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Violence and Victims, Vol. 31, No. 1 (2016): 111-12320. [DOI](#). This article is © Springer and permission has been granted for this version to appear in [e-Publications@Marquette](#). Springer does not grant permission for this article to be further copied/distributed or hosted elsewhere without the express permission from Springer.

Alcohol Outlet Density and Intimate Partner Violence in a Nonmetropolitan College Town: Accounting for Neighborhood Characteristics and Alcohol Outlet Types

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Abstract

There is a growing evidence of an ecological association between alcohol outlet density and intimate partner violence. It is reasonable to assume, however, that not all types of alcohol outlets contribute equally to criminal behavior, and to date, most ecological studies have been of large urban cities. Using Bloomington, Indiana, block groups as units of analysis and controlling for several structural characteristics associated with violence rates, I estimated spatially lagged regression models to determine if the variation in alcohol outlet density, including total outlets and disaggregating by on- and off-premise outlets, is related to intimate partner violence density. Results suggested that total alcohol outlet density and off-premise alcohol outlet density were significantly associated with intimate partner violence density. On-premise alcohol outlet density was not significantly

associated with intimate partner violence density. These results not only extend the geographic scope of this relationship beyond large metropolitan areas but also have important policy implications.

Intimate partner violence is a universal public health problem that affects individuals all over the world (**Kuhns, Exum, Clodfelter, & Bottia, 2013**). Between 15% and 70% of interviewed females from 10 countries reported experiencing sexual or physical violence by an intimate partner in their lifetime (**García-Moreno, Jansen, Watts, Ellsberg, & Heise, 2005**). Victims of intimate partner violence tend to report poor health, injury, and depression and to develop chronic health conditions (**Coker et al., 2002**). Sexually and physically abused females have significantly more health related problems, including gynecological and stress-related problems, relative to females who were never abused (**Campbell et al., 2002**). Intimate partner violence also is a serious problem in the United States, where nearly one in four surveyed females reported experiencing sexual or physical violence in their lifetime, which was three times higher than males in the survey (**Tjaden & Thoennes, 2000**). Intimate partner violence seems to disproportionately affect African American females, relative to White or Hispanic females. **Caetano, Schafer, and Cunradi (2001)** reported that 23% of African American couples reported an instance of male-on-female partner violence in the preceding 12 months, whereas the rate was 17% for Hispanic couples and 12% for White couples. In addition, 30% of African American couples reported instances of female-on-male violence in the preceding 12 months; the rate was 21% for Hispanic couples and 15% for White couples (**Caetano, Schafer, & Cunradi, 2001**).

Understanding and properly identifying the correlates and causes of intimate partner violence is especially challenging because of many influences that play a role in such a complex phenomenon. For example, alcohol consumption can encourage intimate partner violence by disrupting normal brain function and weakening brain mechanisms that control impulsive behaviors (**Gustafson, 1994**). In addition, alcohol consumption impairs information processing, so that individuals under the influence of alcohol are likely to misinterpret the social cues and overreact in their violent response (**Clements & Schumacher, 2010**). Indeed, **Leonard (2005)** argues that what we already know from the empirical evidence allows us to conclude that heavy alcohol consumption is a contributing cause of violence in some people under some circumstances. For example, **Coker et al. (2002)** found that reporting intimate partner violence by both genders was associated with partner's use of alcohol and with self-reported heavy alcohol use. In addition, **Coker, Smith, McKeown, and King (2000)** found that independent of levels of female's substance use, use of alcohol by males was significantly associated with different types of intimate partner violence (i.e., physical assault, sexual assault, battering, and perceived emotional abuse), most likely because social norms promote heavier drinking among males than females (**Neighbors, Lee, Lewis, Fossos, & Larimer, 2007; Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994**). In addition, male-on-female partner violence was especially higher among males who reported drinking five or more drinks per occasion at least once per week, relative to males who reported abstaining from drinking (**Caetano et al., 2001**). Regardless of gender, heavy drinkers have increased risk for mutual intimate partner violence relative to abstainers (**Cunradi, 2007**). **Waller and colleagues (2012)** confirmed that frequent heavy female and frequent heavy male drinkers are at a greater risk for experiencing intimate partner violence relative to abstainers (**Waller et al., 2012**). Although these individual and contextual characteristics are important, structural level characteristics (e.g., neighborhood characteristics) may also play a role in rates of intimate partner violence and have been examined less often in the empirical literature.

There are a few theoretical reasons why alcohol availability might be related to area of intimate partner violence. First, it could be that the alcohol and intimate partner violence association is caused by the routine activities of individuals who consume alcohol, or the convergence in time and space of motivated offenders and suitable targets in the absence of capable guardians (**Cohen & Felson, 1979**). In the context of intimate partner violence, the suitable target may be one of the intimate partners who may be vulnerable after consuming alcoholic beverages. In addition, the motivated offender may be the other partner who may see an opportunity

for victimization, especially because a capable guardian is typically absent in the course of domestic altercations that occur in the privacy of one's home. Second, as **Stockwell and Gruenewald's (2001)** availability theory suggests, increases in the physical availability of alcohol in an area influences consumption of alcohol at the individual level. Indeed, alcohol outlet density, as a potentially important neighborhood characteristic that may be associated with local rates of intimate partner violence, has been receiving increasing attention in the intimate partner violence literature. For example, controlling for several multilevel sociodemographic variables, **McKinney, Caetano, Harris, and Ebama (2009)** found that an increase in alcohol outlet density is associated with increased risk of male-on-female partner violence, especially among risky drinkers. In addition, males that live in neighborhoods with high densities of alcohol outlets are much more likely to experience physical intimate partner violence and be perpetrators of physical intimate partner violence, relative to males who live in neighborhoods where densities of alcohol outlets are lower (**Waller et al., 2012; Waller et al., 2013**).

Yet, although some areas may have many alcohol outlets, it is unlikely that all alcohol outlets equally share in the risk of intimate partner violence. Therefore, the types of venues at which the alcoholic beverages can be bought or consumed warrant additional consideration when attempting to disentangle the relationship between alcohol outlet density and intimate partner violence. For example, individuals who obtain and consume their alcoholic beverages at a bar may be more likely to become involved in an altercation in or around the bar, whereas individuals who obtain alcohol from a liquor store and consume their alcohol at their home may be more likely to become involved in an altercation at their home. Indeed, **Livingston (2011)** found that although all types of alcohol license categories (i.e., general license, on-premise license, and off-premise license) were associated with domestic violence, the effect for off-premise license (e.g., liquor stores) was more than 10 times higher than that for on-premise license (e.g., bars). A **Cunradi, Mair, Ponicki, and Remer (2011)** study suggested similar conclusions: higher off-premise alcohol outlet density is associated with increased risk for in both intimate partner violence-related police calls and intimate partner violence-related crime reports. Although focusing on instances of child physical abuse and neglect and not on instances of intimate partner violence, **Freisthler, Midanik, and Gruenewald (2004)** found an association between density of liquor stores and child physical abuse and between density of bars and child neglect.

This review of the literature suggests a consistent association between alcohol outlet density and intimate partner violence. All of these studies, however, focus on this association in large metropolitan areas. Recent research suggests the association with violence of certain structural characteristics (**Kaylen & Pridemore, 2013; Snowden & Pridemore, 2013a**) and of alcohol outlet density (**Snowden & Pridemore, 2013a, 2013b**) may be different outside cities, and thus this study examines whether association between alcohol outlet density and intimate partner violence exists in a nonmetropolitan college town. This is important both theoretically and practically. Theoretically, it is important to know just how broadly the covariates of intimate partner violence can be generalized. Practically, policies and interventions appropriate for one type of area may not necessarily be appropriate for other areas. Therefore, in this study, I test the hypothesis that the density of total alcohol outlets will be associated with intimate partner violence density in a nonmetropolitan setting. In addition, I test whether the association exists for different alcohol outlet types (i.e., off-premise and on-premise). There are theoretical reasons to believe that different outlet types will have a different influence on intimate partner violence rates. For example, off-premise alcohol outlets are places where informal social control ends the moment the patron leaves the premise, so these types of places may be more likely to contribute to more frequent occurrences of intimate partner violence, relative to on-premise outlets. In on-premise alcohol outlets (e.g., restaurants and bars), on the other hand, there are other patrons or trained staff who may act quickly in cases of problematic behavior before the conflict escalates to more serious harm.

METHODS

Research Site and Unit of Analysis

Bloomington, Indiana, is a nonmetropolitan college town that covers land area of about 60 square kilometers and has a population of 80,405 individuals (**United States Census Bureau, 2010**). Bloomington is home to Indiana University, the flagship state university that is attended by about 40,000 graduate and undergraduate students. The units of analysis for this study are the 65 census block groups that lie within the boundaries of Bloomington. The population of these block groups ranges between 393 and 4,588 individuals, with a mean of 1,268.

Data

Licensed Outlets.

Data on all active alcohol outlet licenses for 2010 were obtained from the Indiana Alcohol and Tobacco Commission. The data included license address, which was geocoded using ArcMap 10 with 99% successful match and license type (e.g., on-premise, such as bars and restaurants, or off-premise, such as liquor and convenience stores). Using these data, I calculated total alcohol outlet density as the number of all outlets per square mile for each block group. Subsequently, I disaggregated all alcohol outlets into two broad types (i.e., on-premise and off-premise). I calculated on-premise alcohol outlet density for the number of on-premise outlets per square mile for each block group and off-premise alcohol outlet density as the number of off-premise outlets per square mile for each block group. Because the distribution of alcohol outlet density was skewed, the scores were transformed using base 10 logs.

Intimate Partner Violence.

Data on physical intimate partner violence were obtained from the Bloomington Police Department and based on incidents of domestic battery and domestic aggravated battery investigated by the police between January 1, 2008 and December 31, 2009. The data included the Indiana statute code (IC code), case type, the time and date of the incident, and the address of the incident. Indiana statute code 35-42-2-1.3 defines *domestic battery* as “intentional injury to a spouse, partner, or a parent of a common child, in a way that results in bodily injury” (**Indiana Code, ch. 2, § 35-42-2-1.3**). Indiana statute code 35-42-2-1.5 defines *aggravated battery* as “injury that creates a substantial risk of death or causes serious disfigurement or impairment of bodily function” (**Indiana Code, ch. 2, § 35-42-2-1.5**). These data were geocoded using ArcMap 10 software and aggregated to block groups with 99% successful match. Using these data, I calculated physical intimate partner violence density per square mile for each block group. The distribution of physical intimate partner violence density was skewed and so the scores were transformed using base 10 logs.

Control Variables.

To account for potential structural influences on intimate partner violence that were found to be significantly associated with intimate partner violence in past research (e.g., **Livingston, 2010**), I controlled several block group characteristics. These control variables included population density, proportion African American, proportion female-headed households, and poverty. The distributions for population density and poverty were skewed and were subsequently transformed using natural logs. Data on proportion African American and proportion female-headed households were also skewed and were subsequently transformed using square root transformation. Data for these control variables were obtained from the United States Census Bureau. As done in previous research on density of alcohol outlets and violence (**Roman, Reid, Bhati, & Tereshchenko, 2008**) and density of alcohol outlets and domestic violence (**Roman & Reid, 2012**; published in *Violence and Victims*), to control for unobserved heterogeneity in block groups, I also controlled for prior levels of intimate partner violence. The data were based on incidents of physical intimate partner violence from January 1, 2004 to

December 31, 2005 and were obtained from the Bloomington Police Department. The distribution of prior levels of intimate partner violence was skewed and was transformed using base 10 logs.

I transformed the dependent, main independent, and control variables in different ways to reduce the skew in the distribution of the data. Specific transformations (i.e., natural log, base 10 logs, square root) were chosen depending on the characteristics of the distribution of the data for each variable (e.g., moderately positive skew, substantially positive skew, etc.).

Statistical Analyses.

Because I used units of analysis (i.e., block groups) that have artificially imposed boundaries and analyzed data that are spatially distributed, I used GeoDa software (Anselin, 2005) and estimated maximum likelihood estimation (MLE) models with spatial lag function to account for spatial autocorrelation of intimate partner violence across neighboring block groups. I conducted three sets of analyses. The first model examined whether intimate partner violence is associated with total alcohol outlet density. The second model examined whether intimate partner violence is associated with on-premise alcohol outlet density. Finally, the last model examined whether intimate partner violence is associated with off-premise alcohol outlet density. I used ArcMap 10 software to clean, geocode, and manage data and GeoDa software to estimate all models.

RESULTS

Descriptive statistics for the dependent, main independent, and control variables used in regression models are presented in **Table 1**. On average, Bloomington block groups contained about 18 incidents of intimate partner violence per square mile, and about 14 alcohol outlets per square mile, most of which were on-premise alcohol outlets (e.g., bars and restaurants). The average Bloomington block group population density was 4,231 individuals per square mile, with about a quarter of people who lived in poverty.

Table 1 Descriptive Statistics of Bloomington Block Groups ($N = 65$)

	Min.	Max.	<i>M</i>	<i>SD</i>
Intimate partner violence density	.00	102.99	18.41	23.99
Total alcohol outlet density	.00	254.52	13.60	37.36
On-premise alcohol outlet density	.00	247.82	10.64	35.58
Off-premise alcohol outlet density	.00	20.60	2.96	5.10
Population density	106.59	30,627.50	4,231.04	4,662.13
Proportion African American	.00	.13	.04	.03
Proportion female headed households	.00	1.00	.13	.16
Proportion living in poverty	.00	.75	.24	.20
Prior density of intimate partner violence	.00	77.87	13.21	17.96

Table 2 shows the correlation matrix. As expected, the density of intimate partner violence was positively and significantly correlated with total alcohol outlets ($r = .39$). In addition, the density of intimate partner violence was positively and significantly correlated with on-premise alcohol outlets ($r = .32$) and with off-premise alcohol outlets ($r = .46$).

Table 2 Correlation Matrix for Bloomington Block Groups ($N = 65$)

	1	2	3	4	5	6	7	8	9
1. Log10 intimate partner violence density	1.00								
2. Log10 total alcohol outlet density	.394 ^a	1.000							

3. Log10 on-premise alcohol outlet density	.315 ^b	.953 ^a	1.000						
4. Log10 off-premise alcohol outlet density	.458 ^a	.839 ^a	.685 ^a	1.000					
5. Ln population density	.365 ^a	.329 ^a	.289 ^b	.345 ^a	1.000				
6. Square root African American	.334 ^a	.130	.140	.070	.290 ^b	1.00			
7. Square root female headed households	.17	.00	.06	-.06	-.07	.09	1.00		
8. Ln poverty	.287 ^b	.472 ^a	.427 ^a	.478 ^a	.573 ^a	.256 ^b	-.130	1.000	
9. Log10 prior density of intimate partner violence	.724 ^a	.356 ^a	.320 ^a	.347 ^a	.467 ^a	.365 ^a	.160	.485 ^a	1.000

Note. Ln = logarithm (natural).

[i] ^aCorrelation is significant at the 0.01 level (two-tailed).

[ii] ^bCorrelation is significant at the 0.05 level (two-tailed).

For reasons outlined earlier, I estimated three models. All three models were spatial regression models that used a first order queen contiguity matrix. All three models included the spatial lag term (*Rho*) that measured the average influence of neighboring block groups on the block group of interest. **Table 3** shows the results of those three different models. Model 1 examined the association between total alcohol outlet density and intimate partner violence density net of control variables. The model explained about 61% of the variance in intimate partner violence. In Model 1, we see that total alcohol outlet density was positively and significantly associated with intimate partner violence ($p = .04$). The spatial lag term (*Rho*) associated with intimate partner violence in the model was a positive and significant contributor to the model ($p = .02$).

Table 3 Spatial Lag Regression Results for Intimate Partner Violence Density Regressed on Outlet Type for Bloomington Block Groups ($N = 65$)

	Model 1 Total Alcohol Outlet Density			Model 2 On-Premise Alcohol Outlet Density			Model 3 Off-Premise Alcohol Outlet Density		
	b	se	p	b	se	p	b	se	p
Constant	-.39	.41	.35	-.41	.42	.33	-.38	.38	.33
Log10 total alcohol outlet density	.18	.09	.04	—	—	—	—	—	—
Log10 on-premise alcohol outlet density	—	—	—	.11	.10	.24	—	—	—
Log 10 off-premise alcohol outlet density	—	—	—	—	—	—	.43	.12	.00
<i>Rho</i> intimate partner violence	.31	.13	.02	.33	.13	.01	.32	.13	.01
Ln population density	.06	.06	.27	.07	.06	.24	.05	.05	.30
Square root African American	.70	.71	.33	.64	.72	.38	.92	.68	.17
Square root female headed households	.01	.25	.96	-.00	.25	.98	.05	.23	.82
Ln poverty	-.76	.42	.07	-.63	.43	.14	-.93	.40	.02
Log 10 prior density of intimate partner violence	.59	.10	.00	.60	.10	0.00	.56	.10	.00
R-squared	0.61			0.60			0.66		
AIC	79.89			82.52			72.15		
Standard error of regression	0.39			0.40			0.37		
Multicollinearity condition number	28.67			28.52			28.45		
Breusch-Pagan	10.54 ($p = .10$)			10.14 ($p = .12$)			9.89 ($p = .13$)		

Note. Ln = logarithm (natural); AIC = Akaike information criterion.

Given the results of this global model and the statistically significant relationship between intimate partner violence and total outlet density, Models 2 and 3 were estimated to provide a more disaggregate analysis of the relationship between intimate partner violence and different alcohol outlet types. Model 2 examined the association between on-premise alcohol outlet density and intimate partner violence density net of control variables. The association between intimate partner violence and on-premise alcohol outlet density was not statistically significant ($p = .24$). Last, Model 3 examined the association between off-premise alcohol outlet density and intimate partner violence density net of control variables. The model explained about 66% of the variance in intimate partner violence. Model 3 suggests that off-premise alcohol outlet density was positively and significantly associated with intimate partner violence ($p = 0.00$). The spatial lag (Rho) associated with intimate partner violence in the Model 3 was a positive and significant contributor to the model ($p = .01$).

Regression Diagnostics

Using GeoDa outputs, I examined three traditional sets of regression diagnostics: the multicollinearity condition number, a test for non-normality, and three diagnostics for heteroskedasticity. First, I considered the multicollinearity condition number and the diagnostic test for all three models suggested no multicollinearity among the control variables. Second, the value of Jarque-Bera statistic suggested that the distribution of errors in the regressions were normal in all of the three models. Third, I assessed the Breusch-Pagan test statistic, which suggested that heteroskedasticity was not a serious problem for the specified models.

A final set of model diagnostics consisted of tests to measure spatial autocorrelation and spatial dependence in the regression residuals. The values of the Lagrange multiplier (lag) and Robust LM (lag) test statistic were significant, suggesting a lack of autocorrelation in the regression residuals and that the MLE spatial lag regression model better suit the properties of the data specified in the models, relative to ordinary least squares (OLS) models. The stronger fit of the spatial lag model was also evident in the values of log-likelihood, Akaike information criterion (AIC), and Schwarz criterion, all of which were reduced in the spatial lag model relative to the OLS model. In addition, the spatial autoregressive coefficient Rho was statistically significant in all three models ($p < .05$). Two spatial lag model diagnostics, the Breusch-Pagan test for heteroskedasticity in the error terms and the likelihood ratio test, confirmed the lack of heteroskedasticity in the error terms and strong significance of the spatial autoregressive coefficient.

DISCUSSION

This study is among the first to examine the relationship between alcohol outlet density, including different types of alcohol outlets, and intimate partner violence outside a metropolitan setting. The findings of the study show support for the hypotheses outlined. Areas that have higher densities of alcohol outlets appear to have higher densities of intimate partner violence even after controlling for neighborhood characteristics that are often found to be associated with intimate partner violence (i.e., poverty, population density, proportion of population that is African American, and proportion of female-headed households). In addition, areas with greater densities of off-premise alcohol outlets (e.g., grocery store, liquor store, convenience store) are also areas that have higher densities of intimate partner violence, independent of the effect of other neighborhood characteristics (i.e., poverty, population density, proportion of population that is African American, and proportion of female headed households).

The findings of this study suggest that total alcohol outlet density and off-premise alcohol outlet density but not on-premise alcohol outlet density seem to be important predictors of intimate partner violence. These findings are similar to findings from several recent studies. Grouping all alcohol outlets together to measure total alcohol outlet density, **Waller et al. (2013)** and **Waller et al. (2012)** found that total alcohol outlet density was associated with physical intimate partner violence. In addition, **Cunradi et al. (2011)** found that density of off-premise alcohol outlets, but not density of bars and restaurants, was associated with intimate partner violence-

related calls for service and crime reports. The findings of this study regarding the statistically significant association between off-premise alcohol outlet density and intimate partner violence are similar to that of **Cunradi, Mair, Ponicki, and Remer (2012)** and **Livingston (2011)**.

However, in terms of association between on-premise alcohol outlet density and intimate partner violence, the findings of this study are opposite with those by **Cunradi et al. (2012)** and **Livingston (2011)**. In their studies, there was a significant association between density of bars and intimate partner violence-related emergency department visits (**Cunradi et al., 2012**), and between density of on-premise alcohol outlets and domestic violence (**Livingston, 2011**), which contradict the findings of this study. The findings of this study are also different from findings from **McKinney et al. (2009)** and **Livingston (2010)**, who found no association between off-premise alcohol outlet density and intimate partner violence; and from **Waller et al. (2012)** and **Gorman, Labouvie, Speer, and Subaiya (1998)** who examined association between total alcohol outlet density and intimate partner violence and found no association. The differences in findings between these studies and the findings of the present study may be attributed to different settings (urban vs. metropolitan college town), methodology (longitudinal vs. cross-sectional), and analytical strategy (e.g., not controlling for spatial autocorrelation; see **Gorman, Labouvie, Speer, & Subaiya, 1998**).

Nonetheless, accumulation of empirical evidence thus far regarding the role of off-premise alcohol outlets in intimate partner violence (**Cunradi, Mair, Ponicki, & Remer, 2011; Cunradi et al., 2012; Livingston, 2011; Waller et al., 2013; Waller et al., 2012**), and interpersonal violence (e.g., **Snowden & Pridemore, 2013b**) suggests that off-premise alcohol outlets appear to be especially risky places for several reasons, relative to on-premise alcohol outlets. First, in the context of off-premise alcohol outlets, surveillance and guardianship ends the moment the patron leaves the premise, and such places may be more likely to contribute to intimate partner violence relative to bars or restaurants where other outlet staff or patrons can keep possible altercations in check. This idea seems to be supported by recent studies on violence among intimate partners. For example, **Livingston (2011)** found that the effect of off-premise license on domestic violence was 10 times higher relative to the effect of on-premise license, and **Cunradi et al. (2011)** found that increase in off-premise alcohol outlet density was associated with increase in intimate partner violence related calls for service. Second, high densities of off-premise alcohol outlets may encourage heavy consumption away from the public eye. Concentration of off-premise alcohol outlets may create market competition resulting not only in lower beverage prices across off-premise alcohol outlets but also in stronger competition for on-premise customers, as it is often less expensive to drink at home than it is to drink at a bar or a restaurant. Therefore, not only may customers drink at home in response to lower prices, but they may also preload before going out to bars and restaurants. Last, there might be something about the off-premise alcohol outlets that contribute to intimate partner violence. It may be that these risky places emerge from the ease, which an intoxicated customer can purchase an additional drink, or the quality of responsible service training that employees are subjected to, or even the signals that litter or empty beer bottles outside of the outlets send to community members about expectations and enforcement of mainstream norms and values.

Limitations

There are four main limitations to be considered in light of these findings. First, the dependent variable for this research measures intimate partner violence and is based on calls for service to Bloomington Police Department. As such, it is a conservative estimate of intimate partner violence because it does not include instances of intimate partner violence that are unreported and not known to the police. However, the data were recorded and provided by one police department, and reporting and recording procedures for violent crimes tend to be similar across units of analysis (**Baumer, 2002**), although less is known whether this is the case for intimate partner violence, in particular. Second, the data regarding incidents of intimate partner violence is based on those that were physical in nature, and this study does not tell us anything about an association

between alcohol outlet density on verbal intimate partner violence. Third, the sample size of 65 Bloomington census block groups may not provide sufficient statistical power for detecting relationships that may exist between densities of on-premise alcohol outlets and intimate partner violence. Last, Bloomington is a quintessential nonmetropolitan college town that has typical problems associated with college experiences (e.g., binge drinking, house parties, etc.), and the findings of this study may not hold true for other nonmetropolitan settings with different demographic characteristics (e.g., noncollege towns, urban cities, etc.). In spite of these limitations, however, this study is carefully designed to advance our understanding of the relationship between alcohol outlets and intimate partner violence by using data from a nonmetropolitan college town, using spatially informed models, controlling for several neighborhood characteristics and prior levels of assaults, and disaggregating all alcohol outlets into different types for the purposes of analyses.

Still, future research should further examine the causal mechanism that drives the association between alcohol outlets and intimate partner violence. In doing so, future research should focus not only on the structural variables commonly associated with intimate partner violence (e.g., poverty), but also neighborhood characteristics such as social disorganization and land use that may moderate the association between alcohol outlet density and violence (**Pridemore & Grubestic, 2013**), including intimate partner violence. There are theoretical and empirical reasons to believe that the effect of outlet density on intimate partner violence may depend on the levels of social disorganization and land use in the neighborhood. As **Pridemore and Grubestic's (2013)** findings suggest, violence is more likely to occur in areas that are socially disorganized or in areas where land use is devoted to commercial or public housing. Socially disorganized neighborhoods and neighborhoods devoted to commercial or public housing may be unable to control the behavior of its members. They may also lack sufficient social cohesion, trust in one another, and political organization to put limits on new alcohol outlets from opening in the area. Thus, in such neighborhoods, it is possible that the effect of alcohol outlet density on intimate partner violence may be stronger relative to organized neighborhoods or neighborhoods with different land uses.

As previously noted by **Leonard (2001)**, one possible way to influence violent events is to start by influencing alcohol use. Reducing violence, including intimate partner violence, could be achieved by (a) reducing the number of alcohol outlets that are allowed to operate within a neighborhood; (b) limiting the hours and days of sales of alcoholic beverages (**Popova, Giesbrecht, Bekmuradov, & Patra, 2009; Rossow & Norström, 2012**); (c) enforcing the current laws that prohibit serving intoxicated patrons (**Leonard, 2001**), or by any other similar means that are meant to reduce consumption of alcoholic beverages to reduce violent events that typically follow alcohol consumption. Reducing the number of outlets where alcohol can be purchased and carried out for consumption elsewhere (e.g., liquor stores), may especially be important in light of the findings from this study.

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