result of a dime a drink increase in Hawai‘i’s alcohol excise tax.

Behavioral Health Conditions

The co-occurrence of alcohol use and mental disorders is common, and a tax would decrease the number of adults served specifically by state mental health facilities and youth registered for state mental health services by 4,675. These data do not capture those who receive mental health services in private facilities, or the large number of individuals who may be in need of mental health services who never access or receive treatment. As a result, the decrease in individuals presented here is likely a conservative estimate of the reduction in co-occurring alcohol use and resulting mental health needs. It can also be expected that Hawai‘i would see a reduction of 5 people over the age of 18 reporting an alcohol use disorder, though again, this is likely a conservative estimate (Figure 9).

Figure 9: Modeling Results of Tax Increase – Behavioral Health Conditions

Condition	Total Number	Percent Related to Alcohol Consumption	Total Related to Alcohol Consumption	Total Decrease – by Scenario
				Dime a Drink Increase
Alcohol Use Disorder	67	100%	67	-5
Any Mental Illness	185,000	36.6%	67,710	-4,675

Source: Authors’ calculations


Deaths

A \$0.10 increase in alcohol taxes will likely reduce alcohol-related deaths. Data suggest that each year, Hawai‘i will lose three fewer people in traffic crashes, experience seven fewer deaths from liver cirrhosis, and prevent at least one death from homicide (Figure 10).

Figure 10: Modeling Results of Tax Increase – Alcohol-Related Deaths

Condition	Total Number	Percent Related to Alcohol Consumption	Total Related to Alcohol Consumption	Total Decrease – by Scenario
				Dime a Drink Increase
Traffic Deaths	108	41.7%	45	-3
Cirrhosis Deaths	121	77.7%	94	-6
Homicides	39	31.3%	12	-1

Source: Authors’ calculations

	<p>A 1983 tax increase in Alaska resulted in a 29% decrease in alcohol-related death, and an additional tax in 2002 resulted in a 11% decrease. This means the tax was responsible for 23 fewer deaths per year in 1983, and an additional 21 fewer deaths in 2002. This effect was maintained over time.⁴¹</p>
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Physical Violence

Other physical harms would also likely decrease. Although reported instances of severe violence against children are somewhat rare, this tax would lead to two fewer instances reported per year. Rape and sexual assault would also decrease, with 14 fewer cases of forcible rape and more than 500 fewer reports of sexual assault. Approximately 55% of intimate partner violence incidents can be attributed to alcohol⁴²: a dime per drink increase in price would reduce instances of reported intimate partner violence by 1,925. Cases of aggravated assault would also decrease by 37 cases annually (Figure 11). It is important to note that the data presented here often reflect the most severe harms- even greater declines can be expected for child abuse more broadly, sexual harassment, and other harms along the continuum.

Figure 11: Modeling Results of Tax Increase – Physical Violence

Condition	Total Number	Percent Related to Alcohol Consumption	Total Related to Alcohol Consumption	Total Decrease – by Scenario
				Dime a Drink Increase
Severe Violence against Children	131	27.2%	36	-2
Forcible Rapes	567	37.0%	210	-14
Aggravated Assault	1,894	28.0%	530	-37
Sexual Assault	14,080	53.6%	7,547	-521
Intimate Partner Violence	50,688	55.0%	27,878	-1925

Source: Authors’ calculations


Additional Harms

Harms in several other categories would also likely decrease as a result of this tax increase. For example, there would be 13 fewer cases of Fetal Alcohol Syndrome annually. Sexually transmitted infections are associated with alcohol use, and this tax would result in 60 fewer chlamydia cases, 25 fewer gonorrhea cases, and 1 fewer syphilis case per year, a finding supported by actual experience in the case of Maryland's 2011 alcohol tax increase. Finally, Hawai‘i can expect 351 fewer arrests for driving under the influence each year as a result of this tax increase (Figure 12). These are just examples of additional harms; future research could likely quantify numerous other public health benefits.


Figure 12: Modeling Results of Tax Increase – Additional Harms

Condition	Total Number	Percent Related to Alcohol Consumption	Total Related to Alcohol Consumption	Total Decrease – by Scenario
				Dime a Drink Increase
Fetal Alcohol Syndrome	185	100.0%	185	-13
Chlamydia	6,290	13.8%	868	-60
Gonorrhea	1,278	28.0%	358	-25
Syphilis	206	7.5%	15	-1
Driving Under the Influence	5,086	100.0%	5,086	-351

Source: Authors’ calculations



18 months after Maryland’s alcohol tax was passed, gonorrhea rates decreased 24%, a total of 1,600 fewer gonorrhea cases each year.⁴³



Maryland high school students reported a 31% reduction in riding in a vehicle operated by a driver who had been drinking alcohol in the four years after the alcohol tax was passed.³⁴

Government Service Utilization

In addition to reductions in harms experienced by individuals, this alcohol tax could reduce the utilization of numerous physical and behavioral health services. For example, a \$0.10 tax increase per drink would result in 114 fewer alcohol-related calls to law enforcement (such as for fights, crime, and violence). There would also be a reduction in calls to crisis hotlines of approximately 356 calls per year. Importantly, Hawai‘i could see a reduction of over 500 alcohol-related visits to the emergency department, and this is likely a very conservative estimate due based on how conditions are coded in these settings (Figure 13). This is particularly relevant at a time when hospitals are overtaxed with COVID-19 cases.

All these declines in the need for services would result in cost savings to individuals, families, state funds, and the national budget.

Figure 13: Modeling Results of Tax Increase – Government Service Utilization

Condition	Total Number	Percent Related to Alcohol Consumption	Total Related to Alcohol Consumption	Total Decrease – by Scenario
				Dime a Drink Increase
Law Enforcement Calls	43,969	3.7%	1,644	-114
Crisis Line Calls	138,000	3.7%	5,161	-356
Emergency Department Visits	516,012	1.6%	8,256	-570

Source: Authors’ calculations

Conclusion

A dime a drink increase in the alcoholic beverage excise tax in Hawai‘i has numerous benefits to the state and its residents, including raising substantial government revenue, preserving and creating jobs across the state, and reducing the considerable harms and costs due to alcohol use. Those who drink the most will pay the bulk of the tax, which will primarily affect drinkers in higher income brackets. Overall, this tax will result in a 9.8% average increase in the price of alcohol, and lead to a 6.9% decrease in alcohol consumption. Data from other states that have passed similar taxes show significant revenue, employment, and health benefits resulting from an increase in alcohol taxes.

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Appendices

Methodology

We replicated methods as performed in *The Potential Economic Effects of Alcohol Excise Tax Increases in Maryland* to calculate the percentage decreases in alcohol consumption and various health-related harm as a result of a ten-cent increase in alcohol tax from numerous variables^{44,45}. For the purposes of this study, we used 2019 as our baseline year as it is the most recent year in which the needed data is available and is presumably unaffected by the potential effects of the ongoing COVID-19 pandemic.

Google searches were performed to find the preliminary variables needed for the calculation including dollar tax per gallon of alcohol, dollar sales of alcohol, revenue from alcohol tax, and price elasticity. Specific sources for each variable include the Hawai‘i 2020 Databook¹⁶ and the Hawai‘i State Department of Taxation⁴⁶ (alcohol sales and revenue from liquor tax). We also used Google to search for existing research manuscripts and literature reviews on price elasticity of alcohol with a focus of specific elasticities of wine, beer, and distilled spirits. Sources that did not include the price elasticities for any of the three types of alcohol were excluded. We performed a review of price elasticities for beer, spirits, and wine for all studies and determined it was appropriate to use elasticities from the most recent US source available, the 2010 Community guide.

In Figure 7, we use tax per gallon¹⁶, alcohol sales⁴⁶, and alcohol tax revenue⁴⁶ to calculate the current price and tax per drink as well as current number of drinks sold. After calculating these new variables and adding the ten-cent increase in alcohol tax, we calculated the resulting price and tax per drink as well as the increase in price. In Figure 8, we apply the price elasticities³² of beer, spirits, and wine to the price increase to calculate the percentage decrease in consumption for each of the three types of alcohol. To calculate the total consumption decrease for all alcohol types, we first multiplied the current number of drinks (excluding the ten-cent per drink increase) by the consumption decrease for each type of alcohol to find the decrease in number of drinks per alcohol type. Then we summed the three products to find the total decrease in number of drinks for all alcohol types. Finally, we divided the sum by the total current number of drinks for all alcohol types to determine total consumption decrease for all alcohol types.

In Figure 6 we calculate number of drinks sold per-capita for those in Hawai‘i of age 21 or older. As the Department of Taxation does not specify an age range for sales and revenue data, we assume sales and revenue were generated from individuals of legal age in the state.⁴⁶ For this calculation, the numerator (number of drinks) was calculated in the steps performed above and the denominator was the total population of individuals that were 21 or older in the state of Hawai‘i taken from the 2019 Census.⁴⁷ It is important to note that while the number of drinks (numerator) includes all individuals in the state, the population data (denominator) only includes Hawai‘i residents. As such, these estimates do not include the potential effects of tourism and may be overstated.

For health-related harm, data for total number in the state and percentage related to alcohol consumption were obtained from multiple sources. State data for each harm was preferred. As such, the applicable state data was obtained from the Hawai‘i 2020 Databook if it existed. If the data was not available from the Hawai‘i 2020 Databook, a Google search was performed to find state data if available or national data if state data was not available. Data was traced to the source study to ensure accuracy, reliability, and validity.

Total number of health-related harm in the state and percentage related to alcohol for each harm was used to calculate the total number related to alcohol. We then apply the percentage decrease in consumption to determine percentage decrease of each harm.

CONSULTATION WHITE PAPER VERSION 1.2

In Figure 9, total number of alcohol use disorder and any mental illness were obtained from the 2018-2019 National Surveys on Drug use and Health.⁴⁸ Percentage related to any mental illness was obtained from a 1990 study.⁴⁹ We assumed that 100% of all cases of alcohol use disorder are related to alcohol consumption.

In Figure 10, total number of traffic deaths and percentage of those related to alcohol consumption were obtained from the National Highway Traffic Safety Administration.⁵⁰ Total number of cirrhosis deaths and homicide were obtained from the Hawai‘i 2020 Databook,¹⁶ and the percentage related to alcohol for each were obtained from the CDC’s Alcohol-Related Disease Impact Application⁵¹ and a 2003 National Institute of Justice Journal article.⁵²

In Figure 11, total number of severe violence against children, forcible rapes, aggravated assault were obtained from the Hawai‘i 2020 Databook¹⁶ while total number of sexual assault and intimate partner violence were obtained from Hawai‘i Health Matters.⁵³ Since Hawai‘i Health Matters reported these in percentage totals instead of a number totals, we applied the reported percentages to the population in the state for 2013 from the United States Census Bureau.⁵⁴ Percentage related to these harms were obtained from various sources from the Bureau of Justice Statistics and the Department of the Attorney General Crime Prevention & Justice Assistance Division.^{17,42,55}

In Figure 12, total number of chlamydia, gonorrhea, and syphilis, were obtained from the Hawaii State Department of Health⁵⁶ and percentages related to alcohol were obtained from a 2008 study which investigated alcohol use and sexual behaviors.⁵⁷ Total number of fetal alcohol syndrome and driving under the influence were obtained from a 2012 study and the Federal Bureau of Investigation respectively.^{15,58} We assumed that 100% of all cases of fetal alcohol syndrome and driving under the influence are related to alcohol consumption.

In Figure 13, total number of law enforcement calls, crisis line calls, and emergency department visits were obtained from the Hawai‘i 2020 Databook¹⁶, the Hawai‘i Behavioral Health Dashboard⁵⁹, and the U.S. Department of Health and Human Services⁶⁰ respectively. Percentage related to alcohol for law enforcement calls was obtained from the 2019 National Incident-Based Reporting System from the Federal Bureau of Investigation.⁶¹ We applied the same percentage to crisis line calls. Percentage related to alcohol for emergency department visits was obtained from the Hawai‘i Strategic Prevention Framework website.⁶²

Definitions

- Binge Drinking: Binge alcohol use is defined as drinking five or more drinks (for males) or four or more drinks (for females) on the same occasion (i.e. at the same time or within a couple hours of each other) on at least one day in the past 30 day
- Heavy Drinking – An average of more than 2 drinks per day for men or an average of more than one drink per day for women
- Excessive Drinking: binge drinking, heavy drinking, and any drinking by pregnant women or people under the age of twenty-one.
- Price elasticity: the amount that consumption will decline as a result of tax increases.