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Neighborhood Alcohol Outlet Density and Rates of Child Abuse and Neglect: Moderating Effects of Access to Substance Abuse Services

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Abstract

This study investigates the relationship between concentrations of on- and off-premises alcohol outlets and rates of child abuse and neglect. Additionally, the study seeks to locate protective features of a neighborhood's built environment by investigating the potentially moderating role that access to substance abuse treatment and prevention services plays in the relationship between alcohol outlet density and child maltreatment. Using a cross-sectional design, this ecological study utilized data from 163 census tracts in Bergen County, New Jersey, on reports of child abuse and neglect, alcohol outlets, substance abuse treatment and prevention facilities, and the United States Census to investigate the linkages between socioeconomic structure, alcohol availability, and access to substance abuse service facilities on rates of child abuse and neglect. Findings indicate areas with a greater concentration of on-premises alcohol outlets (i.e., bars) had higher rates of child neglect, and those with easier access to substance abuse services had lower rates of neglect, controlling for neighborhood demographic and socioeconomic structure. Additionally, the relationship between on-premises alcohol outlet density and rates of child neglect was moderated by the presence of substance abuse service facilities. A greater concentration of off-premises outlets (i.e., liquor stores) was associated with lower rates of physical abuse. Findings suggest that the built environment and socioeconomic structure of neighborhoods have important consequences for child well-being. The implications for future research on the structural features of neighborhoods that are associated with child well-being are discussed.

Keywords

Child Abuse; Child Neglect; Alcohol Outlets; Prevention; Built Environment

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Introduction

The last 30 years has seen growing interest in the way the socioeconomic structure of neighborhoods impacts rates of child abuse and neglect. The most consistent predictor of involvement with the child welfare system is living in poverty (Coulton, et al., 2007; Freisthler, Merritt & LaScala, 2006). Neighborhood rates of poverty, unemployment, vacant housing units, and single parent households have all been shown to be correlated with higher rates of child abuse and neglect (Coulton, Korbin, & Su, 1999; Freisthler, Bruce, & Needell, 2007; Paulsen, 2003). Other neighborhood features including measures of residential stability (i.e., 5-year residential migration) have been less consistent as predictors. Ernst (2001) found residential instability to predict higher rates of abuse and neglect, but other researchers have reported equivocal findings, with no relationship found when investigating all families (Coulton, Korbin, & Su, 1999; Freisthler, 2004); a negative relationship for African American families (Freisthler, Bruce, & Needell, 2007); and a positive relationship for white families (Korbin, Coulton, Platt-Houston, & Su, 1998). Lastly, the degree to which children overburden the available caregivers in a neighborhood (i.e., high ratio of children to adults, scarcity of elderly residents) has been linked to overall rates of child maltreatment (Coulton et al., 1995; Coulton, Korbin, & Su, 1999) and rates of substantiation for white families (Freisthler, Bruce, & Needell, 2007; Korbin et al., 1998), but overall has been an inconsistent predictor of child abuse and neglect (Coulton et al., 2007). Beyond the socioeconomic profile of neighborhoods, researchers have investigated the role dense concentrations of alcohol outlets play on rates of child abuse and neglect. The term alcohol outlet refers to the physical location of bars, restaurants, or liquor stores that are licensed to sell alcohol.

Alcohol outlet density and child abuse and neglect

The neighborhood-level density of alcohol outlets has been associated with a variety of negative health outcomes for communities including adolescent substance use, intimate partner violence, and child maltreatment (Bryden, Roberts, & Petticrew, 2012; Cunradi, Mair, Ponicki, & Remer, 2011; Freisthler, 2011). With regard to child maltreatment, previous research has consistently shown higher levels of alcohol outlet density as associated with higher rates of child abuse and neglect (Freisthler, 2004; Freisthler, Gruenewald, Ring & LaScala, 2008; Freisthler, Midanik, & Gruenewald, 2004; Freisthler, Needell, & Gruenewald, 2005). These findings suggested broad, aggregate trends across all types of alcohol outlets and types of child maltreatment. More nuanced relationships, however, can be observed when alcohol outlet types are disaggregated to specify on- or off-premises outlets and distinct types of child maltreatment are examined (i.e., physical abuse or neglect). Researchers generally refer to two categories of alcohol outlets: on-premises outlets refer to drinking venues where the consumption of alcohol occurs on site (e.g., bars or restaurants) and off-premises outlets refer to venues where consumption must occur away from the establishment (e.g., liquor stores; Daikwon & Gorman, 2013; Freisthler, 2005; Pridemore & Grubestic, 2013).

Depending on the type of alcohol outlet that is predominate in a neighborhood, different child maltreatment outcomes have been detected by researchers. When on-premises outlets were predominate in a neighborhood, the consumption of alcohol was more likely to occur outside of the home, which resulted in acts of omission such as child neglect where children were left without adequate adult supervision. When off-premises outlets were predominate in a neighborhood, individuals were more likely to come in physical contact with children in their homes, possibly enabling acts of commission such as physical abuse. Prior research has established fairly stable associations in which higher density of on-premises outlets was related with elevated rates of child neglect, while higher density of off-premises outlets was related with higher rates of child physical abuse (Freisthler et al., 2008; Freisthler, Midanik, & Gruenewald, 2004; Freisthler, Needell, & Gruenewald, 2005). However, limited research has examined features of a neighborhood's built environment that could be considered a moderating or protective mechanism in the relationship between alcohol outlet density and perpetration of child abuse and neglect.

Substance abuse services and child welfare

Parental substance abuse has long been recognized as one of the primary drivers of the abuse and neglect of children, with estimates of the percentage of child welfare involved parents with substance abuse issues ranging from 40 to 80% (Banks & Boehm, 2001). Importantly, community services for preventing and treating substance abuse have been identified as problematic for child welfare involved parents due to limited availability and accessibility (Rockhill, Green, & Newton-Curtis, 2008). In terms of availability, demand for substance abuse treatment outstrips supply, with child welfare agencies only able to provide services for one-third of this population with others waiting up to twelve months to begin treatment (Banks & Boehm, 2001; Karoll & Poertner, 2003). Also important is the fact that community substance abuse services are not organized in a way to ensure the participation of a group of mainly impoverished clients. These services are often inaccessible because they are not located in poor communities and not convenient to public transportation (Semidi, Radel, & Nolan, 2001).

The successful completion of substance abuse treatment has been associated with shorter stays in foster care for children and a greater likelihood of family reunification (Choi, Huang, & Ryan, 2012; Green, Rockhill, & Furrer, 2007). When mothers were provided transportation to treatment, Marsh, D'Aunno and Smith (2000) found they were more likely to refrain from substance use than mothers who were not provided services to overcome logistical constraints. Although these studies address tertiary prevention of child maltreatment, the ability to democratize access to substance abuse services may have important primary protective effects for child abuse and neglect.

The current study

In this study, we replicate and extend the research on the relationship between alcohol outlet density and child maltreatment. Existing work is replicated by investigating the relationship between two types of alcohol outlets: on-premises and off-premises outlets and their relationship to physical abuse and neglect. We then extend existing research by investigating the potentially moderating effect of neighborhood access to substance abuse services in

relation to alcohol outlet density and rates of child abuse and neglect. Our research questions were: (a) Are neighborhood-level off- and on-premises alcohol outlet densities differentially associated with rates of child physical abuse and neglect?; and (b) Does neighborhood-level accessibility to substance abuse services moderate the relationship between alcohol availability and child abuse and neglect?

These questions are informed by two theoretical frameworks. First, past work investigating the role of neighborhood structure in influencing rates of child abuse and neglect has relied on the concept of social disorganization to explain why impoverished neighborhoods experience higher rates of child maltreatment as compared to areas with a higher socioeconomic profile (Coulton, Korbin, & Su, 1999; Freisthler, 2004). Impoverished neighborhoods are structured in a way that allows disadvantage to be concentrated, leading to an erosion of social control that precipitates negative outcomes like child maltreatment (Sampson, 2008). Second, in terms of access to alcohol and substance abuse services, the conceptual framework relies on routine activities theory which states opportunities for interpersonal violations only occur when a motivated offender, a suitable target, and no effective guardian converge (Cohen & Felson, 1979). The organization of a community may serve to motivate offenders through its built environment (e.g., spatial distribution of roads and retail outlets) by facilitating choices that may contribute to offending behavior. In this study, neighborhoods with a high density of on-premises alcohol outlets are hypothesized to have higher rates of child neglect because drinking outside of the home facilitates violations of omission like neglect. Conversely, neighborhoods with a high density of off-premises alcohol outlets are hypothesized to have higher rates of child physical abuse because drinking must occur off site, which facilitates violations of commission like physical abuse. Lastly, accessibility to substance abuse services may work to limit the capacity of offenders by facilitating access to treatment and prevention services for substance abuse which in turn may reduce rates of child abuse and neglect.

Methods

This study was conducted in Bergen County, New Jersey, which is part of the New York City metropolitan area. It is the most populous county in New Jersey with approximately 900,000 residents and a population density of 3,776 residents per square mile.

Data for this study were drawn from five sources: (a) 2003 New Jersey Department of Children and Families (DCF) Bergen County child maltreatment report data, (b) 2003 New Jersey Division of Alcoholic Beverage Control (ABC) listing of alcohol-selling outlets, (c) New Jersey Division of Mental Health and Addiction Services (DMHAS) listing of licensed substance abuse providers active in 2003, (d) Bergen County Center for Alcohol and Drug Resources' (CADR) listing of substance abuse prevention and treatment facilities active in 2003, and (e) the 2000 United States Census. The address data for physical abuse and neglect reports, alcohol outlets, and substance abuse service facilities were geocoded using ArcGIS 10.1, with a 95% or above match rate for each (ESRI, 2011). The U.S. Census tract was used as the unit of observation in this study as a proxy for neighborhoods. Census tracts are the most commonly relied upon measure of neighborhood boundaries and typically contains an average of 3,000 residents (Messer, 2007; Nicotera, 2007; Sampson, Morenoff,

& Gannon-Rowley, 2002; U.S. Census Bureau, 2002). Each measure discussed below is measured at the census tract level.

Measures

Child abuse and neglect—This study utilized DCF child maltreatment reports of physical abuse and neglect as the main criterion variables, measured as the number of reports per 1,000 children. Sexual abuse was excluded from the analysis due to its low occurrence, less than 2% of the DCF child maltreatment reports concerned sexual abuse.

Alcohol outlet density—The ABC data contain information on the location of each alcohol outlet and whether that outlet is licensed to sell alcohol for on-premises or off-premises consumption. Alcohol outlet density is measured as the number of outlets per 10km of roadway within a census tract.

Substance abuse service accessibility—The DMHAS and CADR data provide addresses for licensed providers of substance abuse treatment and prevention agencies, respectively. The treatment and prevention agencies are referred to as *substance abuse service facilities*.

Accessibility was measured by calculating the distance from the centroid of each census tract to the nearest substance abuse service facility (Guerrero, Kao, & Perron, 2013). This measure was chosen to assign each census tract a measure of accessibility. Other measures, such as those based on population or roadway, would have resulted in an overwhelming majority of census tracts having no values assigned.

Socioeconomic controls—The U.S. Census data provide socioeconomic control variable data measured at the census tract level. The socioeconomic control variables included here were chosen if they fit one of two criteria: a) they were used in previous neighborhood-level analyses of child maltreatment (reviewed in Coulton, Crampton, Irwin, Spilsbury, & Korbin, 2007 and Freisthler, Merritt, & LaScala, 2006), or b) they formed a significant portion of the demographic profile for Bergen County.

Analysis Plan

All analyses were conducted using ArcGIS 10.1 and SPSS 19.0. First, the set of 11 highly inter-correlated, socioeconomic control variables was reduced using Principal Components Analysis (PCA). The resulting factor scores from the PCA were used as control variables in the regression model, which is consistent with prior research in this area (Coulton et al., 1995; Ernst, 2001; Korbin et al., 1998). Using the method recommended by Charlton and Fotheringham (2009), spatial dependence among the units of measurement was assessed using a rook's criteria weight's matrix. Finally, to control for the issue of heteroskedasticity where neighborhoods with small populations are given the same weight in the regression model as those with large populations, each unit of observation was weighted by the square root of the total child population (Freisthler, Needell, & Gruenewald, 2005).

Hierarchical multiple regression was used to examine the effect of alcohol outlet density on child abuse and neglect, controlling for neighborhood-level socioeconomics. The

socioeconomic control, alcohol outlet density, and substance abuse service accessibility variables were entered in the first step. Interaction terms were created as the product of on- and off-premises alcohol outlet density and substance abuse service accessibility. The interaction terms were entered in the second step of the regression model. For illustration purposes, any significant moderation effects were subjected to post hoc analyses by recoding substance abuse service accessibility into groups and plotting regression lines for the relationship between rates of neglect or physical abuse and alcohol outlet density.

Results

Descriptive statistics

Descriptive statistics for each variable included in the analysis are presented in Table 1. The mean physical abuse rate for Bergen County was 2.55/1,000 and the mean child neglect rate was 1.23/1,000. Both rates carried extreme positive skewness. The skew for neglect was 2.85, and it was 2.87 for physical abuse. In order to correct for this skewness, a Box Cox transformation was applied to the variables achieving the following improvement in skew and normalizing the data: transformed neglect $sk = .008$, where $\lambda = -2.0$, and transformed physical abuse $sk = .487$, where $\lambda = .10$. These transformed variables were then used as criterion variables in the analyses. The mean outlet density for off-premises outlets (i.e., liquor stores) was .62 outlets per 10km of roadway and on-premises outlets (i.e., bars) was 1.84 outlets per 10km of roadway. Community substance abuse services had a mean distance of 1.39 miles to the nearest facility from the geographic center of each census tract.

PCA with varimax rotation was conducted on the set of socioeconomic control variables as a data reduction strategy to protect against the issue of multicollinearity. Results from the PCA are presented in Table 2. The PCA revealed three underlying factors characterizing the census tracts included in this study: Impoverishment, Young and Male, and Predominantly Asian. These three factors explained 69% of the variance in the set of socioeconomic variables. The factor scores from the PCA were entered as control variables in the models discussed below.

Effect of alcohol outlet density and substance abuse service accessibility on rates of neglect

On- and off-premises alcohol outlet density and substance abuse service facility accessibility measures were used as independent variables in an OLS regression model with rates of child neglect as the dependent variable and the sociodemographic factor scores from the PCA used as control variables. Table 3 presents the results for this analysis. Impoverishment, the number of on-premises alcohol outlets per 10km of roadway, and the distance to the nearest substance abuse service facility were significantly positively related to rates of child neglect, areas with a greater distance to the nearest facility had higher rates of neglect. The Predominantly Asian factor was negatively related to rates of neglect. The results of a hierarchical regression to support the moderator model for the interaction of alcohol outlet density and substance abuse service accessibility produced significant R^2 and F change statistics. While first order spatial autocorrelation was positive and significant ($MI = .11$, $p < .05$), the set of independent variables explained away the significant autocorrelation in the

regression model where the Moran's I for the residuals from the OLS were negative and non-significant ($MI = -.004, p = .843$). The R^2 value indicates that the set of variables explain 19% of the variation in neighborhood rates of child neglect.

A post hoc test of the moderator effect were performed in order to visualize the relationship between on-premises alcohol outlet density and child neglect for residents with low, medium, and high distances (using tertile groupings) to the nearest substance abuse service facility. Figure 1 illustrates the post hoc analysis. Rates of neglect were the highest in neighborhoods characterized by a greater density of on-premises alcohol outlets and greater distance to substance abuse service facilities. For those neighborhoods with a medium distance to the nearest substance abuse service facility, rates of child neglect were lowest and the slope for neglect was in the opposite direction from both the short and long distance groups.

Effect of alcohol outlet density and substance abuse service accessibility on rates of physical abuse

Similar to the previous neglect model, alcohol outlet density and substance abuse service facility accessibility measures were used as independent variables in an OLS regression model with physical abuse rates as the dependent variable and the sociodemographic factor scores from the PCA used as control variables. Table 4 presents the results for rates of physical abuse. Impoverishment, Young and Male, and on-premises alcohol outlet density were all significantly positively related to rates of physical abuse. The Predominantly Asian factor was negatively related to rates of physical abuse. Off-premises alcohol outlet density and the distance to the nearest substance abuse service facility were significantly negatively related to rates of physical abuse (i.e., *greater* density of outlets was related to *lower* rates of physical abuse and *greater* distance to substance abuse service facilities were related to *lower* rates of physical abuse). The results of a hierarchical regression to support the moderator model for the interaction of alcohol outlet density and substance abuse service accessibility produced significant R^2 and F change statistics. While first order spatial autocorrelation was positive and significant ($MI = .19, p < .001$), the set of independent variables explained away the significant autocorrelation in the regression model where the Moran's I for the residuals from the OLS were negative and non-significant ($MI = -.028, p = .662$), ruling out spatial dependence as a nuisance. The R^2 value indicates that the set of variables explain 34% of the variation in neighborhood rates of child abuse.

Post-hoc tests of the moderator effect were performed in order to visualize the relationship between on-premises and off-premises alcohol outlet density and physical abuse for residents with low, medium, and high distances (using tertile groupings) to the nearest substance abuse service facility. Figures 2 and 3 illustrate these post-hoc analyses. For the on-premises interaction, rates of physical abuse were the highest in neighborhoods characterized by a greater density of on-premises alcohol outlets and greater distance to substance abuse service facilities. For off-premises outlets, rates of abuse were highest for neighborhoods with a short distance to the nearest substance abuse service facility, followed by long distance and medium distance.

Discussion

There were two central foci of this study: one was to explore the association between the type of alcohol outlet (on- versus off-premises) and rates of physical abuse and neglect. The second aim was to examine the moderating effect of accessibility to substance abuse services on these two types of child maltreatment. In addition, another aim in our project was to examine the demographic characteristics of the community's population and the association with rates of child abuse and neglect reports. Overall, the results from this study reflect similar research in several areas, though there are significant departures from the literature as well. For instance, agreeing with previous research, our findings indicate that neighborhood level poverty was a strong predictor of elevated rates of both child physical abuse and neglect (reviewed in Coulton et al., 2007 and Freisthler, Merritt, & LaScala, 2006).

Some novel findings to the literature on neighborhood effects and child maltreatment emerged in this study, where neighborhoods characterized by high percentages of Asian residents had lower rates of physical abuse and neglect reports. This finding is supported by other studies showing relatively low rates of officially-reported abuse and neglect among Asian groups (Pelczarski & Kemp, 2006). Additionally, neighborhoods characterized by young, male residents had higher rates of physical abuse reports which is supported by other work finding perpetrators of severe physical abuse to be predominately male (Naidoo, 2000; Ricci, Giantris, Merriam, Hodge, & Doyle, 2003).

Regarding the association between presence of different types of alcohol outlets and rates of child maltreatment, this study adds to the literature by establishing that for rates of child neglect, neighborhoods with higher densities of on-premises alcohol outlets had corresponding high rates of neglect. This is concordant with research in other within-state studies (Freisthler, 2004; Freisthler, Midanik, & Gruenewald, 2004; Freisthler, Needell, & Gruenewald, 2005). Although the neglect findings mirror that of other studies, it is important to point out that our study was conducted in a different region of the country (New Jersey vs. California) and also looked at a smaller number of geographic units (census tracts within a single county versus multiple counties).

Additionally, substance abuse has long been recognized as a contributing factor to the perpetration of abuse and neglect, particularly in communities where poverty is present (Dubowitz, Pitts, & Black, 2004; Erickson & Egeland, 2002; Wulczyn, Barth, Yuan, Jones Harden, & Landsverk, 2005). While our findings in terms of neglect were consistent with prior research, some perplexing results emerged in the findings concerning physical abuse. That is, the direction of the relationship was not as expected, a greater density of off-premises outlets was connected to *lower* rates of physical abuse. This runs contrary to results elsewhere (Freisthler, Midanik, & Gruenewald, 2004).

Regarding the research aim of examining the potential moderating effect of access to substance abuse services on displays of neglect in the community, we found that access to substance abuse service facilities predicted lower rates of neglect both on its own, and through its interaction with the density of on-premises outlets. This finding suggests that

access to substance abuse services has a positive effect for rates of child neglect in neighborhoods with dense concentrations of alcohol retailers and points to a longstanding challenge in child welfare: the lack of available substance abuse services for child welfare clients. Results here showed easy access to these services predicted lower rates of neglect. Again, however, a counterintuitive finding emerged in this same analytic approach using physical abuse as the dependent variable. Here, our results show that the *further away* the substance abuse service facilities were, the *lower* the rates of physical abuse.

Although the results from the moderator analysis on rates of physical abuse were somewhat counterintuitive, there are likely other factors not included in the dataset that could potentially explain this finding. For instance, we do not have case level information in our dataset, which would include demographic information on the families reported for abuse and neglect. It is possible that some of these factors (e.g., child's age, gender, parents' functioning in other interpersonal domains) could have an impact on the manifestation of physical abuse compared to neglect. Therefore, our results may reflect some of the distinctions between neglect and physical abuse and that distinct types of child maltreatment can often be attributable to different cause and circumstances, particularly for different age groups (Simmel, 2011; Wulczyn et al., 2005). Thus, the availability of substance abuse services may not impact the rates of physical abuse, because the parents' needs and challenges may go beyond what these services are providing. These families may possess other difficulties that fall outside of the purview of these facilities.

Lastly, in regard to the physical abuse findings, Bergen County's rates of abuse and neglect have been historically different from other counties in New Jersey. A 2004 report by the NJ Division of Youth and Family Services shows physical abuse was the most common report type in Bergen County at 51.9% compared to 36.6% of reports being for child neglect (NJ DYFS, 2006). No other county in the state has this pattern and this distribution is markedly different from nationwide data as well. Future work could provide a more in-depth look at this issue to clarify these intriguing findings, some considerations could include the fact that Bergen County has a high median income and a racial and ethnic profile that is unique from the rest of the state, with high percentages of white, Asian, and Latino residents and low percentages of African American residents.

Moreover, an additional set of factors that would be beneficial to examine in this context is the utilization and efficacy of the substance abuse services. Whereas in our study we know about proximity to these services, we do not know if families were able to access these services and to what degree these services provided adequate resolution for families' substance abuse (or other) difficulties. Thus, even having close proximity to substance abuse service facilities may not be sufficient—it could be that myriad impediments exist that preclude enrollment in seeking help. Transportation, waiting lists, hours of availability of services (e.g., day treatment versus residential), gender specific services for both mothers and fathers, and options for permitting children of all ages to accompany the parent to treatment (if services include residential treatment) are all important factors to consider in future research projects on this topic. Additionally, the presence of a substance abuse service facility in a neighborhood may suggest something about a community that goes beyond service accessibility; this may reflect community investment that has had positive effects for

family well-being. More work on identifying the structural features of neighborhoods associated with lower rates of maltreatment (i.e., safe play space, community centers) would add to the findings here.

Limitations

This study is limited by its cross-sectional design and use of secondary data. The main criterion variables, reports of abuse and neglect, are only indicative of the families who were reported to CPS and may not reflect true rates of child abuse and neglect in the communities included in the study. The ability to track change in rates of child abuse and neglect over time in relation to shifts in the distribution of alcohol outlets and substance abuse service facilities would add weight to the relationships found here. For the neglect findings, the R^2 value was modest with 19% of the variance explained and the ability to identify additional demographic and structural variables to account for more of the variability in rates of neglect would be important for future analyses. Additionally, the data utilized were from 2003, future studies could compare the results from this study to more recent data that reflect the changes in child welfare practice in New Jersey.

Conclusion

The results from this study add to the evidence that features of a neighborhood's socioeconomic structure and built environment are correlated with rates of child abuse and neglect. There is a need for further investigation into the role that community accessibility to substance abuse services plays in relation to abuse and neglect. Additionally, strategies that seek to alter the availability of alcoholic beverages through limiting the number of licenses, hours of sale, or increasing prices via taxation have shown success in reducing problem drinking and could be considered as prevention avenues in child welfare (Sparks, Jernigan, & Mosher, 2011). These types of environmentally-focused prevention efforts are not the typical child welfare prevention strategy, as the focus has traditionally been on the provision of services, not on the organization of communities. The ability to invest in strengthening communities to support child well-being is an important goal that cuts across different human service sectors including child welfare, substance abuse prevention, urban planning, and alcoholic beverage control. Connecting the prevention of problem drinking and the accessibility of substance abuse services to the prevention of child maltreatment could provide policy opportunities to structure communities in a way that aids in the preservation of families.

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Figure 1.
Interaction of on-premises alcohol outlet density and substance abuse service accessibility
on rates of child neglect

Physical abuse rates reflect transformation where $\lambda=.10$

Figure 2.

Interaction of on-premises alcohol outlet density and substance abuse service accessibility on rates of child physical abuse

Physical abuse rates reflect transformation where $\lambda=.10$

Figure 3.

Interaction of off-premises alcohol outlet density and substance abuse service accessibility on rates of child physical abuse

Table 1

Descriptive statistics of predictor and criterion variables for Bergen County, NJ

	Census Tract (N=163)	
	Mean	Standard Deviation
Child Abuse and Neglect^a		
Physical abuse rate	2.55	2.45
Child neglect rate	1.23	2.05
Alcohol Outlet Density^b		
Off-premises outlet	.62	.77
On-Premises outlet	1.84	2.27
Substance Abuse Services^c		
Miles to nearest	1.39	.90
Socioeconomic Controls		
% in poverty	4.78	3.29
% vacant housing units	2.45	1.38
% 5 year residential movement	36.62	8.62
Child to adult ratio	.31	.07
Male to female ratio	.89	.06
% population over 65	15.09	3.50
% African American	4.67	10.92
% Asian	10.46	8.58
% Latino/Hispanic	10.01	8.56
% immigrant population	24.52	11.96

^a Number of CPS reports per 1,000 children^b Number of outlets per 10km of roadway^c Distance in miles from center of each census tract to nearest facility

Table 2

Principal Components Analysis of socioeconomic variables

Variable	Factor 1 Impoverishment	Factor 2 Young and Male	Factor 3 Predominantly Asian
% poverty	.87	.12	-.05
% immigrant population	.86	.05	.32
% 5-year residential movement	.82	.19	.08
% Latino/Hispanic	.77	.31	-.20
Child to adult ratio	-.69	.42	-.15
% vacant housing units	.65	-.03	-.10
% African American	.38	-.05	-.75
% Asian	.34	-.06	.72
% over 65 years of age	-.05	-.85	.21
Male to female ratio	.16	.74	.22

Note: N=163. These 3 factors explained 69% of the variance in the set of variables.

Table 3

OLS regression model of child neglect rates, socioeconomic variables, alcohol access, and substance abuse services

Variables	Dependent variable: child neglect rate per 1,000 children			
	Model 1 Socioeconomics, alcohol, and substance abuse service access		Model 2 + Interaction effect	
<u>Spatial autocorrelation</u>	<u>.004</u>		<u>.003</u>	
	B	se	B	se
Socioeconomics				
Factor 1: Impoverishment	.067 ***	.003	.068 ***	.003
Factor 2: Young male	.003	.003	.002	.003
Factor 3: Predominantly Asian	-.050 ***	.003	-.050 ***	.003
Alcohol access				
On-premises density per 10km	.005 ***	.002	.015 ***	.003
Off-premises density per 10km	-.002	.004	-.008	.008
Substance abuse service access				
Service accessibility	.020 ***	.003	.030 ***	.004
Interaction				
Service accessibility × on-premises outlet density			-.007 ***	.002
Service accessibility × off-premises outlet density			.006	.004

Model 1 $R^2=.18$, Model 2 $R^2=.19$

* $p<.05$, $p<.01$

F change Model 2= 11.61(7,156), $p<.01$

 $p<.001$

Table 4

OLS regression model of physical abuse rates, socioeconomic variables, alcohol access, and substance services

Variables		Dependent variable: physical abuse rate per 1,000 children			
		Model 1 Socioeconomics, alcohol, and substance abuse service access		Model 2 + Interaction effect	
<u>Spatial autocorrelation</u>		-.028		-.028	
Socioeconomics		B	se	B	se
	Factor 1: Impoverishment	.359 ***	.010	.337 ***	.010
	Factor 2: Young male	.097 ***	.008	.101 ***	.008
	Factor 3: Predominantly Asian	-.127 ***	.008	-.128 ***	.008
Alcohol access					
	On-premises density	.022 ***	.005	.008	.005
	Off-premises density	-.050 ***	.013	-.022	.013
Substance abuse service access					
	Service accessibility	-.043 ***	.009	-.050 ***	.009
Interaction					
	Service accessibility × on- premises outlet density			.130 ***	.016
	Service accessibility × off- premises outlet density			-.546 ***	.062

Model 1 $R^2=.33$, Model 2 $R^2=.34$

* $p<.05$

** $p<.01$

F change Model 2= 24.24(7,156), $p<.01$

 $p<.001$