Abstract 1

Background: Lower-income populations are exposed to excess risks related to the presence of greater concentrations of alcohol outlets in their communities. Theory from economic geography suggests this is due to dynamic processes that shape urban retail markets (as outlets are attracted to areas of higher population density due to the increased demand but are excluded from higher-income areas due to land and structure rents). This mechanism may explain increased exposure to alcohol outlets for lower-income populations in rural areas. This study tests the hypothesis that the distribution of outlets between rural towns will reflect these market dynamics, such that outlets are concentrated in towns with (i) greater resident and temporary populations, (ii) with lower income, and (iii) which are adjacent to towns with higher income. Method: Bayesian conditional autoregressive Poisson models examined counts of bars, restaurants, and off-premise outlets within 353 discrete towns of rural Victoria, Australia (mean population = 4,236.0, SD = 15,754.1). Independent variables were each town’s total resident population, net changes to population (due to commuter flow, visitors, and the flow of local residents to other towns [spatial interaction]), and income for the local and adjacent towns. Results: Lower local income and increased income in adjacent towns were associated with more outlets of all types. Greater resident populations and greater net population due to commuters also predicted greater numbers of all outlets. Bars and restaurants were positively related to greater net population due to visitors and negatively related to spatial interaction. Conclusions: The economic geographic processes that lead to greater concentrations of alcohol outlets in lower-income areas are common to all retail markets. Lower-income populations are exposed to increased risk associated with the presence of additional outlets that service demand from nonresidents. In rural areas, these processes appear to operate between discrete towns.

Abstract 2

Objective: Alcohol outlets tend to be located in lower income areas, exposing lower income populations to excess risks associated with alcohol sales through these establishments. The objective of this study was to test two hypotheses about the etiology of these differential exposures based on theories of the economic geography of retail markets: (a) outlets will locate
within or near areas of high alcohol demand, and (b) outlets will be excluded from areas with high land and structure rents. Method: Data from the 2010 National Drug Strategy Household Survey were used to develop a surrogate for alcohol demand (i.e., market potential) at two census geographies for the city of Melbourne, Australia. Bayesian conditional autoregressive Poisson models estimated multilevel spatial relationships between counts of bars, restaurants, and off-premise outlets and market potential, income, and zoning ordinances (Level 1: n = 8,914). Results: Market potentials were greatest in areas with larger older age, male, English-speaking, high-income populations. Independent of zoning characteristics, greater numbers of outlets appeared in areas with greater market potentials and the immediately surrounding areas. Greater income excluded outlets in local and surrounding areas. Conclusions: These findings are consistent with the hypothesis that alcohol outlets are located in areas with high demand and are excluded from high-income areas. These processes appear to take place at relatively small geographic scales, encourage the concentration of outlets in specific low-income areas, and represent a very general economic process likely to take place in communities throughout the world.

Abstract 3


Introduction and Aims. Greater concentrations of off-premise alcohol outlets are found in areas of social disadvantage, exposing disadvantaged populations to excess risk for problems such as assault, child abuse and intimate partner violence. This study examines whether the outlets to which they are exposed also sell cheaper alcohol, potentially further contributing to income-related health disparities. Design and Methods. We conducted unobtrusive observations in 295 off-premise outlets in Melbourne, Australia, randomly selected using a spatial sample frame. In semi-logged linear regression models, we related the minimum purchase price for a 750 mL bottle of wine to a national index of socioeconomic advantage for the census areas in which the outlets were located. Other independent variables characterised outlet features (e.g. volume, chain management) and conditions of the local alcohol market (adjacent outlet characteristics, neighbourhood characteristics). Results. A one decile increase in socioeconomic advantage was related to a 1.3% increase in logged price. Larger outlets, chains, outlets adjacent to chains, outlets in greater proximity to the nearest neighbouring outlet and those located in areas with more students also had cheaper alcohol. Discussion and Conclusions. Not only are disadvantaged populations exposed to more outlets, the outlets to which they are exposed sell cheaper alcohol. This finding appears to be consistent with the spatial dynamics of typical retail markets.

Abstract 4


Aims. This study investigated the hypotheses that (i) intentional and unintentional injuries occur more frequently in areas with greater density of off-premises alcohol outlets; and (ii) larger and
chain outlets selling cheaper alcohol contribute more substantially to injury risk than smaller and independent outlets. Design. Ecological cross-sectional. Setting. From the 256 Statistical Area level 2 (SA2) census units in Melbourne, Australia, we selected a random sample of 62 units. There were 2119 Statistical Area level 1 (SA1) units nested within the selected SA2 units. Participants. The selected units contained 295 off-premises outlets. Measurements. Two independent observers conducted premises assessments in all off-premises outlets, assessing the volume of alcohol available for sale (paces of shelf space), price (least wine price) and other operating characteristics (chain versus independent, drive-through). Outlet counts, assessed outlet characteristics and other area characteristics (population density, median age, median income, retail zoning) were aggregated within SA1 units. Dependent variables were counts of ambulance attended intentional injuries (assaults, stabbings, shootings) and unintentional injuries (falls, crush injuries and object strikes). 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 [IRR]=1.38; 95% credible interval [CI]=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.

Abstract 5


Background: This study examines spatial relationships between alcohol outlet density and the incidence of alcohol-related crashes. The few prior studies conducted in this area used relatively large spatial units; here we use highly resolved units from Melbourne, Australia (Statistical Area level 1 [SA1] units: mean land area = 0.5 km²; SD = 2.2 km²), in order to assess different microscale spatial relationships for on-and off-premise outlets. Methods: Bayesian conditional autoregressive Poisson models were used to assess cross-sectional relationships of three-year counts of alcohol-related crashes (2010–2012) attended by Ambulance Victoria paramedics to densities of bars, restaurants, and off-premise outlets controlling for other land use, demographic and roadway characteristics. Results: Alcohol-related crashes were not related to bar density within local SA1 units, but were positively related to bar density in adjacent SA1 units. Alcohol-related crashes were negatively related to off-premise outlet density in local SA1 units. Conclusions: Examined in one metropolitan area using small spatial units, bar density is related to greater crash risk in surrounding areas. Observed negative relationships for off-premise outlets may be because the origins and destinations of alcohol-affected journeys are in distal locations relative to outlets.