

BARS, BLOCKS, AND CRIMES*

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ABSTRACT

We investigate the effect of bars or taverns on the amount of crime occurring on residential blocks. Our specific problem fits within the context of segregating non-residential from residential uses. We find that blocks with bars have more crime than blocks without bars, and that the number of bars on a block is moderately important for explaining where crimes occur. There are, however, no strong unique effects from locating bars on poor or minority blocks. Because the number of bars does not explain much of the variance in crime, our analyses do not warrant prohibiting bars on residential blocks.

INTRODUCTION: AN ON-GOING CONCERN WITH PUBLIC USE AND ABUSE OF ALCOHOLIC BEVERAGES

Although famous, Carrie Nation's efforts were not the first attempt to control the use of alcohol by Americans. American lawmakers at the local, state, and national levels have also concerned themselves with the public use and abuse of alcoholic beverages since the beginning of the nation. There are numerous laws and regulations governing what, how, and where Americans drink. Regulation of public drinking ranges from total prohibition to various forms of zoning to restrict the number and location of bars. The issuing of a liquor license to a

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tavern often produces concern among the local residents about the effect of the bar on the neighborhood. One of the major concerns of local residents about the opening of a bar centers around its effect on the amount of crime in the area [1, p. 223]. Despite this concern and the various forms of regulation of bars, there is little empirical evidence regarding their impact on residential areas [1]. We will examine whether the presence of bars on residential city blocks increases the amount of crime. Our analysis will provide an expanded empirical base for evaluating the need for regulation over the location of bars through zoning because of crime.

Two Alternative Theories

Examining the effect of bars on crime in residential areas is relevant to a broader issue in city planning, that of segregating non-residential land uses from residential areas. Jacobs argues that diversity of land use in a city's residential areas promotes safety by increasing utilization of the area [2]. She opposes planning theory that argues for separating of residential and non-residential uses because this leaves streets and sidewalks deserted and makes areas unsafe. Bars are an interesting land use to examine because much of their business will occur in the evening and at night. Thus, bars are likely to increase usage at times when an area might otherwise be relatively empty and possibly unsafe. Also, a bar in a residential area can increase the social integration of the neighborhood by increasing the contacts among residents. Increased contact could occur through common frequenting of the bar or increased use of the immediate area, that is, being seen going to and coming from the bar. Such contact could increase residents' willingness to assist each other directly or indirectly in the threat of crime.

Yet, there are several reasons why a bar in a residential area might produce more crime. The most obvious impact on crime on blocks with bars is through barroom brawls. Frisbie, et al., note that a relatively large proportion of reported indoor assaults occur in bars [1, p. 223]. Blocks without bars will not have such assaults. Although there is no research which shows how bars increase crime in an area, there are several plausible processes through which such increases could occur. Blocks with bars and the bars themselves could provide opportunities for criminal activity. Patrons coming to the bar are likely to have cash and this can increase their probability of being victimized because of the relative certainty of gain. Customers leaving the bar, although they may have less cash, may be easier targets. Bars often have cash on hand and, thus, are targets that will yield gain from either robbery or burglary. Thieves or robbers might take the liquor in bars either for personal consumption or for later sale. Frisbie, et al., also note that persons who have been drinking might commit crimes, such as assaults or murders which they would not commit if sober [1, p. 224]. If these crimes occur near the bar, then more crime would result.

Finally, Frisbie, et al., suggest the possibility that bars can be meeting places for people with criminal tendencies and this can produce more crime [1, p. 224]. Thus, examining the effect of the location of bars on crime in residential areas provides an opportunity to test whether or not Jacobs' utilization-safety perspective holds for one specific type of non-residential land use.

RESEARCH GOALS, HYPOTHESES, AND METHODS

Our concern is to determine if and how the number of bars on residential city blocks affects the amount of crime taking place. This concern requires three major research tasks:

1. determining if city blocks with bars have more crime than blocks without bars;
2. controlling for the effects of other characteristics of city blocks which could account for any differences in crime between blocks with and without bars; and
3. identifying whether bars have statistical interactions with other characteristics of city blocks and whether these interactions produce higher levels of crime.

Our purpose is to test two alternative hypotheses. The first hypothesis derives from Jacobs [2], and states that the presence of non-residential uses (in this case, bars) on residential city blocks is associated with lower levels of crime incidence. The second based on the work of Frisbie, et al., states that the presence of bars increases the amount of crime on residential city blocks [1].

Method

Ideally, we would prefer a rigorous experimental design, but, even if possible, this would be expensive. The lack of previous research argues against such expenditures. Thus, we rely on a cross-sectional design. First, we compare the amounts of crime on blocks with and without bars to identify if there are any important differences. Second, we examine how important bars are for predicting the number of crimes across city blocks by using regressions which include control variables. This procedure will not permit completely resolving the issue of causality. Yet, bar owners are unlikely to select locations because they have high crime levels. The regressions will permit determining if the opportunity or safety effects predominate. Yet, bars differ, and some may enhance safety while others may produce more crime. This difference should be due to the characteristics of the bars or of their environments. Unfortunately, we cannot distinguish different types of bars, but, we can test for interaction effects between the number of bars on a block and other characteristics of the blocks. We examine the interactions of the number of bars with the economic

status and racial composition of blocks. Past studies find that much crime occurs in poor and minority areas [3, 4]. We ask if locating bars on such blocks affects their levels of crime.

DATA

The City: Cleveland, Ohio – 1970

Cleveland is an interesting city for examining this problem. It is a large city, containing 751,000 people in 1970 at a density of 9,893 persons per square mile. Thus, it is the type of city for which Jacobs' concerns are relevant. Second, it has sufficient crime so that the crime distributions will not impair analysis. Of the thirty largest cities in the U.S., Carol finds that Cleveland ranks eighth highest both in robbery, a violent crime, and in property crime [3]. Finally, in 1970 there were enough blocks with bars for analyzing bar effects.

The Unit of Analysis: City Blocks

We use city blocks to assess the direct impact of bars on the immediate residential environment. Using blocks avoids the aggregation error which can occur with larger units of analysis such as census tracts [4, 5]. As Taeuber and Taeuber note [6, p. 226], "City blocks are . . . the smallest readily identifiable subareas for which reliable data can be tabulated." Frisbie, et al., examined the gradients of crime around licensed liquor establishments, but not the effect of bars on the block of location [1].

The Variables: The Bars

For 1970, the only data available for bars were their addresses. Using commercial maps, Census block maps and city directories, we assigned census tract and block numbers to the bars. Next, we tallied the number of bars on each block and used this as a variable. For 1970, there were 710 bars on 566 residential blocks. Of the 3,985 residential blocks in the city, 14.2 per cent had one or more bars. Of the blocks with bars, most had only one bar.¹

The Variables: Crimes

The number of index crimes and the number of violent crimes on each block are the dependent variables. Index crimes are the total of murders, rapes, assaults, robberies, burglaries, grand thefts, and auto thefts. Violent crimes are

¹ We also examined regressions containing a dummy variable to indicate whether a block had any bars on it or not. The results of this analysis are very similar to those we report in the tables. We retained the actual number of bars on a block as our independent variable because using the dummy variable results in ignoring available information.

the total of the first four crimes in the list. Using aggregate measures of crime insures adequate distributions for analysis. We use the frequencies of crimes because, except for burglary, the victims do not have to live on the block. For the potential victim [7], the important problem is where crimes occur. A low rate of crime, regardless of the base, provides little comfort to a victim. Having two measures of crime allows comparing across crimes. Using the number of index crimes permits estimating bar effects on the total volume of serious crimes. The Cleveland police department provided the addresses of the crime offenses by type. Using the ADMATCH program [8], we assigned census tract and block numbers to the addresses of the crimes. Despite having the addresses of the offenses, it was impossible to tell which crimes occurred in the bars.

The Variables: The Controls

The Third Count Census Summary Tape from 1970 and measurements from geographic base files (GBF/DIME files) are the data sources for the nine control variables. These represent social and physical characteristics of the blocks which are important correlates of where crimes occur. Previous studies find that the household composition, racial composition, and economic status of residential areas correlate with crime [9–11]. The four variables representing these characteristics are: the per cent primary individuals,² the per cent female-headed families, the per cent black, and the mean value of rental housing.³ We also include the per cent of persons over sixty in the regressions. Older people are easy to victimize, and their presence can affect the amount of crime. The four indicators of the physical features of the blocks are: gross density; the per cent of persons living at 1.01 or more persons per room (per cent Overcrowded); the per cent of units in ten or more unit structures (per cent Multi-unit); and population potential, a measure of the concentration of people in the block's surroundings.⁴ Heer [13] and Choldin and Roncek [14] provide detailed explanations of this variable.

² A primary individual is "a household head with no relatives in the household." [12]

³ The Census does not report income or occupation for blocks. The only direct measure of economic status for blocks are the average values of housing. We use average rent for reasons of parsimony and accuracy. There is no accepted method of combining owner and renter values into a single index for all city blocks. Since blocks with bars have rent values reported more frequently than owner values, using rent helps insure the accuracy of measuring the economic status of bar blocks. To prevent the loss of cases, we replace missing block rents by the average tract rent. This technique is more accurate than replacement by the city mean. The tract mean is computed over an average of twenty blocks rather than the nearly 4000 blocks in the city. The correlation between block and tract rents is .81.

⁴ Population potential was calculated by an original program using the geographic centroids of the blocks obtained by using DACS [15] and the DIME files and block populations.

Table 1. Tests for Differences of Mean Number of Crimes on Blocks With Bars and Blocks Without Bars

<i>Crime</i>	<i>With Bars</i>	<i>Without Bars</i>	<i>t</i>	<i>p</i> ^a
Index Crimes	12.83	6.78	9.30	.000
Violent Crimes	3.48	1.63	7.98	.000
Murder	.10	.04	3.83	.000
Rape	.07	.05	1.94	.053
Assault	1.55	.77	7.75	.000
Robbery	1.76	.78	6.96	.000
Burglary	2.91	1.77	6.96	.000
Grand Theft	1.52	.73	6.40	.000
Auto Theft	4.93	2.65	8.24	.000
Number of Blocks	566	3419		

^a Probability less than .00051., except for Crime of Rape.

RESULTS

Testing the alternative hypotheses requires examining how crime levels differ between blocks with and without bars. Table 1 provides this information for the total number of index crimes, violent crimes, and each of seven crimes in the aggregate measures. For all crimes except rapes, blocks with bars on them have significantly more crimes than those without bars. Besides murder and rape, the *t*-values for the individual crimes are similar in magnitude. Since murders and rapes occur less often than other crimes, these low frequencies could account for the relatively small *t*-values. Apart from these two crimes, the higher incidence of crime on bar blocks is fairly uniform across crime types. Thus, the effect of bars on crime appears to be general rather than specific to any type of crime. These differences support the hypothesis from Frisbie, et al. [1], rather than the one from Jacobs.

To begin to examine how important bars are for explaining crime, Table 2 reports the zero-order correlations among our variables.⁵ The number of bars has only moderately strong, positive correlations with the number of index crimes and the number of violent crimes. Squaring the zero-order correlations of bars with these crimes shows that the number of bars, before controlling for

⁵ We checked the correlation matrix containing only the independent variables for possible multicollinearity by using the Haitovsky test [16]. Significant collinearity was not present.

Table 2. Zero-Order Correlations, Means, and Standard Deviations (N = 3985)

	Y1. Index Crimes	Y2. Violent Crimes	X1. Bars	X2. % Prim. Ind.	X3. % Female Head	X4. % Black	X5. Rent	X6. % Over 60	X7. Density	X8. % Overcrowded	X9. % Multi-Unit	X10. Population Potential
Y1.	1.000	.846	.197	.297	.248	.368	-.166	-.050	.070	.119	.426	.358
Y2.	1.000	1.000	.188	.272	.263	.376	-.202	-.038	.098	.162	.361	.362
X1.		1.000	1.000	.188	-.009	-.072	-.143	.070	-.019	.024	.083	.018
X2.			1.000	1.000	-.123	-.028	-.176	.468	-.038	-.164	.568	.122
X3.				1.000	1.000	.479	-.305	-.188	.275	.271	.003	.451
X4.					1.000	1.000	-.184	-.253	.175	.229	.074	.590
X5.						1.000	1.000	.003	-.208	-.204	.088	-.511
X6.							1.000	1.000	-.200	-.386	.149	-.125
X7.								1.000	1.000	.234	.116	.335
X8.									1.000	1.000	-.049	.190
X9.										1.000	1.000	.098
X10.											1.000	1.000
\bar{X}	7.640	1.895	.178	8.537	13.180	31.984	87.092	15.893	51.967	15.304	5.352	38.112
SD	11.694	3.870	.484	8.543	9.537	42.927	20.775	9.336	34.793	12.284	16.579	4.947

N = 3985

Table 3. Regression Coefficients: Index Crimes and Violent Crimes

	<i>Index Crimes</i>		<i>Violent Crimes</i>	
	<i>beta</i>	<i>b</i>	<i>beta</i>	<i>b</i>
% Prim. Ind.	.095 ^a	.131 ^a	.100 ^a	.045 ^a
% Female Head	.087 ^a	.106 ^a	.084 ^a	.034 ^a
% Black	.212 ^a	.058 ^a	.234 ^a	.021 ^a
Rent	-.032	-.018	-.056 ^a	-.010 ^a
% Over 60	-.078 ^a	-.097 ^a	-.029	-.012
Density	-.106 ^a	-.036 ^a	-.069 ^a	-.008 ^a
% Overcrowded	.037 ^a	.035 ^a	.084 ^a	.026 ^a
% Multi-Unit	.357 ^a	.252 ^a	.284 ^a	.066 ^a
Population Potential	.147 ^a	.347 ^a	.119 ^a	.093 ^a
Bars	.161 ^a	3.884 ^a	.151 ^a	1.209 ^a

R	.609		.575	
R ²	.370		.330	
N = 3985				

^a Significant at the .05 level. Significance tests are reported as a rough means of distinguishing high and low coefficients.

other variables, explains about 3.9 per cent of the variation in index crimes and about 3.5 per cent of the variation in violent crimes.

Providing a better test of the hypotheses requires controlling the effects of bars for other variables. Table 3 contains the results of the multiple regressions for the two major crime measures with the number of bars and the nine control variables. Again, the results support the hypothesis from Frisbie, et al. [1].

In the regressions, the bars still have positive and significant effects on both crime measures. The greater the number of bars on a block, the higher is the incidence of crime. The beta weights for the number of bars indicate that bars are a *moderately important predictor of where crimes occur*. The *b*-coefficients show that each additional bar on a block increases the number of index crimes by approximately four crimes a year in 1970 and the number of violent crimes by approximately 1.2 crimes. Controlling for the other variables, the number of bars explains an additional 2.4 per cent of the variance in index crimes and additional 2.1 per cent in violent crimes. Although statistical control reduces

Table 4. Regression Coefficients and Unique Variances Due to Interaction

	<i>Index Crimes</i>			<i>Violent Crimes</i>		
	<i>beta</i>	<i>b</i>	<i>UV</i>	<i>beta</i>	<i>b</i>	<i>UV</i>
Rent ^b	.039 ^a	.022 ^a		.054 ^a	.010 ^a	
Bars	.057	1.380		.177 ^a	1.416 ^a	
Rent x Bars	-.105	-.032	.000	.026	.003	.000
Per Cent Black	.179 ^a	.049 ^a		.188 ^a	.017 ^a	
Bars	.100 ^a	2.426 ^a		.069 ^a	.549 ^a	
Per Cent Black x Bars	.121 ^a	.066 ^a	.010 ^a	.165 ^a	.030 ^a	.019 ^a
Rent ^b	.044 ^a	.025 ^a		.062 ^a	.012 ^a	
Per Cent Black	.178 ^a	.049 ^a		.189 ^a	.017 ^a	
Bars	-.032	-.769		-.068	-.543	
Rent x Bars	-.132	-.040		-.140 ^a	-.014 ^a	
Per Cent Black x Bars	.043	.024		.439 ^a	.079 ^a	
Rent x Per Cent Black x Bars	-.083	-.001	.000	.275 ^a	.001 ^a	.002 ^a

^a Significant at the .05 level.

^b In the regressions testing interactions with rent, the rent variable is scored inversely to permit ease of interpretation of the interaction terms.

the amount of variation in crime explained by bars, these results indicate that blocks with bars have more crime.⁶

Bar effects may depend on other characteristics of the blocks, and such interactions could affect interpreting the results. Table 4 contains the regression coefficients for the linear and interaction terms as well as the increment to the explained variance (unique variance) for the interactions of the number of bars with rent value, and with per cent black, and the three-way interaction of bars, per cent black, and rent.⁷ Although all the independent variables are in the regressions, Table 4 only reports the coefficients of the component variables and the interaction terms. Since there are high correlations between the component variables and the interaction terms, it is more important to focus on the increment to the variance explained (unique variance) than on the values of

⁶ Because Frisbie, et al. [1], find that many assaults occur in bars, we also examined regressions for both crime measures without assaults. These regressions are very similar to those we report in Table 3. There were no important differences. The regressions for property crimes are very similar to those we report in Table 3. The beta weight for the number of bars in the property crime regression is similar in magnitude to the corresponding beta weight for the violent crime regression. This finding agrees with the results of the t-tests which indicate that the effect of bars on crime occurrence is a general effect.

⁷ To interpret the interactions including rent easily, we changed the direction of the rent variable for the regressions with rent in an interaction term. For these regressions in Table 4, a positive coefficient for rent indicates that lower rents mean more crime. With the rent variable scored thusly, both rent and the number of bars are scored in the direction in which higher values will mean a more crime-prone block.

specific coefficients in the regressions. The increments to the variance explained indicate how much additional power results from including the interaction terms. The interaction between rent and the number of bars does not have a significant effect for either crime measure. It adds less than .1 per cent to the variance explained for both crime measures. The interactions between per cent black and the number of bars are significant, but the increments to the variance explained in both crime measures are small. For index crimes, it is only .4 per cent. For violent crimes, the increase is only 1.9 per cent. The effects of the three-way interaction between rent, per cent black, and bars are also small. Only the three-way interaction for violent crimes is significant, but the increase in variance is only .2 per cent. In summary, the results of examining interaction effects show that the presence of bars on poor or minority blocks makes little difference for explaining where crimes occur. Thus, the effect of bars on crime does not depend on its interaction with the economic status or racial composition of the blocks.

DISCUSSION

Our concern is to evaluate the effect of the presence of bars on residential blocks for explaining where crimes occur. The specific problem fits within the context of segregating non-residential from residential uses. Jacobs (1962) argues that a diversity of land uses makes residential areas safer, especially at night. Because most bars will do the bulk of their business at night, examining their impact on the incidence of crime is relevant to this issue. Yet, there are several reasons why blocks with bars might have more crime than blocks without bars [1]. We examine whether the overall effect of bars decreases or increases crime.

The results consistently support the hypothesis of higher crime levels as a result of the presence of bars on residential blocks. For index crimes and violent crimes, as well as the seven component crimes except rape, blocks with bars have significantly more crime. The multiple regression analysis shows that the number of bars on a block is moderately important for explaining where crimes occur, controlling for other variables. Finally, the analyses of the interaction of the number of bars with the economic status and racial composition of the blocks show that there are no strong unique effects from locating bars in poor or minority areas.

In terms of the general issue raised by Jacobs, it is clear that this non-residential land use increases rather than decreases the amount of crime on residential blocks. Each additional bar on a residential block increases the incidence of index crimes by approximately four crimes in 1970. Since the median number of index crimes on residential blocks is also approximately four crimes and the mean number of index crimes is approximately eight, the effect of increasing the number of bars is important practically as well as statistically.

Apparently, the overall effects of the social processes associated with bars that increase the vulnerability of areas to crime are stronger than those of utilization or integration that would decrease the number of crimes. Although distinguishing among different types of bars was not possible, the analyses show that the higher crime levels of bar blocks are not due solely to locating bars on poor or minority blocks. Nevertheless, some types of bars may decrease the incidence of crime on their blocks while others produce a marked increase, but we do not have adequate data for detecting if such differences occur. There are seventeen blocks with bars without any index crimes occurring on them. There are one hundred sixty blocks with bars without any violent crimes. Hence, having a bar on a residential block does not always mean that crimes will occur.

The effect of bars on crime is strong enough to suggest that it may be wise to increase surveillance of bar blocks. Yet, our analyses do not warrant prohibiting bars on residential blocks because the amount of variance accounted for by bars is not large. For residential blocks, other characteristics not contained in the census or other features of bars which we could not examine could further reduce the effects of bars on crime. Because the presence of bars may be associated with other non-residential uses, we examined the number of other non-residential uses on bar blocks both with and without crimes on them.⁸ For bar blocks without crimes, the average number of non-residential uses was 3.35. For bar blocks with crimes, it was 4.18. Although these averages are similar, seven of the seventeen bar blocks without crimes had no other non-residential uses. For bar blocks with crimes, only 15.5 per cent had no other non-residential uses. Among blocks with bars and crimes, those with other non-residential uses had higher levels of crime than those without other such uses. Thus, while bars appear to increase crime, these effects are apparently compounded by additional non-residential uses.

Thus, the wisest policy seems to be to monitor the crimes on and around blocks with bars to determine, on a case by case basis, if a particular bar is in some way the cause of crime in the area. Bars frequently implicated in crime incidents could have their licenses revoked. The local police precinct could perform such monitoring and submit reports to liquor licensing authorities at license renewal time. We urge caution in regulating bar locations because one alternative to allowing bars on residential blocks might be to create bar zones or strips. In general, the effects of concentrating bars in strips or zones are not

⁸ The Haines Criss-Cross Directory for Cleveland for 1970 was used to identify other non-residential uses on blocks with bars. The printed directory had to be used because access to the 1970 computer file was not possible. Thus, the number of non-residential uses on every block could not be identified. Furthermore, the limited access to this non-residential information and the large number of bar blocks with crimes necessitated sampling. The average number of non-residential uses on bar blocks with crimes was based on a 20 per cent simple random sample without replacement. All seventeen bar blocks without crimes were examined. Census maps, commercial maps, and street guides were used to determine address ranges.

clear. If having such zones or strips cause people to drive more frequently after drinking, then this could result in more accidents. Although our analyses do not support Jacobs' arguments on the safety effects of this non-residential land use, they also do not warrant totally prohibiting bars from residential blocks.

Finally, except for rapes, the effects of bars, controlling for other variables, are positive and statistically significant for each of the components of the aggregate crime measures. The largest standardized effect is for robbery. In decreasing order, the next largest effects are for auto theft, grand theft and burglary (which are almost identical), and then assaults and murders (which are also very similar).

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