

Assessing Alcohol Retail Outlet Density Policy in Utah:

A Health Impact Assessment

Hannah Payne MPH(c), Siena Davis MPH(c), Victor Moxley MPH(c), Sadie Tengelsen MPH(c), Lauren Call MPH(c)

Author Affiliations: Brigham Young University, Provo, Utah

Acknowledgements: The researchers acknowledge the contribution of several individuals throughout the development of this report: Pat Bird, Utah County Health Department; Michael Barnes, BYU Health Science Department; Melva Sine, Utah Restaurant Association; Nina McDermott, Utah Department of Alcoholic Beverage Control.

Suggested Citation: Payne H, Davis S, Moxley V, Tengelsen S, Call L. Assessing Alcohol Policy in Utah: A Health Impact Assessment. Brigham Young University, Dec 2013.

Table of Contents

I.	Key Findings and Executive Summary	1
II.	Introduction	3
III.	Background and Screening.....	4
IV.	Scoping.....	6
V.	Assessment & Findings.....	9
VI.	Recommendations and Monitoring.....	23
VII.	References	26
VIII.	Appendix: Causal Pathway	31

I. Key Findings and Executive Summary

Background

Utah legislators are revisiting alcohol policy as many stakeholders feel current laws are outdated. These include a limit on the number of alcohol retail outlet licenses issued according to population quotas. By lowering the population quotas required for each license, the number of available licenses and the amount of alcohol consumed would increase. A variety of negative health impacts, including increased incidences of rape and sexual abuse, underage drinking, binge drinking, long-term health effects, motor vehicle accidents, and economic decline may follow. The populations most likely to be affected include responsible drinkers, binge drinkers, underage drinkers, those who abstain from alcohol and minority populations.

The decision to conduct this Health Impact Assessment (HIA) was made at the suggestion of Michael Barnes from the Brigham Young University (BYU) Health Science Department, and Pat Bird from the Utah County Department of Drug and Alcohol Prevention and Treatment. Prominent stakeholders and consultants also included Melva Sine from the Utah Restaurant Association (URA), Nina McDermott from the Department of Alcoholic Beverage Control (DABC), various public health officials, and residents of Utah. Key data sources included peer-reviewed journals, interviews with key stakeholders, and census and survey data such as the Behavior Risk Factor Surveillance Survey (BRFSS) and Student Health and Risk Perception (SHARP) survey. Stakeholder concerns addressed in this report include impact on underage youth, binge drinking rates, and the economy.

Research Questions

The HIA team constructed a causal pathway (see Appendix) demonstrating the links between increased alcohol outlet density and health effects to develop the following questions:

- Which health effects are most likely to be impacted by increased alcohol outlet density?
- As economic status is tied to health outcomes, how does alcohol retail density affect Utah economically?
- How does availability of alcohol retail licenses compare with demand, as this gives a better picture of economic impact and thus, health effects?

Findings

The HIA finds that the proposal being assessed would have significant negative impacts on health and the economy (See Table 6). [Recommendations](#)

- Maintain existing alcohol density quotas and license limits.
- Require businesses applying for club licenses to operate for a period of time under more restrictive tavern or restaurant license before receiving a club license.
- Increase alcohol excise taxes. Strong evidence shows that increased taxes have been the most reliable means of encouraging the responsible consumption of alcohol.
- Maintain restrictions on the days, hours, and places that alcohol can be sold.

Intended Next Steps

An extensive body of research on best practices for alcohol control policy has been conducted on local and national levels. The HIA team identified two significant areas for Utah that require additional study to determine the most beneficial policy for Utah:

- Evaluate potential waiting periods to obtain club licenses (e.g. 6 months, 1 year).
- Determine the number of compliant businesses deterred from opening alcohol retail establishments due to alcohol density limits.

II. Introduction

Utah's alcohol policies have been under intense scrutiny and debate by the State Legislature in an effort to make the State's controls on alcohol sale and consumption more lenient, in an attempt to bolster business within the State and make Utah appear friendlier to tourists and national restaurant chains. One of the control policies under more intense scrutiny concerns control of quotas for alcohol retail licenses.

Policymakers are considering lowering the population required to obtain an alcohol retail license. This policy would allow for a greater number of outlets, resulting in increased alcohol consumption. Thus, increasing the number of outlets could adversely impact Utah residents' health. The proposed policy is of moderate significance because (1) drinking, including excess consumption of alcohol, is a relatively mild problem in Utah (12% in Utah vs. 18% in the U.S. overall),¹ (2) economic factors and powers granted to city and county governments limit alcohol density, and (3) the policy aims to adjust an existing legislation rather than develop a novel policy. However, as the policy could negatively affect the health of Utah residents and changing alcohol density laws has been shown to lead to negative health and social outcomes,² an HIA is beneficial.

BYU public health graduate students conducted this HIA from September to December 2014 to assess the health impacts of the proposed policy. While previous HIAs have been conducted to analyze the distribution of alcohol retail establishments and their effect on health outcomes,³ this HIA team made a unique contribution by assessing how demand for licenses and economic impact of the policy could affect health.

Problem and Purpose Statement

Many policymakers advocate loosening Utah's alcohol density laws in an attempt to

bolster the local economy and better cater to consumers. However, the serious and costly health impacts from such a policy change must be considered before any adjustments are made, especially since policymakers and stakeholders often neglect to consider health impacts. This HIA evaluates the potential health impacts of increasing alcohol outlet density.

III. Background and Screening

Background

An HIA is useful to policymakers and stakeholders because it assesses health impacts of a proposed policy using both quantitative and qualitative methods. In addition, it provides recommendations based on research findings to better inform policy.

Overview of HIA Process:

- *Screening:* Determine whether an HIA for the proposed alcohol policy would be feasible, timely and valuable.
- *Scoping:* Consider health impacts of increased alcohol availability. Prioritize research questions and data sources.
- *Assessment:* Gather and analyze evidence to answer research questions.
- *Recommendations:* Prioritize alternative strategies to reduce or maintain alcohol consumption, while allowing for responsible retailers to obtain alcohol retail licenses.
- *Reporting:* Communicate alcohol policy recommendation to stakeholders and legislators.
- *Monitoring:* Evaluate the effectiveness of recommendations.

The Case for HIA

Loosening alcohol density quota policy could potentially result in increased incidences of DUIs, underage drinking, binge drinking, and other third-party harms and costs to society, such as

domestic violence and child abuse. Such incidents incite economic damage: for example, in 2011, the State of Utah spent approximately \$1.57 billion on alcohol, and \$351.9 million was spent by Utah's criminal justice system to pay for crimes related to alcohol.⁴

Alcohol sales increase alcohol excise tax revenue, which funds school lunches, public safety transfer and prevention programs.⁵ There are other positive economic implications that could result from looser alcohol quotas, such as economic growth and increased tourism.

It is feasible to conduct a relevant and timely analysis of the health impacts of proposals related to alcohol quotas and licensing. An intermediate HIA can inform legislators about the health impacts of increasing the availability of alcohol in the Utah. This HIA can be shared with legislators before they make decisions about the anticipated alcohol proposals.

At the 2014 Utah Legislative Alcohol Policy Summit, major decision-makers within the state of Utah voiced the need to consider health impacts from the proposed policy, so it is apparent they would be receptive and open to the findings from this HIA. These stakeholders included the Utah Legislature, Beer and Wine Wholesaler's Association, Utah Restaurant Association, and the DABC.

Based on the widespread interest in Utah's alcohol policy by legislators, retailers, and the community as a whole, an HIA should be conducted to determine the best possible solutions related to health, safety, and economic outcomes. These changes could have a vast impact on the health and wellbeing of Utah communities.

Partners

Interested stakeholders in this policy include government officials, Utah State Legislators, law enforcement agencies, alcohol manufacturers, distributors, and retailers, bar and restaurant business owners, community volunteer organizations, and state and local health departments.

For this HIA, the primary consultants included Pat Bird from the Utah County Health Department Substance Abuse Division, the Substance Misuse and Abuse Reduction Team (SMART), and Michael Barnes from BYU Health Science Department. Secondary informants included Melva Sine from the Utah Restaurant Association, Nina McDermott from the DABC, various public health officials, and residents of Utah.

Conflicts of Interest

Funding for this HIA was provided by BYU, sponsored by the Church of Jesus Christ of Latter-day Saints, which has already vocalized its stance against any change to existing alcohol policy. Information was provided by the Utah County Health Department and similar coalitions; thus, there could be bias to favor the health impact results. While the opinions of researchers in this study are independent from the LDS Church and health department, the HIA team maintained academic integrity and analyzed data objectively.

IV. Scoping

HIA Goals & Purpose of HIA Scope

In their upcoming session, Utah Legislators may consider passing a new law to decrease the population quota required to issue alcohol licenses. The primary goal of this HIA is to provide legislators with a detailed assessment explaining the health impacts of increasing the density of alcohol in Utah. The purpose of the scoping stage is to describe the potential policy, priority health issues, affected populations, data sources, and methods to collect evidence.

Scoping Process

At the start of the scoping phase, the HIA team considered any possible impacts that the proposed policy could have on the health of Utah residents. Additional research revealed that some of the impacts initially proposed were not impacted by loosening alcohol policy. As a result,

health impacts that were not supported by research were excluded from the HIA scope.

Stakeholder Input Process

Pat Bird, a leading stakeholder and public health official, presented to the HIA team his current findings and consulted with the HIA team throughout the development process. The HIA team consulted with other stakeholders at the 2014 Utah Legislative Alcohol Policy Summit. These stakeholders included Utah Senator John Valentine, Dag Rekve from the World Health Organization, Dr. Bob Brewer from the Centers of Disease Control and Prevention (CDC), and James Mosher, an alcohol policy specialist. The HIA team also consulted with Victoria McDowell from The Presidents' Forum of the Distilled Spirits Industry and Paul Pisano from the National Beer Wholesalers Association. At the Summit, presenters emphasized their goal to balance economic development with their two primary concerns of underage and binge drinking.

In the course of the HIA, the team performed a Photovoice, which revealed that Utah residents are concerned with underage and binge drinking. In addition, Utah residents are concerned about the consequences of irresponsible drinking, including sexual assault, adverse birth outcomes, and negative neighborhood climate.

Affected Population

This policy change will affect responsible drinkers, binge drinkers, underage drinkers, and those who abstain from alcohol. Vulnerable populations (such as minorities and youth) will be most affected by the proposed policy. Utah faces a unique challenge, as more than 30.9% of the population is under the age of 18, compared to the national average of 23.3%⁶. Because of this greater proportion of underage youth, underage drinking may be more prevalent in Utah. With just under 15% of the population being Hispanic, and over 35,000 refugees from various countries, there is a significant minority population.⁶ Minority populations, including Hispanics,

Native Americans, and Blacks, are disproportionately affected by alcohol related harms.⁷

This HIA is specifically concerned with Utah State jurisdiction and focuses on the effects within state lines and State Legislative authority. For example, the addition of alcohol retail establishments will affect parking and traffic safety. However, these health effects are local issues that fall under city zoning and are addressed on that level. This HIA needs to be sensitive to the Utah Legislative calendar and present results before the 2015 General Session convenes.

Potential Health Impacts and Causal Pathway

The two direct impacts that would result from loosening alcohol quotas would be more alcohol retail outlets and greater quantities of alcohol consumed. As greater quantities of alcohol are consumed, a plethora of health problems result: underage drinking, binge drinking, intoxicated driving, rape and sexual assault, and long-term health effects.² However, higher quantities of alcohol sold would increase state revenue, resulting in more funds for transportation, school lunches, and underage drinking prevention programs.⁸

More outlets could cause an economic *decline*, as an increased number of bars and other establishments could lead to a negative neighborhood climate⁹. Conversely, economic *growth* could be possible as more outlets may cause increased tourism and employment, potentially leading to better health outcomes (through expendable income and health coverage).¹⁰

Research Questions

The HIA team's highest research priorities are investigating economic impact of alcohol retail density. There exists far less research on this topic and economic consequences are important to legislators. For these reasons, the following research questions were developed:

1. Which health effects are most likely to be impacted by increased alcohol outlet density?
2. As economic status is tied to health outcomes, how does alcohol retail density affect Utah

economically?

3. How does availability of alcohol retail licenses compare with demand, as this gives a better picture of economic impact and thus, health effects?

V. Assessment & Findings

Introduction

As discussed previously, the HIA team constructed a causal pathway (see Appendix) of the various health effects that could result from increased alcohol outlet density. Of the many health effects assessed, this HIA analyzes six: (1) rape & sexual assault, (2) underage drinking, (3) binge & excessive drinking, (4) long-term health effects, (5) motor vehicle incidents and DUIs, and (6) potential economic impact (assessing both potential growth and decline).

Methods

To assess proposed effects, the team conducted an exhaustive literature review to eliminate effects that lacked conclusive evidence. The literature review was performed on various platforms including Google Scholar, EBSCO, and PubMed. Interviews of key stakeholders from the URA, the DABC, and the Utah County Health Department provided information on health and economic outcomes. The HIA team also gathered baseline data from the U.S. Census, IBIS-PH, CDC, DABC, and BRFSS for primary analysis.

Evaluating each of the diverse health effects of alcohol retail establishments requires a common metric. In order to compare disparate effects of various health measures, the HIA team adapted the definitions of characteristics (see Table 1) and scoring rubric (see Table 2) described in *Health Impact Assessment: A Guide for Practice*.¹¹

Table 1: Definitions of Characteristics

Characteristic	Definition
Likelihood	How certain is it that the decision will affect health determinants or outcomes irrespective of the frequency, severity, or magnitude?
Severity	How important is the effect with regards to human function, well-being, or longevity, considering the affected community’s current ability to manage the health effects?
Magnitude	How much will health outcomes change as a result of the decision (i.e., what is the expected change in the population frequency of the symptoms, disease, illness, injury, disability, or mortality)?
Distribution	Will the effects, whether adverse or beneficial, be distributed equitably across populations. Will the decision reverse or undo baseline or historical inequities?

Adapted from Health Impact Assessment: A Guide for Practice by Rajiv Bhatia¹¹

Table 2: Scoring Rubric

Likelihood	Severity	Magnitude	Distribution
<p><u>Insufficient Evidence/ Not Evaluated (0)</u></p> <p><u>Unlikely/ Implausible (1)</u> Logically implausible effect; substantial evidence against mechanism of effect</p> <p><u>Possible (2)</u> Logically plausible effect with limited or uncertain supporting evidence</p> <p><u>Likely (3)</u> Logically plausible effect with substantial and consistent supporting evidence and substantial uncertainties</p> <p><u>Very Likely/ Certain (4)</u> Adequate evidence for a causal and generalizable effect</p>	<p><u>Insufficient Evidence/ Not Evaluated (0)</u></p> <p><u>Low (1)</u> Acute, short-term effects with limited and reversible effects on function, well-being, or livelihood that are tolerable or entirely manageable within the capacity of the community health system</p> <p><u>Medium (2)</u> Acute, chronic, or permanent effects that substantially affect function, well-being, or livelihood but are largely manageable within the capacity of the community health system; OR Acute, short-term effects on function, well-being, or livelihood that are not manageable within the capacity of the community health system</p> <p><u>High (3)</u> Acute, chronic, or permanent effects that are potentially disabling or life-threatening, regardless of community health system manageability; OR Effects that impair the development of children or harm future generations</p>	<p><u>Insufficient Evidence/ Not Evaluated (0)</u></p> <p><u>Limited (1)</u> A change of less than one-tenth of 1% in the population frequency of a health endpoint</p> <p><u>Moderate (2)</u> A change of between 0.1% and 1% in the population frequency of a health endpoint</p> <p><u>Substantial (3)</u> A change of greater than 1% in the population frequency of a health endpoint</p>	<p><u>Insufficient Evidence/ Not Evaluated (0)</u></p> <p><u>Disproportionate Harms (2)</u> The decision will result in disproportionate adverse effects to populations defined by demographics, culture, or geography</p> <p><u>Disproportionate Benefits (1)</u> The decision will result in disproportionate beneficial effects to populations defined by demographics, culture, or geography</p> <p><u>Restorative Equity Effects (0)</u> The decision will reverse or undo existing or historical inequitable health-relevant conditions or health disparities</p>

Adapted from Health Impact Assessment: A Guide for Practice by Rajiv Bhatia¹¹

Baseline Data

The HIA team determined the number of alcohol retail establishments by cross-referencing data from the DABC, population estimates from the Utah Population Estimates Committee, and County Business Patterns data from the U.S. Census Bureau.^{12,13}

Table 3: Baseline Health Effect Data

Utah Population	2,900,872 ¹²	
	Count	Density
Alcohol Establishments (2014)	1,795	1 per 1,616 residents
	Count	Prevalence
Binge drinking (2011)	348,104	12% ¹
Underage Drinking in lifetime (2009-2013)	522,156	18% ¹⁴
Long-term Health Effects (2013)	622	0.02% ¹⁵
Sexual Assault (2012)	258,177	8.9% ¹⁶
Motor Vehicle Deaths per year (2013)	192 ⁶	0.006%

Table 4: Baseline Demographic Data

Utah Population	State	U.S.
% of Utah Population 2011		
% of persons living in poverty, 2011	13.6	15.3
% of white population, 2007-2011	89.3	74.1
% of Hispanic population, 2010	12.9	16.3
Unintentional injury death rate per 10,000 (2007-2009)	34.3	
Emergency Dept. encounters (Unintentional injury), % of HD pop., 2011	6.35	
Youth alcohol use in the past 30 days, HS grades 8, 10, 12 (% reporting), 2011	11.2	
Suicide age-adjusted rate per 10,000, 2007-2011	17.1	11.5
Homicide age-adjusted rate per 100,000, 2007-2011	1.9	5.8
binge drinking past 30 days, 2011 crude % of adults	12	

Adapted from The Health Impact of Alcohol Outlet Density Laws in Utah by Chalmers et al.³

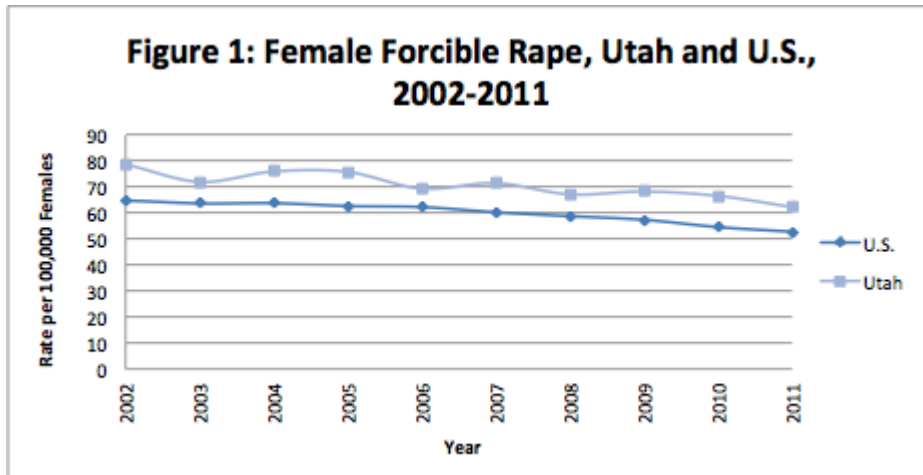
Assessment of Effects

Rape and Sexual Assault

While drinking alcohol does not cause sexual assault, research shows that half of sexual assaults are by intoxicated men. Likewise, half of sexual assault victims report that they were intoxicated at the time.¹⁷ Thus, an increase in alcohol retail density may *Increase* the rates of sexual assaults, leading to the likelihood categorization of *Likely*. Sexual assault has long-lasting effects such as depression, PTSD, STIs, and suicide, giving it a *High* severity characterization.¹⁸

Certain populations are more likely to experience sexual violence. Among adult women surveyed in 2010, 26.9% of American Indian/Alaska Natives, 22% of non-Hispanic blacks, 18.8% of non-Hispanic whites, 14.6% of Hispanics, and 35.5% of women of multiple races experienced an attempted or a completed rape at some time in their lives.¹⁶ Past victims are especially vulnerable as those who have experienced sexual abuse in the past are more likely to be victimized again.¹⁷ The CDC reports that "nearly 1 in 5 (18.3%) women and 1 in 71 men (1.4%) reported experiencing rape at some time in their lives."¹⁶ In contrast, one in three women in Utah have been a victim of form of sexual assault, and one in eight women report being raped.¹⁶ As women, past victims, and minorities are at greater risk, this categorizes the distribution as *Disproportionate Harms*.

As of 2011, rates of sexual assault/rape among all Utah residents are 10% higher than the national rate.¹⁹ Although approximately 88% of sexual assaults go unreported, the HIA team estimates that at least 1% of the population is affected, characterizing the magnitude as *Substantial*. If these numbers are allowed to rise, Utah residents will feel the economic impacts; "at \$127 million per year, rape has the highest annual victim costs of any crime."¹⁹



Adapted from IBIS-PH⁶

Underage Drinking

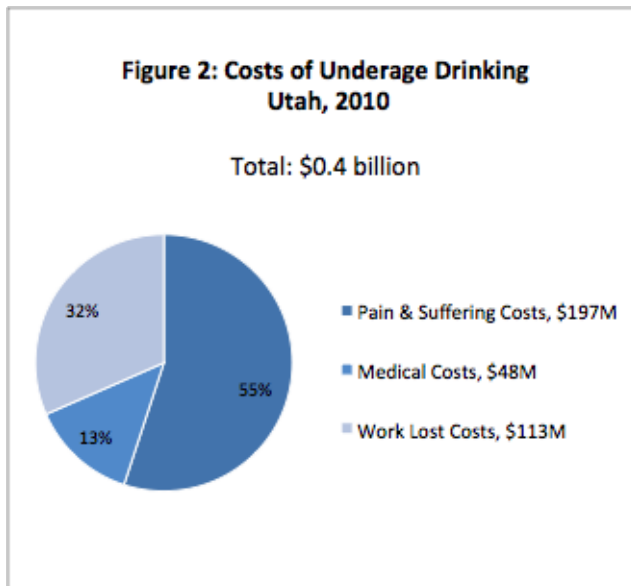
Currently, 36% of underage youth in Utah drink alcohol, in comparison to 18% percent of adults.²⁰ Since one-third of Utah’s population are under 21, 12% of Utah’s population are underage drinkers. As this represents more than 1% of the population, the magnitude for youth drinking is expected to be *Substantial*.

The rate of 12th graders using alcohol in the past 30 days in Utah is higher than the percent of adults drinking (14% vs 12% for adults)²⁰. Populations at risk for underage drinking include youth, males, and those living in lower-income neighborhoods.^{21,22} The distribution classification is expected to be *Disproportionate Harms* as specific age groups are more likely to drink than adults.²⁰

Several studies indicate that teens living in areas with higher alcohol outlet densities are more likely to consume alcohol.^{21–24} Density of off-premise alcohol outlets was significantly related to injuries from accidents, assaults, and traffic crashes for underage youth (as well as adults).²³ Based on the high volume of literature demonstrating a link between the two, direction is expected to *Increase* and the likelihood of this occurring is characterized as *Likely*.

Table 5: Baseline Demographic Data

Problem	Total Costs (in millions)
Youth Violence	\$186.40
Youth Traffic Crashes	\$65.50
High-Risk Sex, Ages 14-20	\$8.50
Youth Property Crime	\$46.10
Youth Injury	\$19.70
Poisonings and Psychoses	\$2.70
FAS Among Mothers Age 15-20	\$3.30
Youth Alcohol Treatment	\$25.20
Total	\$357.40

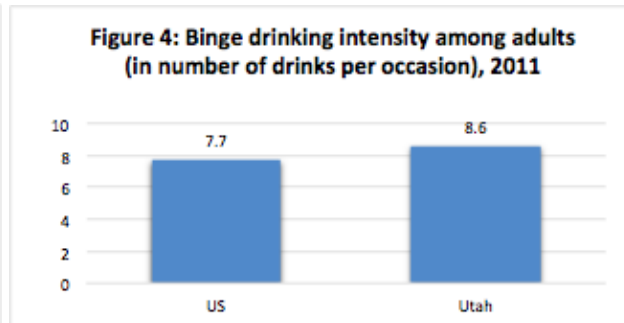
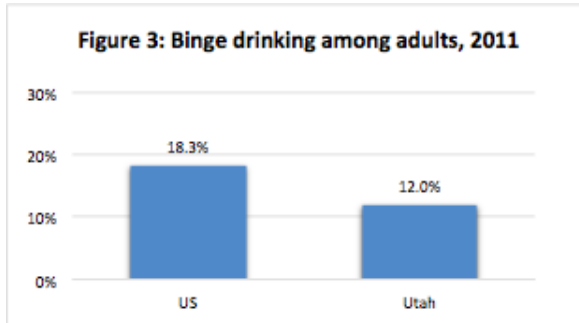


Adapted from Underage Drinking Enforcement Training Center¹⁴

In 2010, underage drinking cost the citizens of Utah \$0.4 billion (see Figure 2).¹⁴ The cost translates to \$1,173 per year for each youth, or \$3.61 per drink consumed.¹⁴ High school students who use alcohol are five times more likely to drop out of school,²⁵ and suffer from worse health outcomes.²⁶ Studies have also demonstrated that underage youth who abused alcohol sustain brain damage inhibiting complex stages of thinking and social interaction.²⁷⁻³⁰ When alcohol is more available, teens drink more and are more likely to engage in risky or unprotected sex, which can often lead to teen pregnancies.³⁰ Thus, underage drinking received a *High* severity rating.

Binge drinking

As alcohol outlet density increases, the rate of binge drinking (five or more drinks per occasion for men and four or more drinks per occasion for women) also increases.^{23,31-33} Because multiple journal articles have shown a strong relationship between alcohol outlet density and binge drinking, the direction is expected to *Increase*. The likelihood is expected to be *Likely* as the only studies on this have been natural experiments relying on the existing conditions.^{23,32,33}



Adapted from Centers for Disease Control and Prevention¹

In 2011, the prevalence of binge drinking among adults in Utah was lower than the national average.³⁴ However, binge drinking intensity (defined as the number of drinks per occasion) is higher in Utah than the rest of the U.S. Utah adults consume 8.6 drinks per occasion, which is nearly one drink more than the national average of 7.7 drinks per occasion.³⁴ Binge drinking can lead to various health problems including domestic violence, unintended pregnancy, children born with fetal alcohol syndrome, and long-term health effects.¹ In Utah, excessive drinking leads to 529 deaths each year.³⁴ In addition to causing serious health issues, binge drinking carries an economic cost. In 2006, lost workplace productivity, healthcare expenses, and crime due to excessive alcohol use cost the U.S. \$223.5 billion, or \$1.90 per drink consumed,⁹ compared with \$1.4 billion, or \$2.74 per drink in Utah.³⁵ Because binge drinking leads to serious and costly health effects that are potentially disabling or life-threatening, this indicator was assigned a *High* severity classification.

In Utah, approximately 12% of adults and 9% of high school students reported binge drinking in 2011, compared with 18% of adults and 22% of high school students in the U.S.³⁴ Thus, magnitude was assigned a *Substantial* ranking.³⁴ Binge drinking is most common among persons 18-34 years old, males, non-Hispanic whites, and individuals with higher household incomes.³⁶ In Utah, 86.1% of people are white, 50.2% are male, and 24.3% are 20-34 years old.³⁷ As a result, distribution was given a *Disproportionate Harms* classification.

Long-Term Health Effects

Greater outlet density is associated with increased alcohol consumption and related harms, including medical harms, injury, crime, and violence.³⁸ Excessive alcohol use causes both immediate and long-term health effects. The short-term health impacts include injuries, alcohol poisoning, miscarriage/stillbirth, and fetal alcohol spectrum disorders.³⁹ Long-term health risks include high blood pressure, heart disease, stroke, liver disease, digestive problems, cancers, learning and memory problems, mental health problems, social problems, and alcoholism.¹⁵

Because alcohol consumption causes multiple long-term health risks, the direction has been classified as *Increase*. The populations within Utah who are at greatest risk for developing chronic diseases are those who are older, male, obese, use tobacco, and have a family history of heart disease, high blood pressure and cholesterol, and diabetes.⁴⁰ These health problems are also significantly more prevalent among low-income, unemployed, uninsured, and less-educated individuals.⁴¹ Thus, the distribution is categorized as *Disproportionate Harms*.

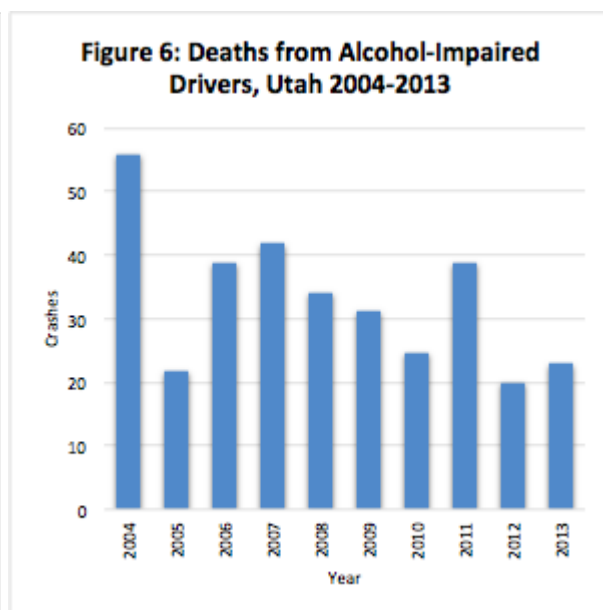
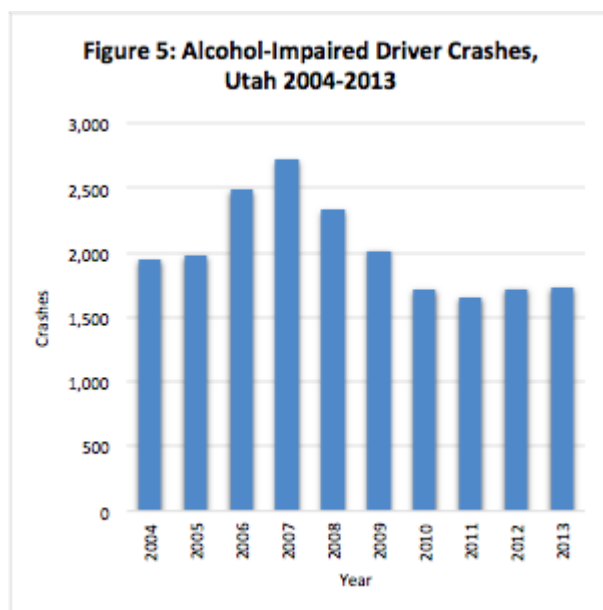
While it is certain that alcohol use has long-term health effects, only 0.02% of long-term health problems can be attributed to alcohol.¹⁵ The long latency period and the use of only natural experiments to determine the connection between alcohol retail densities and long-term health effects make it difficult establish an association between cases and earlier alcohol use. Thus, the likelihood is categorized as *Likely*.

These long-term health effects carry a significant economic cost; one in ten deaths of working age adults every year can be attributed to excessive alcohol consumption.⁴² Although Utah has one of the lowest impact rates of alcohol mortality in the nation (22.9 per 100,000) and lowest per capita cost (\$578), the adverse health effects and costs of excessive alcohol consumption are still a significant societal concern.⁴³

Utah has a smaller proportion of people who drink compared to other states⁴⁴ and only 0.02% of long-term health problems can be attributed to alcohol.¹⁵ Thus, the magnitude of long-term health risks is categorized as *Limited*. Utah paid \$1.5 billion for excessive drinking in 2006, with the highest cost per drink in the nation (\$2.74 per drink). These costs come from higher healthcare spending, decreased productivity, injury, disease, death, and criminal justice expenses.^{43,44} Because of the high cost to society, the severity is categorized as *Medium to High*.

Motor Vehicle Crashes and DUIs

Increased alcohol outlet density raises alcohol availability and the incidence of motor vehicle crashes, arrests, and driving under the influence (DUIs). Studies have shown that the availability of alcohol (measured by alcohol outlet density) has a direct positive relationship to automobile crashes and related injuries from drinking and driving.²⁵ Restaurant outlet and bar densities are also positively related to total injury crash risks and the risk of crashes being alcohol-related.⁴⁵ An estimated 10,322 people were killed in alcohol-impaired driving crashes in the U.S. in 2012; the cost of these alcohol-related crashes is more than \$59 billion annually.⁴⁶⁻⁴⁸



Adapted from Utah Department of Public Safety⁴²

Over the past 10 years, 13% of all traffic deaths in Utah have been from alcohol-impaired drivers.⁴² Thus, increasing alcohol density and consumption may raise the incidence of motor vehicle crashes.^{25,45} As a result, the likelihood is characterized as *Likely*. In 2013, Utah had a total of 1,736 alcohol-impaired driver crashes, 1,073 injured persons from alcohol-impaired driving, and 23 alcohol-impaired-driving fatalities (See Figures 5 and 6).^{42,43} As a result, the HIA team categorized the magnitude this health effect as *Limited*.

Alcohol-impaired driving in Utah cost approximately \$4.8 million per fatality in 2012.⁴⁹ These crashes were four times as likely to be fatal than crashes where alcohol was not involved,⁴² resulting in a *High* severity categorization. DUI arrests cost between \$9,000 and \$10,000 dollars; most of these costs are paid by the arrestee. There were 10,901 DUI arrests in fiscal year 2014 and almost 12% of those arrestees were under the legal drinking age of 21.⁴⁴ Whereas young adult males are disproportionately convicted of driving under the influence and are more likely to cause a motor vehicle crash,⁵⁰ the distribution is classified as *Disproportionate Harms*.

Potential Economic Impact

Stakeholders argue that increased alcohol density could greatly affect Utah's economy. Economic conditions have a direct impact on health outcomes. Conversely, health affects the economy through worker productivity and healthcare expenses.⁵¹

A Case for Economic Growth

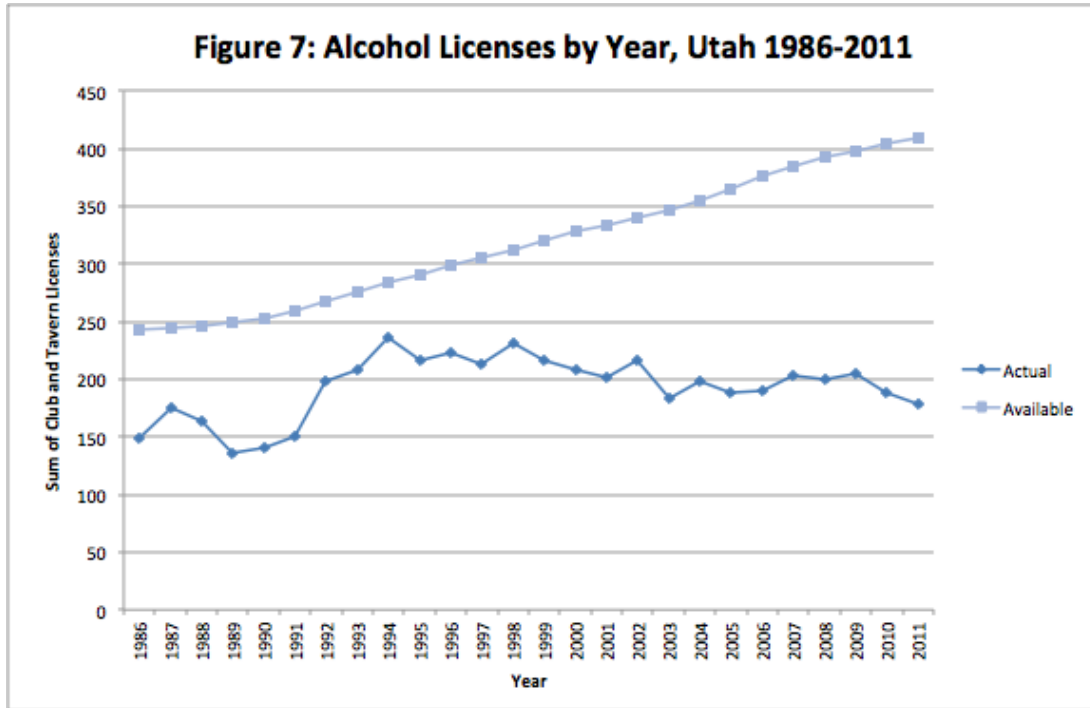
Increased State Revenue. In 2013, net operating income from alcohol tax totaled over \$137 million.⁸ This money funds school lunches, transportation, and underage drinking prevention programs.⁸ As outlet density increases, revenue also increases, providing more funds for state programs that benefit Utah residents.⁵²

Economic Contribution of the Alcohol Industry. Data about the economic benefits of alcohol production is scarce.¹⁰ The U.S. alcohol industry is directly responsible for over 1.9 million jobs, \$41 billion in wages, and \$171 billion in economic activity.¹⁰ The total economic contribution of the alcohol industry (including both direct and indirect activity) is over 3.9 million jobs, \$89 billion in wages, and \$401 billion in economic activity.¹⁰

The U.S. beer industry is directly and indirectly responsible for over 2 million jobs, \$78.9 billion in wages and benefits, and \$246.5 billion in economic impact.⁵³ In addition, the Utah beer industry is responsible for over 10 thousand jobs, \$333 million in wages, and \$1 billion in economic contribution.⁵³ Although there is insufficient data on this topic, it would be logical to conclude that increasing the number of alcohol retail licenses would lead to an increase in alcohol outlet densities, and ultimately an increase in jobs, wages, and economic contribution.

A Case for Economic Decline

Sufficient Available Licenses. The hospitality industry argues that population based license quotas deter potential businesses from establishing in Utah. They note that the shortage of available licenses turns away otherwise qualified applicants. Nina McDermott, Director of Licensing and Compliance for the UDABC has seen that there is consistently a surplus of most types of alcohol retail licenses. The overall the statutory limit on alcohol licenses is higher than the number of applicants (email communication, October 2014). Figure 7 shows the divergence between the actual number of establishments that primarily sell alcohol and the number of available licenses. This trend is true for the summation of all types of alcohol retail licenses.



Club licenses are the only type of alcohol retail licenses where demand exceeds supply. Most types of establishments can carry on a similar business structure under a more restrictive restaurant license or tavern license. These more restrictive licenses place a greater burden of enforcement on the alcohol retail establishment. The DABC has also seen that most businesses that are denied a club license continue to operate as either a restaurant or tavern. The HIA team sees the most potential for economic loss through added enforcement costs if club licenses are more available. This is because the limited club licenses have the least enforcement to prevent underage access and overconsumption.

Peer-Reviewed Literature and Public Health Theory. The few journal articles that address the economic impact of alcohol density changes argue that more alcohol outlets are accompanied by a decline in the environments surrounding them.⁵⁴⁻⁵⁶ Broken Window Theory suggests that minor environmental "crimes" such as public drinking or leaving broken bottles around may lead to higher rates of more serious crimes.⁵⁴ This theory and the articles give weight to the idea that

increased density of alcohol outlets would lead to an economic decline.⁵⁴ Businesses are not likely to establish in areas where alcohol abuse occurs. Additionally, potential customers will avoid unsafe and run-down areas, hurting these areas economically.

Current Economic State. Assuming additional alcohol outlets lead to economic growth, some experts argue that the economic benefits of these outlets would be negligible due to the economic success Utah already enjoys. Utah was recently ranked as one of the "Best States for Business," and the 2014 economic forecast was very positive.⁵⁷ Additionally, Utah's tourism industry continues to thrive, as revenue generated from tourism activities is increasing and \$7.4 billion was spent by tourists last year.⁵⁸

Social Costs. It was reported in 2010 that the total cost of alcohol for the state of Utah (including costs for the criminal justice system, government programs, healthcare expenditures, and indirect social cost) totaled over \$1.5 billion.⁵⁹ Compared to the net operating income of \$138 million from liquor sales for the past year⁸, the social costs seem to far outweigh any economic benefits from alcohol sales. This figure does not take into account the indirect economic benefits from alcohol sales, the disparity between revenue and social cost is stark.

Economic Impact: Conclusion

Either *no economic change* or a net *economic decline* would result from increased alcohol retail density. The alcohol industry contributes to the Utah economy, and increased state revenue would *Very Likely* result from the existence of more alcohol outlets. However, evidence suggests that the proposed policy change would not lead to additional approved applications for alcohol retail licenses (and thus, resulting economic growth), as there is a surplus. The social costs currently outweigh the revenue generated from alcohol sales, and evidence suggests social costs will increase.

Table 6: Characterization of Effects

Outcome	Direction	Likelihood	Severity	Magnitude	Distribution	Total
Long-term Health Effects	Increase (2)	Likely (3)	Medium-High (2.5)	Limited (1)	Disproportionate Harms(2)	10.5
Binge/Excessive Drinking	Increase (2)	Likely (3)	High (3)	Substantial (3)	Disproportionate Harms (2)	13
Underage Drinking	Increase (2)	Likely (3)	High (3)	Substantial (3)	Disproportionate Harms (2)	15
Motor Vehicle Incidents	Increase (2)	Likely (3)	High (3)	Limited (1)	Disproportionate Harms (2)	11
Rape/Sexual Assault	Increase (2)	Likely (3)	High (3)	Substantial (3)	Disproportionate Harms (2)	13
State Revenue	Increase (2)	Very Likely (4)	Medium (2)	Moderate (2)	Restorative Equity (0)	10
Economic Growth*	Increase (2)	Insufficient Evidence (0)	Medium(2)	Moderate to Substantial (2.5)	Disproportionate Benefits (1)	7.5
Economic Decline*	Increase (2)	Possible (2)	Medium(2)	Moderate to Substantial (2.5)	Disproportionate Harms (2)	10.5

*As both effects have been proposed by stakeholders, and opposing evidence exists to demonstrate growth *and* decline, both are included in characterization of effects.

Limitations

Studies assessing the relationship between alcohol retail density and health and economic effects have relied on retrospective natural experiments. Strong ties between increased availability of alcohol and increased retail density make it impossible to isolate the level of change that could be expected. However, consistency of evidence for most effects, where available, makes the association certain while magnitude is only an estimate of current prevalence.

Additionally, it is not always feasible to obtain 2014 or very recent data, as data collection years vary among organizations. The HIA team acknowledges this limitation and selected the most recent available data. Likewise, historical license issuance has not consistently been recorded. Pulling data from multiple databases, comparison with current numbers and expert testimony made it possible to frame a reasonably complete picture of license availability.

There is also insufficient data to accurately characterize the relationship between outlet density growth and economic status. This includes the number of compliant business owners who

were unable to open an alcohol retail establishment due to current alcohol policy, the number of tourists who are deterred from visiting Utah due to limited availability of alcohol, etc. The HIA team was careful not to discount or confirm any economic impact in this regard, and acknowledges the need for further study to better characterize this relationship.

VI. Recommendations and Monitoring

The HIA team found that overall, changing alcohol density limits would not be likely to increase the actual number of alcohol retail establishments. In the case of limited club licenses, the HIA team found that allowing for more outlets would lead to negative health effects for Utah residents. Based on the assessment phase, the HIA team recommends the following:

Recommendation 1. It is recommended that stakeholders maintain current alcohol policy and not lower the population required to obtain an alcohol retail license. The social and economic costs far outweigh any economic benefit from increased alcohol sales, and prospective sellers do not face any appreciable obstacle in obtaining licenses.

Suggestions for Monitoring. Annual health surveys of Utah residents such as the BRFSS survey (conducted by the CDC) and SHARP survey (Utah Division of Substance Abuse & Mental Health) will effectively monitor whether rates of alcohol-related harms are affected by leaving the policy unchanged. Revenue reports for the state of Utah, including the State of Utah Comprehensive Annual Financial Report and the Utah State Tax Commission annual report, also measure economic gains or losses. The HIA team recommends the continued administration and analysis of these surveys and reports.

The HIA team recognizes that such a recommendation may not be practical or likely to be adopted. Thus, the following recommendations, intended either to enhance the current proposed

policy or mitigate any negative impacts that might result from the policy, are detailed below, in order of increasing feasibility.

Recommendation 2. Maintain restrictions on the days, hours, and places that alcohol can be sold to prevent alcohol sales (1) in excess quantities, (2) at times where it is likely to be abused, or (3) near vulnerable populations.^{60,61}

Suggestions for Monitoring. The HIA team recommends that the Utah Department of Public Safety (UDPS) evaluate the effectiveness of these recommendations every 6 months using law enforcement data and economic reports. UDPS could evaluate law enforcement data including rates of alcohol-related motor vehicle crashes and fatalities, DUI offenses, and assaults by intoxicated individuals. In addition, UDPS could evaluate economic reports on cost for medical care and lost productivity, as well as estimates of disability-adjusted life year (DALY). Biannual comparisons of law enforcement and economic data would provide information on whether maintaining restrictions also maintain current levels of alcohol-related offenses and economic consequences.

Recommendation 3. Require businesses applying for club licenses to operate for a period of time under more restrictive tavern or restaurant license before receiving less restrictive club licenses. This waiting period gives the DABC opportunity to observe the establishments' commitment to comply with the limits that will remain as a club license.

Suggestions for Monitoring. The DABC monitors the compliance of license applicants with existing licenses to determine whether to approve new licenses. To monitor compliance, the DABC conducts inspections and reviews of law enforcement reports. Their ongoing evaluation methods and results in monitoring business owners' compliance would be vital in determining on

a monthly basis which businesses could receive a club license. The HIA team recommends that this become standard practice for all club license applicants.

Recommendation 4. Increase alcohol excise taxes. Strong evidence shows that increased taxes are the most reliable means of encouraging the responsible consumption of alcohol, while also serving the fiscal interests of the state.²

Suggestions for Monitoring. The Utah State Tax Commission and the Utah Division of Finance measure the fiscal status of Utah. These bodies could partner with the Utah Department of Health to compare BRFSS and SHARP survey data with excise tax levels on an annual basis. This analysis could determine the point at which diminishing returns occur for the optimal amount of alcohol excise tax.

Other recommendations have been proposed by stakeholders. However, the HIA team cautions against implementing the following due to limited evidence: (1) Law enforcement initiatives: Because the small number of available studies have inconsistent findings, a determination of the effectiveness of law enforcement initiatives in reducing excessive alcohol consumption and alcohol-related harms cannot be made.⁶² (2) Responsible beverage service training: Although studies showed positive results for the effectiveness of beverage service training for reducing excessive alcohol consumption and related harms, these studies were limited to individual establishments under favorable conditions. Thus, a determination for effectiveness cannot be made at the community level until further research is completed.⁶³

References

1. Centers for Disease Control and Prevention. Fact Sheets--Binge Drinking. *Centers Dis Control Prev*. <http://www.cdc.gov/alcohol/fact-sheets/binge-drinking.htm>. Accessed December 12, 2014.
2. Preventing Excessive Alcohol Consumption: Increasing Alcohol Taxes. *Community Guid*. 2013. <http://www.thecommunityguide.org/alcohol/increasingtaxes.html>. Accessed December 12, 2014.
3. Chalmers, Luke; Khomitch, Elena; Graham, Nicole; Larsen, Tawny; Sloan A. *The Health Impact of Alcohol Outlet Density Laws in Utah*.; 2013.
4. Lister C, Hanson C, Lindsay G, Nordfelt K. *Racking Up the Cost: Analysis of the Economic Burden of Alcohol and Substance Abuse for the State of Utah*.; 2010.
5. Department of Alcoholic Beverage Control. *Utah Perform*. 2014. <http://performance.utah.gov/agencies/abc.shtml>. Accessed December 12, 2014.
6. IBIS-PH, Utah's Public Health Data Resource. *Utah Dep Heal*. 2013. <http://ibis.health.utah.gov/>. Accessed December 12, 2014.
7. Rehm J, Hingson R. Measuring the Burden: Alcohol's Evolving Impact on Individuals, Families, and Society. *Alcohol Res Curr Rev*. 2014;35(2):117.
8. *78th Annual Report Utah Department of Alcoholic Beverage Control for the Fiscal Year Ended June 30, 2013*.; 2013. http://abc.utah.gov/about/documents/78th_annual.pdf. Accessed December 12, 2014.
9. Bouchery EE, Harwood HJ, Sacks JJ, Simon CJ, Brewer RD. Economic costs of excessive alcohol consumption in the U.S., 2006. *Am J Prev Med*. 2011;41(5):516-524. doi:10.1016/j.amepre.2011.06.045.
10. *Economic Contribution of Alcohol Beverage Industry*.; 2010. <http://www.discus.org/assets/1/7/ContributionFactSheet.pdf>. Accessed December 12, 2014.
11. Bhatia R. Health Impact Assessment: A guide for practice. *Oakland, CA Hum Impact Partners*. 2011.
12. Utah Population Estimates Committee. *Utah Population Projections*.; 2012. <http://governor.utah.gov/DEA/popestimates.html>. Accessed December 12, 2014.

13. US Census Bureau Economic Planning and Coordination Division. County Business Patterns (CBP) Home Page - US Census Bureau. <http://www.census.gov/econ/cbp/>. Accessed December 12, 2014.
14. Underage Drinking in Utah: The Facts. *Underage Drink Enforc Train Cent*. 2011. <http://www.udetc.org/factsheets/UT.pdf>. Accessed December 12, 2014.
15. National Institute on Alcohol Abuse and Alcoholism. 10th Special Report to the US Congress on Alcohol and Health. 2000.
16. Understanding Sexual Violence Fact Sheet. *Centers Dis Control*. 2012. <http://www.cdc.gov/violenceprevention/pdf/sv-factsheet.pdf>. Accessed December 12, 2014.
17. Abbey A, Clinton-Sherrod AM, McAuslan P, Zawacki T, Buck PO. The relationship between the quantity of alcohol consumed and the severity of sexual assaults committed by college men. *J Interpers Violence*. 2003;18(7):813-833.
18. Effects of Sexual Assault. *Rape, Abus Incest Natl Netw*. 2009. <https://www.rainn.org/get-information/effects-of-sexual-assault>. Accessed December 12, 2014.
19. Statistics. *Rape Recover Cent*. <https://raperecoverycenter.org/statistics/>. Accessed December 12, 2014.
20. Student Health and Risk Prevention Needs Assessment Survey Revised Results. *State Utah Dep Hum Serv Div Subst Abus Ment Heal*. 2013. [http://dsamh.utah.gov/pdf/sharp/2013/2013 State of Utah Profile Report.pdf](http://dsamh.utah.gov/pdf/sharp/2013/2013%20State%20of%20Utah%20Profile%20Report.pdf). Accessed December 12, 2014.
21. Chen M, Grube JW, Gruenewald PJ. Community alcohol outlet density and underage drinking. *Addiction*. 2010;105(2):270-278.
22. U.S. Office of the Surgeon General. The Surgeon General's call to action to prevent and reduce underage drinking. 2007.
23. Truong KD, Sturm R. Alcohol environments and disparities in exposure associated with adolescent drinking in California. *Am J Public Health*. 2009;99(2):264.
24. Reboussin BA, Song E, Wolfson M. The impact of alcohol outlet density on the geographic clustering of underage drinking behaviors within census tracts. *Alcohol Clin Exp Res*. 2011;35(8):1541-1549.
25. Treno AJ, Grube JW, Martin SE. Alcohol availability as a predictor of youth drinking and driving: a hierarchical analysis of survey and archival data. *Alcohol Clin Exp Res*. 2003;27(5):835-840.

26. Johnston LD, O'Malley PM, Bachman JG. *National Survey Results on Drug Use from the Monitoring the Future Study, 1975-1998. Volume II: College Students and Young Adults.* ERIC; 1999.
27. Groot, Wim; van den Brink HM. What does education do to our health? In: *Measuring the Effects of Education on Health and Civic Engagement.*; 2006:355-362.
<http://www.oecd.org/edu/innovation-education/37425763.pdf>. Accessed December 12, 2014.
28. Hanes M. Effects and Consequences of Underage Drinking. *US Dep Justice.* 2012.
<http://www.ojjdp.gov/pubs/237145.pdf>. Accessed December 12, 2014.
29. Medina KL, McQueeney T, Nagel BJ, Hanson KL, Schweinsburg AD, Tapert SF. Prefrontal cortex volumes in adolescents with alcohol use disorders: unique gender effects. *Alcohol Clin Exp Res.* 2008;32(3):386-394.
30. Bonnie RJ. *Reducing Underage Drinking:: A Collective Responsibility.* National Academies Press; 2004.
31. Bureau of Disease Control, Prevention & Epidemiology, MDCH. *The Association of Increased Alcohol Outlet Density & Related Harms: Summary of Key Literature.*; 2011.
https://www.michigan.gov/documents/mdch/Outlet_Density_Associated_Harms_Summary-3.10.2011_373894_7.pdf. Accessed December 12, 2014.
32. Ahern J, Margerison-Zilko C, Hubbard A, Galea S. Alcohol outlets and binge drinking in urban neighborhoods: the implications of nonlinearity for intervention and policy. *Am J Public Health.* 2013;103(4):e81-e87. doi:10.2105/AJPH.2012.301203.
33. Freisthler B, Byrnes HF, Gruenewald PJ. Alcohol Outlet Density, Parental Monitoring, and Adolescent Deviance: A Multilevel Analysis. *Child Youth Serv Rev.* 2009;31(3):325-330. doi:10.1016/j.childyouth.2008.08.006.
34. Centers for Disease Control and Prevention. *Prevention Status Report, 2013: Excessive Alcohol Use.*; 2013. <http://www.cdc.gov/psr/alcohol/2013/UT-alcohol.pdf>. Accessed December 12, 2014.
35. Sacks JJ, Roeber J, Bouchery EE, Gonzales K, Chaloupka FJ, Brewer RD. State costs of excessive alcohol consumption, 2006. *Am J Prev Med.* 2013;45(4):474-485. doi:10.1016/j.amepre.2013.06.004.
36. Frieden TR. CDC Health Disparities and Inequalities Report-United States, 2013. Foreword. *Morb Mortal Wkly report Surveill Summ (Washington, DC 2002).* 2013;62:1-2.
37. U.S. Census Bureau. *Profile of General Population and Housing Characteristics 2010.*; 2010. <http://factfinder2.census.gov/faces/nav/jsf/pages/error.xhtml>. Accessed December 12, 2014.

38. Campbell CA, Hahn RA, Elder R, et al. The effectiveness of limiting alcohol outlet density as a means of reducing excessive alcohol consumption and alcohol-related harms. *Am J Prev Med.* 2009;37(6):556-569.
39. CDC Fact Sheet--Alcohol Use and Your Health. *Centers Dis Control Prev.* 2014. <http://www.cdc.gov/alcohol/fact-sheets/alcohol-use.htm>. Accessed December 12, 2014.
40. Cardiovascular Disease in Utah: Milestone Report. *Utah Dep Heal.* 2002. <http://health.utah.gov/oph/publications/bhp/cardiovascularreport.pdf>. Accessed August 11, 2014.
41. Vulnerable Populations: Who Are They? *Am J Manag Care.* 2006. <http://www.ajmc.com/publications/supplement/2006/2006-11-vol12-n13Suppl/Nov06-2390ps348-s352>. Accessed December 12, 2014.
42. Utah Department of Public Safety. Alcohol-impaired drivers. *Utah Crash Summ.* 2013:59-66.
43. 2012 Motor Vehicle Crashes: Overview. *US Dep Transp Natl Highw Traffic Saf Adm.* 2013. <http://www-nrd.nhtsa.dot.gov/Pubs/811856.pdf>. Accessed December 12, 2014.
44. Utah Commission on Criminal and Juvenile Justice. 12th Annual DUI Report to the Utah Legislature. *DUI Rep to Utah Legis.* 2014;(12):1-29.
45. Ponicki WR, Gruenewald PJ, Remer LG. Spatial panel analyses of alcohol outlets and motor vehicle crashes in California: 1999–2008. *Accid Anal Prev.* 2013;55:135-143.
46. Impaired Driving: Get the Facts. *Centers Dis Control.* 2013. http://www.cdc.gov/motorvehiclesafety/impaired_driving/impaired-drv_factsheet.html. Accessed December 12, 2014.
47. U.S. Department of Transportation: National Highway Traffic Safety Administration. *Alcohol-Impaired Driving.*; 2012.
48. Blincoe LJ, Seay A, Zaloshnja E, et al. *The Economic Impact of Motor Vehicle Crashes, 2000.* US Department of Transportation, National Highway Traffic Safety Administration Washington, DC; 2002.
49. 2012 Drunk Driving Stats. *Mothers Against Drunk Driv.* 2014. <http://www.madd.org/drunken-driving/state-stats/Utah.html>. Accessed December 12, 2014.
50. Elder, Leif; Halverson S. Bagels and Briefings for Legislators: Driving Under the Influence, the \$9,000 drink. *Off Legis Res Gen Couns.* 2011. <http://www.le.state.ut.us/lrgc/briefings/2011.DUI.BB.pdf>. Accessed December 12, 2014.

51. Woolf SH, Aron L. *US Health in International Perspective:: Shorter Lives, Poorer Health*. National Academies Press; 2013.
52. Latham, William; Lewis K. America's Beer Distributors: Fueling Jobs, Generating Economic Growth & Delivering Value to Local Communities. *Natl Beer Wholes Assoc*. 2013. <http://nbwa.org/sites/default/files/NBWA-Economic-Report-2013.pdf>. Accessed December 12, 2014.
53. Economic Impact. *Beer Serves Am*. <http://www.beerinstitution.org/br>. Accessed December 12, 2014.
54. Maxwell, Ann; Immergluck D. Liquorlining: Liquor Store Concentration and Community Development in Lower-Income Cook County Neighborhoods. *Woodstock Inst*. <http://www.woodstockinst.org/sites/default/files/attachments/liquorlining.pdf>. Accessed December 12, 2014.
55. Roncek DW, Maier PA. Bars, Blocks, and Crimes Revisited: Linking the Theory of Routine Activities to the Empiricism of "Hot Spots". *Criminology*. 1991;29(4):725-753.
56. Speer PW, Gorman DM, Labouvie EW, Ontkush MJ. Violent crime and alcohol availability: relationships in an urban community. *J Public Health Policy*. 1998:303-318.
57. Badenhausen K. Utah Tops Forbes 2012 List Of The Best States For Business. *Forbes*. 2012. <http://www.forbes.com/sites/kurtbadenhausen/2012/12/12/utah-tops-list-of-the-best-states-for-business/>. Accessed December 12, 2014.
58. Tourism Works. *Utah Tour Ind Coalit*. 2013. <http://utahtourism.org/wp-content/uploads/2010/01/Tourism-Works-state-of-indu-10-13.pdf>. Accessed December 12, 2014.
59. Club Liquor License Summary. *Utah Dep Alcohol Beverage Control*. 2011. http://abc.utah.gov/license/documents/summary_club.pdf. Accessed December 12, 2014.
60. Preventing Excessive Alcohol Consumption: Maintaining Limits on Hours of Sale. *Community Guid*. 2014. <http://www.thecommunityguide.org/alcohol/limitinghourssale.html>. Accessed December 13, 2014.
61. Preventing Excessive Alcohol Consumption: Maintaining Limits on Days of Sale. *Community Guid*. 2014. <http://www.thecommunityguide.org/alcohol/limitingsale.html>. Accessed December 13, 2014.
62. Preventing Excessive Alcohol Consumption: Overservice Law Enforcement Initiatives. *Community Guid*. 2013. <http://www.thecommunityguide.org/alcohol/overservice.html>. Accessed December 13, 2014.

63. Preventing Excessive Alcohol Consumption: Responsible Beverage Service Training. *Community Guid.* 2013.
http://www.thecommunityguide.org/alcohol/beverage_service.html. Accessed December 13, 2014.

Appendix: Causal Pathway

