Examining the Link Between Sexual Entertainment and Crime:

The Presence of Adult Businesses and the Prediction of Crime Rates in Florida

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Abstract

The Supreme Court of the United States has recently considered the constitutionality of anti-nudity legislation passed by municipalities and states. In *City of Erie v. Pap's A.M.*, the Court held that municipalities may under certain circumstances pass anti-nudity ordinances on the assumption that nudity causes adverse secondary effects such as increased crime. The purpose of the present study was to examine whether rates of crime are associated with the rates of adult businesses in the 67 counties of Florida once other variables related to crime are controlled. Three kinds of crime were examined: UCR property crimes, UCR violent crimes, and rape. Rates per 100K people in the population were also computed for the numbers of nonsexual adult businesses: drinking establishments, gambling establishments, and hotels and motels in each county. These measures, along with measures of social disorganization and demographic variables, were examined for their relative ability to predict the three rates of crime. Regression analyses were performed to determine the unique contributions made by the control variables, rates of nude or semi-nude businesses, and rates of nonsexual adult businesses to prediction of the three rates of crime. Results revealed that rates of nude or semi-nude businesses were not significantly related to rates of property crimes or violent crimes. However, they were significantly, though <u>inversely</u>, related to rates of rape when other variables were taken into account. By contrast, rates of nonsexual adult businesses showed strong positive relationships with rates of both property crimes and rape. These results are consistent with previous research using different methodologies and they support the predictions of routine activity theory. However, they may cast doubt upon the validity of the doctrine of the adverse secondary effects of businesses offering nude or semi-nude entertainment.

Government Regulation of Erotic Expression

Through Anti-nudity Ordinances

The Supreme Court of the United States has over the last fifteen years considered the constitutionality of anti-nudity legislation passed by municipalities, counties and states. The Court in *Barnes v. Glen Theatre, Inc.* (1991) held that the State of Indiana could regulate nudity generally, and in adult cabarets and other adult businesses.

Negative Secondary Effects Justification For the Regulation of Erotic Expression

In a concurring opinion in *Barnes* Justice Souter offered his justification for the State's ban on nudity. He argued that the State could ban nudity on the basis of the *presumed* negative secondary effects on the surrounding community such as the occurrence of sex crimes. Thus, in *Barnes* the secondary effects "doctrine" was expanded to include not only the "zoning" of adult businesses to certain localities in the community but now the regulation of the content of expression within these establishments.

The rationale for the secondary effects doctrine had earlier been laid out in a prior decision *Renton v. Playtime Theatres, Inc.*, in 1986. In *Renton*, the Supreme Court considered the validity of a Renton Washington municipal ordinance that prohibited any adult theater from locating within 1,000 feet of any residential zone, family dwelling, church, park, or school. The Court's analysis of the ordinance proceeded in three steps. First, the Court found that the Renton ordinance did not ban adult theaters altogether, but merely required that they be a certain distance from so-called "sensitive locations." The ordinance, the Court said, was properly considered to be a time, place, and manner regulation. The Court next considered whether the ordinance was content neutral or content based. If the regulation were content based, it would be considered presumptively invalid and subject to the strict "scrutiny" standard. The Court held, however, that the ordinance was not aimed at the content of the films shown at adult theaters, but rather at the secondary effects of such theaters on the surrounding community, namely at crime rates, property values, and the quality of the city's neighborhoods.

Following the *Barnes* ruling the Court once again invoked the secondary effects doctrine in the case *City of Erie v. Pap's A.M.* (2000). The Court again held that municipalities have the right under certain circumstances to pass anti-nudity ordinances. The Court was fractured in its opinion although the secondary effects doctrine figured more prominently in the Court's decision making. Three justices agreed with Justice O'Connor's opinion that combating negative secondary effects (specifically, crime effects) that were supposedly associated with adult businesses was a legitimate basis for the imposition of an anti-nudity regulation.

The Link Between Sexual Entertainment and Crime

Several correlational studies have focused on sex-related crime such as rates of rape across states, as indicated by FBI Uniform Crime Reports, and their relationship to circulation rates of various forms of sexually explicit materials within those same states (Bauserman,1996). For example, Baron and Straus (1987, 1989) obtained circulation rates of "soft core" men's magazines, such as Penthouse, Oui, and Playboy for each of the 50 states. They then calculated the correlation between these figures and the rates of rape per 100K population for the same states. Their results revealed a significant, positive correlation between circulation rates of "soft core" magazines and rates of rape. This correlation remained statistically significant after other variables related to rape were entered into the regression equation. Other researchers (Jaffee and Straus, 1987; Scott and Schwalm, 1988) have also obtained positive correlations between sex magazine circulation rates and rates of rape.

Despite the positive correlations obtained by different researchers examining data from different years, Baron and Straus (1989) eschew the interpretation that these results indicate consumption of sexually explicit materials increases levels of rape. They note that the experimental literature examining the effects of various sexually explicit media (See Davis and Bauserman, 1993; Linz, Donnerstein, and Penrod, 1987: Linz, 1989 for reviews of this literature.) has consistently found that nonviolent sexually explicit materials do not affect viewers in ways that would encourage them to rape. Second, they note that studies in other countries (Kutchinsky, 1985; Ben Veniste, 1971) examining the rate of sex crimes

following the legalization of sexually explicit materials have failed to find increases in sex crimes, including rape. Third, they note that the circulation rates of Playgirl magazine, which appeals primarily to women and gay men, are also highly correlated ($r =. 68$) with rates of rape. They argue that some other factor, which researchers have not measured sufficiently by any of their statistical indices, must be responsible for the correlation between sex magazine circulation rates and rates of rape.

Several additional findings challenge any interpretation that sexually explicit entertainment contributes to increased levels of rape. Gentry (1991) also examined the correlation between sex magazine circulation and rates of rape, but she did so at the level of Metropolitan Statistical Areas (MSAs), rather than states. She found that the significant relationship between rape and sex magazine circulation dropped to zero when several other variables, such as proportion of the population that is youthful (15-24 years of age), were entered into the regression equation. Gentry (1991) argues that the relationship between sex magazine circulation rates and rape rates is spurious. She contends that these two variables are correlated because both are related to the proportion of young people in the population. An additional challenge to the hypothesis that sexual entertainment causes rape comes from the work of Scott and Schwalm (1988) who examined the relationship between rates of rape by states and the number of adult movie theaters showing "hard core" sex films in each state and found no significant relationship.

These studies have either focused on a relatively narrow range of forms of sexual entertainment, such as "soft core" magazines, or adult theaters which have largely disappeared. Many forms of erotic entertainment are now available to anyone with an online computer, and auditory erotica is available to anyone with a telephone and a credit card. The study of the relationship between the extent of consumption of sexual entertainment and rates of rape in a specified geographic area will be improved to the extent that a wider range of sexual entertainment is included in the assessment.

A significant source of erotic entertainment in the United States is provided in so called gentlemen's clubs that feature nude or semi-nude dancers who entertain patrons with live performances.

In many communities, similar entertainment is available on an out-call basis. These forms of entertainment proliferated in the 1970s, along with adult bookstores and theaters. In its earliest form, the "topless bar," the featured entertainment was primarily women dancing bare-breasted. Today, "gentlemen's clubs" provide a wide range of sexual entertainment, from women dancing on stage in bikinis or wearing pasties, to fully nude performances with bodily contact between patrons and dancers, i.e., "lap dances." Similar performances are also provided by performers in "lingerie modeling" or massage salons. These are stand-alone businesses that typically do not serve alcohol, but do feature nude or semi-nude performances in a less public setting.

Empirical tests of the relationship of nude or semi-nude live entertainment on crime in the community have yielded mixed effects. Unpublished reports by municipalities across the county have claimed to find empirical evidence of adverse secondary effects in the form of greater crime in the areas surrounding adult nude and semi-nude entertainment businesses. These studies, relied on by other communities throughout the country, do not adhere to professional standards of scientific inquiry and nearly all fail to meet the basic assumptions necessary to calculate an error rate--a test of the reliability of findings in science. Those studies that are scientifically credible demonstrate either no negative secondary effects or a reversal of the presumed negative effect (Paul, Linz and Shafer, 2001).

Additional empirical studies have yielded results that contradict the claims of municipalities. The only published, peer reviewed study of secondary effects (Linz, Land, Williams, Paul and Ezell, 2004) examined the presence of adult dance clubs featuring topless dancing and possible negative secondary effects in the form of increased crime in Charlotte, North Carolina. They found no more crime incidents in areas surrounding the clubs than in matched control areas that do not contain such an adult business. Indeed, the analyses implied the opposite, namely, that the nearby areas surrounding the adult business sites have smaller numbers of reported crime incidents than do corresponding areas surrounding the control sites studied. Unpublished studies of secondary effects have also yielded no evidence of adverse secondary effects (see for example: Paul and Linz, 2002).

One other published study, not specifically addressed to the adverse secondary effects of adult businesses, but potentially relevant reports similar findings. Ford and Beveridge (2004) used survey data from over forty-two thousand respondents to estimate the levels of visible drug sales in 1,166 census tracts. Various demographic variables and measures of the presence of various types of businesses, both "desirable" and "undesirable," were then used in an attempt to account for variation in levels of drug sales. The only type of business that offered sexual entertainment included in their analysis was "massage parlors/escort services." They found that the presence of massage parlors/escort services was not related to levels of drug sales. They concluded that visible drug sales were generally unrelated to the presence of "undesirable" businesses, such as massage parlors/escort services, liquor stores and pawnshops, but were related to the relative absence of more "desirable" businesses, such as movie theaters, supermarkets, and clothing stores. They also found that visible drug sales tended to be significantly higher in census tracts with high numbers of fast food restaurants.

The present study extends the prior research in several ways. First, this study includes a test of the association of both nude and semi-clothed sex-related entertainment and rape rates as well as other crime events. Previous studies by Linz et al have included only topless or pasties and g-string dancer entertainment facilities. Other researchers such as Ford and Beveridge (2004) limited their research to the presence of massage parlors/escort services. Second, this study investigates several theoretical explanations that may account for either increases or decreases in crime in geographical areas containing adult entertainment venues. Third, the present study is an attempt to provide an empirical test of the claims made about secondary effects and nude and semi nude entertainment on a statewide rather than a more localized basis by investigating the claim that crime in the state of Florida, especially rape and sexual assault is associated with the presence of adult businesses that feature nude and seminude performances. Such statewide analyses are critical in order to inform law and policy makers attempting to formulate statewide legislation to regulate, for example, alcohol service at partially clothed or nude entertainment facilities. The regulation of alcohol serving establishments is often a statewide rather than

localized matter. The legality of statewide regulation of alcohol serving that feature adult entertainment is the subject of recent federal court decisions (see: <u>J.L. Spoons, Inc., et al., v. Kenneth Morckel, et al.</u> 314 F Supp. 2nd 746, ND Ohio, April 1, 2004).

<u>Theoretical Mechanisms</u>

<u>Social learning theory</u>. Implicit in the search for an association between pornography and live sex entertainment and sexual assault is the idea that exposure to erotic performances, sexual messages and other materials either create a desire to engage in sexual activity including forced sex and molestation, or these performances attract individuals who are already predisposed to such antisocial activities. This approach is a variant of the notions put forth by social psychologist Albert Bandura and his original formulations of "social learning theory."   Social learning theory emphasizes the effect that vicarious experiences (observation) of actors (models) on the behavior of observers. (See example experiment by Bandura, Ross, and Ross; 1961; also see Bandura, 1973; Mischel & Shoda, 1995; and Seto et al, 2001.)

Very briefly, observing models can have several effects on observers: New responses can be learned or acquired by observing the model. A response that otherwise may be made is changed or inhibited when the observer sees a model being punished. Already learned responses may be disinhibited due to a reduction in fear by observing a model's behavior go unpunished. Or a model may elicit from an observer a response that has already been learned. Observing several models performing and then adapting a combination of characteristics or styles may lead to the creation of completely new behaviors.

A social learning approach is often implicitly embraced by local municipalities and articulated in testimony by citizens who appear before legislators considering zoning regulation of adult businesses. The citizens are concerned that customers of adult businesses will either learn new sexually deviant behaviors, become disinhibited and engage in antisocial behaviors that they would not have save for exposure to sexual performances or are concerned about adult businesses facilitating antisocial behavior

by serving as a magnet for those willing to engage in antisocial activities in their community. The anecdotal testimony of a citizen in New Albany, Indiana serves as an example of the reliance of many municipalities on a social learning justification for restriction of adult businesses. One citizen addresses the city council, which was considering a ban on adult bookstores, with the following plea:

> "I urge you, I beseech you, to vote for the delay to this establishment and any other type of business in this field from our community. I urge you to develop policies that for the good of our children will prevent this type of business from opening in New Albany. And I ask you to research the occurrences of -- like things as incest, rape, molestation and abductions and the effect of easy availability of this type material on the behavior of pedophiles who often are known to frequent these businesses (pg.13 lines 5-15).

Social learning theory would point to sex crimes as an especially likely form of adverse secondary effect and the theory would predict that these crimes would be likely to increase in vicinities that included adult erotic performances. The theory would tend to deemphasize other criminal activity such as theft or robbery or even nonsexual violent crimes against persons as modeling may not extend very far beyond the specific sex related messages.

Routine activities theory. A more general crime theory, routine activities theory suggests that the causes of crime may be independent of many of social learning and cultural contexts that are often stressed by other approaches. Cohen and Felson (1979) hypothesized crime clustering as a result of routine activities including the convergence in both space and time of motivated offenders, suitable targets, and the absence of capable guardians against a violation. Criminal activities often cluster in places under certain conditions, and these high-crime areas are referred to as "crime hot spots" (Shermen, 1995).

Places that have been identified in the academic literature as attracting or generating crime include liquor stores and taverns (Roncek and Bell, 1981; Roncek and Maier, 1991), public housing (Roncek et al., 1981), high schools (Roncek and Faggiani, 1985), and certain types of commercial

businesses (Walsh, 1986). Other studies on crime and space have identified "crime hot spots" or "clusters of criminal activities" that include nightlife areas, restaurants, convenience store areas and isolated club or tavern establishments (Sherman et al, 1989; Sherman, 1995; Block and Block, 1995). Sherman et al. (1989) found that crime hot spots (with just 3% of the total places) accounted for more than 50% of the total calls for assistance made to the police in a one-year period in Minneapolis, Minnesota, showing a high degree of crime clustering. He further showed that five of the top ten "hot spots" for per capita crime were alcohol-serving establishments.

High concentration of inner-city males and alcohol consumption may create a place-specific critical mass resulting in violence (Crutchfield, 1989). Norstrom (1998) using time series data spanning over 38 years found that the assault rate is significantly related to consumption of beer and spirits in bars and restaurants, while the homicide rate is linked to spirit(s) consumption in private contexts. Some studies report a strong association between heavy drinking and sexual assault among college-age men and women (Miller and Marshall, 1987; Koss and Dinero, 1988; Nicholson, 1998). In another attempt to identify drinking as a risk factor for robbery, Leppa (1974) noted that people who have been drinking offer attractive targets for robbery because they are often unable to protect themselves or their judgment is impaired.

Adult businesses such as nude and semi-nude entertainment facilities have not been identified as crime hotspots by those researchers most often employing a routine activities approach. Instead, this theoretical approach and the past empirical research employing it would suggest that alcohol serving establishments, hotels and restaurants associated with nightlife activities would most likely be crime hotspots.

McCleary (2004) offers a variation on routine activities theory that applies to adult entertainment establishments. He hypothesizes that sexually oriented businesses, including nude and seminude live entertainment businesses pose high crime risks. McCleary contends that sexually oriented businesses constitute crime "hotspots" both because of the quantity and quality of people drawn to the "hotspot."

In terms of quantity, McCleary maintains that standard business practices designed to attract customers (sales, advertising, "giveaways," etc.) aggravate the crime risk by making the location more attractive to predatory criminals. In terms of quality, McCleary asserts that sexually oriented business patrons travel to distant locations (presumably far from their own neighborhoods); use aliases; pay in cash; and when victimized, tend not to complain to or seek assistance from the police.   According to McCleary the steps that sex business patrons take to maintain their anonymity make them attractive targets for predatory criminals. This theory would predict higher rates of all forms of crime in geographical areas with concentrations of adult cabarets.

Social disorganization theory. Sociologists have enumerated several variables indicative of social disorganization that are useful in predicting the risk of crime. These include measures of racial composition (number of African Americans and racial heterogeneity), family structure (as measured by number of single-parent households), economic composition (as measured by family income), and the presence of motivated offenders including males between the ages of 18 and 25 (Miethe & McDowall 1993). These social disorganization variables have been examined on the basis of the assumption that a local area's population age structure (especially the presence of young adults) and its race/ethnic composition can affect both the size of the pool of motivated crime offenders and the presence of suitable targets for predatory crimes (Miethe & Meier 1994). Similarly, the socioeconomic status of individuals in a local area can affect both the prevalence of motivated offenders and crime targets. For example, Cohen, Gorr, and Olligschlaeger (1993) found that crime hot spots tended to be in areas with higher levels of poverty or low income, and were likewise associated with low family cohesion, an indication of the prevalence of both motivated offenders and crime targets.

This approach, rather than specifically predicting effects for the presence of adult businesses, suggests that demographic variables and household composition variables shown in previous studies to be related to rates of crime and disorder such as total population of the counties, proportion of population between the ages of 15 and 24, the proportion of the population divorced, the proportion of

the population that is nonwhite, the proportion of female headed households, and an index of income inequality need to be considered as control variables.

Summary of Hypotheses

Social learning theory would predict that sex crimes would be most likely to increase in vicinities that included adult erotic performances. The theory would be neutral with regard to other criminal activity such as theft or robbery or even nonsexual violent crimes against persons. Second, the positive relationship between sex crimes and the presence of an adult businesses in a specified geographic area should remain statistically significant after the variance due to demographic and social disorganization variables is taken into account.

Routine activities theory would predict that the presence of liquor stores and taverns or other "crime hot spots" or "clusters of criminal activities" that include nightlife areas, restaurants, convenience store areas and isolated club or tavern establishments would be associated with criminal activities. High concentrations of inner-city males and alcohol consumption may create a place-specific critical mass resulting in violence. Some studies report a strong association between heavy drinking and sexual assault among college-age men and women. People who have been drinking offer attractive targets for robbery because they are often unable to protect themselves or their judgment is impaired.

McCleary's (2004) variation on routine activities theory applied to nude and seminude live entertainment, which states that these businesses constitute crime "hotspots" both because of the quantity and quality of people drawn to the "hotspot" predicts several outcomes. If McCleary's (2004) view is correct, several results should be obtained in our analyses. First, the results should reveal significant, positive correlations between the number of nude or semi-nude businesses and all forms of crime. Second, these positive relationships should remain statistically significant after the variance due to demographic and social disorganization variables and numbers of nonsexual, adult businesses are taken into account. Finally, the proportion of unique variance accounted for in the prediction of crime

rates should be greater for the numbers of nude and semi-nude businesses than for the numbers of nonsexual adult businesses.

Method

Numbers of Nude and Semi-nude Businesses Per County

We attempted to create the most comprehensive and accurate listing possible of adult businesses that feature nude or semi-nude entertainment by female performers. We consulted a total of 16 sources and then cross-referenced the listings they provided. We began our listing with all of the adult cabarets listed in Exotic Dancer's Guide to Adult Nightclubs 2003-2004 for the state of Florida. This industry publication claims to list over 2300 "gentlemen's clubs" in the U. S. We also consulted nine websites that advertise adult businesses, some with listings just for adult businesses in Florida, and others, such as Naughtynightlife.com and Exoticnites.com with listings for the entire U. S. In addition, we consulted several print publications, both mainstream (weekly papers) and those serving the adult industry. The name of each business identified in any of these sources was entered into a data-file that also included the type of business (nude dance club, swing club, lingerie modeling salon etc.), whether it offered nude or semi-nude live performances, and the county, city and MSA of its address. We also included street addresses and telephone numbers to check for duplication.

We focused on those businesses that provide live performances by nude or partially clothed women. We restricted our listing to those businesses that have a fixed location. This is a somewhat arbitrary distinction, and it eliminates some businesses that offer nude entertainment, such as escorts and some "out-call" erotic models, from consideration. Three arguments can be made in favor of this restriction. First, the impact of businesses such as escorts is probably much less than an adult cabaret that has many dancers and many patrons in a given evening. A single escort will presumably have only one or at least only a few patrons in a given evening. Second, escorts or other "outcall" businesses that lack a business address may advertise in several areas of the state. It is difficult or arbitrary deciding which county this "business" is located in. Finally, if an adult business has no address, then it has no

"surrounding community" in which its effects can be felt. Thus the legal arguments for restricting such a business must be based on other considerations.

Our analyses focus only on comparisons between counties. There are several reasons for this selection. First, there are only 20 MSAs in Florida, and a statistical analysis based on so small a sample would lack the statistical power necessary to adequately test for the hypothesized relationships. Cities on the other hand are numerous, but their populations are often so small that their crime rates can fluctuate dramatically from one year to the next. County crime rates tend to be much more stable. Second, counties are more socially and demographically meaningful geographical areas than either MSAs or cities. Divisions between cities can often create a contrast between two contiguous areas that are identical in virtually all ways, save for their arbitrary boundaries. Cities can also be so small that the characteristics of one city can have a powerful effect on adjoining, or even nearby cities. On the other hand, MSAs can be so large that they arbitrarily combine counties that are quite different from each other. Finally, if there is any validity to the concept of "adverse secondary effects," such effects would seem to emanate at least moderate distances from adult businesses. These effects could extend beyond the boundaries of a small city, or even a large one if the business is near its border. On the other hand, they would be unlikely to extend across the counties of a large, multi-county MSA.

Crime Rates

The focus of this analysis is on rates of crime in the 67 counties of Florida. All of these data were downloaded from the Florida Department of Law Enforcement (FDLE) website (*www.fdle.state.fl.fsac*) for the period from 1998 to 2002. Our analysis focuses on three types of crimes: UCR property crimes (burglary, theft, auto theft and arson), UCR violent crimes (murder, assault, and robbery), and forcible rape. Rape is typically included as one of the UCR violent crimes. However, rates of rape were of interest by themselves, so they were analyzed as a separate category. All crime rates were computed as annual rates per 100K people in the population. Examination of these rates reveals that they are quite consistent from one year to the next. Consequently the average rate for each

county for the period 1998-2002 was computed for use in subsequent analyses. This time span was used because it centered on the year 2000 for which U. S. Census data is readily available.

Control Variables

A considerable amount of previous research has established that several characteristics of geographical areas, such as states, MSAs, and counties are associated with their rates of crime. These can be seen as falling into one of three theoretical domains.

"Urbanness." The first theoretical domain contains measures of the degree of urbanness or population density of the area. It is obvious that areas with more persons will have higher absolute numbers of crimes. But, it is also true that the rate of crime is typically higher in areas that have higher populations. For example, Baron and Straus (1989) found that rates of rape were higher in states where a higher percentage of the population resided in MSAs. Kposawa, Breault, and Harrison (1995) found that "urbanness" and population density were related to rates of both property crimes and violent crimes. We computed population densities (persons per square mile) from Census Bureau data.

Demographic characteristics of population. A second set of variables related to crime are those that describe demographic characteristics of the population. These include the relative youthfulness of the population, its ethnic composition, and the income distribution. The highest rate of rape perpetration is found among males aged 15-24, and the highest rate of rape victimization is found among females aged 15-24. Consequently, the higher the percentage of persons in the population of an area who are in this age range, the greater the rate of rape is likely to be (Baron and Strauss, 1987 & 1989; Gentry, 1991). Young persons are also more likely to commit other forms of violent crime and property crimes (Cohen and Land, 1987, Cohen, Felson and Land, 1980). To assess the youthfulness of county populations, we computed the percentage of persons between the age of 15 and 24 for each county from data from the 2000 Census.

In absolute numbers, most crimes are committed by people of European origin. Still, African-Americans commit a higher number of rapes and other violent crimes than would be expected based on

their proportion of the population (Amir, 1971; Katz and Mazur, 1979). Other researchers found the percentage of the population that is African-American to be associated with rates of both violent crimes and property crimes (Kposawa, Breault, and Harrison, 1995; Patterson, 1991). Kposawa, Breault, and Harrison (1995) also found that the percentage of persons identifying themselves as Hispanic was related to rates of property crime. To capture the level of ethnic diversity of counties, we used Census data to compute the percentage of the total population who were non-white (either African-American or Hispanic).

Many researchers have noted a link between poverty and crime (Allen, 1996; Blau and Golden, 1986). Some researchers have found that communities with high proportions of both poor and affluent citizens are especially likely to have high rates of property crimes (Kposawa, Breault, and Harrison, 1995) and rape (Baron and Straus, 1989). Thus, any attempt to explain variations in levels of crime rates across geographical areas should take into account some measure of income variance. We constructed an index of income inequality from Census data giving percentages of the population over the age of 15 who fell above or below the poverty line. Specifically, we computed the product of the percentage of these persons who whose annual incomes were .74 or below the poverty line and those whose incomes were 2.0 the poverty line or above. Thus our measure of income inequality reflects the variability in incomes, with counties that have the highest proportions of both poor and affluent persons scoring highest.

Social disorganization variables. A third set of variables that is related to crime are those that describe the degree of social disorganization of the area. A higher proportion of separated or divorced persons indicates a greater degree of social disorganization, and this is typically associated with a breakdown in conformity to social norms, including the tendency to abide by law. Further, separated and divorced women may be especially vulnerable to sexual assault and other crimes against persons. Separated and divorced men may also be more likely to be perpetrators of crimes, including rape. Finally, the adolescent offspring living in single parent (female headed) households may be less closely

supervised. This variable has been found to be associated will both violent and property crimes by Kposawa, Breault, and Harrison (1995) at the county level. Rice and Smith (2002) also found that single parent households were related to auto thefts at the "face block" level, especially when a hotel or motel was near. Thus, a thorough attempt to account for variations in crime rates should also take measures of social disorganization into account. To partially assess levels of social disorganization we computed two variables from Census data. The first was simply the percentage of persons over the age of 15 who were separated or divorced. The second was the percentage of households headed by females.

Numbers of nonsexual adult businesses. We included in our analyses measures of several types of businesses that cater mostly or exclusively to adults, but do not provide any form of sexual entertainment. On the one hand, these measures are included to serve simply as control variables. As with the social disorganization and demographic variables, they may account for much of the variance in crime rates. In addition, these businesses are similar in nature to the many of nude or semi-nude businesses, and provide useful comparisons to these businesses. If it is true, as the doctrine of adverse secondary effects holds, that businesses that offer sexual entertainment have adverse effects over and above those associated with any large and successful business, then we should observe stronger associations between measures of sexually oriented businesses and crime rates than we observe between measures of nonsexual adult businesses and crime rates.

Bars and taverns are especially appropriate controls for many nude businesses. In some cases the sole difference between an alcohol only bar and a "topless" bar, or nude cabaret that offers alcohol for consumption on the premises, is the presence of sexual entertainment in one but not the other. Several studies have found that bars and taverns tend to be associated with elevated rates of crimes. For example, Sherman, Gartin and Buerger (1989) found that both bars and convenience stores were disproportionately likely to be locations from which calls for police service were made. Roncek and Maier (1991) also reported that crime rates were higher on blocks that contained bars or taverns. We attempted to apply this logic at the level of counties. We obtained the numbers of drinking

establishments for Florida counties from the survey of County Business Patterns performed each year by the Census Bureau for inclusion in the analysis.

Nicholls (1976) argues that tourists are more likely to commit crimes because they have less investment in the community and/or view themselves as on a "vacation" from norms that usually govern their behavior. In addition, tourists may be more vulnerable for a variety of reasons. Visitors may be unaware of dangerous areas or practices that locals routinely avoid. Hotel or motel rooms may be less secure than the homes that visitors left behind. If the tourists drove their vehicles, the vehicles are likely to be more vulnerable to auto thefts or burglaries than they would have been in the visitor's garages at home as shown by Rice and Smith (2002). They examined the likelihood of auto thefts in nearly eight thousand "face blocks" in a medium sized southeastern city, and found that the presence of hotels and motels was by far the best predictor of the number of auto thefts. The second best predictor of auto thefts in their study was the combination of the presence of a hotel or motel and a high number of single parent households.

A large number of non-residents visiting a community may contribute to heightened crime rates in a more basic way. The FBI calculates crime rates per 100K population by dividing the number of known crimes by the stable population of the community, as indicated by Census Bureau. If a sizable number of persons, whether tourists or business travelers, are found in a geographical area on a given day, these persons may contribute to the number of crimes in the area either as victims or perpetrators. However, their numbers are not included in the population used to compute crime rates. Thus, even if these non-residents are no more likely than permanent residents to be either victims or perpetrators, they can increase the reported "crime rate." Finally, if tourists are more likely to be victims or perpetrators, then their impact on the crime rate is even greater.

There is no readily available indicator of this level of increase in the aggregate number of persons in a community on an average day. One indirect measure of this impact is the number of businesses that provide accommodations for these visitors, such as hotels and motels. It may be

reasonable to assume that those communities that have higher numbers of hotels and motels are those that have higher numbers of visitors, and that the number of visitors these communities have is roughly proportional to the number of hotels and motels. We obtained the numbers of hotels and motels for Florida counties from the survey of County Business Patterns performed each year by the Census Bureau.

Several researchers (Beale & Goldman, 1975; Fujii & Mak, 1980; Miller & Schwartz, 1998, Ochrym, 1990; and Wilson, 2001) have examined the impact of gambling establishments, both traditional casinos and riverboat gambling establishments, on crime. While the results of their studies are somewhat inconsistent, almost all have detected evidence that the presence of gambling establishments increases one or more types of crime. Thus, it is reasonable to anticipate that the number of gambling establishments in each county is likely to be related to rates of crimes in that county. The numbers of gambling establishments for each county were also derived from the survey of County Business Patterns performed annually by the Census Bureau.

Results

Numbers of adult businesses per county

Table 1 displays the counts of nude and semi-nude businesses of various types by county. Table 1 shows only those counties that have at least one adult business; counties not found in the table had no adult businesses with physical locations listed in any of our sources. While we are aware of at least some adult businesses that have physical locations that are not listed here, it is reasonable to believe that Table 1 captures the vast majority of such businesses found in the state of Florida. Certainly the relative differences between counties in number and type of adult businesses are reflected accurately in the table.

Examination of Table 1 reveals that 401 adult businesses were listed by at least one of the various sources consulted. Nude dance clubs (33.7% of the total) are the most common form, followed by topless dance clubs (26.2%), and lingerie modeling salons (20.7%). It is also clear that nude and semi-nude businesses are not randomly distributed across counties. Rather, the highest numbers are

clearly found in the more populous counties. For example, of all such businesses, 90 (22.4%) are in

Hillsborough County, 54 (13.5%) are in Dade County, 40 (10.0%) are in Pinellas County, and 36 (9.0%)

are in Broward County. Thus these four counties contain over half of these businesses, while the 42

counties not listed in Table 1 have no such businesses. Clearly, Florida counties vary considerably in

the number of nude and semi-nude businesses they contain. The total number of nude and semi-nude

businesses in each county was selected as the clearest indicator of these businesses. This measure was

converted to a rate similar to the UCR crime rates by dividing the number of nude and semi-nude

businesses by the population of the county and multiplying by 100,000. This variable was used in all

subsequent analyses. Rates of nonsexual adult businesses, such as drinking establishments, were also

computed in the same way.

    Rates of property crime 1998-2002. Rates of property crimes per 100K people in the population

averaged across this five-year period show considerable variability, ranging from a low of 119.17 to a

high of 7198.87. The mean for this distribution is 3574.78, with a standard deviation of 1505.50. Rates

of property crime showed great stability across the five years,   = .977.

    Rates of violent crime(other than rape) 1998-2002. Rates of violent crimes per 100K population

averaged across this five year period also show considerable variability across counties, ranging from a

low of 106.94 to a high of 1265.18. The mean for this distribution is 627.94, with a standard deviation of

251.30. Rates of violent crime also showed great stability,   = .954

    Rates of rape 1998-2002. Rates of rape per 100K population averaged across this five year

period ranged from a low of 9.30 to a high of 135.35. The mean for this distribution is 73.94, with a

standard deviation of 26.57. Rates of rape also showed considerable stability,   = .847.

Data cleaning

    Prior to any statistical analysis, descriptive statistics for all predictor variables were examined to

determine whether these variables met the assumptions underlying multiple regression analysis. These

descriptive statistics are shown in Table 2. Many of the variables showed high levels of skew, kurtosis,

or both. Following the advice of Tabachnick and Fidell (2000), variables with that strongly deviated from normality were subjected to log (10) transformations, while variables with less severe deviations were transformed by computing the square root of the raw scores. These transformed scores were then used in all subsequent analyses.

Zero order correlations among the predictor variables

Table 3 shows the zero order correlations between the predictor variables used in the initial regression analyses. Quite notable are the very high, positive correlations between the three variables that assess types of nonsexual, adult businesses and between these variables and population. Clearly, more populous counties are those that also have more hotels and motels, drinking establishments, gambling establishments and businesses offering nude and semi-nude entertainment. The high correlations raised the likelihood that the results of the planned regression analyses could be affected by multicollinearity. Given the very high correlations between the three measures of nonsexual businesses (hotels and motels, drinking establishments, and gambling establishments), it was reasoned that it would be impossible to distinguish between these variables in a multivariate analysis in which more than one of them was included, so the decision was made to perform the initial analyses using only one of these variables (drinking establishments per 100K population). Secondary analyses were planned in which this variable would be deleted and one of the other two measures of rate of nonsexual adult businesses used in its place. In other words, 3 regression analyses would be performed and only one measure of nonsexual adult businesses would be entered into each equation.

Zero order correlations between the predictor variables and crime rates

Table 4 shows the zero order correlations between the crime outcome variables and the predictor variables. The rates of nonsexual adult businesses per 100K population are significantly correlated with both rates of violent and property crimes but not with rates of rape. Rates of nude and semi-nude businesses per 100K are not significantly related to rates of any type of crime.

The purpose of the regression analyses that follow was two fold. The first purpose was to determine whether numbers of nude and semi-nude businesses per 100K contributed to the prediction of rates of crime after variance accounted for by the remaining variables was taken into account. The second was to compare the amounts of unique variance accounted for in prediction of crime by numbers of nude and seminude businesses per 100K and with that accounted for by numbers of nonsexual adult businesses per 100K.

Regression analyses with UCR property crime rates as the dependent variable

Rates of property crimes were used as the outcome variable in a standard regression analysis with the following variables entered in a single step: county population density, the % of the population nonWhite, the % of the population between the ages of 15 and 24, the % or the population separated or divorced, the % of households headed by females, income inequality, the number of drinking establishments per 100K population, and the number of nude and semi-nude businesses per 100K population. The results of this analysis are shown in Table 5. The model including these eight predictor variables is clearly significant, $R = .756$, $F(8, 58) = 20.606$, $p < .001$, and accounts for 64.3% of the variance in UCR property crime rates. Three variables make a unique, significant contribution to prediction of rates of property crimes: population density ($sr = .214$), income inequality ($sr = .214$), number of drinking establishments per 100K ($sr = .194$). The number of nude and semi-nude businesses per 100K does not make a significant contribution to prediction of UCR property crimes when the other variables are taken into account, ($sr = -.095$).

Two similar analyses were performed. In the first, number of hotels and motels per 100K was substituted for number of drinking establishments per 100K, and in the second number of gambling establishments per 100K was used as the variable representing nonsexual adult businesses. As expected, given the high correlations between the three measures of nonsexual adult businesses, both analyses yielded quite similar results. The unique contributions of hotels and motels per 100K ($sr = .331$), and gambling establishments per 100K ($sr = .331$), were significant, while the contributions of the remaining

variables were similar to the initial analysis. All three measures of nonsexual adult businesses thus have a similar ability to account for rates of property crime.

Regression Analyses With UCR Violent Crimes as Dependent Variable

Rates of UCR violent crimes were also used as the outcome variable in a standard regression analysis similar to that described above. The same eight predictor variables were entered in a single step. The results of this analysis are shown in Table 6. The model including these variables is significant, R =.713, $F(8, 58) = 7.500$, $p<.001$, and accounts for 50.8% of the variance in UCR violent crime rates. Only population density ($sr = .212$), % of female headed households ($sr = .192$), and income inequality make significant, unique contributions to prediction of rates of violent crimes. Neither the number of drinking establishments per 100K ($sr = .082$), nor the number of nude and semi-nude businesses per 100K ($sr = -.014$) makes a significant contribution to prediction of UCR violent crimes when the other variables are taken into account.

Once again, two similar analyses were performed. In the first, number of hotels and motels per 100K was substituted for number of drinking establishments per 100K, and in the second number of gambling establishments per 100K was used as was the variable representing nonsexual adult businesses. The unique contributions of hotels and motels per 100K ($sr = .135$) and gambling establishments per 100K ($sr = .125$) were both non-significant. The contributions of the remaining variables were similar to the initial analysis.

Regression Analyses With UCR Rape Rates as Dependent Variable

UCR rates of rape also were submitted to a regression analysis identical to those described above. Table 7 shows that the model predicted 34.3% of the variance in rates of rape, $F(8, 58) = 3.780$, $p< .001$. Three variables make unique, significant contributions to prediction of rates of rape: % of the population nonWhite ($sr = -.223$), number of drinking establishments per 100K ($sr = .216$), and the number of nude and semi-nude businesses per 100K ($sr = -.260$).

Once again, secondary analyses substituting number of hotels and motels per 100K or number of gambling establishments per 100K for number of drinking establishments per 100K were performed. In the first analysis, neither the contribution of hotels and motels per 100K (sr = .145) nor that of numbers of nude and semi-nude businesses per 100K (sr = -.212) reached the conventional level of statistical significance ($p<.05$), though their magnitudes were similar to those of the initial analysis. In the second, both gambling establishments per 100K (sr = .229) and numbers of nude and semi-nude businesses per 100K (sr = -.250) made significant, unique contributions to prediction of rates of rape. Percentage of the population that is nonwhite made a significant, unique contribution in both analyses.

Discussion

The Supreme Court of the United States has considered the constitutionality of anti-nudity legislation passed by municipalities or states that have relied on the negative secondary effects doctrine as justification. One negative secondary effect often cited is an increase in crime. The present study examined the empirical support for this assumption at the level of counties in the state of Florida. We examined the relationship between crime rates and the prevalence of nude or semi-nude businesses with other variables known to be related to crime controlled. Three kinds of crime were examined: UCR property crimes, UCR violent crimes, and rape. A single measure of the rate of nude and semi-nude businesses per 100K ppeople in the population was computed. Four demographic variables (population density, percentage of the population non-white, percentage 15-24, and income inequality) previously shown to be related to crime were used as control variables. Similarly, two social disorganization variables (percentage of female headed households and percentage of the population separated or divorced) were also entered as control variable. Measures of the numbers of nonsexual adult businesses (hotels and motels, drinking establishments, and gambling establishments) were also computed as rates per 100K population. Due to their high correlations with each other, these variables were entered in separate regression equations. These variables were entered into a series of regression analyses to

determine whether the measure of nude or semi-nude businesses showed significant relationships with rates of crime after the other variables were controlled.

These results provide no support for the prediction from social learning theory that rates of rape would be positively associated with the prevalence of businesses offering nude or semi-nude entertainment. On the contrary, when all variables were entered in the equation, the relationships between nude and semi-nude businesses and rates of all three crimes were negative. *In the case of rape, this negative relationship was statistically significant when rates of drinking establishments and gambling establishments were entered*, and approached significance when rates of hotels and motels were entered. On the other hand, rates of drinking establishments and gambling establishments both showed significant relationships with rates of rape when other variables were taken into account.

Predictions derived from McCleary's (2004) version of routine activities theory applied to erotic businesses did not fare well either. The relationships between rates of nude and semi-nude businesses were negative and non-significant when other predictor variables were taken into account. Further, rates of nonsexual adult businesses showed substantial positive associations with rates of both property crimes and rape when other variables were taken into account. McCleary's (2004) speculations about the quality and quantity of the patron's of adult businesses making them especially likely to be targets of predatory criminals are not supported by these data.

Predictions derived from work within the mainstream of routine activities theory was reasonably well supported. As predicted by this view, rates of both violent crime and rape were positively associated with the prevalence of nonsexual adult businesses, such as drinking establishments, hotels and motels, and gambling establishments. Our results also revealed negative associations between crime rates and the prevalence of nude and semi-nude businesses when other variables were controlled. A similar pattern of results was obtained for violent crimes other than rape, but the semi-partial correlations for these variables did not reach conventional significance.

Better management of potential crime hotspots

Cohen and Felson (1979) hypothesized crime clustering required motivated offenders, suitable targets, and the *absence of capable guardians against a violation*. Emphasis on the capable guardians portion of routine activities theory suggests that adult cabarets may not be sites where motivated offenders prey on victims. Why do we not find empirical evidence of the social disorganization/crime opportunity spillover of these adult establishments? While many interpretations of the different patterns of associations with crime rates shown by nude and semi-nude clubs and nonsexual adult businesses are possible, we suggest that the role of capable guardians is likely to be important.

The adult nightclub business in the late-1990s in many respects may be quite unlike that of the 1960s and 1970s when these establishments were relatively new forums of entertainment in American society. Adult nightclubs have been subjected to over two decades of municipal zoning restrictions across the country, and they usually must comply with many other regulations as well. The establishments themselves have evolved more closely into legitimate businesses establishments with management attention to profitability and continuity of existence. To meet these objectives, it is essential that the management and/or owners of the clubs provide their customers with some assurance of safety. Accordingly, adult nightclubs, including those in Florida often appear to have better lighting in their parking lots and better security surveillance than is standard for non-nightclub business establishments. These may be factors producing fewer crime opportunities and lower numbers of reported crime incidents in the surrounding areas of the clubs.

Architectural features of businesses may also play a role. Carter, Carter, and Dannenburg (2003) advocate an approach they call Crime Prevention Through Environmental Design. This approach emphasizes changes in properties that make the activities of persons more visible from the street and reinforce distinctions between public and private places. Carter et al noted a decrease in prostitution following the institution of their program while crime in the remainder of Sarasota, Florida remained unchanged or increased.

Support for the secondary effects doctrine

Our results are not consistent with the doctrine of adverse secondary effects. The prevalence of nonsexual adult businesses is more powerfully associated with rates of crime than the prevalence of nude and semi-nude businesses. Empirical findings that fully support the secondary effects notion should have shown not only that businesses offering nude entertainment are associated with crime, but also that they are associated with levels of crime over and above those associated with nonsexual businesses. The results of the present study show the opposite pattern: the prevalence of nonsexual adult businesses is more powerfully associated with rates of crime than the prevalence of nude and semi-nude businesses.

However, some caveats should be made regarding these results as applied to the debate about the secondary effects of adult businesses. We were able to identify 401 adult businesses in the state of Florida. While this is substantial, it is clear that the actual number is even greater. We did not include in our listing businesses for which we could identify no physical location. This eliminates many out-call modeling and massage businesses. Indeed, we observed many massage businesses that advertise only a phone number, though their ads suggest they have a physical location, e.g., by listing a general area, such as "Disney vicinity." It is also undoubtedly the case that some businesses with actual physical locations were not found, because they advertise in ways not captured in our search. We also did not include adult bookstores, though some may feature live performances, at least occasionally. Certainly, there are many adult businesses in the state of Florida that provide nude or semi-nude female performers for (mostly) male patrons. Our listing of 401 should be considered the lower limit on their number.

An additional concern that one might have about this data set is that the number of counties examined limits the likelihood of detecting adverse effects because it places a limit on the degree of statistical power that can be obtained. Several analytic decisions were based on a concern with statistical power. This concern is why the number of predictor variables was limited and crime rates were observed over a five-year period. However, the pattern of these results argues against this criticism. We did find statistically significant associations between both property crime and rape and the prevalence of

nonsexual adult businesses. Thus our data apparently provide sufficient power to detect these robust associations. Further, these data have sufficient statistical power to reveal that relationships between crime rates and rates of nonsexual adult businesses are significantly more positive than the relationships between crime rates and rates of nude or semi-nude businesses.

A related concern is the possibility that adverse effects such as crime emanate only a short distance from nude businesses, and that they are thus not detectable when a much larger unit of analysis, such as whole counties, is examined. This view suggests that these adverse effects can be detected only with designs that examine crime activity within a small radius, such as 1,000 feet, from the business. Such a position might have some merit, but it assumes that any adverse effects such businesses have on crime are weak and local. Still, one might argue that even weak and local effects, if accumulated over 90 or so businesses, such as in Hillsborough County, ought to have a detectable effect at the county level. If these effects cannot be detected at the level of analysis at which policy decisions are being made, that is, cities or counties, then it is difficult in our view to argue that the possibility of such effects should affect policy decisions made at that level. This is especially true when powerful "effects" of nonsexual businesses on crime are suggested by the robust associations between their prevalence and crime rates.

One final concern can be raised about the generalizability of these results. We found no evidence of a positive association between rates of crime and the prevalence of nude and semi-nude businesses. However, one can express some doubt about whether the patterns observed here will be found in other regions of the country. Tourism is a very important part of the Florida economy, and Florida arguably has a greater population of tourists as well as higher densities of hotels and motels than most other states. It is possible that the associations observed here are affected in part by the relatively high numbers of nonsexual adult businesses in Florida as compared to other states.

A comprehensive examination of the validity of the concept of adverse secondary effects on crime rates should employ a variety of methods. Different measures of crime (calls for service and UCR rates), analytic strategies (multivariate and quasi-experimental), and units of analysis (from counties to

census tracts and "face blocks") should be used. However, until studies using valid sources of data and appropriate methods provide credible evidence that businesses offering sexual entertainment contribute to increased crime in the areas that surround them, the doctrine of adverse secondary effects must be regarded as unsupported in the published scientific literature.

Table 1.

Types of businesses featuring nude or semi-nude live performances by female performers by county.
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				Type				
County	Bikini	Lingerie	Massage	Nude	Pasties	Swing	Topless	Total
Alachua	0	0	0	2	0	0	0	2
Bay	0	0	0	0	1	0	6	7
Bradenton	0	1	0	0	0	0	0	1
Brevard	0	0	0	1	0	0	8	9
Broward	0	3	0	16	1	6	10	36
Charlotte	1	0	0	1	0	0	0	2
Collier	0	0	0	0	0	1	0	1
Dade	0	2	1	43	0	2	6	54
Duval	21	0	0	3	0	0	3	27
Escambia	0	0	0	1	0	0	8	9
Hillsborough	3	43	8	24	0	2	10	90
Lee	1	0	0	0	0	1	5	7
Manatee	0	11	0	0	0	0	2	13
Marion	0	0	0	0	1	1	0	2
Monroe	0	0	0	5	0	1	2	8
Okaloosa	0	0	0	1	0	0	4	5
Orange	4	0	3	5	2	0	10	24
Palm Beach	0	1	2	15	0	0	4	22
Pasco	1	2	0	2	0	0	5	10
Pinellas	5	13	0	10	1	0	11	40
Sarasota	0	7	0	1	0	0	2	10
Seminole	0	0	1	1	1	0	4	7
St. Johns	1	0	0	0	0	0	0	1
St. Lucie	1	0	0	2	0	0	1	4
Volusia	1	0	0	2	2	1	4	10
Total	39	83	15	135	9	15	105	401

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Legend: Bikini=dance club with women in bikinis, Lingerie=lingerie modeling salon, Massage=massage salon, Nude=dance club with nude dancers, Pasties=dance club with dancers wearing pasties, Swing=swingers club, Topless=dance club with topless dancers

Note: Forty–two counties not shown above had no nude or semi-nude businesses listed in any of our sources.

Table 2.

Descriptive statistics for predictor variables.

Predictor variables	Mean	Std. Deviation	Skewness	Kurtosis	transformation
County population density	288.73	491.23	4.036	21.142	logarithm
% Non-white	.198	.102	1.410	3.173	square root
% aged 15-24	6.27	1.70	1.741	5.698	logarithm
% Separated or divorced	9.45	1.746	2.595	11.492	logarithm
% households headed by females	11.41	2.855	1.086	2.318	square root
Income inequality	.062	.015	.736	.255	--
Nude or Semi-Nude businesses per 100K	1.051	2.007	2.695	8.443	logarithm
Drinking establishments per 100K	29.993	41.397	2.682	7.688	logarithm
Hotels and motels per 100K	49.291	75.479	2.632	7.215	logarithm
Gambling establishments Per 100K	58.067	85.661	2.665	7.369	logarithm