

# CRIME & ACCESS TO ALCOHOL

## SUMMARY

Community & Environmental Defense Services (CEDDS) is assisting Fresno, CA residents with concerns regarding the proposed addition of an off-sale alcoholic beverage retail establishment (convenience store) within their neighborhoods. “Off-sale” means a place where alcoholic beverages are purchased for consumption elsewhere. This would be the second off-sale establishment in close proximity to the neighborhoods. Unlike the existing establishment (Rite-Aid) the proposed convenience store would be open 24/7.

Following is an initial review of scientific studies relevant to the potential effect of the 24/7 off-sale convenience store on crime and public health. The author has no particular expertise in this subject area. The intent of this document is to provide neighborhood residents with a starting point for a discussion of the science regarding alcohol beverage sales and neighborhood safety. The next step will be to contact the researchers cited below to see if they believe their findings are relevant to the proposed off-sale convenience store and the Fresno neighborhoods.

The gist of these studies is that a positive relationship exists between crime as well as adverse health effects and the number of off-sale retail outlets in a given area. Hours of operation are also relevant. The *Key Relevant Findings* notes what the researchers found which may be applicable to the proposed convenience store and the Fresno neighborhoods. Clicking on each title of will take you to the paper.

These findings indicate that allowing off-sale of alcoholic beverages at the proposed convenience store will increase crime and other adverse health effects, especially if the store is open 24/7. One study indicated the presence of an off-sale, 24/7 establishment “may attract people at increased risk for involvement with violent crime.”

After creating the first draft of this document, Dr. Anthony Yu noted additional aspects of the studies missed by CEDDS. Dr. Yu’s notes appear under *AY Comments*.

## [ALCOHOL CONSUMPTION AND THE PHYSICAL AVAILABILITY OF TAKE-AWAY ALCOHOL: SYSTEMATIC REVIEWS AND META-ANALYSES OF THE DAYS AND HOURS OF SALE AND OUTLET DENSITY](#)

**Key Relevant Findings:** This paper shows limiting the hours of operation for retail off-sale of alcohol reduces alcohol consumption and, therefore, reduces adverse health effects.

### **Abstract**

This study suggests that decreasing the physical availability of take-away alcohol will decrease per capita consumption. As decreasing per capita consumption has been shown to reduce alcohol-

related harm, restricting the physical availability of take-away alcohol would be expected to result in improvements to public health.

## Discussion

The results are generally consistent with previous systematic reviews relating physical availability and alcohol-related outcomes; however, we provide greater specificity by focusing on the physical availability of take-away alcohol and conducting novel meta-analyses regarding days of sale. Meta-analysis of high-quality days of sale studies provide compelling evidence that one additional day of sale will lead to increased aggregate and beverage-specific alcohol consumption. The small number of studies found suggests that increasing hours of sale and outlet density may lead to increased consumption.

### *AY Comments:*

- *One author from UC Berkeley (Harold Holder), the rest from Canada, Europe, Australia - 2018*
- *“An increase in per capita consumption will increase the level of drinking in all consumption groups, from light to heavy drinkers; this is referred to as “single distribution theory” or the “total consumption model” (Keboe et al., 2012; Skog, 1985). An important corollary of this theory should be a marked association between average drinking levels and alcohol-related harm rates. A large number of studies have indeed substantiated this relationship (for a review, see (Norström and Ramstedt, 2005))”*
- *“The study by Kolosnitsyna et al. (Kolosnitsyna, et al., 2014) examined the effect of hours of sale on per capita consumption. In 2009, Russian regions gained the ability to independently restrict the hours of alcohol sale. This created a natural experiment with various changes in opening hours by region which the authors used to estimate the effect of hours of sale on total consumption. The study reported that later evening opening hours were significantly related to total consumption: each additional hour of sale led to a 7.9% increase in alcohol sales.”*
- *“The U.S.-based, individual-level study by Brenner et al. (Brenner, et al., 2015) took place between 2000 and 2010 and examined changes in alcohol consumption which occurred when participants relocated to areas with changed outlet density. The study reported that a one standard deviation increase in outlet density was associated with a significant 11% increase in alcohol consumption for women and a significant 7% increase in consumption for men.”*
- *This is a strong study. We should contact the UC Berkeley author.*

## ALCOHOL INVOLVEMENT IN HOMICIDE VICTIMIZATION IN THE U.S

**Key Relevant Findings:** This paper shows a correlation between Blood Alcohol Content (BAC) and homicides.

**Results**—Among all homicide victims, 39.9% had a positive BAC including 13.7% with a BAC between 0.01%–0.79% and 26.2% of victims with a BAC  $\geq$ 0.08%. Males were twice as likely as females to have a BAC  $\geq$ 0.08% (29.1% vs. 15.2%;  $p < 0.001$ ). Characteristics that were independent predictors of homicide victims having a BAC  $\geq$ 0.08 included male sex, American Indian/Alaska Native race, Hispanic ethnicity, history of intimate partner violence, and non-firearm homicides.

**Conclusions**—Alcohol is present in a substantial proportion of homicide victims in the U.S., with substantial variation by state, demographic and circumstantial characteristics. Future studies should

explore the relationships between state-level alcohol policies and alcohol-involvement among perpetrators and victims of homicide.

***AY comments:***

- *Boston 2016*
- *California was not one of the states included in study (17 states)*
- *This is a medium-value study in that it suggests an association between EtOH and homicide victims. No need to contact authors.*

**COMPARATIVE APPROACHES FOR ASSESSING ACCESS TO ALCOHOL OUTLETS: EXPLORING THE UTILITY OF A GRAVITY POTENTIAL APPROACH**

**Key Relevant Findings:** This paper introduces what may be a more valid basis for limiting the number of retail off-sale establishments rather than the three per Census Tract limit imposed by the California Alcohol Beverage Commission.

**Results:** Significant statistical and spatial variability exists between measures of alcohol access, and these differences have meaningful practical implications. In particular, standard measures of outlet density (e.g., spatial, per capita, roadway miles) can lead to biased estimates of physical availability that over-emphasize the influence of the control variables. Employing a gravity potential approach provides a more balanced, geographically-sensitive measure of access to alcohol outlets.

**Conclusions:** Accurately measuring the physical availability of alcohol is critical for understanding the causes and consequences of its distribution and for developing effective evidence-based policy to manage the alcohol outlet licensing process. A gravity potential model provides a superior measure of alcohol access, and the alcohol access-based taxonomy a helpful evidence-based heuristic for scholars and local policymakers.

***AY comments:***

- *AZ State, 2016 – studied Seattle*
- *Medium to low value – this would hope if the opposition argued that, per capita, the alcohol consumption in this area is low. Per capita measurements, or container-based measurements are not accurate depictions of access.*

**METHODS FOR EVALUATING THE ASSOCIATION BETWEEN ALCOHOL OUTLET DENSITY AND VIOLENT CRIME**

**Key Relevant Findings:** Proximity, mean distance and spatial access methods yielded the best correlation between alcohol outlets and violent crimes.

**Results:** The inference depended on the measurement methods used. Eight models that used a count of alcohol outlets and/or violent crimes failed to detect an association between outlets and crime, and three other count-based models detected an association in the opposite direction.

Proximity, mean distance, and spatial access methods consistently detected an association between outlets and crime and produced comparable model fits.

**Conclusion:** Proximity, mean distance, and spatial access methods yielded the best model fits and had the lowest levels of error in this urban setting. Spatial access methods may offer conceptual strengths over proximity and mean distance. Conflicting findings in the field may be in part due to error in the way that researchers measure alcohol outlet density.

***AY comments:***

- *Studied Baltimore, not a good comparison group*
- *“...it is unclear whether on-premise (e.g. bars, restaurants)...or off-premise outlets (e.g. liquor stores)...have stronger associations with level of harm.”*
- *Similar to article 3, this would only be helpful if one argues that tper capita, the alcohol consumption in this area is low. Per capita measurements, or container-based measurements are not accurate depictions of access.*

## **RELATING OFF-PREMISES ALCOHOL OUTLET DENSITY TO INTENTIONAL AND UNINTENTIONAL INJURIES**

**Key Relevant Findings:** This study conducted in Australia documented a positive relationship between injury rates and the density of off-sale retail establishments, particularly those that are larger and sell less expensive alcoholic beverages. Another chain outlet factor of significance is that they tend to do more advertising.

**Findings** In univariable analyses, chain outlets were larger ( $r = 0.383$ ;  $p < 0.001$ ) and sold cheaper alcohol ( $r = -0.484$ ;  $p < 0.001$ ) compared with independent outlets. In Bayesian spatial Poisson models, off-premises outlet density was positively related to both intentional (Incidence Rate Ratio = 1.38; 95% Credible Interval: 1.19, 1.60) and unintentional injuries (IRR = 1.18; 95% CI: 1.06, 1.30). After disaggregation by outlet characteristics, chain outlet density was also related to both intentional (IRR = 1.35; 95% CI: 1.11, 1.64) and unintentional injuries (IRR = 1.20; 95% CI: 1.08, 1.38).

**Conclusions** Greater off-premises outlet density is related to greater incidence of traumatic injury, and chain outlets appear to contribute most substantially to traumatic injury risk.

### **Quotes from This Study:**

- “In absolute terms, each additional chain was associated with 0.28 additional intentional injuries in local areas compared to 1.09 additional unintentional injuries per year.”
- “For example, off-premises outlets may attract people at increased risk for involvement with violent crime.”

- “Relationships may also be confounded by the tendency of outlets to be located in disorganised neighbourhoods, and for disorganised neighbourhoods to have greater incidence of traumatic injury (where disorganisation refers to the ‘inability of a community structure to realise the common values of its residents and maintain effective social controls’.”

***AY comments:***

- *Studied Melbourne, but lead author is in Oakland*
- *This is a good study. Should contact authors from Oakland.*
- Christopher Morrison<sup>1,2</sup>, Karen Smith<sup>1,3,4</sup>, Paul J. Gruenewald<sup>2</sup>, William R. Ponicki<sup>2</sup>, Juliet P. Lee<sup>2</sup>, and Peter Cameron<sup>1</sup>
- 1 Monash University, Department of Epidemiology and Preventive Medicine, Melbourne, Victoria, Australia
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- 3 Ambulance Victoria, Strategic Planning Department, Blackburn, Victoria, Australia
- 4 University of Western Australia, School of Primary, Aboriginal and Rural Health Care, Crawley, Western Australia, Australia

**THE EFFECT OF A BAN ON LATE-NIGHT OFF-PREMISE ALCOHOL SALES ON VIOLENT CRIME**

**Key Relevant Findings:** This study conducted in the German state of Baden-Wurttemberg, found that banning late-night, off-sale retail outlets reduced late-night simple and aggravated assault.

***AY comments:***

- *I was unable to find the full text article even with my medical resources. The abstract is helpful, but the applicability to this community is questionable. This would be something helpful to mention as an aside but not lean heavily on.*

**THE SPATIO-TEMPORAL RELATIONSHIP BETWEEN ALCOHOL OUTLETS AND VIOLENCE BEFORE AND AFTER PRIVATIZATION**

**Key Relevant Findings:** “For each additional off-premises and on-premises alcohol outlet in a given census block group, we found a significant increase of 8% and 5% for aggravated assaults and 6% and 5% for non-aggravated assaults, respectively.” A census block group has about 1,500 people.

**Abstract:** Alcohol-related violence is a well-documented public health concern, where various individual and community-level factors contribute to this relationship. The purpose of this study is to examine the impact of a significant policy change at the local level, which privatized liquor sales and distribution. Specifically, we explored the relationship between alcohol and violence in Seattle, WA, 2010-2013, via hierarchical spatio-temporal disease mapping models. To measure and map this

complex spatio-temporal relationship at the census block group level (), we examined a variety of models using integrated nested Laplace approximations and used the deviance information criterion to gauge model complexity and fit. For each additional off-premises and on-premises alcohol outlet in a given census block group, we found a significant increase of 8% and 5% for aggravated assaults and 6% and 5% for non-aggravated assaults, respectively. Lastly, our maps showed variation in the estimated relative risks across the city of Seattle.

***AY comments:***

- *I also couldn't get the full text article but this seems promising. Study out of Drexel and ASU, studied Seattle, 2010-2013*
- *"Areas with more alcohol outlets tended to have more violence, even after adjusting for various sociodemographic and neighborhood characteristics."*
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**THE USE OF REGULATORY POWER BY U.S. STATE AND LOCAL ALCOHOL CONTROL AGENCIES TO BAN PROBLEMATIC PRODUCTS**

**Key Relevant Findings:** Agencies charged with the responsibility for regulating alcohol sales may have difficulty balancing adverse public health effects of excessive alcohol beverage sales with the short-term economic benefits of reduced regulation.

**Results:** Control jurisdictions have banned/restricted different products (e.g. grain alcohol and alcoholic energy drinks) for a variety of reasons (e.g. flavorings/packaging appealing to underage drinkers, blurring of distinctions between alcoholic and non-alcoholic drinks, and judgment that the product was not socially responsible).

**Conclusions/ Importance:** Although U.S. control jurisdictions universally have the authority to limit access to problematic alcohol products, they vary in the degree to which they use it. These states need to take action, and as of now, there is no systematic reasoning behind when and how states make decisions to ban/restrict these products. Greater exploration of regulatory authority in this arena could be protective of public health.

***AY comments:***

- *"Underage alcohol consumption is a s(20.3%) reported consuming alcohol in the past 30 dayserious public health problem in the United States. In 2015, 7.7 million youth ages 12 to 20 (20.3%) reported consuming alcohol in the past 30 days (Center for Behavioral Health Statistics and Quality, 2016, p.1014–15). Approximately 5.1 million youth (13.4%)*

*consumed five or more drinks on the same occasion on at least 1 day in the past 30 days (“binge drinkers”) and 1.3 million (3.3%) consumed five or more drinks on the same occasion on each of 5 or more days in the past 30 days (“heavy drinkers”) (p. 1018–19).”*

- *We have a many teen drivers in this community (it is actually a major community issue as they are blamed for a lot of reckless driving witnessed on Copper Ave)*
- *Low impact: this study focuses on the banning of certain products, not the ban of an actual outlet*

## **THE VIOLENCE PREVENTION POTENTIAL OF REDUCING ALCOHOL OUTLET ACCESS IN BALTIMORE, MARYLAND**

**Key Relevant Findings:** “For preventing homicides, the strategy of removing liquor stores in residential zones was preferred because it was associated with substantial reductions in homicides without closing unacceptably high numbers of outlets. It is possible that policies that close the bars/taverns operating as liquor stores would be associated with decreases in other types of violent crime.”

### **ABSTRACT**

**Objective:** There are few cost-effectiveness analyses that model alcohol outlet zoning policies. This study determines the potential decreases in homicides, disability-adjusted life years (DALYs), and victim and criminal justice costs associated with four policy options that would reduce the alcohol outlet access in Baltimore.

**Method:** This cost-effectiveness analysis used associations between on-premise (incidence rate ratio [IRR] = 1.41), off-premise (IRR = 1.76), and combined on- and off-premise outlet density (IRR = 1.07) and homicide in Baltimore. We determined the potential change in the level of homicide that could occur with changes in the density of alcohol outlets, assuming that 50% of the association was causal.

**Results:** Reducing alcohol outlet density in Baltimore City by one quintile was associated with decreases of 51 homicides per year, \$63.7 million, and 764 DALYs. Removing liquor stores in residential zones was associated with 22 fewer homicides, which would cost \$27.5 million and lead to 391 DALYs. Removing bars/taverns operating as liquor stores was associated with a decrease of one homicide, \$1.2 million, and 17 DALYs. Removing both the liquor stores in residential zones and the bars/taverns operating as liquor stores was associated with 23 fewer homicides, which translated to \$28.7 million and 409 DALYs.

**Conclusions:** For preventing homicides, the strategy of removing liquor stores in residential zones was preferred because it was associated with substantial reductions in homicides without closing unacceptably high numbers of outlets. It is possible that policies that close the bars/taverns operating as liquor stores would be associated with decreases in other types of violent crime. (J. Stud. Alcohol Drugs, 81, 24–33, 2020)

### ***AY comments:***

- *Strong study. We should reach out to authors.*

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## [VIOLENT CRIME REDISTRIBUTION IN A CITY FOLLOWING A SUBSTANTIAL INCREASE IN THE NUMBER OF OFF-SALE ALCOHOL OUTLETS: A BAYESIAN ANALYSIS](#)

**Key Relevant Findings:** Increasing the number of off-sale outlets is related to greater rates of violent crime.

### **Abstract**

**Introduction and Aims.** This study examined whether the introduction of a large number of off-premise alcohol outlets into a city over a brief period of time could affect rates of violent crime.

**Design and Methods.** The study analysed annual counts of violent crime across 172 US Census block groups in Lubbock, Texas from 2006 through 2011. Spatial Poisson models related annual violent crime counts within each block group to off-premise and on-premise alcohol outlets active during this time period as well as neighbourhood socio-demographic characteristics. The effects of alcohol outlets were assessed both within block groups and across adjacent block groups.

**Results.** On-premise outlets had a small, significant positive association with violence within a given block group. A similar well-supported local effect for off-premise outlets was not found. However, the spatially lagged effect for off-sale premises was well-supported, indicating that greater densities of these outlets were related to greater rates of violent crime in adjacent areas.

**Discussion and Conclusions.** While these analyses confirmed a previous time-series analysis in finding no city-wide effect of the increase in off-premise outlets, they do suggest that such outlets in a local area may be related to violence in nearby geographic areas. They indicate the importance of examining neighbourhood-specific effects of alcohol outlets on violence in addition to the city-wide

effects. They also present further evidence supporting the need to examine the differential effects of on-sale and off-sale premises.

***AY comments:***

- *Strong study. Paul Grunewald, one of the authors, is also co-author on the paper that looked at Melbourne. That was also a strong study. Perhaps he is the one we should contact first?*
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