Research Article

Are Adult Businesses Crime Hotspots? Comparing Adult Businesses to Other Locations in Three Cities

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This study addresses three questions pertinent to the debate concerning the secondary crime effects of adult businesses. (1) Are adult businesses hotspots for crime? (2) How do adult businesses compare with controls with regard to crime? (3) What subclasses of adult business are most likely to be associated with crime? A study of three cities reveals that adult businesses tended to fall outside the heaviest concentrations of criminal activity. Further, adult bookstores were less related to crime than both cabarets and on-site liquor-serving establishments. While adult cabaret were associated with ambient crime, crime was generally equivalent to nonadult liquor-serving establishments. A weighted intensity value analyses revealed that crime generally was more “intense” around liquor-serving establishments than around adult cabarets across the municipalities. These findings suggest that the relationship between cabarets and crime is not due to the presence of adult entertainment per se but rather due to the presence of liquor service. This finding is consistent with central precept of routine activities theory that areas that contain public establishments that serve alcohol facilitate crime.

1. Are Adult Businesses Crime Hotspots?
Comparing Adult Businesses to Other Locations in Three Cities

Historically, courts have allowed cities and municipalities to regulate adult businesses featuring sexual expression via time, place, and manner restrictions, such as zoning ordinances, that limit where these businesses may locate. These regulations are justified under the assumption that governmental bodies have a substantial interest in combating the alleged “adverse secondary effects,” such as crime thought to be associated with these businesses [1]. Furthermore, in the case City of Renton v. Playtime Theatres, Inc. [2], the U.S. Supreme Court has ruled that there need only be a “reasonable” belief that adult businesses are associated with secondary effects and that cities and municipalities need not rely upon studies from within their own community to establish that secondary effects occur but can instead draw upon evidence from other communities.

The evidentiary standard to be used for the regulation of adult businesses was further refined by the court in the case City of Los Angeles v. Alameda Books [3]. While the plurality said that Los Angeles had met the reasonableness standards set forth in the earlier Renton decision, Justice O’Connor, delivering the opinion of the Court, wrote the following.

This is not to say that a municipality can get away with shoddy data or reasoning. The municipality’s evidence must fairly support the municipality’s rationale for its ordinance. If plaintiffs fail to cast direct doubt on this rationale, either by demonstrating that the municipality’s evidence does not support its rationale or by furnishing evidence that disputes the municipality’s factual findings, the municipality meets the standard set forth in Renton. If plaintiffs succeed in casting doubt on a municipality’s rationale in either manner, the burden shifts back to the municipality to supplement the record with evidence renewing support for a theory that justifies its ordinance.

However, much of the empirical evidence for the alleged secondary effects accumulated by cities and municipalities is,
2. Hotspot Theory of Routine Activities

Routine activities theory is derived from a rational choice perspective which maintains that committing a crime is a purposive behavior that the criminal believes will benefit him in some way [12]. The theory states, in part, that crime activity is the result of a convergence in time and space of a likely offender, a suitable target, and the absence of capable guardians to prevent the crime. The more often that these three factors converge, the more often crime will occur. Further, the more valuable the target is perceived to be, or the easier it is to victimize the target, the more likely offenders will commit a predatory crime. Constructs from routine activities theory and environmental criminology have been used to explain crime trends in a variety of urban locations (see, e.g., [13]).

An empirical observation important to this theoretical perspective is the finding that the majority of crimes in any given city occur in a few geographic areas or “hotspots.” Ratcliffe and McCullagh [14] define hotspots as “aggregations of the raw crime data, designed to identify the sites of highest incident concentrations” (page 385). For example, Sherman et al. [15] found that, in Minneapolis, 50 percent of all calls to the police regarding predatory crime resulting in a patrol car being dispatched went to only 3 percent of all the addresses or intersections in the entire city. Consistent with the theory, research has shown that these crime hotspots are, indeed, often the result of the convergence of offenders, targets, and guardians in space and time [15]. For example, Ratcliffe et al. [16] found that increasing police foot patrols in areas known to be hotspots for violent crime led to a significant decrease of violent crime rates compared to controls. Weisburd et al. [17] also found that higher concentrations of motivated offenders (in this case, juveniles at high risk for committing crimes) were associated with a higher likelihood of the area being a crime hotspot. In addition, Ratcliffe and McCullagh [14] have found evidence to suggest that hotspots can be categorized into one of two broad categories: hotpoints, which are single remote locations characterized by a high incidence of crime, and hotbeds, which are a grouping of discrete locations with high incidence of crime that are spatially proximal.

2.1. Sexually Oriented Businesses as Crime “Hotspots”

McCleary [11] has modified the routine activities theory of hotspots and applied this modified theory to adult businesses. McCleary maintains that sexually oriented businesses draw potential targets (customers) to the area around the businesses that are attractive to criminals based on the “presumed” characteristics of these customers such as lack of residence in the neighborhood, being disproportionately male (and thus more likely to enter an adult business alone rather than with a group of friends), being open to vice overtures (i.e., offers of drugs, prostitution), carrying cash, and being reluctant to report their victimization to the police. McCleary proposes that because of the presence of so many attractive targets, presumably drawn there by the sexually oriented business, criminals arerationally motivated to seek out these areas and victimize these “soft” targets. McCleary surmises that because of these presumed features that sexually oriented businesses must be “hotspots” of crime.

However, we suggest that routine activities theory would actually predict the opposite of McCleary’s theory, for several reasons. First, routine activities theory posits that offenders are attracted to areas and locations that bring them into proximity with suitable targets, such as shopping malls, large retail store parking lots, and fast food restaurants [18]. These locations are most likely to be both target rich and congruent with the lifestyle of people that are likely to commit crimes than are other locations. Most adult businesses do not present an environment as target rich as several restaurants or grocery shopping locations. Particularly, locations such as adult cabarets may be too expensive, due to the expensive entry fees as well entertainment fees, and therefore incongruous with the lifestyles of the most likely offenders. Additionally, routine activities theory also implies that people and their property vary in suitability as targets for predatory crime and that these differences influence who is chosen by offenders or whether or not a crime even occurs at all [19]. While it might be the case that patrons of adult businesses would have high economic value that are theoretically attractive to offenders, a range of soft targets (or those who are easily victimized), such

at best, inconclusive and may not meet the Alameda evidentiary standard [4]. More recent empirical examinations of the potential public safety hazards posed by adult businesses in communities in which they are located, such as San Diego, several cities in Ohio, Charlotte North Carolina, and several other municipalities, have been undertaken by Linz and his associates [5–8], as well as other researchers examining adult business in San Antonio [9]. These investigations suggest that adult businesses do not pose the public safety hazards assumed by municipalities and the courts.

Although studies published in peer-reviewed journals with a contrary view are few in number, at least one other author has claimed to find secondary crime effects for adult businesses, in contrast to the null findings of the Linz et al. and Enríquez et al. investigations. McCleary [10] claims to have found empirical evidence of crime increases when an adult entertainment business opened on an interstate highway off-ramp to a small rural village. To explain these findings McCleary relies on a variation of the hotspot theory of routine activities. In addition, McCleary [11] asserts that subclasses of adult businesses do not differ in ambient crime risk, a finding later contradicted by Seaman and Linz [8].

The present study addresses four questions pertinent to the debate concerning secondary crime effects of adult businesses, in light of the criminological theory of hotspots and routine activities. First, we ask the following. Are businesses that feature adult entertainment located in several cities in the Eastern United States hotspots for crime? How do adult businesses compare with other businesses in the community as places that attract crime? What types or subclasses of adult business are most likely to be associated with crime?
as elderly men and women and mothers with small children in tow carrying cash, would be considered theoretically the most valuable targets. These people are not frequent patrons of adult establishments. Moreover, the presence of people who are inattentive to their surroundings is far more likely at bars and restaurants, rather than adult business venues, because the former are controversial in the community and customers will be far more likely to be especially vigilant of potential danger. This should be especially true at bookstores, in which there is no alcohol being consumed on-site to lower the vigilance of customers. Further, adult cabarets, for example, are known for exceptionally high level of guardianship. These establishments often employ several male floor hosts and "bouncers." Security personnel often patrol the parking area and may even have security cameras that oversee entries and locations in the club. These guardianship practices would contribute to relatively low levels of criminal activity at adult business locations.

Empirical research has also not supported the notion that adult businesses are hotspots of crime. For example, Weisburd et al. [20] found that between four and five percent of street segments in the city accounted for 50 percent of crime incidents for each year over 14 years. As Cancino and McCluskey [21] have pointed out, these studies did not identify any adult businesses as hotspots.

2.2. 7th Circuit Court of Appeals and Adult Businesses as Hotspots. This hybrid theory and these hypothesized effects have been directly and most thoroughly addressed by the 7th Circuit Court of Appeals in New Albany DVD, L.L.C. v. City of New Albany, 581 F.3d 556 (7th Cir. 2010), cert denied, 130 S.Ct. 3410 (June 14, 2010). This case involved a zoning ordinance prohibiting the opening of a video store. The 7th Circuit Court of Appeals was suspicious of the reasoning underlying McCleary's theory and questioned whether it was empirically supported. Referring to the McCleary theory as "the theft line of argument," the court said

The "theft" line of argument starts with the premise that many customers of adult establishments pay in cash, which makes them a target for thieves. (Page 6).

The Court in New Albany further said the following.

New Albany has not supplied evidence that fairly supports the idea that adult bookstores located near churches or residences attract thieves who then steal from the local denizens as well as the stores’ customers. We don’t say that the City will be unable to produce this evidence, but the lack of good evidence to this effect in the record— is enough to require an evidentiary hearing. (Page 7).

Rather than using this two-step procedure employed by other researchers (e.g., [15, 22]), in which a point source is established as a hotspot before applying routine activities theory to understand the dynamics of crime at that location, McCleary’s application of routine activities theory to adult businesses and secondary effects begins and ends with an adult address as a point source, never endeavoring to establish whether that point source is a crime hotspot in the context of the larger municipal, metropolitan, or other geographical areas. It can be argued that unless it can be established that there is an unusual amount or pattern of crime surrounding a particular geographical location, it would seem to be unnecessary to resort to a special theory such as routine activities to explain a crime pattern that is not anomalous.

The present study endeavors to answer the question: are adult businesses hotspots of crime activity?

2.3. Comparing Adult Businesses to Other Locations. Once the hotspot question has been addressed, subsequent questions involving the identifiable features of the adult businesses themselves and the features of other businesses and locales that may be associated with crime and the routine activities of who does what and where may be answered using a comparative analysis. Simply knowing that crime occurs in the vicinity of an adult business gives no indication of the relative frequency of crime compared to other locales. Here it is useful to understand the criminological impact of adult businesses relative to other types of businesses and other locales in a community.

The 7th Circuit Court of Appeals in the case Annex Books, Inc. v. City of Indianapolis, Ind. [23] has said that crime in and around adult businesses must be compared to some control location in order to understand the relative criminological potency of an adult business. If such a comparative analysis is not undertaken, the court said the ordinance to regulate adult businesses in Indianapolis may be unconstitutional and a court hearing or court trial is necessary for the municipality and the adult businesses to determine whether or not the ordinance is fairly supported by the evidence collected in a scientifically valid manner.

The court, commenting on the comparative analysis issue further, went on to suggest that alcohol-serving businesses would constitute the most useful control or comparison points, as the court noted in Annex Books.

Nor can we tell whether 41 arrests at one business over the course of 365 days is a large or a small number. How does it compare with arrests for drunkenness or public urination in or near taverns, which in Indianapolis can be open on Sunday and well after midnight? If there is more misconduct at a bar than at an adult emporium, how would that justify greater legal restrictions on the book-store—much of whose stock in trade is constitutionally protected in a way that beer and liquor are not. ([23, page 4])

The 7th Circuit Court has stated that taverns and bars are appropriate comparison points for criminal activity in the vicinity of adult bookstores. In the present study we ask the following: how do adult bookstores compare with other businesses such as taverns and bars in the community as places that attract crime?
3. Are Subclasses of Adult Businesses Equal in Their Crime Impact?

In addition to the questions of whether adult businesses are hotspots of crime activity in the first place and how adult businesses compare to other businesses in the community, it is useful to know how types or subclasses of adult businesses compare to one another in terms of criminological impact. The courts have also weighed this question to some degree. The question for the courts has been how applicable is evidence of secondary effects associated with one type of business to conclusions about crime and public safety for other types of adult businesses. Specifically, the courts have been concerned with the question of whether “off-site” adult businesses (i.e., retail businesses in which adult entertainment is bought and then viewed at home) versus “on-site” adult businesses (i.e., businesses with adult entertainment on premises) are differentially associated with crime. Secondary effects studies have typically ignored salient differences among distinct adult business models.

Recall that, in City of Los Angeles v. Alameda Books, the court allowed adult businesses to challenge the relevance of secondary effects evidence. If an adult business plaintiff could demonstrate that the government’s evidence was irrelevant to the problem that its ordinance purported to address, the ordinance might be struck down. The Fifth, Seventh, and Tenth Circuit Courts of Appeal are “split” regarding the meaning of the Alameda decision for the relevance of secondary effects evidence. The Fifth Circuit decision Encore Videos v. City of San Antonio struck down a San Antonio ordinance when the city failed to include secondary effects studies of “off-site” adult bookstores in the defense of the ordinance. The court said that the evidence used by the city did not distinguish between “on-site” and “off-site” sexually oriented businesses and that it is reasonable to assume that “off-site” sexually oriented businesses would be associated with less crime, due to the fact that the patrons are not present at and around the location of the business for as long as they would be at “on-site” businesses.

The Seventh Circuit Court of Appeals, in the two separate cases mentioned above, has also said that distinctions between “subclasses” of adult businesses are important. The court has said that in order to regulate “off-site” adult businesses, cities and municipalities must provide reliable evidence that this class of businesses is associated with negative secondary effects. In Annex, the court said that the crime data must be relevant to the type of business for which secondary effects are being alleged.

The City's only evidence about the four plaintiffs is that during 2002 the police made 41 arrests for public masturbation at Annex Books, the only plaintiff that offers private booths. (The masturbation was "public" in the sense that officers could see what customers were doing inside the booths.) The district court thought this datum enough, by itself, to support the 2003 amendments. Yet it is hard to grasp how misdemeanors committed in single-person booths justify the regulation of book and video retailers that lack such booths (Id. at 4.).

In the companion decision in New Albany DVD, LLC v. City of New Albany [24], the city of Indianapolis and New Albany relied only upon studies that examined the impact of adult businesses with live entertainment or on-site viewing booths. The Seventh Circuit specifically required the city to provide evidence that off-site adult businesses are associated with negative secondary effects.

In contrast, the Tenth Circuit has not agreed with the Fifth and Seventh Circuit courts. In Doctor John's, Inc. v. City of Roy [25], the court upheld the constitutionality of an ordinance in Roy, Utah, writing that “Alameda Books reiterated that a city does not face a “high bar” in meeting its initial obligation to show an ordinance is narrowly tailored towards a significant interest; it need only show that its evidence “fairly support[s]” its rationale.”

The question of adult business subclass differences may be extended beyond the possible differences between “off-site” (i.e., retail businesses in which adult entertainment is bought and then viewed at home) and “on-site” adult businesses (i.e., businesses with adult entertainment on premises) and whether secondary crime effects are similar for both. A potentially more important question concerns the difference between the two predominate business subtypes, the adult cabaret or nightclub that offers live entertainment such as exotic dancing and often serves alcohol and the book/video store where no such live entertainment is offered but where on-premise viewing of adult materials is possible. This differential crime potential of these businesses has not been addressed by the courts at all. However, there is good reason to believe that the two types will differ in terms of crime impact.

Compared to the adult book/video store, the adult cabaret may be a more frequent source of criminal activity simply because this business model nearly always includes alcohol service. A central precept of routine activities theory is that areas that contain public establishments that serve alcohol as an important part of their retail activity facilitate general crime [22, 26–31]. It has also been shown that higher levels of alcohol outlet density are geographically associated with higher rates of violence [32, 33]. Therefore, there may be significant differences in crime between adult businesses that serve alcohol and those that do not. Further, the amount of traffic and number of visitors at any business will affect the extent to which criminal activity occurs around that location [15, 34]. Adult businesses that offer live entertainment such as cabarets might be expected to have more traffic and patrons on-site than will bookstores.

In the present study we explore the question of what types or subclasses of adult business are most likely to be associated with crime. We wonder, on the basis of the forgoing, if cabarets will be more criminogenic than adult bookstores. We also wonder about the results of comparisons of adult cabarets and other alcohol serving businesses in the community and if cabarets are more or less criminogenic than bars and taverns.
4. Summary of Research Questions

In summary, relying upon the hotspot theory of routine activities as applied to sexually oriented businesses, the following research questions were investigated. RQ 1: are businesses that offer sexually oriented communication "hotspots" of criminal activity? RQ 2: is the geospatial relationship between crime and adult cabarets lower, equal to, or higher than the geospatial relationship between crime and adult bookstores? RQ 3: is the geospatial relationship between crime and adult bookstores lower or higher than the geospatial relationship between crime and nonadult establishments with liquor service? Is the geospatial relationship between crime and adult bookstores lower or higher than the geospatial relationship between crime and nonadult establishments with liquor service?

An empirical study of three cities, Richmond VA, Milford CT, and East Hartford CT, was undertaken to address these research questions.

5. Method

5.1. Measuring Criminal Activity. Criminal activity was measured using crime incident data gathered with Incident Based Reporting (IBR) rules, which was obtained from law enforcement agencies. IBR systems, which are defined at the local and state levels, involve comprehensive data collection at the incident level on the various aspects of reported criminal incidents. Depending upon the design of the particular system, the information collected can include details about the incident location, offense(s), offender(s), victim(s), property, and arrestee(s). The crime data for Milford covered the years of 2000–2008, East Hartford covered the years of 2005–2008, and Richmond covered the years from March 2007 to September 2008.

These data were then aggregated into specific "types" of crime in order to get a sense of what kinds of crimes were most prevalent in specific areas of the cities. Crimes including robberies, murders, assaults, and the like were aggregated as "Person Crimes." Crimes including burglaries, criminal mischief, shoplifting, and autothefts were aggregated as "Property Crimes." Crimes that involve alcohol or drug intoxication, possession of narcotics, prostitution, and so forth were aggregated as "Vice and Disorder Crimes." Finally, crimes such as indecent exposure, sexual assaults, and lewd and lascivious behavior were listed as "Sex Offenses."

5.2. Adult Businesses Locations. Both cabarets and bookstores were located using a combination of information provided by the liquor control boards and public directories. In East Hartford, CT, there are two cabarets, Kahoots and Venus Lounge, which are located at 639 Main Street and 1268 Main Street, respectively. There are also two adult bookstores, Aircraft Book and News and Video Lane, which are located at 349 Main Street and 775 Silver Lane, respectively. It should be noted, however, that Venus Lounge was not an adult business during the full period of crime observations in the study. In 2008 the Venus Lounge became the Main Street Café, which is currently a bar that does not feature adult entertainment.

In Milford, CT, there are five adult bookstores: Milford Book and Video, located at 784 Boston Post Road; Penthouse Books, located at 9 Banner Drive, Romantix, located at 120 Boston Post Road; Video Pleasures, located at 110 Bridgeport Ave.; Vinnys Adult Superstore, located at 753 Boston Post Road. There is also one cabaret, Keepers, which is located at 354 Woodmont Road.

In Richmond, VA, there are seven cabarets: two Paper Moon Gentleman's Clubs located at both 6710 Midlothian Turnpike and 3300 Norfolk Street; Daddy Rabbit's, located at 3206 Broad Rock Road; Pure Pleasure, located at 68 Labrook Concourse; Candy Bar, located at 3904 Hull Street Road; Velvet, located at 35 15th Street; Richard's Restaurant, located at 1732 Altamont Ave. There are also four adult bookstores in Richmond, VA; Broadway Books, located at 5100 Midlothian Tpke number A; B&T Adult Books, located at 1203W Broad St.; Quality Books, located at 8S Crenshaw Ave.; Triangle Bookstore, located at 1001N Boulevard.

5.3. Locating Liquor-Serving Businesses. Liquor-serving businesses that do not feature adult entertainment were located using records obtained through the alcohol control boards in Connecticut and Virginia. For both East Hartford and Milford, these records included businesses, like bars and restaurants, which served liquor on the premises. Also included were "off-site" businesses, like liquor stores, which sold packaged liquor that could be taken home. For Richmond, the records did not distinguish between "off-site" liquor-serving businesses and those that only sold beer and wine. In fact, it was not clear from the records that off-site stores that sold liquor were even included at all. No off-site businesses, such as a grocery, had any indication that liquor was being served there and there was no specific business types listed for liquor stores or other such establishments. Because these two very different types of businesses could not be distinguished and it could not be established that "off-site" liquor-serving businesses were represented at all, only on-site liquor-serving establishments were included in the Richmond analysis.

5.4. Constructing Crime Maps Using ArcGIS. The crime events were then assigned latitude and longitude coordinates through geocoding in the WGS1984 coordinate system and then plotted on to a map using ArcGIS. In order to have the corresponding maps of the cities in ArcGIS, TIGER Lines provided by the U.S. Census were downloaded and added to the data file. Because the TIGER Lines were provided in a different coordinate system (NAD83), crime events were reprojected into NAD83 coordinates in order to have all elements in the data file be in the same coordinate system.

5.5. Overview of Analysis Strategy. In this study, three different types of analyses were performed across the three cities: (1) kernel estimation, (2) crime rate calculations using ambient population data provided by the Oak Ridge National Laboratory, and (3) buffer analysis examining crime hypothesized to emanate from a given point source using "intensity
value analysis,” which takes into account the element of spatial sensitivity. Each of these analyses gives a unique picture of the relationship between sexually oriented businesses and criminal activity.

5.6. Kernel Density Estimation. Kernel estimation or kernel density is a procedure that maps the location and relative density of plotted points. Cancino and McCluskey [21] suggest that using a kernel density function is a better way to understand where the concentration and proximity of crime are in a given area. Concerning this method, Anselin et al. [35] explain the following.

Kernel estimation or kernel smoothing is one method for examining large-scale global trends in point data. The goal of kernel estimation is to estimate how event levels vary continuously across a study area based on an observed point pattern for a sample of points. Kernel estimation creates a smooth map of values using spatial data. The smoothed map appears like a spatially based histogram, with the level at each location along the map reflecting the point pattern intensity for the surrounding area. (Page 227)

Kernel density estimations were performed using the function available in ArcGIS. Crime types were combined to create a map showing the incidence of all crimes in each city. Given that there is no steadfast rule in determining search radius or bandwidth [35], the defaults given in ArcGIS were used to determine the cell output and search radius. Square meters were used as the area units, due to being the measurement system utilized by NAD83. For ease of presentation and in order to make fine grain distinctions in crime concentrations, the range of data was broken into 32 intervals, separated by natural breaks in the data, with each interval being given a particular shade. It should be noted that the use of 32 intervals is mostly arbitrary; 32 intervals were enough to show subtle differences in crime frequency across the three cities, but slightly more or fewer intervals could potentially have been used. However, unless the number of intervals was drastically different, it is unlikely that this would significantly affect the interpretation of the analysis. Darker shades corresponded to heavier concentrations of crime.

The major advantage of using the kernel density technique is that it gives an intuitive visual representation of where the crime is concentrated in a given area. Cancino and McCluskey [21] analogize this technique to a “Doppler Radar,” in which one can see on a map where the heaviest and most concentrated rainfall (or in this case, crime) is located. This allows for an excellent exploratory examination of crime. Further, for our purposes, if adult businesses really are crime hotspots, we should see them located within these heavily concentrated areas of criminal activity. This technique is useful because it allows for a “bird’s eye view” of where the criminal activity is spatially clustering, and whether these “clusters” of crime are proximate to adult businesses.

5.7. Crime Rates Using Ambient Population Data. Next, we examined crime rates across the three cities using ambient population data provided by the Oak Ridge National Laboratory. This data provides an estimate of the number of people within a given area during a 24-hour period, using probability coefficients that take into consideration factors such as proximity to roads, slope and land cover of area, and presence of nighttime lights. This estimate of ambient population provides a better measure to calculate a rate than simply the number of residents within a given area, because commercial areas often have many potential victims (e.g. customers) but few to no residents living within those areas. Therefore, calculating a crime rate based only upon the number of residents will inflate the perceived “dangerousness” of commercial areas over residential areas and will lead to an inaccurate estimate of crime risk. The LandScan dataset provides a grid of blocks approximately one square kilometer in size which each contain an estimated 24-hour ambient population count. For the sake of brevity, crime rates were calculated for all crimes across the three cities for each of these blocks, providing a crime rate per 1000 people within each LandScan block. Adult businesses were then located within their respective LandScan block and compared to crime rates across the whole city to examine whether adult businesses tend to be located in areas with high crime rates, relative to the rest of the city. This analysis will be used as a hotspot analysis, similar to the kernel density estimation, which accounts for the impact of ambient population in the calculation of a crime rate.

5.8. Intensity Value Analysis. In crime hotspot research, researchers conventionally have constructed a buffer of predetermined distance around a point source and then examined the frequency of crime events that fall within that buffer in order to establish the point source’s relative contribution of crime. Further, all crime events are usually assigned the same value, regardless of their distance from the hypothesized point source [36]. This lack of “spatial sensitivity” prevents the researcher from drawing conclusions about the relative contribution of a point source to ambient criminal activity. Ideally, an intensity value analysis must be undertaken in order to include the element of spatial sensitivity in any buffer analysis examining crime hypothesized to emanate from a given point source [36].

An intensity value is a value (usually one) that is weighted by the distance from a spatial event to a point source within a buffer of a specified distance. Like conventional buffer analyses, the researcher must specify the length of the radius from the point source to the edge of the buffer. Unfortunately, there is little research available on what an appropriate buffer size is, and the choice is often arbitrary [36]. However, in the area of secondary effects, cities have often constructed their ordinances requiring adult businesses to be 1000 feet away from residential areas and/or other adult businesses. Given that cities and municipalities have often maintained that 1,000-foot buffer was sufficient distance to keep ambient criminal activity from creeping into areas that needed to be protected, 1,000-foot buffers were used in the intensity value
analysis due to their legal significance. Crime events were converted from latitude/longitude coordinates into Cartesian coordinates using ArcGIS and then analyzed using buffer intensity analysis software developed by Ratcliffe [37].

This intensity value analysis software utilizes an inverse weighting procedure in which each crime event within the buffer of a point source is given a weighted value depending on its distance from that point source. The exact algorithm used in order to weight particular crime events is too rather arbitrary, but results rarely vary as a result of the algorithm utilized [36]. For the purposes of this study, a nonlinear inverse weighting method based on an exponential value was used, such that crime events half the distance from the point source contribute a weighted value of 0.33 to the final intensity calculation.

Using this algorithm, each crime event within 1,000 feet of the adult businesses was weighted and added together to get a final intensity value for that particular business. This value is, of course, both descriptive and relative. In order to make meaningful comparisons, intensity values were also calculated for the approximately top 100 hotspots for each type of crime and also for liquor-serving establishments within the city. In addition, for Milford and East Hartford, both “off-site” (e.g., liquor stores) and “on-site” (bars and nightclubs) liquor-serving establishments were able to be obtained. As mentioned above, in Richmond only “on-site” liquor-serving establishments were included.

Further, adult cabarets and bookstores were separately compared in order to test whether there were any noticeable differences between the two classes of business.

6. Results

6.1. Kernel Density Estimation Analyses. The kernel density estimation was used to investigate RQ 1: are businesses that offer sexually oriented communication “hotspots” of criminal activity? Kernel density estimations work best as simple visual examples and will be relied upon as such here.

6.1.1. East Hartford. The kernel density estimation map for East Hartford, CT, can be seen in Figure 1. All of the adult businesses, except for the Venus Lounge, are not located within the heaviest (or, in a visual sense, “darkest”) clusters of crime. However, this cluster does not appear to be centered around Venus Lounge specifically. Rather, Venus Lounge appears to be located in a larger area in which crime is prevalent and which also contains at least two other nonadult alcohol-serving establishments. However, conservatively, it can be said that Venus Lounge is somewhat spatially related to high occurrences of person, property, and vice/disorder crime. Adult bookstores did not seem to have any sort of spatial relationship to crime.

6.1.2. Milford, CT. The kernel density estimation map for Milford, CT, can be seen in Figure 2. None of the adult businesses are wholly within any of the heaviest clusters of crime activity. In fact, the heaviest cluster of crime in the city seems to be centered on a nonadult liquor-serving establishment. Therefore, there does not seem to be any spatial relationship between adult businesses and heavy clusters of criminal activity in Milford, CT.
6.1.3. Richmond, VA. Kernel density estimation map for Richmond, VA, can be seen in Figure 3. Neither the adult bookstores nor the adult cabarets are completely located within any of the densest areas of crimes. Once again, there does not seem to be a clear spatial relationship between adult businesses and crime.

6.2. Ambient Population Crime Analysis. Ambient population crime analysis was also used to investigate RQ 1: are businesses that offer sexually oriented communication “hotspots” of criminal activity? Much like the kernel density estimation, this analysis is meant to provide an overall visual picture of areas of heavy crime within each city and is not meant to provide detailed quantitative information about specific differences between subclasses of adult businesses or between adult businesses and liquor-serving establishments. Thus, as with the prior analysis, the ambient crime analysis will be utilized to provide a general sense of where the “hotspots” of crime exist within each city.

6.2.1. East Hartford. The ambient population crime analysis map for East Hartford, CT, can be seen in Figure 4. While the two cabarets are present in areas with a relatively high rate of crime to ambient population, there does not appear to be a unique relationship between crime and the cabarets, and most criminogenic area in the city contains no adult businesses at all. Furthermore, the bookstores are located in areas that have relatively low incidence of crime.

6.2.2. Milford, CT. The ambient population crime analysis map for Milford, CT, can be seen in Figure 5. While adult businesses generally are located within relatively heavy areas of crime, no adult businesses are located in any of areas that are most strongly related to crime. This is especially significant considering the area containing two adult bookstores, is no more criminogenic than neighboring areas that contain no adult businesses at all. Given that there are two adult businesses in the same area, we should have expected this block to be particularly high in crime if McCleary’s [11] version of routine activities were true. Therefore, there does not seem that adult businesses are “hotspots” of crime, when accounting for ambient population in Milford, CT.

6.2.3. Richmond, VA. The ambient population crime analysis map for Richmond, VA, can be seen in Figure 6. There were two cabarets that were located in the areas among the highest rate of crime in the city, while four other cabarets were not. Further, none of the adult bookstores were located in areas that had very high crime rates. Thus, in Richmond, there was some limited support that adult businesses may be located in hotspots of crime; though it was more common that they were not in these areas.

6.3. Intensity Value Analysis. This analysis specifically addresses the following research questions. RQ 1: is the geospatial relationship between crime and adult cabarets lower, equal to, or higher than the geospatial relationship between crime and adult bookstores? RQ 2: is the geospatial relationship between crime and adult cabarets lower or higher than the geospatial relationship between crime and nonadult establishments with liquor service? RQ 3: Is the geospatial relationship between crime and adult bookstores lower or higher than the geospatial relationship between crime and nonadult establishments with liquor service?
Hotspots were identified by examining the total number of crimes per address for each city. An address was considered to be a "hotspot" if it fell within the approximately top one hundred most criminogenic addresses in a given city. There were slight discrepancies in the number of addresses included as hotspots for each city, given that some addresses that fell below and above the cutoff for inclusion in the top one hundred had equal numbers of crimes. Therefore, the basic strategy taken was to include as close to 100 addresses as possible and stop where a natural break in the number of crimes per address occurred in the data. These addresses were then geocoded and analyzed using the intensity value analysis. An average intensity value for the hotspots was calculated, in order to compare the criminogenic impact of an "average" hotspot to that of an adult business.

For the purposes of interpreting the results of the intensity value analyses, the mean will be given primary importance over the median. This choice was made because hotspots, which are outliers responsible for the majority of the crimes in a given city, are exactly what are of interest in this approach. So, given that means are sensitive to outliers, they are the better measure of what is and is not a "hotspot" in this case.

6.3.1. Person Crimes. Results of the intensity value analysis for person crimes across the three cities can be seen in Table 1. There are considerable differences across the three cities in how "intense" criminal activity is around the cabarets as compared to the hotspots and the nonadult liquor-serving establishments.

In East Hartford, the cabarets have a higher mean intensity value than both the hotspots and on-site liquor-serving businesses controls. Looking at this more closely, this is almost entirely due to the Venus Lounge; the mean intensity value for Venus Lounge is 182.14, while it is only 46.55 at Kahoots. In Milford, the cabaret was a fraction more intense than the on-site liquor-serving establishments in terms of their mean person crime intensity and slightly less intense than the mean hotspot intensity value. In Richmond, the cabarets have lower mean intensity values for person crimes than do the on-site liquor-serving establishments and are almost half as intense as the mean hotspot value.

One clear finding, however, is that the bookstores have the lowest mean intensity value for person crimes, compared to liquor selling point sources and other hotspot point sources, and bookstores show considerable differences in mean intensity values compared to the adult cabarets and the on-site liquor-serving establishments.
### Table 2: Property crimes intensity values across East Hartford, Milford, and Richmond.

<table>
<thead>
<tr>
<th>Point sources</th>
<th>East Hartford</th>
<th>Milford</th>
<th>Richmond</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average</td>
<td>Median</td>
<td>Average</td>
</tr>
<tr>
<td>Cabaret</td>
<td>114.35</td>
<td>114.35</td>
<td>50.31</td>
</tr>
<tr>
<td>On-site liquor</td>
<td>61.63</td>
<td>48.31</td>
<td>256.61</td>
</tr>
<tr>
<td>Off-site liquor</td>
<td>79.06</td>
<td>64.47</td>
<td>94.98</td>
</tr>
<tr>
<td>Bookstores</td>
<td>34.94</td>
<td>34.94</td>
<td>53.12</td>
</tr>
<tr>
<td>Hotspots</td>
<td>94.13</td>
<td>79.50</td>
<td>183.16</td>
</tr>
</tbody>
</table>

### Table 3: Vice/disorder crimes intensity value across East Hartford, Milford, and Richmond.

<table>
<thead>
<tr>
<th>Point sources</th>
<th>East Hartford</th>
<th>Milford</th>
<th>Richmond</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average</td>
<td>Median</td>
<td>Average</td>
</tr>
<tr>
<td>On-site liquor</td>
<td>12.87</td>
<td>9.50</td>
<td>24.37</td>
</tr>
<tr>
<td>Off-site liquor</td>
<td>8.19</td>
<td>6.95</td>
<td>18.99</td>
</tr>
<tr>
<td>Bookstores</td>
<td>4.23</td>
<td>4.23</td>
<td>18.69</td>
</tr>
<tr>
<td>Hotspots</td>
<td>21.52</td>
<td>11.37</td>
<td>39.08</td>
</tr>
</tbody>
</table>

6.3.2. Property Crimes. Results of the intensity value analysis for property crimes across the three cities can be seen in Table 2. Once again, for the cabarets, there were differences across the three cities. In East Hartford, the cabarets had higher mean intensity values for property crimes than did the on-site liquor-serving establishments or hotspots. Again, this difference can almost entirely be attributed specifically to the Venus Lounge; the mean intensity value for Venus Lounge was 80.63, while it was 18.39 for Kahoots.

In Milford, the cabaret had a considerably lower mean intensity value than either the on-site liquor-serving establishments or the hotspots. Finally, in Richmond, the cabarets had a slightly lower mean intensity value than did the on-site liquor establishments and a noticeably lower mean intensity value compared to the hotspots. Once again, the bookstores had, across all three cities, the lowest mean intensity value for property crime.

6.3.3. Vice Disorder Crimes. Table 3 displays the results of the intensity value analysis for vice/disorder crime. The cabarets showed a similar pattern as for the last two crime types. In East Hartford, the cabarets had higher mean intensity values than both the on-site liquor-serving establishments and the hotspots. Once more, this was solely because of the Venus Lounge. The mean intensity value at the Venus Lounge was 46.55, while it was 18.39 at Kahoots. In Milford, the mean intensity value for cabarets was lower than both the on-site liquor-serving establishments and the hotspots. In Richmond, the cabarets had a slightly lower mean intensity value than the on-site liquor-serving establishments did and a much lower mean intensity value than the hotspots.

In both East Hartford and Richmond, the bookstores once again had the lowest mean intensity value. However, in Milford, the mean intensity value for the bookstores was higher than that of the cabaret but still lower than any of the alcohol serving establishments or hotspots.

6.3.4. Sex Crimes. Table 4 displays the results of the intensity value analysis for sex crimes. In East Hartford, the cabarets had the lowest mean intensity value out of all point sources included in the analysis. In Milford, the cabaret mean intensity value was lower than both the on-site liquor-serving establishments and the hotspots. Finally, in Richmond, the mean intensity value was just slightly higher for the cabarets than for the on-site liquor establishments but lower than the hotspots. In East Hartford, the bookstores had the second lowest mean intensity values, with the cabarets being a fraction lower. For both Milford and Richmond, the bookstores had the lowest mean intensity value of all point sources included in the study.

### Table 4: Sex crimes intensity values across East Hartford, Milford, and Richmond.

<table>
<thead>
<tr>
<th>Point sources</th>
<th>East Hartford</th>
<th>Milford</th>
<th>Richmond</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average</td>
<td>Median</td>
<td>Average</td>
</tr>
<tr>
<td>Cabaret</td>
<td>0.96</td>
<td>0.96</td>
<td>1.34</td>
</tr>
<tr>
<td>On-site liquor</td>
<td>1.66</td>
<td>1.00</td>
<td>1.80</td>
</tr>
<tr>
<td>Off-site liquor</td>
<td>1.52</td>
<td>1.45</td>
<td>0.87</td>
</tr>
<tr>
<td>Bookstores</td>
<td>1.00</td>
<td>1.00</td>
<td>0.80</td>
</tr>
<tr>
<td>Hotspots</td>
<td>4.93</td>
<td>3.57</td>
<td>3.51</td>
</tr>
</tbody>
</table>

7. Discussion

The present study used crime data and adult business locations in East Hartford, Milford, and Richmond to answer several questions. Are adult businesses hotspots of crime? Are adult businesses more or less criminogenic than liquor-serving establishments? There are several conclusions that can be drawn from the analyses of these secondary effects.

#### 7.1. Adult Businesses as Hotspots of Crime?

Are businesses that offer sexually oriented communication “hotspots” of criminal activity? Results of the kernel density estimation indicated that the adult businesses tended to fall outside the heaviest concentrations of criminal activity. In addition, results of the intensity value analysis indicated that the mean intensity value in the 1,000-foot area around the adult businesses was generally lower than the mean intensity value around the approximately top 100 hotspots in their respective cities. This was particularly salient for the adult bookstores. There was no city in the study and no type of crime for which the
adult bookstores had a higher mean intensity value than the hotspots.

This finding was also true for the cabarets in Milford and Richmond. For no type of crime did the cabarets have a higher mean intensity value than the hotspots. This was not the case for East Hartford, however. One venue, the Venus Lounge, solely accounted for the higher cabaret mean intensity value for person, property, and vice/disorder crime. It should be further noted that the results for the Venus Lounge are partially confounded by the fact that at least two nonadult alcohol-serving establishments are located adjacent to this business, and it is not known to what extent ambient crime activity is due to either of these two other businesses. Finally, while the ambient population analysis indicated that cabarets may be hotspots in Richmond, VA, this was contradicted by the results of the intensity value analysis. In summary, for the most part, with a few exceptions, adult businesses, either cabarets or bookstores, were not “hotspots” of crime in our study.

This finding suggests that the results of data analyses using the two-step procedure often employed by other researchers of first locating a crime hotspot and then applying routine activities theory to understand the dynamics of crime in the hotspot (e.g., [15, 22]) may yield a different account of crime patterns in a given municipality than an inquiry which begins and ends with the assumption that the adult business address is a point source of crime. The results of the present study suggest that since there is no unusual amount or pattern of crime surrounding the geographical location of adult businesses, it would seem to be unnecessary to resort to a special theory such as routine activities to explain a crime pattern that is not anomalous. McCleary’s application of routine activities theory to adult businesses and secondary effects may be misapplied.

7.2. Are There Differences between Bookstores and Cabarets? Our findings consistently obtained across several different methods strongly suggest that there are critical crime differences between cabarets and adult bookstores in these cities. Compared to cabarets, adult bookstores, overwhelmingly, were unassociated with crime in virtually every analysis in the study. Consistently, adult bookstores were not located in areas shown to be regions of high criminal activity in kernel density estimations and had the lowest mean intensity values. Furthermore, the adult bookstores were even found to be less related to crime than both on-site and off-site liquor-serving establishments. In these particular cities, at least, there does not seem to be much evidence to support treating adult bookstores as a public safety hazard.

This finding is important for the secondary effects debate. McCleary [11] has argued that differences between subclasses of adult businesses (such as cabarets and bookstores) are trivial and should not affect theorizing about the crime impact of adult businesses. He writes the following.

In lawsuits, SOB (“sexually oriented business”) plaintiffs have argued that their narrowly-defined SOB subclass is exempt from criminological theory. But in fact, the relevant criminological theory applies to all subclasses. To the extent that two SOB subclasses draw similar patrons from similarly wide catchment areas, theory predicts similar ambient crime risks. Put simply, similar causes (the presence of many high-value targets and low levels of police presence) have similar effects (i.e., high ambient crime risk). [11, page 54]

However, McCleary’s assertion that all subclasses will have equivalent effects on crime has not been well tested empirically. The present study is a strong empirical test of McCleary’s suppositions and suggests that there are substantial differences in the criminogenic impact of subtypes of adult businesses. The research results reported here suggest that municipalities should be far less concerned about the safety hazards posed by adult book/video stores compared to alcohol serving cabarets.

7.3. Are Adult Businesses More or Less Criminogenic Than Liquor-Serving Establishments? In this study we asked is the geospatial relationship between crime and adult cabarets lower or higher than the geospatial relationship between crime and establishments with liquor service but no adult entertainment? We also asked is the geospatial relationship between crime and adult bookstores lower or higher than the geospatial relationship between crime and nonadult establishments with liquor service?

Examining the results of the three separate analyses, we found that the magnitude of the relationship between adult book/video stores and crime was far smaller than the relationship between liquor-serving establishments and crime. While adult cabarets were found to be associated with ambient crime, this level of crime was generally no greater than that found for liquor-serving establishments that did not have adult entertainment. In fact, the intensity value analyses revealed that, across the municipalities, crime generally was more “intense” around liquor-serving establishments than around adult cabarets. These findings suggest that the relationship between cabarets and crime is not due to the presence of adult entertainment per se but rather due to the presence of liquor service. This finding is consistent with a central precept of routine activities theory that areas that contain public establishments that serve alcohol facilitate general crime [22, 26–33]. This finding, while not technically inconsistent with the McCleary’s [10] proposal that the presence of attractive targets, presumably drawn there by the sexually oriented business, brings in rationally motivated criminals that seek to victimize these “soft” targets, does suggest that this process is not one that is endemic to or unusually strongly associated with adult businesses. The present study demonstrates that it cannot be assumed that adult businesses must be “hotspots” of crime merely because of the presumed features of the geographic areas that contain such businesses.

7.4. Study Limitations. There are several limitations to the current study. The cities included in the study may not be representative of other locations across the country. The conclusions based on these data may not be easily generalized
from these cities to cities in the United States at large. These venues were chosen on the basis of convenience, due to the quality of crime data available in a desirable format. However, given the difficulties associated with getting high quality, usable crime data for even one city, trying to do a representative random sample of cities to use for this analysis was beyond the scope of this study. A broader range of different cities and towns should be analyzed and compared in order to determine if there are any specific differences in secondary effects by national location. Ideally, future research needs to be done in which cities are sampled representatively in order to maximize generalizability. This being unlikely, at the very least, a broader range of cities, towns, and municipalities needs to be analyzed and compared in order to determine if there are any specific differences in secondary effects across localities. While this study may not be broadly generalizable, it is still important to note that we observed the same pattern of relationships across three cities of varying population and geographic location. Therefore, this study suggests some evidence to suggest that these findings may hold generally and provides a strong impetus for future research in this regard.

Another limitation of the present study lies in the philosophical difficulties associated with trying to provide evidence for a null effect. Finding few differences between cabarets and bars in the present analyses used in this study, with the methods employed, is not technically a demonstration that no effects exist.

It is also important to note that we cannot necessarily establish that any crime that is spatially proximal to an adult business or nonadult alcohol-serving establishment is actually caused by that business. Future research would need to undertake a longitudinal quasiexperimental design to more soundly make such causal claims.

Another potential limitation of this study is that it did not measure the structural characteristics that would predict crime at both adult business locations as well as nonadult alcohol-serving establishments. It should be noted, however, that Seaman and Linz [8] mirrored the present results when controlling for such factors. Nonetheless, future research should integrate the structural characteristics of the urban environment in order to more precisely assess the spatial relationship between crime, subclasses of adult businesses, and nonadult alcohol-serving establishments.

In summary, there are observable differences in the crime activity between adult book/video store locations and adult cabaret locations, as well as between adult businesses in general and nonadult liquor-serving establishments. While it cannot be concluded that adult bookstores are not related to crime at all, it can be said that the adult bookstores in our convenience sample of municipalities are overall less strongly associated with crime than the adult cabarets. The same can be said concerning the strength of relationship between adult businesses and crime and the nonadult liquor-serving establishments and crime, the latter relationship showing evidence of greater strength.

7.5. Legal and Policy Implications. In this study we have conducted a series of comparative analyses. The Court of Appeals in Annex Books noted the usefulness of such a comparative analysis and suggested that this type of inquiry is undertaken so that crime in and around adult businesses could be put into some perspective relative to crime at other businesses in the community, particularly alcohol-serving businesses. The court recognized that this comparative process has First Amendment implications. Without such comparative analyses and a demonstration that adult businesses present some special problem to the community as hotspots of crime, any legislation singling out adult businesses and the expression that occurs there for special regulation may therefore be based on the content of speech and not the secondary crime effects associated with adult businesses.

There has been a recent attempt to deliberately exclude such comparative analysis by various state legislatures who apparently fear that a finding of little difference in crime around adult businesses that compared other locations may appear to make state regulations less than content neutral. The Missouri State Legislature, for example, recently passed a law regulating adult businesses which deliberately excepts municipalities and other governmental bodies from undertaking comparisons of the secondary effects of adult businesses versus other businesses in the community R.S.Mo. § 573.525.2(3). The law incorporates the following language: “each of the foregoing negative secondary effects constitutes a harm which the state has a substantial interest in preventing or abating or both. Such substantial government interest in preventing secondary effects, which is the state’s rationale for sections 573.525 to 573.537, exists independent of any comparative analysis between sexually oriented and nonsexually oriented businesses.”

This language strongly suggests that the legislative purpose in adopting the legislation would likely subject the restrictions to “strict scrutiny” as content based. The language of the statute implies an intention to treat erotic expression differently from similarly situated nonerotic speech. The application of intermediate scrutiny to adult use regulations is only appropriate when “the ‘predominate concerns’ motivating the ordinance were with the secondary effects of adult [speech] and not with the content of adult [speech].” Intermediate scrutiny, as a legal policy then, is reserved for restrictions on expression which are “justified without reference to the content of the regulated speech.” The Missouri Legislature claimed to be doing so to ameliorate the adverse secondary effects alleged to be associated with that expression. But, in the next breath, the general assembly betrayed its concern with the content of the expression by stating that even if businesses offering books, magazines, videos, and live entertainment with a nonerotic theme produced the same or even greater secondary effects, SB 586 and 617 in a comparative analysis, the state would only regulate businesses offering adult content. Under Missouri law, a nightclub that presents comedy acts and a nightclub that presents adult dancers are treated differently, notwithstanding the fact that they might cause precisely the same sorts of adverse secondary effects.

Precluding comparative analyses may cause First Amendment problems for municipalities. Undertaking comparative
analyses as in the present study in which an attempt is made to identify adult businesses as hotspots for crime relative to other locations and asking how adult businesses compare with other businesses in the community as places that attract crime may be one way to avoid creating content based legal restrictions.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

References


