

## SYNOPSIS

# Review of “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”

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## One-Minute Summary

- Alcohol consumption is a causal risk factor in many chronic and acute health conditions, including cardiovascular disease, diabetes, hepatic disease, pancreatic disease, neuropsychiatric conditions, cancers and acute injuries. The “single distribution theory” or “total consumption” model indicates an increase in per capita alcohol consumption will increase drinking in all-level consumption groups, from light to heavy drinkers. Public health policy around alcohol seeks to limit per capita consumption and alcohol-related harm.
- This systematic review by Sherk et al. (2018) synthesized the scientific literature on two related topics: 1) impacts of temporal availability of take-away alcohol from off-premise outlets on alcohol consumption; and, 2) impacts of take-away alcohol outlet density on alcohol consumption. The authors also conducted meta-analyses to estimate the effect of one additional day of sale on total alcohol as well as beverage-specific consumption.
- The majority of available evidence demonstrated that increasing the days and hours of take-away alcohol sales (i.e., temporal availability) and increasing the density of take-away alcohol outlets in an area (i.e., spatial availability) both increased per capita alcohol consumption.
- The meta-analyses found one additional day of sales was associated with a 3.4% per capita consumption increase for total alcohol. For specific alcoholic beverages, one additional day of sale was associated with a 5.3% increase in per capita consumption for beer, 2.6% increase for wine and 2.6% increase for spirits.
- The review authors concluded that the available evidence suggests decreasing temporal and spatial availability of take-away alcohol from off-premise outlets can reduce per capita alcohol consumption, likely contributing to improvements in public health outcomes.

## Additional Information

- Previous reviews have examined the impact of physical availability of alcohol on alcohol consumption, but generally aggregated on-premise establishments and off-premise outlets into generic categories containing all alcohol outlets. This review examines only off-premise outlets for more detailed information to inform specific policies affecting take-away alcohol outlets. Previous studies also lack the meta-analyses this review offers.
- The review formed a literature base from the four most recent systematic reviews up to December 2015, supplemented with a systematic review search. Articles were screened based on inclusion and exclusion criteria, then further evaluated on quality criteria determined by the authors.
- Quality criteria divided study designs into 3 tiers, with only tier 1 (i.e., pre-/post-natural experiments with simultaneous control observations) and tier 2 (i.e., pre-/post-natural experiments with no control observations) being included. All other study designs were excluded, including cross-sectional. All excluded cross-sectional studies were provided in an appendix for additional review, context and information.
- Two systematic reviews were conducted: one assessed days and hours of sale, and one separately assessed outlet density:
  - The systematic review for days and hours of sale identified seven eligible studies. These studies were conducted in Canada, the United States (US), Sweden and Russia. Six of the seven studies found increased days or hours of available take-away alcohol sales to be significantly associated with increased per capita consumption of total alcohol, to varying degrees.
    - Three studies in Sweden showed an additional day of sale led to per capita consumption increases of 3.3% for total alcohol consumption, 7.0% for beer, 2.0% for wine, and 3.0% for distilled spirits. Two US articles examined a repeal of Sunday bans on alcohol sales and found a 3.8% increase in per capita alcohol consumption of total alcohol, a 3.5% to 4.0% increase in beer, and a 7.5% increase in per capita for distilled spirits. A study in Russia found each additional hour in the evening of take-away alcohol sales to be significantly associated with increased alcohol consumption.
    - One study based in Ontario did not find a statistically significant association between days of sales and total alcohol consumption.
  - The systematic review for outlet density identified four eligible studies. Three took place in Canada and one in the US. Three of the four studies showed increased take-away alcohol outlet density to be statistically significantly associated with increases in total alcohol consumption. The remaining study found non-significant effects of outlet density on alcohol consumption.
    - One study in Canada found a 1.0% increase in take-away outlet density was associated with a 0.15% increase in total alcohol consumption. Another Canadian study found similar results, reporting greater take-away outlet density to be significantly associated with increased per capita consumption. One study in Canada examined the impact of outlet density on beverage-specific sales and found no significant associations. Finally, the US-based study reported a 1 standard deviation (SD) increase in outlet density was significantly associated with 7% and 11% increases in alcohol consumption for men and women, respectively.

- The authors of this systematic review identified six studies with data they deemed appropriate for quantitative synthesis in meta-analyses. These studies examined the effect of days of sale on per capita consumption of total and beverage-specific alcohol. One additional day of sale resulted in a 3.4% (95% confidence interval [CI]: 2.7, 4.2] per capita alcohol consumption increase for total alcohol, with specific products showing a 5.3% (95% CI: 3.2, 7.4) increase for beer, 2.6% (95% CI: 1.8, 3.5) increase for wine and 2.6% (95% CI: 2.1, 3.2) increase for spirits.

## PHO Reviewer's Comments

- This literature should be interpreted with an understanding of the current policy context in relation to alcohol availability in the province of Ontario. Recently, Ontario expanded the spatial availability of take-away alcohol, thereby increasing the convenience to purchase larger volumes and strengths of alcohol at outlets such as big box stores, all grocery stores and convenience stores.<sup>1-4</sup> This context presents an opportunity to evaluate the impacts of these policies. Specifically, to evaluate if the increases in alcohol consumption measures reported in this systematic review will be observed in Ontario following the expanded availability of alcohol in more off-premise outlets.
- The review itself did not directly assess the impact of increased alcohol consumption on alcohol-related health outcomes, although the authors reference previous literature on the health effects of alcohol as part of their background. Given the current context in Ontario and the established evidence of health harms associated with alcohol consumption,<sup>5-7</sup> evaluation and analysis of population health outcomes in relation to current policy changes would enhance understanding of the policy impacts.
- As this review focused specifically on the spatial and temporal availability of alcohol, it does not provide an assessment of the implementation of various other public health or policy interventions relevant to alcohol. For example, advertising, pricing adjustments and education on the sale of alcohol. While this is likely reflective of most real world contexts where multiple policies and public health initiatives occur concurrently, it is worth considering these factors and their potential confounding effects on alcohol consumption.
- The Canadian Alcohol Policy Evaluation (CAPE) is a valuable resource which outlines 11 evidence-based alcohol policy domains, one of which is physical availability (i.e., both temporal and spatial).<sup>8</sup> Reducing physical availability of alcohol is a heavily weighted policy domain for effectiveness for reducing harm and population-wide reach. Other policy domains that may be worth considering to counteract the potential impacts of increasing physical availability include: health and safety messaging, monitoring and reports; minimum legal age enforcement; liquor law enforcement; and others. Details for all 11 domains can be accessed [here](#).<sup>8</sup>
- The majority of studies reviewed regarding temporal availability were not conducted in a Canadian context, although a large portion were conducted in the North American context. Additionally, there was considerable heterogeneity across studies. For example, the increase in temporal availability differed in terms of specific days or length of days even, in the case of the Russian study specifically.
- The review does not differentiate between types of take-away outlets and aggregates them as a common factor. However, distinguishing between different types of take-away shops in future research or evaluations, such as grocery stores, convenience store and others, may provide further specificity in public health or policy interventions.

## Critical Appraisal

A critical appraisal of this SR was conducted using A MeaSurement Tool to Assess Systematic Reviews (AMSTAR 2), which is composed of 16 questions.<sup>9</sup> The full critical appraisal tool with all responses is available on request.

Overall, for this review paper, the majority of AMSTAR 2 questions were answered with “Yes”, denoting a positive result for review methodology. In particular, key strengths included descriptions of included studies, thorough description of inclusion and exclusion criteria, references to databases and clear reporting of methods for each step (search strategy, screening, extraction, and synthesis). Moreover, the performed meta-analysis displayed strongly considered methodology and rigorous considerations of data aggregation.

Items that did not meet AMSTAR 2 criteria include no mention of investigating causes of heterogeneity or discussing heterogeneous results. While most or all studies demonstrated a positive correlation with alcohol consumption and increased physical availability, differences between significance and non-significance were not discussed. Additionally, while risk of bias was alluded to for the meta-analysis in its methodology and description of quality criteria for inclusion, the systematic reviews performed in this paper did not explicitly account for risk of bias in its interpretation of results.

## Additional References

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## Citation

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