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Rebecca K. Murray

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**Bars, Brawls, and Blocks: An Examination of the Associations between the Locations of
Liquor-serving Establishments and Felonious Assaults**

A THESIS

Presented to the

College of Public Affairs and Community Service

and the

Faculty of the Graduate College

University of Nebraska

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

University of Nebraska at Omaha

by

Rebecca K. Murray

February 2002

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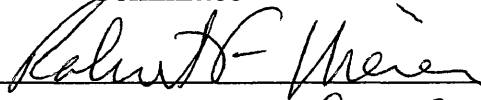
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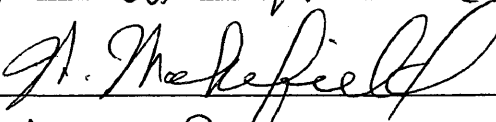
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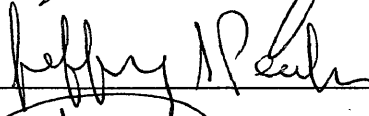
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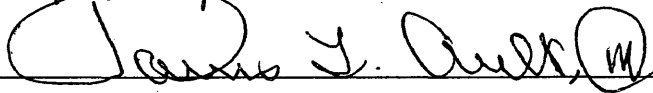
Dr. William O. Wakefield



Dr. Jeffrey S. Peake

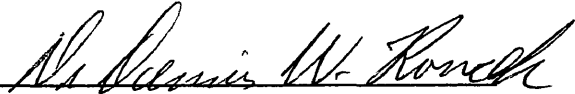


Mr. James T. Ault III



Chairperson

Dr. Dennis W. Roncek



Date February 20, 2002

Acknowledgments

I would like to thank the Omaha Police Department for providing their data to Dr. Dennis W. Roncek, and allowing me to use it for this research. Without their consent this research would not be possible.

I would like to express my gratitude to my thesis committee, Dr. Dennis W. Roncek, Dr. Robert F. Meier, Dr. William O. Wakefield, Dr. Jeffrey S. Peake and Mr. James T. Ault III. Dr. Roncek provided many long hours both helping me to learn mapping software and in providing direction with analysis and writing. The maps that he created were a learning tool as well as a research tool in terms of geocoding crime. His generosity in sharing both his time and knowledge has been invaluable. I would like to thank Mr. Ault for sharing his insights on urban crime and mapping techniques. I would also like to thank Dr. Meier, Dr. Wakefield and Dr. Peake particularly for their suggestions about previous research that have lent depth to the current research.

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Bars, Brawls, and Blocks: An Examination of the Associations between the Locations of Liquor-serving Establishments and Felonious Assaults

Rebecca K. Murray

University of Nebraska, 2002

Advisor: Dr. Dennis W. Roncek

Research on the effects of liquor and liquor-serving establishments as they relate to crime is substantial, although conclusions on the type or size of effects have recently varied considerably. This research attempts to distinguish between particular types of liquor-serving establishments and isolate their effects on felonious assaults, with particular attention to the effects of bars or taverns as separate from both offsite liquor-selling establishments and other onsite establishments such as restaurants. Additionally, this research attempts to determine if dispersion or diffusion effects exist for bars. Findings show that there is a marked difference among the effects of the three types of liquor-serving establishments, indicating the importance of distinguishing type of establishment. They reveal a statistically significant effect for felonious assaults for both bars and for offsite establishments, with no significant effect for “other onsite” establishments such as restaurants or sports arenas. Results of this study also show a dispersion effect for bars on felonious assaults within a one-block area. Thus, blocks that were adjacent to blocks with at least one bar were significantly more likely to have had an assault occur on them.

Chapter I

American Drinking Culture and Research

For as long as humans have existed, there has been violence. For centuries, scholars have attempted to give reasons and explanations for humans' violent behavior toward one another. More recently, however, societal attention has turned toward substances that people consume, not only as a contributing factor, but also essentially as a *cause* for behavior. This link has been accepted by the general population and has been studied by numerous researchers (Cochran, Rowan and Blount et al., 1998; Tomsen, 1997). Many have found a significant link between alcohol and crime (Ullman, Karabatsos and Koss, 1999; Scott, Schafer and Greenfield, 1999), and several have gone on to look at the connection with the places most often connected with alcohol, such as liquor stores (Wakefield and Kautt, 1997) and bars or pubs (Roncek and Bell, 1981; Roncek and Maier, 1991). Both drinking and violence have become a significant part of Western culture. Both have changed drastically over the years with society itself, and an overwhelming amount of evidence has accumulated to support the idea that the relationship between the two has gotten stronger (Cavanagh, 1985).

Why does this relationship between where alcohol is consumed and where violence occurs exist, and how far does it reach? This is a particularly intriguing question when posed in regards to the places where people consume alcohol. After all, the effect of alcohol on a person's state of mind has not changed, but the method in which people imbibe and the company with whom they consume has. Nowhere has this been more evident than in the research on assaults (Norstrom, 1998). A violent crime that is

commonly associated with the consumption of alcohol, and ironically, one of the least studied individually, is assaults. The “bar brawl” is taken as a commonplace event in American culture, signifying at least a popular tendency to link assaults with bars. Once again, drinking, and especially bar drinking, has become undeniably a social endeavor. In particular, assaults are linked closely to the environment in which they occur – fights are more likely to escalate when alcohol is consumed, and when an “audience” is present (Felson, 1998).

In examining the link between the presence of bars and assaults, it is useful to review the history of American culture in terms of alcohol, and to trace the link between alcohol and crime. Following this, the specific characteristics of assaults can be theoretically linked with the presence of bars. This particular study will look not only at the effect of bars, but also at the *breadth* of that effect, by examining not only crime on blocks with bars, but also crime on adjacent blocks, i.e., blocks that are directly opposite from a block with a bar either on the opposite side of a street or diagonally across an intersection, (Roncek, and Maier, 1991).

Alcohol Use and American Culture.

While both alcohol and drugs have been named as culprits of criminal violence, alcohol is unique in that it is widely accepted as part of many cultures. With this widespread use of alcohol and seemingly general consensus of its innocuous nature, it is not surprising that alcohol as a contributing factor to violent crimes has been confined for the most part to the nineteenth and twentieth century, and in a large part to the United States (Marshall, 1979). There is little question that alcohol’s part in aggressive or

criminal behavior has been viewed as much more significant in the United States within the 19th and 20th centuries (Parker, 1995). Undoubtedly, there are many reasons for this change, but they can be seen particularly in social, economic and political ideas formed throughout this time period. Parker (1995) argues that cultural idiosyncrasies, particularly in response to political, religious, and economic shifts have affected the alcohol-violence relationship. He points out that violence in a society, including fistfights, lynchings, pistol duels, etc., have been “an integral part of struggles over ownership of territory, rights to produce and sell goods, conflicts between ethnic groups, and gender relations in the United States from colonial times and continuing until today” (Parker, 1995, p.11). Alcohol, he claims, was “inextricably integrated” into these cultural tensions, either by giving the rivals “liquid courage” or by enhancing conflicts in the convivial atmosphere of bars (Parker, 1995, p.14). Powers (1998) made the case for the effect of America’s speed into industrialization on the alcohol/crime link. The rise of industrial capitalism in the nineteenth century, Powers claims, brought enormous changes in the nature of work by moving it away from the preindustrial apprenticeship system in which “master, journeymen and apprentice toiled, drank and socialized together in the master’s small workshop” (Powers, 1998, p. 28). With the expansion of markets and breakdown of the apprentice system, specialized tasks were broken down and divided. Master and laborer became estranged, and men began to strongly identify with their peer groups with the same interests, and “the saloon’s regular crowd constituted just such a working-class male peer group,” (Powers, 1998, p. 30). The saloon-life itself, she

argues, bolstered the regulars' ethic of manliness, and lent itself to such manly endeavors as brawls and fights.

Prior to the late eighteenth century, alcohol was viewed more as a supplement to good health rather than as a precursor to out-of-control behavior (Parker, 1995). By the nineteenth century, along with the increased industrialization of the U.S., the dominant alcohol consumption pattern had moved from "dram drinking," i.e., drinking small amounts of alcohol throughout the day, to "binge drinking," i.e., drinking large amounts of alcohol in a single sitting. Powers (1998) argued that "binge drinking" would be more likely to lead to violent behavior. Binge drinking was linked in a large part to the emergence of bar drinking, though it is unclear whether drinking in a specific public place led to binge drinking or whether bar drinking emerged from binge drinkers looking for a place to gather. With days filled with work, alcohol became less a *part of* daily activities, and more an *escape from* them. This may have contributed in part to the idea that in the Temperance Movement that alcohol weakens inhibitions and contributes to immoral and even criminal behavior (Levine, 1977). While Colonialists did not generally support the idea that alcohol caused aggressive or criminal behavior, 19th and 20th century Americans have tended to view alcohol as at least a contributing factor to such behavior, and a cause of it in many instances (Levine, 1977).

Perhaps one of the most interesting distinctions between the United States and other countries in terms of alcohol is the differences in alcohol control policies. While many countries participate in some alcohol control policies, most of them do not have "systems of legal regulations which are easily manipulated, [but] rather...elaborate

networks of rational and nonrational cultural, economic, and political structures which are more a response to than a determinant of the magnitude of alcohol-related problems,” (Single, Morgan and DeLint, 1981, p.1). For instance, while the United States has a variety of laws regarding alcohol, such as underage drinking, drinking and driving, etc., these regulations are frequently thwarted by underage persons obtaining and consuming alcohol, as well as by intoxicated minor and adult drivers. Penalties for these crimes, while certainly severe, are not consistent or even frequent in proportion to the offenders. These American sanctions are used primarily to discourage dangerous use of alcohol. In contrast, many European countries, while they do not have the same penalties for, say, underage drinking, tend to have fewer problems with alcohol and violence simply because of the cultural structures present in European society, (Single, Morgan and DeLint, 1981).

American society has attempted to control drinking, and especially drinking and crime, through tougher and tougher laws and sanctions. This may have a circular relationship with the way society as a whole views drinking and crime. Because the bond between alcohol and crime is so strong, tougher laws and/or social sanctions are warranted, but society also may use the many laws to contribute to the idea that alcohol must cause, or at least contribute highly to, crime.

Economics have also played a significant role in how our society views alcohol consumption and criminal acts. Cavanaugh (1985) argues that for both tobacco and alcohol, the growth of corporate power has increased both the consumption of these substances and social and health problems associated with them. Thus, the ability to

successfully attractively market and sell alcohol may also contribute to the social problems stemming from its use, which includes crime. This cannot be overlooked as a potentially crucial influence on the attitudes toward alcohol and crime.

The Evolution of Bar Drinking.

While much research suggests a link between alcohol and crime, relating criminal events to a specific way in which alcohol is consumed is more difficult. To determine the possible effect of bars on criminal activity, the presence of liquor in other settings (grocery stores, liquor stores, restaurants, etc.) must be ruled out as having a significant effect on crime. There may be an effect from the mere sale of alcohol on crime, but the purpose of this study is to show that imbibitions of alcohol in and of themselves do not sufficiently explain the relationship of bars with crime. The public places where alcoholic beverages are consumed could also play a significant part in the amount of alcohol consumed (Felson, 1998) as well as the amount and types of crimes linked to alcohol (Norstrom, 1998). Indeed, the shift within American culture from drinking at home to drinking in specific places designated for such purposes has changed how drinking has affected American society.

Taverns, pubs and bars play a role in the escape from daily activities with alcohol. While early settlers consumed beer and homemade alcoholic beverages at home, so called "frontiersmen" moving west tended to prefer to binge drink in town (Parker, 1995). These places that were oriented to the consumption of alcohol, while not often studied in their own right, may have as much to contribute to the study of violence as alcohol itself. The makeup of taverns or bars is a fascinating aspect of American culture

that has implications for its societal bonds. Taverns and pubs are ready-made arenas for the mixing of two favorite human pastimes: drinking and socializing. Pubs and bars give people a place “away” in which to entertain camaraderie while losing inhibitions with alcoholic beverages. According to Powers (1998, p.15), “tavern society” has three denotations: “It denotes a method of communal drinking, wherein participants make a pact to combine their resources toward the barroom’s pleasures, It also refers to a group of tavern goers engaging in such a pact. Finally, the term acts as a synonym for “barroom,” meaning the place where people assemble to make a club of the drinking experience,” (Powers, 1998, p. 15). Consequently, any examination of bars and any aspect of social life, e.g., a violent crime, must not focus solely on the fact that alcohol is available and readily consumed, but must attend to its context since it has a *social atmosphere* unlike any other place with alcohol, e.g., homes, liquor stores, etc. The purchase of alcohol alone may not be the only, or even the most important factor in linking drinking with crime. This is supported by the finding that, while spirit consumptions dropped dramatically in the period of 1969 to 1980, homicide rates increased (Parker, 1995).

Clearly, simply consuming alcohol does not necessarily produce crime, although a statistically significant association between bars and violence has been found in a number of studies (Roncek and Bell, 1981; Roncek and Pravatiner, 1989; Norstrom, 1998). These results seem to indicate that other factors that accompany imbibitions in alcoholic beverages may aid in better understanding the picture of alcohol and its relationship with crime. Additionally, understanding the changes in the relationship of consumption of

alcohol and especially violent crime gives a frame for much of the research that has been generated in this area. The United States has had an interesting, if somewhat rocky relationship with alcohol and the places where it is consumed.

I have used the terms “taverns” “bars” and “pubs” interchangeably, although there may very well be differences among them. For the purposes of studying these establishments and their link to a particular violent crime, it is important to understand the definitions given to these establishments. In this particular study, I designate establishments based on the names given to these businesses. If businesses are called a pub, tavern or bar, then I include them as pubs, taverns or bars (all used interchangeably). These may include establishments that serve food, but they do not necessarily have to serve food. This also includes liquor-serving establishments that will allow minors on their premises for limited purposes such as eating meals with their families. Other liquor-serving establishments specifically designated as a restaurant, fraternal organization, or entertainment arenas are identified through control variables in this study. Their relationship to crime can help test the validity of the link between bars and crime. The purpose of dividing liquor-selling establishments into different categories is twofold. First, my intent is to look more closely at the social connection established by drinking alcohol in a designated place, thus examining those establishments that are primarily marketed for that purpose is essential. Second, definitions of particular establishments as given by their owners are likely to be shared with the patrons of the establishments, and can help define social behavior for these places, and the places surrounding them. For purposes of this study, all businesses that list themselves in the telephone directory as or

have in their name bars, taverns or pubs and allow alcohol to be purchased and consumed on the premises will be used in computing the values of the major independent variable, the number of bars, while the number of other liquor-serving establishments will be used as control variables.

An Environmental Approach to Crime.

Bars have been the focus of several studies of crime, particularly within the routine activities approach to studying violent crime. Routine activities, as developed by Cohen and Felson, uses the idea that crime cannot be understood solely by examining motivation of offenders, but also must consider the milieu in which people engage in routine activities (Cohen and Felson, 1979). They pinpoint three “elements” that precipitate criminal acts: A likely offender, a suitable target (victim), and the absence of a capable guardian against offenses. These three elements must be present simultaneously for crimes to occur (Cohen and Felson, 1979). Cohen and Felson were the key researchers in recent times that argued for looking at the routine activities of everyday life as a crucial element in criminal acts. In this, they recognized that crime is a part of our everyday life, and that it simply must be examined within everyday activities, that is, the *usual* acts of life, as opposed to the *unusual* motivations of a criminal mind.

One of the problems with this theory lies with one of the elements named by Cohen and Felson as a precipitation of criminal acts. While absence of a capable guardian is one of the elements necessary for a crime, the term “capable guardianship” is often *defined* by the absence or occurrence of a criminal act. For instance, from the routine activities perspective a guardian was not a “capable” guardian if a crime occurs,

but when this is the definition used as such, the relationship between a crime and a capable guardian becomes tautological.

Felson (1998) has expanded the routine activities approach. He also analyzes criminal motivations in terms of temptations, informal and formal controls, as well as presence of others. Additionally, he looks to victim activities, particularly in those that disperse activities away from home, as a crucial element in criminal activity. Perhaps most significantly, Felson dissects both victim activities and criminal motivations in terms of *environmental* factors. These factors may be as complex as seeing hourly shifts in activities by day or a shift in daily activities weekly, or they may be as elementary as using inertia in explaining why some people or objects are more likely targets for crime than others. Felson's approach to routine activities fits well with the examination of the effects of non-residential land uses, and particularly of bars or taverns on crime.

Temptations can easily be present in bars, both in terms of loosely self-guarded clientele, as well as a casual, even sometimes rowdy, atmosphere. Bars provide an arena away from the safety of home, which, according to Felson, can facilitate criminal activities (Felson, 1998). Finally, because of the crowded nature of many bars or taverns, not to mention the disregard for safety precautions that may be brought about by intoxication, bars can provide an arena for hosting probable targets of crime.

Felson (1998) focuses specifically on spatial and temporal patterns in examining crime through a routine activities approach. He points out that each have been studied exclusively, Brantingham and Brantingham (1995) study the spatial distribution of crime, and Chapin (1974), examines both spatial and temporal patterns, but that examining both

is a cumbersome endeavor. Felson (1998) explains that a routine activities approach allows breaking apart spatial and temporal patterns and examining them separately.

Meier et al. (2000) advocates a comprehensive approach to examining criminal acts. Their “criminal events” perspective focuses on all elements of the particular event: time, place, offender and victim. This integrative, holistic approach to the criminal event itself helps to account for all aspects of a crime. In fact, they conclude, “What matters initially is the development of models that consider simultaneously offenders, victims, and the context in which they are brought together,” (Meier et al., 2000, p. 62).

Undoubtedly, this all-encompassing approach to looking at crime in terms of all aspects of a criminal event, i.e., offender, victim and context would be ideal for examining criminal events. As Felson (1998) points out however, this in most cases is awkward, and in several cases impossible to do. In particular, adequate data on offenders may not be available. Merit may be found, then, in looking at these contexts separately for a particular criminal event, even though the *cumulative* explanation of crime must involve all of these aspects.

Studies of the surroundings or environment of criminal activities have become a focus of criminal research (see Roncek and Bell, 1981; Roncek and Faggiani, 1985; Taylor and Harrell, 1996; Wilson and Kelling, 1982; Skogan, 1990). Shaw and McKay (1942), with their study on the addresses of delinquent boys in Chicago, were breakthrough researchers within this area of environmental criminology. Although their study focused on residences of offenders instead of the locations of criminal events, their

idea that criminals concentrated in specific areas of a city has since been expanded by several researchers who examine the concentration of crime in different areas of cities.

Sherman et al. (1989) drew particular attention to locations of crime with their use of Spring and Block's (1988) idea of criminal "hot spots." They argued that certain areas of a city seem to continually produce more violent activity than others. They also began to examine these specific areas of concentrated criminal activity in terms of what facilities were present in these areas. Sherman et al. also noted that bars were frequently among these facilities. Perhaps one of the most crucial expansions of the concept of "hot spots" is that of displacement or dispersion. Green (1996) points out that, while police enforcement in certain hot spot areas may indeed aid in cleaning up a particular drug area, there is a danger of the hot spot simply moving into another area. Crime displacement or dispersion in terms of location can also be involved in understanding the relationship between bars and crime. The guardianship necessary to thwart criminal activity (Cohen and Felson, 1979) may be present inside a bar itself, but bar staff and patrons may attempt to encourage those involved in confrontations to leave the premises, thereby removing the restraint placed upon them through guardianship. The dispersion of an assault may be right outside the bar, down the street, around the corner, or perhaps one or two blocks away. Because of this, it is important to look at the range of the effect that establishments, such as bars, have upon any criminal activity and on felonious assaults in particular. Spring and Block (1988) also use the "hot spots" idea to refer to specific locations that hosted a number of crimes, while Block and Block (1995) use the concept specifically for liquor-related crime. Dispersion effects may be particularly important in

terms of the effects certain businesses have on crimes because a large amount of crime at the sites of particular businesses can have negative consequences for the owners of the businesses. Because these businesses are in permanent structures within the urban or suburban environment, diffusing or dispersing crime from the businesses to different locations can be important to the owners.

Physical structures and urban planning have been stressed in terms of preventing or deterring criminal activity. Taylor and Harrell (1996) point to four sets of physical or environmental features that have been emphasized in much of this previous literature: housing design or block layout, land use and circulation patterns, resident-generated territorial features, and physical deterioration. Of these, physical deterioration certainly has been at the forefront of environmental criminology. Experiments with zero-tolerance policing, driven by Wilson and Kelling's (1982) "broken windows" theory, have been a practical example of the attention given to this type of physical feature. Less popular has been housing design or block layout. Although the potential policy implications for looking at urban structure may be just as practical as physical deterioration, research specifically on block layout is by no means immense.

Roncek has been involved in examining the effects of the urban environment on crime (See Roncek, 1981, 1991; Roncek and Bell, 1981; Roncek and Francik, 1981; Roncek and Faggiani, 1985; Roncek and Maier, 1991). Perhaps most importantly, Roncek and his colleagues have taken into account city environment in terms of characteristics of the resident population and use of nonresidential physical space. This view of crime in terms of environmental design is crucial for a number of reasons. Most

crime occurs within cities, and within cities themselves, certain areas tend to have more crime than others (Roncek, 1981). Focusing on areas prone to criminal events can be important for understanding the influences that contribute to these events. The physical environments, structures, and the locations of businesses are malleable by social policy. Thus, in practical terms, assessment and prevention of criminal events through *environmental* change is less daunting than changing either criminal motivations or victim activity. This makes sense, since environmental change is not dependent on seeking out or restructuring the thoughts and actions of either offenders or victims.

Because of a limited amount of data on victims and offenders in official police records, my focus is on an element of the urban environment. The limitations of the data are not unusual (Roncek, 1981; Roncek and Bell, 1981; Roncek and Francik, 1981; Roncek and Maier, 1991). Focusing on the effects of environmental characteristics of crimes, and, in particular, on assaults, while it is certainly not an all-inclusive approach, can still help obtain an understanding of a potentially important aspect of this crime.

Finally, while most research on non-residential land uses and their link to crime has covered a wide range of crimes (Roncek and Bell, 1981; Roncek and Francik, 1981; Roncek and Faggiani, 1985; Roncek and Maier, 1991), very little crime-specific research has been done. Focusing on a specific crime also often linked with the presence of bars will allow for a more detailed look at the effects of bars.

Hypotheses.

Two hypotheses will be tested in this study. These hypotheses emerge from the findings of past research and from controversies over whether bars have an effect on

crime that is distinct from other alcohol outlets and from recent concerns about displacement or dispersion effects. The **first hypothesis** is that the number of bars will have a statistically significant effect on assaults. The next hypothesis concerns the range of the effects of bar locations. Following Roncek and his students' works on the range of criminogenic effects around housing projects and high schools, the effects of displacement will be measured in terms of adjacency rather than simple distance. An adjacent block for this study is a city block that has at least one part of it, be it a side or a corner that touches a city block with a bar on it. This is known as the "Queen's case" in geography. These measures are used to identify the effects of dispersion because they reflect the physical environment and how the city has defined the boundaries of its basic units, the city block. The **second hypothesis** is that being an adjacent block will have a positive and statistically significant effect on assaults.

Chapter II Data

The City.

In 1999, the city of Omaha, Nebraska had approximately 379,545 residents (U.S. Bureau of the Census, 1999) and a total of 5,659 residential city blocks out of 6,947 total city blocks. Omaha is a primarily white, middle-class city, with an ethnic composition as follows: White: 83.9%, Black: 13.1%, American Indian, Eskimo, or Aleut: 0.7%, Asian or Pacific Islander: 1.0%, Hispanic Origin: 3.1% (U.S. Bureau of the Census, 1999). The median age for Omaha in 1999 was 33.8 years, which was lower than the national median age of 35.4, and the median household effective buying income was \$46,575 at the beginning of 2000, compared to the national median of \$37,233 (AccessOmaha.com, 2001). In terms of crime, the city of Omaha had a total of 22,953 crimes in 1999 and 10,875 Part I Index crimes in 1999, providing an overall rate of 28.7 Part I Index crimes per 1,000 people, (personal communication, Dr. Dennis Roncek, 2001). These can be broken down further into rates of 6.64 violent crimes per 1,000 people and 22 property crimes per 1,000 people.

Unit of Analysis.

Census city blocks are used as the primary unit of analysis for this research. As defined by the Census Bureau, census blocks are “small areas bounded on all sides by visible features such as streets, roads, streams, and railroad tracks, and by invisible boundaries such as city, town, township, and county limits, property lines, and short, imaginary extensions of streets and roads,” (U.S. Bureau of the Census, 1990, p. A-3). The city blocks in this study will include residential blocks with bars on them, as well as

other non-residential land uses. For this study, adjacent blocks are defined in terms of proximity. Adjacent blocks will be blocks that are physically directly adjacent to a block with a bar on it. These blocks are also central to this study to allow for identifying any proximity or dispersion effects of bars on assaults.

There are several compelling reasons to examine the relationship of block-level characteristics to crime. First of all, the characteristics of city blocks are derived from, and adapt to, the particular surroundings of the area they are within. Second, city blocks, unlike census tracts, are a common reference point for specific areas of a city. Finally, the resident population, businesses or other structures will be more similar to others on the same block, but the similarity will necessarily be less for larger units of analysis. People identify themselves or a business as being part of a particular block, but might have considerable trouble even knowing the census tract to which they or a business belongs. Thus, using city blocks as the units of analysis means using areas for which there should be a familiarity of the public as well as the police.

One of the most crucial components of this study is measurement of the *range* of the effects of liquor-serving establishments on assaults. The goal of this task is to understand any displacement of felonious assaults in terms of physical area away from these establishments. Use of census tract as unit of analysis would not allow for an accurate assessment of this, since the census tracts would cover a large area around the establishment, and would blur any effects. Bars may also be located on census tract boundaries and have more of an effect on blocks in an adjacent tract than on other blocks in the same tract. Additionally, using a smaller unit of analysis, i.e., parcels might be

misleading because crimes recorded at non-bar parcels could be related to the bar. Fights that moved two doors down before being stopped and recorded would not be assigned to a bar's influence when geocoded to parcels. This would be incorrect. To adjust for this possibility would require using detailed narrative information that is not available to this research and often beyond the resources of or information available to other research as well.

City Block-level analyses are not only preferable in terms of the size of the area covered, but also because of the *form* of the layout particular to blocks. While some researchers have focused on using different *radii* in determining how far out a particular object, place or phenomenon affects crime (Clark and Lab, 2000; Buckley, 1996), a more practical measure of any effects might lie with using measurement based on city blocks, i.e., the effect seems to be present for a certain number of blocks away from the bar, rather than a certain number of feet around the bar. There are several reasons for this. First, logistically, a measurement of radius around anything in a populated area is bound to cut through areas such as a house or other building, rendering much of its measurement useless. Radius measurements would also tend to cut out possible crimes that occur in corners of blocks, just beyond the radius cutoff point. One of the strongest arguments against use of radius when measuring crime in a city is that *cities are not laid out in circles*. This may seem elementary, and indeed, looking at measurements of anything physical, it may very well be so simple. Rulers are not used to measure *around* an object. Why, then, would researchers use a circular measure for a city laid out in city blocks, which are most frequently rectangular?

There are limitations to using city blocks, and these must be acknowledged. One of the largest limitations is that, in terms of streets, the side of the street a crime occurs on makes a huge difference in its block assignment, and so for example, a potential victim who ran across a street before being attacked could change whether or not that crime becomes attributed to a city block with a bar. How frequently potential victims would run across a street rather than down a side of a street when attempting to avoid confrontation is not known. Running across the street poses its own risks and could make it easier for a potential offender to catch a fleeing "victim." Another important problem occurs when the crime itself is recorded at an intersection, and, therefore, there could be four blocks that are possible choices for specifying the crime location. Defining adjacent blocks in terms of any shared space between blocks minimizes these limitations. Through broadening the block area to be examined for effect of bars, the possibility of an assault either being included when it should have been excluded or vice-versa should be minimized.

Assaults.

In this study, the dependent variable is the reported number of felonious assaults. These were obtained from 1999 Omaha Police Department reports by Dr. Dennis W. Roncek. These assaults include all felony assaults reported and recorded by the police within the Omaha city limits during this time. The definition of the assaults recorded, stated in the Uniform Crime Reports as aggravated assaults is as follows: "An unlawful attack by one person upon another for the purpose of inflicting severe or aggravated bodily injury. This type of assault usually is accompanied by the use of a weapon or by

means likely to produce death or great bodily harm,” (U.S. Department of Justice, 1999). These assaults are defined in the police reports as felonious assaults. Simple (misdemeanor) assaults are not included, due to potentially more serious underreporting problems. Serious domestic violence assaults would be categorized as felonious assaults, while less serious ones could be classified as misdemeanor assaults. While using reported felonious assaults most certainly will underestimate the total number of these assaults that occurred within Omaha during this year, using police data can provide more consistent information than found in other sources such as 911 calls for service. In addition, assaults for which no one felt that they were serious enough to report and which were not serious enough for police to record, provided there is no substantial offender bias are most likely not serious enough to use in linking the presence of bars to serious and harmful violence.

In total, there were police reports of 1,025 felonious assaults in 1999 within the Omaha city limits. Each crime had an address or a partial address in the police reports. These addresses were then coded and mapped for accuracy using information from census maps, county maps, and commercial maps. For those assaults for which an intersection was given, an address was assigned using a random placement into one of the residential city blocks of that intersection, which was usually four blocks for a regular intersection and three for a T-intersection. The closest address to the intersection itself was used to locate the crime. A total of twenty-five randomizations were made. Addresses with errors in street suffixes (street, avenue, etc.) were “fixed” only after visual confirmation of the correct address was determined, which included driving to the

address or as close as possible to it. Eighty-four assault addresses were “fixed” in this way. Every attempt was made to fix every problem in the data, using the location code of the police report as a guide. Those addresses that could not be fixed or randomized were discarded. There were only four such addresses for four assaults.

Each assault was assigned a census tract and block number using census maps. They were then totaled by block and regressed against the major independent variable, the number of bars, and the control variables.

Presence of Bars.

The primary independent variable of this study is the number of bars on a city block. The definition of bars to be used in this model is a corporation within the city limits that provides on premise sale and consumption of spirits, wine, and beer (definition formed from Omaha Liquor license Commission, Type C license). A list of liquor licenses for the city of Omaha was obtained from (Nebraska Liquor Control Commission web site, 2001). These licenses were split into sixteen categories, and licenses defined as a license to sell Spirits, Wine, Beer, On Sale (NLCC web site, 2001) were further divided in different categories, primarily based on the name of the establishment itself, (given primarily in the license list and in the telephone directory). Any unlicensed and, therefore, illegal onsite liquor-selling businesses could not be included since no data are available for them.

The other categories of the “non-bar” liquor licenses includes: Entertainment (including bowling alleys, golf courses, etc.), fraternal organizations (including VFW halls, Eagles Club, etc.), hotels/motels, grocery stores, restaurants. The locations of these

establishments are measured by control variables. Bars, as mentioned previously, include lounges, pubs and taverns. Those establishments listed as both restaurants and a tavern, lounge or pub were classified as Bars. The total number of bars was 240, spread across 220 blocks, of which 170 residential blocks were the locations for 184 bars. The total number of other license types on the city blocks was included as a control variable for determining the effects of bars, as defined above.

Control Variables.

This research will use many of the control variables outlined in Roncek and Maier's (1991) research on bars and crimes. These variables will include both measures of social composition and environmental variables. These variables were chosen by Roncek and Maier for their "centrality to past theoretical arguments, their importance in differentiating among residential areas, findings of important effects on crime in past studies, and the need to examine crime-diffusion effects," (Roncek and Maier, 1991, p. 734).

Social Composition Variables.

Social composition variables include measures of family status, as well as racial composition and economic status. Measure of family status includes the following: 1) percentage of one-person households, 2) percentage of one-parent families with children under age 18, and 3) percentage of persons over age 65. One-person households, as defined by the Bureau of Census, includes 1) a householder living alone or only with persons not related to him or her, 2) a roomer, boarder, partner, roommate or resident employee unrelated to the householder, or 3) a group quarters member who is not an

inmate of an institution (U.S. Bureau of Census, 1990). This variable has been shown to have statistically significant effects on crime in a number of studies (Roncek, 1981; Roncek and Bell, 1981; Roncek and Faggiani, 1985; Reiss, 1986). The percentage of single-parent families with children under age 18 includes not only families divorced, but also never-married single mothers and fathers, as well as widowed wives and husbands. Smith (1986) found a link between high-delinquency communities and a disproportionate concentration of such households. On average, he pointed out that these households tend to have incomes at or below the poverty line, and reside in low-cost housing (Smith, 1986). The percentage of single-parent families has statistically significant effects in prior research as well (Roncek and Bell, 1981; Roncek and Faggiani, 1985). The percentage of residents over age 65 controls for a negative effect on crime that this group of individuals tends to provide (Roncek, 1981; Roncek and Faggiani, 1985).

Ethnic composition will be represented by percentage African American and percentage Hispanic, due to Omaha's fairly large Hispanic population. Research on crime has found positive relationships between both percentage African American and percentage Hispanic and crime (Roncek and Bell, 1981; Roncek, 1981; Roncek and Lobosco, 1983).

Socioeconomic status will be measured through mean owner value (average housing value for a particular city block) because household income is not available for blocks. Average rent is not a good measure of socioeconomic status because apartment sharing can allow individuals to live in housing that no one of them could afford. When owner value is suppressed, the average housing value of the census tract in which the

block is located will be substituted. Should the average owner value for a census tract be missing but the average rent for a block be reported, then the predicted value of owned housing for a regression of owned value on rental value using all blocks with both values will be substituted.

Environmental Variables.

Controlling for the environmental structure of city blocks is also crucial in examining the effect of bars on crime (Roncek, 1981; Roncek and Bell, 1981; Roncek and Faggiani, 1985). Five variables will be used to control for any environmental effects from the characteristics of the housing blocks on the city blocks. The housing variables will include 1) percent overcrowded, defined by the Census Bureau as percent of residents living in housing units with 1.01 or more persons per room. 2) percent of structures with ten or more housing units (usually apartments), and 3) the vacancy rate per 100 year-round housing units.

Other variables representing the characteristics of the block will include size of the resident population, the physical area of each block, and the total amount of other liquor-selling establishments on that block that are not bars. The amount of people in the environment has been shown to have a significant effect consistently, from Wirth (1938) and extended into an urban environment with Roncek and his colleagues. The size of blocks in acres has also been shown by Roncek (1981) to have strong and consistent effects on urban crime.

Other Liquor-Selling Establishments.

One of the biggest threats to validity in measuring the relationship between crime and the number of bars is the number of other establishments that also sell alcohol. Therefore, using the data on liquor-licenses obtained for the city, all establishments that have a liquor license but are not included in the list of bars as the main independent variable will be used as control variables. Only by controlling for these establishments can a link be made specifically between bars and assaults, showing that the effect on crime exists not only for alcohol itself, but also for the specific types of public places in which alcohol is consumed. Because several researchers have linked alcohol and crime (Ullman, Karabatsos and Koss, 1999; Scott, Schafer and Greenfield, 1999), separating the substance from the place it is consumed is crucial in determining the relationship between bars and assaults. A total of 233 establishments were included in the “offsale” establishments, which included such businesses as liquor stores, gas stations and grocery stores, where alcohol was sold to be consumed off of the premises of the establishments. Additionally, 373 establishments were included as “other onsite liquor establishments.” These include places where alcohol can be consumed at the location, but who were not classified as “bars” according to the definition above. These include restaurants, various locations of recreation, social halls, etc.

Chapter III

Methods

Overview.

This research will use a cross-sectional research design and begin the analysis by conducting t-tests for the difference of means to examine the differences between blocks with bars, blocks directly adjacent to blocks with bars, and blocks that have no bar and are not adjacent to a block with a bar. Next, this research will examine the zero-order correlations among the independent variables and use Variance Inflation Factors and the Condition Number Test to determine whether multicollinearity is present and how severe it is. Ordinary least squares regression will then be used as a baseline multivariate technique to identify the effects of bars on assaults. This research will also use Poisson and negative binomial regression to determine the controlled effects for proximity to bars on felonious assaults across all residential blocks. My hypotheses will be supported if the regression coefficients for the number of bars on a block are significant at the .05 level, and if adjacency to those blocks is significant at the .05 level.

T-tests for Difference of Means.

T-tests will be used to determine whether the samples from the three groups of blocks are from the same population. These will be carried out for each of the three groups of city blocks being examined: Blocks with bars, adjacent blocks and blocks that have no bars and are not an adjacent block. Here, the null hypotheses are that there are no significant differences in the amount of felonious assaults reported to the police for blocks with bars or for adjacent blocks when each of these is compared to blocks without

bars that are also not adjacent to bar blocks. Conversely, the alternative hypothesis for the t-tests will be that there is a difference, respectively, between blocks with bars, adjacent blocks and blocks that have no bars and are not adjacent to blocks with bars. If the probability associated with t is .05 or less for these tests, this will indicate that felonious assaults differ across the groups of blocks more than would be expected by chance in 95% of all such tests.

Tests for Multicollinearity.

Variance Inflation Factors will be used to check for multicollinearity. Variance inflation factors also provide an indication of specific location and severity of multicollinearity among the independent variables. The critical value that I will use for the variance inflation factors to determine if severe multicollinearity is present is 4.0. Thus, if the variance inflation factors are less than 4.0, multivariate analysis techniques can be used with confidence of no severe collinearity problems.

Regression Analysis.

Ordinary least squares regression analysis will be used to determine the best linear relationship between the independent variables and the dependent variables. The use of multiple regression requires meeting the assumptions that the dependent variable is measured at least on an interval scale, and that the independent variables are either measured at least on an interval scale or dichotomous.

The unstandardized coefficients obtained from multiple regressions will give the expected numerical effect or association of the independent variables on the dependent variable, taking into account all other variables. If positive and statistically significant

coefficients are found for the number of bars as well as adjacency, my hypotheses will be supported. The statistical significance for the regression coefficients will be obtained through a t-test, with the probability set at .05 or less as the criterion for a statistically significant effect. Standardized coefficients, beta weights, will also be obtained from this multiple regression. They will allow a standardized, simplified assessment of the importance of each independent variable regardless of its scale of measurement, on the dependent variable.

Unstandardized and standardized coefficients will also be examined and interpreted for Poisson/Negative Binomial Regressions. The unstandardized coefficients from these techniques after they are multiplied by 100 are interpretable as the expected percentage change in the dependent variable for a change in an independent variable (Roncek, 1997). The size of standardized coefficients can be ranked to indicate the relative importance of each independent variable relative to the other independent variables.

Chapter IV

Results

Before examining the relationships between assaults and the independent variables for liquor sales, it is important to understand how liquor sales vary across residential and non-residential blocks. The frequency distributions of assaults and the number of liquor-selling businesses on the blocks are in Tables 1 and 2. Assaults in Omaha varied widely by city block in 1999. Among the 6,947 city blocks, 6,412 or 92.3% had no reported assaults as can be seen from Table 1. The worst block in terms of assaults was a residential block that had thirteen assaults. The largest number of assaults on the nonresidential blocks, five, was found for two of these blocks. For the total of 5,659 residential city blocks, 5,176, or 91.46% had no assaults. Not only was the block with the most assaults (13) a residential one, but also so were the twenty-three blocks with the second through sixth largest number of assaults for which the range was from twelve to six assaults. The total number of assaults on all blocks was 1,021. For residential blocks, the total number of assaults was 945, which was 92.6% of all assaults even though residential blocks were only 81.5% of all blocks in the city.

The 240 bars in the entire city were located on 220 blocks. Sixteen blocks had two bars, and two blocks had three bars. The 170 residential blocks with bars were 77.3% of all blocks with bars and this resembles the percentage of all blocks that are residential. Thus, the focus of this research on residential blocks replicates the focus of prior work (Roncek and Bell, 1981; Roncek and Maier, 1991; Roncek and Pravatiner, 1989) on residential blocks and, in this research, has not resulted in a disproportionate loss

Table 1: Distributions of Major Variables – All Blocks

	Value	# of Blocks	% of all Blocks
Blocks with Assaults	0	6412	92.30
	1	338	4.87
	2	105	1.51
	3	29	0.42
	4	24	0.35
	5	15	0.22
	6	5	0.07
	7	6	0.09
	8	1	0.01
	9	4	0.06
	12	7	0.10
	13	1	0.01
	Blocks with Bars	0	6727
1		202	2.91
2		16	0.23
3		2	0.03
Blocks Adjacent to Blocks with Bars	0	5567	80.14
	1	973	14.01
	2	315	4.53
	3	61	0.88
	4	18	0.26
	5	9	0.13
	6	3	0.04
	7	1	0.01
Blocks with Offsite Liquor Sales ¹	0	6736	96.96
	1	190	2.73
	2	20	0.29
	3	1	0.01
Blocks with Other Onsite Liquor Sales ²	0	6683	96.20
	1	200	2.88
	2	34	0.49
	3	21	0.30
	4	4	0.06
	5	4	0.06
	6	1	0.01
Annexed Blocks	0	6880	99.04
	1	67	0.96

¹ Includes convenience stores, grocery stores, liquor stores, etc

² Includes restaurants, fraternal organizations, etc

Table 2: Distributions of Major Variables – Residential Blocks

	Value	# of Blocks	% of all Blocks
Blocks with Assaults	0	5176	91.46
	1	302	5.34
	2	93	1.64
	3	28	0.49
	4	23	0.41
	5	13	0.23
	6	5	0.09
	7	6	0.11
	8	1	0.02
	9	4	0.07
	12	7	0.12
	13	1	0.02
	Blocks with Bars	0	5489
1		157	2.77
2		12	0.21
3		1	0.02
Blocks Adjacent to Blocks with Bars	0	4640	81.99
	1	733	12.95
	2	220	3.89
	3	48	0.85
	4	11	0.19
	5	5	0.09
	6	2	0.04
Blocks with Offsite Liquor Sales ¹	0	5512	97.40
	1	139	2.46
	2	8	0.14
Blocks with Other Onsite Liquor Sales ²	0	5490	97.01
	1	136	2.40
	2	16	0.28
	3	13	0.23
	4	1	0.02
	5	2	0.04
	6	1	0.02
Annexed Blocks	0	5606	99.06
	1	53	0.94

¹ Includes convenience stores, grocery stores, liquor stores, etc

² Includes restaurants, fraternal organizations, etc

of blocks with bars. The differences between the distributions of bars across the two sets of blocks are due to the loss of one three-bar nonresidential block, four two-bar blocks, and forty-five one-bar blocks.

For the entire city, 1,380 blocks, or 19.9% were adjacent to blocks with one or more bars on it. One nonresidential block was adjacent to blocks with a total of seven bars on them. While no residential block was adjacent to as many bars, two of the 1,019 residential blocks were adjacent to a total of six bars each. There were only three such blocks in the entire city. The residential blocks that were adjacent to bars were 73.8% of all blocks that were adjacent to bars. This figure is quite close to the percentage of bar blocks that were residential.

One hundred sixty more residential blocks had businesses or organizations selling alcohol for consumption at their sites. These residential blocks were 64.0% of all 264 blocks with such other onsite places on them. The lower percentage share for residential blocks with these other onsite places is undoubtedly due to the concentration of alcohol-selling restaurants in the different types of malls throughout the city.

Places selling alcohol products for consumption away from their premises (off-site) were located on 211 different blocks, of which 147 or 69.7% were on residential blocks. This percentage, which resembles that for other onsite blocks, is also a product of the off-site places such as grocery stores, gas stations, drug stores, and convenience stores being located in malls or on other completely nonresidential blocks.

Because this analysis was restricted to using 1990 Census data due to the unavailability of data from the 2000 Census, it is possible that blocks recently annexed to

the city may have a different proportion of residential blocks and bar-related blocks that were already part of the city in 1990. Thus, Tables 1 and 2 also report the frequencies of annexed blocks. Of the 67 blocks that had to be added to the 1990 data file, 53 or 79.1% were residential. This figure is quite close to the 81% of all blocks that were residential. Although not reported in a table, the zero-order correlations of the presence of bars with the other control variables were very low. Thus, it is unlikely that more recent data on the control variables would substantially alter the relationships of these businesses to assaults.

Table 3 reports the results of eight groups of t-tests. Each panel of the table reports the differences found between those residential blocks with a particular type of alcohol-related activity and those without it for the number of assaults and for the three data adjustments made (annexed blocks, randomized blocks, and fixed blocks). The assault comparisons are the substantive concern of this research and the other comparisons are made to check whether there are statistically significant differences in the data adjustments made to the two groups of blocks being compared.

For every comparison of the numbers of assaults across residential blocks with alcohol sales and those without them, the blocks with any type of these sales had a higher average number of assaults than blocks without them and, in each instance, the difference was statistically significant. Also, the average number of assaults on residential blocks that were adjacent to bars was higher than the average on those that were not adjacent to bars. This difference was also statistically significant.

Table 3: T-tests for Differences of Means

A. Difference of Means between Blocks with Bars and Blocks without Bars				
	With Bars	Without Bars	t	p
Assaults	0.4269	0.1588	3.32	0.0011
Annexed Blocks	0.0175	0.0096	0.79	0.4325
Randomized Assaults	0*	0.0037		
Fixed Assaults	0.0058	0.0123	1.03	0.3059
	N = 171	N = 5442		
* Difference of means not computed because no assaults were randomized on bar blocks				
B. Difference of Means between Blocks with Bars and Blocks without Liquor Sales				
	With Bars	No Liquor	t	p
Assaults	0.4269	0.1434	3.52	0.0006
Annexed Blocks	0.0175	0.0094	0.8	0.424
Randomized Assaults	0	0.0031		
Fixed Assaults	0.0058	0.0117	0.93	0.355
	N = 171	N = 5211		
C. Difference of Means between Adjacent Blocks and Non-Adjacent Blocks without Bars				
	Adjacent	Non-Adj/Non-Bar	t	p
Assaults	0.2542	0.1412	3.55	0.0004
Annexed Blocks	0.0079	0.0086	0.23	0.8183
Randomized Assaults	0.0099	0.0022	1.57	0.1168
Fixed Assaults	0.0718	0.0106	1.12	0.2643
	N = 1011	N = 4510		
D. Difference of Means between Adjacent Blocks and Blocks with No Liquor Sales				
	Adjacent	No Liquor	t	p
Assaults	0.2542	0.1285	3.96	<.0001
Annexed Blocks	0.0079	0.0087	0.230	0.8167
Randomized Assaults	0.0099	0.002	1.650	0.0986
Fixed Assaults	0.0178	0.010	1.210	0.2259
	N = 1011	N = 5211		

Table 3: T-tests for Differences of Means (Cont.)

E. Difference of Means between Blocks with Other Onsite Liquor-Serving Establishments and Non-bar Blocks without Other Onsite Establishments				
	Other Onsite	No Onsite/No Bar	t	p
Assaults	0.3905	0.1533	2.97	0.0034
Annexed Blocks	0.0355	0.0092	1.83	0.0687
Randomized Assaults	0.0118	0.0034	1.00	0.317
Fixed Assaults	0.0237	0.0121	0.97	0.3335
	N = 169	N = 5305		
F. Difference of Means between Blocks with Other Onsite Liquor-Serving Establishments and Blocks without any Liquor Sales				
	Other Onsite	No Liquor	t	p
Assaults	0.3905	0.1434	8.49	<.0001
Annexed Blocks	0.0355	0.0094	1.82	0.0705
Randomized Assaults	0.0118	0.0031	1.04	0.2988
Fixed Assaults	0.0117	0.0237	1.00	0.319
	N = 169	N = 5211		
G. Difference of Means between Blocks with Offsite Liquor-Serving Establishments and Non-bar Blocks without Offsite Liquor-Serving Establishments				
	Offsite	No Offsite/No Bars	t	p
Assaults	0.6824	0.1459	4.33	<.0001
Annexed Blocks	0.027	0.0094	1.31	0.1917
Randomized Assaults	0.0203	0.0032	1.46	0.1455
Fixed Assaults	0.0338	0.0118	1.52	0.1275
	N = 148	N = 5320		
H. Difference of Means between Blocks with Offsite Liquor-Serving Establishments and Blocks without any Liquor Sales				
	Offsite	No Liquor	t	p
Assaults	0.6824	0.1434	6.28	<.0001
Annexed Blocks	0.027	0.0094	1.31	0.1918
Randomized Assaults	0.0203	0.0031	1.47	0.1426
Fixed Assaults	0.0338	0.0117	1.53	0.1268
	N = 148	N = 5211		

I used multiple regression analysis to establish a baseline against which more complicated statistical procedures could be compared. Ordinary linear regression, while not very sophisticated, also provides an initial crude estimate of how powerful the predictor variables were, as well as their rank order in terms of importance. This type of regression also provides easily interpretable R-squared and standardized coefficients. Mathematically, the R-squared and standardized coefficients of linear regression do not have exact counterparts in more advanced techniques, so getting baseline results from an ordinary least squares regression model is helpful for understanding the overall strength of the relationships of the variables. The correlations between the independent variable and all other control variables were very low, with no Variance Inflation Factor reaching above 3, with most under 2 (See table 4). This indicates that multicollinearity is not a problem for this regression model. The Condition Number Test also indicated no severe multicollinearity, since its first criteria for assessing severe multicollinearity of having at least one condition index greater than 30 was not met (Belsley, Kuh and Welsch, 1980).

The regression results are in Table 5, which contains the standardized (beta) and unstandardized (b) coefficients for all independent variables. Because the coefficients for bars are statistically significant, the regression results permit concluding that blocks with bars had significantly more assaults on them than did blocks without bars. The beta for blocks with bars (.0353) however, is not very strong. It is only the tenth largest one from the regression. The b-coefficient shows the expected additional increase in assaults due to being a bar block. The b-coefficient indicates that an increase of .144 assaults can be expected for every additional bar on a block. For adjacent blocks, no significant effect

Table 4: Correlation of Assault with All Independent Variables

	Correlation	X	Std Dev
Assaults	1.0000	0.1669	0.7893
Bars	0.0586	0.0330	0.1929
Adjacency	0.0438	0.2478	0.6065
Non-Bar Onsite Liquor	0.0396	0.0412	0.2779
Offsite Liquor	0.1110	0.0278	0.1729
Annexed Blocks	-0.0073	0.0098	0.0985
Randomized Assaults	0.1413	0.0036	0.0778
Fixed Assaults	0.2603	0.0121	0.1705
Population	0.1141	61.6123	72.5988
% One-Person Units	0.0687	22.9439	18.2290
% Single-Parent Families ¹	0.1277	10.1724	12.7422
% Over 65	-0.0297	14.1000	13.5872
% under 18	0.0686	24.8053	12.5139
% Black	0.1279	14.8191	28.7347
% Hispanic	0.0883	3.1565	7.6694
Owned Housing Value ²	-0.1025	5.7785	4.0564
% Overcrowded ³	0.0834	2.3457	5.4262
% Apartments	0.1088	5.6833	18.9903
Vacancy Rate	0.1377	5.7770	9.4017
Area ⁴	0.0239	0.8999	1.9119

¹ Percentage of Single-Parent Families supporting at least one child under age 18.

² Housing Value reported in tens of thousands of dollars.

³ Overcrowding is the percent of residents living in housing units with 1.01 or more persons per room.

⁴ Area is reported in tens of acres.

Table 5: Linear Regression Results for Assault and All Independent Variables

	Beta	b	Std. Error	VIF
Bars	0.03525*	0.14422*	0.05335	1.09203
Adjacency	0.00167	0.00218	0.01734	1.13962
Non-Bar Onsite Liquor	-0.01138	-0.03233	0.03915	1.22014
Offsite Liquor	0.08965*	0.40940*	0.05948	1.08923
Annexed Blocks	-0.00257	-0.02056	0.10241	1.04883
Randomized Assaults	0.02543	0.25819	0.14138	1.49875
Serious Fixed Assaults	0.02251	0.20107	0.14342	1.65585
Population	0.09091*	0.00098*	0.00016	1.42852
% One-Person Units	0.04230*	0.00183*	0.00068	1.58915
% Single-Parent Families	0.05321*	0.00330*	0.00108	1.94796
% Over 65	0.00080	0.00004	0.00084	1.35475
% under 18	0.04008*	0.00253*	0.00114	2.07943
% Black	0.04914*	0.00135*	0.00044	1.66182
% Hispanic	0.07318*	0.00753*	0.00134	1.09126
Owned Housing Vaue	-0.02625	-0.00511	0.00284	1.18809
% Overcrowded	0.01315	0.00191	0.00198	1.68063
% Apartments	0.04159*	0.00173*	0.00067	1.21580
Vacancy Rate	0.07896*	0.00663*	0.00116	1.36950
Area (per 10 Acres)	-0.00523	-0.00216	0.00600	1.35500

R = .3593

R² = .1291

R² = .1260

* Statistically Significant at the .05 level

emerged. Other onsite establishments also did not have a statistically significant effect, although offsite liquor establishments did. The b-coefficient for offsite establishments was .409 and the beta for this variable was .0896. Although this size of beta weight does not typically indicate a strong effect in terms of standardized estimates, this variable was the 2nd most important indicator of assaults among all the control variables used. This regression accounts for 12% of the variance in the number of assaults across blocks which is not a large amount but resembles the explained variance for other analyses using blocks in relatively low-crime cities, (Roncek and Pravatiner, 1989; Roncek, 1981).

In the first regression analysis, which was not reported here, an indicator of improperly recorded addresses had a statistically significant effect. Fixed assaults, which were those for which an incorrect address was in the data and for which part or all of the original address was changed, had a beta of .226 and a b-coefficient of 1.047. These coefficients are much larger than for any other variable. They indicate that the amount of addresses of assaults needing to be fixed due to incorrect recording of addresses has a statistically significant effect in accounting for the variation in the number of assaults across the city's blocks. Using this as a control variable ensures that the effects of the liquor-related variables will not be distorted due to inaccurately recorded crimes. Because many of these "fixes" were not serious, for example if the street suffix was omitted, but the city only had one street with that name, or were actually map problems that were corrected using appropriate mapping techniques, another variable was created that included only the "serious" assault fixes. These included fixes where the street suffix was left out for names that included more than one street, for example "34th" could

be “34th Street” or “34th Avenue”, transposed house numbers, etc. The variable for serious assault fixes did not have a statistically significant effect.

Because of the severe skewness of the distribution of the dependent variable, a more complicated model was needed. The next strategy I attempted was using the natural logarithm of assaults. This type of procedure is still a fairly simple baseline model and still produces easily interpretable standardized coefficients. The results of the logged regression are in Table 6. Logging the dependent variable increased the R-squared from .1291 to .1618, and gave a better indication of the strength of the model as a whole and produced larger beta weights. Because the data are count data, however, and not continuous, assumptions of linear regression were violated, and other statistical techniques needed to be used.

A Poisson regression model was computed because it is the base model appropriate for count data. Because the dependent variable was overdispersed, that is, its variance was greater than its mean, I adjusted for this by using a negative binomial regression. This technique works well with the limited range of the dependent variable, and adjusts for over dispersion in a dependent variable as well.

Initially the negative binomial regression was computed using the raw number of bars and number of establishments with offsite licenses as if they were continuous variables. Results of this negative binomial model are in Table 7. To check whether both these variables could legitimately be used this way (due to their limited range), the number of bars was represented initially by three dummy variables (3, 2 and 1) with the

**Table 6: Logged Regression Results for Assault and All Independent Variables
(Logged Dependent Variable)**

	Beta	b	Std. Error	VIF
Bars	0.0506*	0.0780*	0.0197	1.0920
Adjacency	0.0099	0.0049	0.0064	1.1396
Non-Bar Onsite Liquor	-0.0103	-0.0110	0.0145	1.2201
Offsite Liquor	0.1049*	0.1804*	0.0220	1.0892
Annexed Blocks	0.0047	0.0141	0.0378	1.0488
Randomized Assaults	0.0299*	0.1144*	0.0573	1.4988
Serious Fixed Assaults	0.0477	0.1603	0.0530	1.6559
Population	0.0871*	0.0004*	0.0001	1.4285
% One-Person Units	0.0551*	0.0009*	0.0003	1.5892
% Single-Parent Families	0.0776*	0.0018*	0.0004	1.9480
% Over 65	-0.0109	-0.0002	0.0003	1.3548
% under 18	0.0283	0.0007	0.0004	2.0794
% Black	0.0800*	0.0008*	0.0002	1.6618
% Hispanic	0.0778*	0.0030*	0.0005	1.0913
Owned Housing Value	-0.0305*	-0.0022*	0.0012	1.3695
% Overcrowded	0.0161	0.0009	0.0007	1.1881
% Apartments	0.0462*	0.0007*	0.0002	1.6806
Vacancy Rate	0.0899*	0.0028*	0.0004	1.2158
Area (per 10 Acres)	0.0023	0.0004	0.0022	

R = .4022

R² = .1618

R² = .1588

* Statistically Significant at the .05 level

reference category being 0, but the negative binomial regression failed to converge because too few blocks had three bars. Then I combined the 2 and 3-bar blocks into one category. This also produced unusual results, because having 2 or 3 bars on a block was not significant, but having just 1 was. This is probably again due to the rarity of blocks having either 2 or 3 bars on them (only 1 block had 3 bars and only 12 had 2). The number of bars, therefore, was redefined as a simple dummy variable, and this has a statistically significant effect. Establishments with offsite licenses were defined with 2 dummy variables (2 and 1) with 0 as the reference category. The negative binomial regression with this specification did converge, and since both dummy variables had statistically significant effects, both were retained in the analysis.

Results of the final negative binomial model are in Table 8. The specification criterion (chi-squared) was highly significant ($\alpha = .0000$), indicating that negative binomial was the correct specification for this type of data. Overall, the computed R-squared for this model was also highly significant ($R\text{-squared} = .3706^1$) and indicated that the variables within the model account for 37.06% of the variance of assaults within the city of Omaha. This model affirmed the initial results that blocks with at least one bar had a statistically significant effect on whether or not an assault occurred ($Pr > \text{Chisq} = .0112$). Additionally, having at least one bar increased the expected number of assaults on that block by 63.40%. This was the second strongest predictor variable in the model.

Interestingly, the variable with an even more substantial effect on assaults was offsite liquor selling establishments. A 109% difference in the number of assaults is

¹ R^2 calculated using Lemeshow's formula, (Hosmer and Lemeshow, 1989).

Table 7: Negative Binomial Regression (Bars and Offsite as Continuous Variables)

	Standardized Estimate¹	Unstandardized Estimate	Std. Error	Pr > Chi Sq
Bars	0.1035*	0.5387*	0.2289	0.0186
Adjacency	0.1100*	0.1814*	0.0843	0.0314
Non-Bar Onsite Liquor	-0.0106	-0.0399	0.1700	0.8143
Offsite Liquor	0.1865*	1.0842*	0.2358	<.0001
Randomized Assaults	0.0056	0.0726	0.6616	0.9126
Serious Fixed Assaults	0.0003	0.0037	0.6097	0.9952
Population	0.2542*	0.0035*	0.0010	0.0004
% One-Person Units	0.2059*	0.0113*	0.0042	0.0068
% Single-Parent Families	0.2268*	0.0178*	0.0060	0.0032
% Over 65	-0.0094	-0.0007	0.0053	0.8882
% under 18	0.1186	0.0095	0.0068	0.1621
% Black	0.1754*	0.0061*	0.0022	0.0055
% Hispanic	0.2986*	0.0389*	0.0066	<.0001
Owned Housing Value	-0.8326*	-0.2048*	0.0310	<.0001
% Overcrowded	-0.0250	-0.0046	0.0112	0.6820
% Apartments	-0.0076	-0.0004	0.0038	0.9167
Vacancy Rate	0.1900*	0.0202*	0.0058	0.0005
Area (per 10 Acres)	0.0740	0.0388	0.0361	0.2829

R = .60877

R² = .3706²

* Statistically Significant at the .05 level.

¹ Proportional semistandardized coefficient developed by Dr. Dennis W. Roncek, (1997).

² R² calculated using Lemeshow's formula, (Hosmer and Lemeshow, 1989).

Table 8: Negative Binomial Regression (Bars and Offsite as Dummy Variables)

	Standardized Estimate¹	Unstandardized Estimate	Std. Error	Pr > Chi Sq	Rank
Bars	0.1203*	0.6340*	0.2499	.0112	10
Adjacency	0.1084*	0.1788*	0.0844	.0341	12
Non-Bar Onsite Liquor	-0.0089	-0.0336	0.1686	.8420	17
Offsite Liquor (one only)	0.1885*	1.0959 *	0.2642	<.0001	8
Offsite Liquor (>than one)	0.3461*	2.0117*	0.9571	.0356	2
Randomized Assaults	0.0564	0.0726	0.6610	.9125	13
Serious Fixed Assaults	0.0006	0.0067	0.6091	.9912	19
Population	0.2615*	0.0036*	0.0010	.0003	4
% One-Person Units	0.2040*	0.0112*	0.0042	.0073	6
% Single-Parent Families	0.2256*	0.0177*	0.0060	.0034	5
% Over 65	-0.0108	-0.0008	0.0053	.8721	16
% under 18	0.1173	0.0094	0.0068	.1633	11
% Black	0.1754*	0.0061*	0.0022	.0051	9
% Hispanic	0.2978*	0.0388*	0.0066	<.0001	3
Owned Housing Value	-0.8346*	-0.2053*	0.0310	<.0001	1
% Overcrowded	-0.0260	-0.0048	0.0112	.6715	15
% Apartments	-0.0057	-0.0003	0.0038	.9433	18
Vacancy Rate	0.1891*	0.0201*	0.0058	.0006	7
Area (per 10 Acres)	0.0719	0.0377	0.0362	.2978	14

R = .5366

R² = .2879²

* Statistically significant at the .05 level.

¹ Proportional semistandardized coefficient developed by Dr. Dennis W. Roncek (1997).

² R² calculated using Lemeshow's formula (Hosmer and Lemeshow, 1989).

associated with having one offsite business on a block versus having none. A 201% difference in assaults was associated with the difference between blocks with two such businesses and those with none. Once again, the range of offsite establishments was from 0 to 2.

The next most important independent variable was housing value ($b = -.2053$, $\beta_{pscr} = -.835$)². Adjacency also was a significant predictor in this model ($P > \text{Chisq} = .0341$, $b = .1788$, $\beta = .108$). The change for adjacent blocks from being a non-significant indicator in ordinary linear regression to a significant predictor in a negative binomial model highlights the importance in determining the most appropriate model before drawing conclusions about the effects of independent variables.

Finally, it is noteworthy that establishments other than bars with liquor licenses for onsite consumption did not have a significant effect on assaults. More interestingly, the direction of the extremely small coefficients was negative. The seemingly cavernous difference in the effect or lack of effect for this variable as compared to both bars and offsite establishments needs further study.

The results of this negative binomial regression support both hypotheses of this research. The presence of bars has a significant affect on felonious assaults on the same block, and there is evidence that a dispersion effect also exists for bars. There is however, additionally an undeniably larger effect on assaults from the presence and number of establishments with offsale liquor licenses (such as liquor stores, convenience stores, etc.). The implications of this will be discussed later in the concluding chapter.

² Proportional semi standardized coefficient developed by Dr. Dennis W. Roncek, (1997).

Many other independent variables also had statistically significant effects in this model and these are in Table 8. The statistically significant effects are for total population, percent overcrowded, percent of single-parent families, percent African American and percent Hispanic. The strength of these variables was not surprising, but most importantly for this research, the independent variables reflecting liquor sales showed strong results after controlling for these other variables.

Finally, the results here should be viewed with some caution because I have not used city-wide controls for spatial autocorrelation in this research. While this has been done in some previous research (Costanza, Bankston and Shihadeh, 2001), the software for this procedure was not readily available in this state. While spatial autocorrelative effects can change the effects of other variables, they do not appear strong enough to eliminate statistically significant effects in other work (Costanza, Bankston and Shihadeh, 2001). Also, this research has controlled for the most critical spatial autocorrelative effects by the use of the adjacency measure for bars.

Finally, to highlight the social and spatial variation in assaults, highly assault-prone bar blocks and non-assault bar blocks, this section focuses on three groups of blocks that are important representatives of each of these types of places. Map 1 shows the locations of the twelve residential blocks with the highest frequency of assaults is represented by squares. The locations of the ten residential bar blocks with the highest frequency of assaults are represented with triangles and the locations of a simple random sample of ten bar blocks without assaults are represented with circles.

Descriptively, the twelve “worst” blocks in terms of assaults are surprisingly different from each other in some characteristics. Overall, they are all located in the northeast or southeast precinct within the city, with four in the northeast and eight in the southeast precinct. The numbers of assaults on these blocks range from four blocks with 9 assaults to one block with 13 assaults. Of the twelve worst, 8 were at least 75% white and 4 were at least 70% African American. Six of the twelve had no apartments, but five of the other six were at least 25% apartments, with the highest concentration being 87.34%. However, these blocks were quite similar in other characteristics. None of the property values reached above \$45,000 and most were between \$30-40,000. All of these blocks had at least some single-parent families, ranging from 4% to 76.7% for the worst assault block. Additionally, all but one had less than 20% of their residents over age 65, and the worst assault block had no elderly. Perhaps the most surprising element of these blocks was that *none of the worst twelve blocks had a bar on it*. In the same vein, only one of these blocks had an offsite liquor selling establishment on it, and none had other onsite businesses. Only three of the twelve worst assault blocks were adjacent to one-bar blocks, and one was adjacent to a two-bar block.

Of those bar blocks with assaults, the ten “worst” in terms of assaults were a bit different from the twelve worst assault blocks described above. These blocks were more clustered within one area. Seven of the ten were in the southeast precinct while two were in the northwest and one in the southwest. None of the worst bar-blocks were in the northeast precinct, typically assumed to be the “worst part of town.” These assault-bar blocks ranged from five blocks that had 3 assaults to one block with 7 assaults. All ten

were at least 70% white in 1990, and half were over 90% white. Housing values also had a wide range, from \$23,300 to one block with average property values at \$162,500. Only three of these ten blocks had apartments on them. In contrast to the “worst assault” blocks, every one of these ten bar-blocks had at least some residents over age 65, ranging from 3% to 36% of all residents. Additionally, two of these blocks had no single-parent families, and had 7 and 3 assaults. The bar-block with the highest percentage of single-parent families had 25.64% single-parent families and had 5 assaults. Again, only two of these ten with 3 and 4 assaults had offsite establishments. Three other bar-blocks had other onsite businesses and the numbers of assaults were 3, 3 and 4 respectively. Indeed, the ten worst *bar blocks* in terms of assaults shared few traits with the twelve worst blocks overall in terms of assaults.

In fact, the ten worst bar blocks more closely resembled a random sample of ten of the bar blocks with no assaults. Of these no-assault bar blocks, nine were at least 60% white (one was 86% African American), property values ranged from \$27,500 to \$72,500 and eight of the ten had at least some residents over age 65 (ranging from 0 to 87.85% of all residents). Perhaps the most dramatic difference was that, of these blocks, only four had *any* single-parent families, with the highest percent of single-parent families being 25%. Oddly, only four of these blocks had any apartments, but of those four, all had over 75% apartments. While only one of these blocks also had an offsite liquor-selling business, three others had other onsite ones, and one of those blocks had one bar, three other onsite businesses, and was adjacent to two other blocks with bars!

The similarities among all bar blocks, those with and without assaults, are striking and important. While certainly not conclusive, it suggests that the bars themselves may be affecting the incidence of assaults more so than the sociodemographics of the particular block. Certainly more research in this area must be done, but these descriptions support the idea that bars *do matter* in terms of at least assaults, quite separately from the demographics of the surrounding area.

Chapter V

Conclusions and Discussion

The effects of alcohol and of the places where people consume alcohol on one type of crime are complex as demonstrated by this research. Two of the three types of alcohol outlets examined had statistically significant effects on assaults, and these effects are part of the three major patterns in these results. The first is that the presence of taverns or bars has a positive and statistically significant relationship with the number of felonious assaults. Although an incident-level analysis to determine the particulars that may lead to assaults in a certain place was not possible, it seems likely that the atmosphere of taverns or pubs would contribute to the likelihood of assaults, above and beyond the effects of alcohol consumption. Clearly, the insignificant effect of other onsite establishments such as restaurants, sports arenas, etc. indicates that where individuals drink is as important, if not more so, than what or how much they drink.

These other onsite establishments that serve liquor might have more guardianship and less suitable victims than do bars. Serving food with alcohol may decrease its intoxicative effects. In a business serving alcohol and food, the number of patrons who are not drinking alcohol may be as large as the number of those who are drinking at any given point in time. Places such as these may also have more staff on hand at one time, serving as multiple guardians. Additionally, most of these establishments close much earlier than either bars or liquor stores, and tend to serve customers who are diverse in ages. Finally, the atmospheres of other onsite establishments are undoubtedly different from the atmospheres of most taverns. After all, for most bar patrons the purpose of

visiting a bar or tavern is to socialize and drink – not to eat or watch a game. Given this, the results are not surprising in terms of the effect of bars on felonious assaults.

The effect of adjacency on assaults, however, is extremely important because it has not previously been studied. Because those blocks that were adjacent to blocks with bars had a significant effect on assaults as well, it can be concluded that there is indeed a dispersion effect for bars on felonious assaults. As discussed earlier, this intuitively makes sense as well. Altercations that might be attributable to a bar or tavern might actually take place or eventually move to an area outside of the business, either because guardianship is lower or because business owners have a stake in moving these altercations away from their establishments. Immediate proximity to bars is associated with a higher incidence of assaults.

Finally, the very large effect of the presence and number of offsite establishments is also worth noting. Costanza, Bankston, and Shihadeh (2001) argue that some of the same reasons that blocks with taverns might have more assaults than blocks with other onsite liquor establishments may also come into play with offsite establishments. Unlike restaurants or bars, many offsite establishments like liquor or convenience stores have very little guardianship, often just one clerk, and many are open all night. This effect was substantiated in this research. These same researchers found that the density of onsite liquor sales had little effect on either robberies or assaults; however it is not clear whether these “bars” did or did not include places such as restaurants or grilles that may have had a liquor license, which would most certainly weaken the effect of establishments that

were primarily bars only. It is clear, however, that the presence of offsite liquor-selling establishments do affect serious, felonious assaults in Omaha as well.

Discussion

The results of this study suggest several areas for further research. First, the idea that there is a dispersion effect for taverns on assaults logically leads to the question of how *far* that effect extends. A look at possible effects of secondary adjacent blocks, blocks that are two blocks away, may be worth investigating. Additionally, the way in which dispersion is measured, which has varied by researcher, has not been formally examined nor empirically tested. The results of dispersion to adjacent blocks should be compared to radial dispersion.

The differences in assaults that take place in places such as restaurants, bars and liquor stores ideally should be examined with incident-level analyses in which specific attributes about victim, perpetrator and contextual factors are compared for assaults in different places. Such analysis would be a useful way to at least descriptively identify the processes leading to assaults in these different alcohol-related businesses.

While the findings of this research indicate that taverns and offsale establishments independently significantly affect felonious assaults, it could be important to disaggregate these establishments further into those that serve hard alcohol as opposed to just beer and wine, etc. and to separate different types of offsale businesses, e.g., convenience stores, grocery stores, etc. This may indeed give further insight into the specific characteristics of these establishments, and what specifically it is about them that leads to such a strong relationship with crime. Given the strong effect of offsale establishments on assaults, it

could be useful to examine possible dispersion effects for this type of business as well. If dispersion effects are indeed present for offsale establishments as well, then these can also be incorporated into planning for crime prevention.

The results of this study must also be extended and replicated before policy initiatives are undertaken. It is important to note that all of these findings are based on the police reports of only one Midwestern city, and this may make results difficult to generalize to other areas. As with other research there are some assumptions that had to be made to conduct this study. First, it is necessary to assume that these reports have been accurately recorded by officers, accurately entered into records, and that this same, accurate information was provided for this research. Second, as stated earlier, the assumption that demographic information from the 1990 Census was relatively the same as it was in 1999 is necessary, since data from the 2000 Census was not yet available. While these assumptions are not unrealistic by any means, they should be recognized.

The effect of alcohol and the social environment in which it is consumed is shown here to be a very important predictor for the violent crime of assaults. Clearly, the effects of urban structure as well as alcohol are much more complex, and encompass both individual propensity to engage in violent behavior, as well as social and environmental factors. Understanding this type of criminal behavior fully would require much more in-depth and extensive research, and may never be fully possible. Nevertheless, this study sheds crucial light on the importance of urban environmental structures and the breadth of their effect on assaults.

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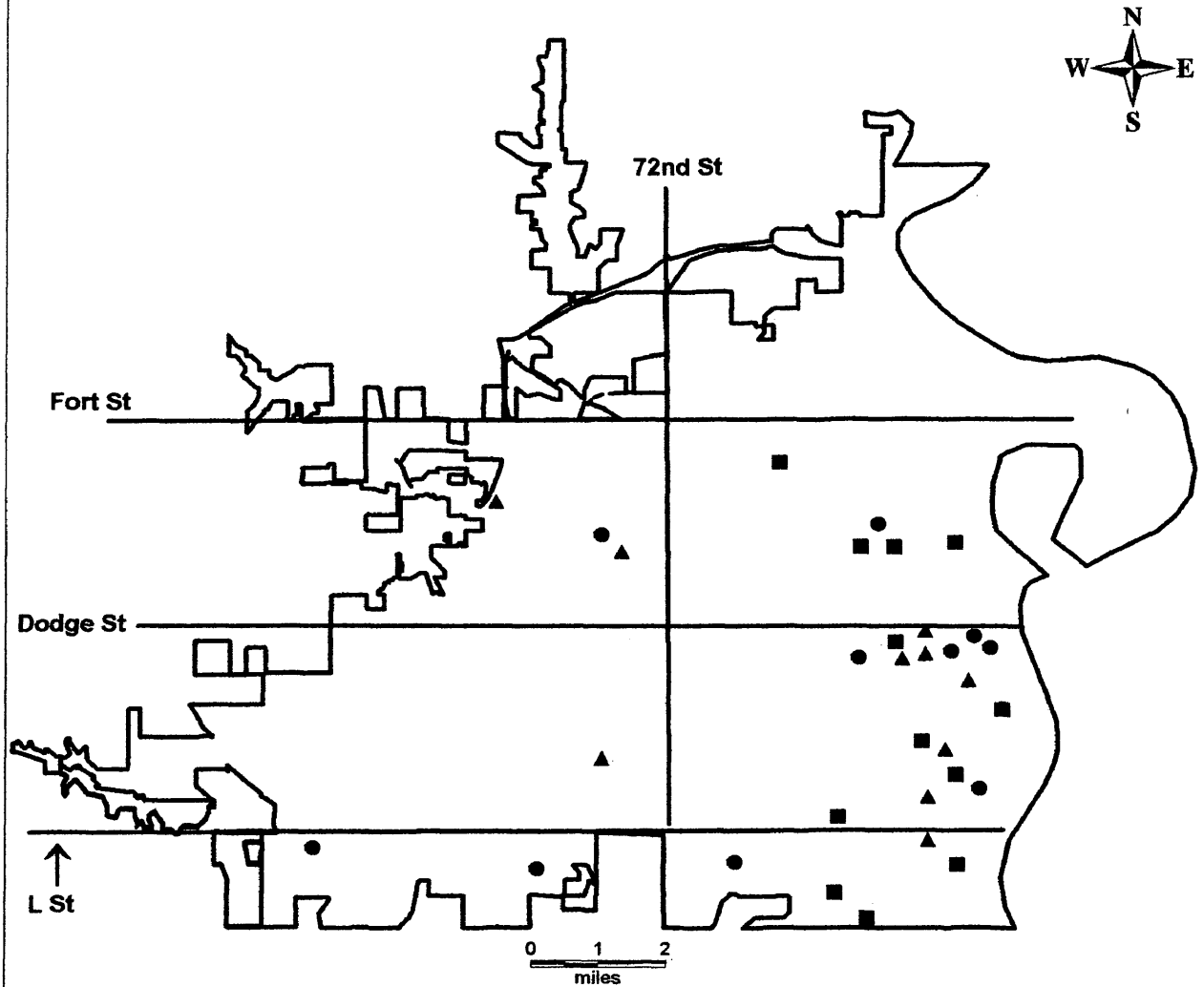
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Map 1. Locations of 12 Worst Assault Blocks, 10 Worst Bar Blocks, 10 Bar Blocks without Assaults in 1999.



- Worst Assault Blocks
- ▲ Worst Bar Blocks
- Assault-Free Bar Blocks