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A SPATIAL ANALYSIS OF CALLS FOR POLICE SERVICE AND BAR LOCATIONS IN DOWNTOWN VANCOUVER

by

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B.A. University of British Columbia 1995

THESIS SUBMITTED IN PARTIAL FULFILMENT OF

THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

In the

School of

Criminology

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SIMON FRASER UNIVERSITY

August 1999

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Abstract

Environmental criminology explores the relationship between surrounding context and criminal events. Such exploration can be for repeated crimes of individuals or for aggregations of criminal events. This thesis is an effort to situate the role of licensed drinking establishments in the distribution of crime across urban space. Of the many perspectives available "pattern theory," as developed by Brantingham & Brantingham, is exemplary in its engagement of the diverse challenges present in any attempts at understanding or even merely exploring urban crime phenomena. Pattern theory is seen as most useful for both its sophisticated analysis of crime as an event and the provision of immediate linkages between empirical study and urban planning. Such potential is discussed in the context of an investigation of the relationship between licensed premises (bars, pubs, and cabarets) and calls for police service in the Downtown district of Vancouver for three consecutive months (April through June 1996). For each month, all calls in the study area are plotted using street addresses contained in files generated from the Vancouver Police Department Computer-Aided Dispatch (CAD) database. After consideration of the macro scale patterning of dispatch locations, the thesis moves to a finer cone of resolution to explore meso- and micro spaces of interest, as suggested by the macro picture, previous empirical studies, and relevant theory. Our findings provide support for the hypothesis that licensed public drinking establishments do have an impact on crimes known to police. While the findings of this case study must be considered preliminary, they are strong enough to justify further exploration into the bar-crime nexus.

Dedication

I am thankful for a many things that have allowed me to pursue academics without pause for worldly concerns, but none so much as the unbounded love and friendship of my mother, Francis Mary Kinney who succumbed to cancer late last December. I shall never utter a more profound understatement than to say that it is to her that I owe everything. For all that you have done, I thank you; and even though you are gone, I know that you still watch over us all. It is to you that I humbly offer this thesis as a token of my love and appreciation.

Acknowledgements

It is with great pleasure that I acknowledge those persons who have provided much aid and inspiration, and certainly have made the journey a true joy. First and foremost, I would like to formally recognise Dr. Patricia L. Brantingham, my Senior Supervisor, and Dr. Paul J. Brantingham for their limitless support and patience since taking on this wayward historian into their fold. They are an inspiration in both life and academia. I am also extremely grateful for the support shown me by Dr. Bill Glackman, who, on several occasions has taken the time to put in a good word. I am similarly indebted to many of the faculty at the School of Criminology, but especially to Dr. Ted Palys and Dr. Wendy Chan. I would also like to thank the Vancouver Police Department for permitting me access to their CAD data, and Mr. Nathan Edelson of the City Planning Department for Vancouver for his many helpful and timely interventions on my behalf. To Mr. Terry Whin-Yates, I extend many thanks for his efforts in furnishing the Crime Prevention and Analysis Laboratory (CPAL) with the luxurious facilities that made this mode of research possible.

I have also to especially thank my best friend, Chris Giles, and my two brothers, Darrin and Grant Kinney, for their companionship and suffering me as a roommate. As well, I would like to extend my deepest gratitude to my Dad for being an excellent one, and to Carol and Amber Kinney—it is good to be near you at long last. I am indebted to Peter Bryce for making the hours in the lab not only bearable but also a source of endless entertainment, and to Norma-Jean McLaren for pointing out that criminology existed in the first place. Thank you all; I hope that I may have the opportunity to return these many kindnesses.

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Chapter I: Introduction

The purpose of this thesis is twofold. Firstly, it is our intention to provide a brief orientation to a selection of key themes that emerge in the field of Environmental Criminology and its collective attempts at analysing urban crime. It is through this introduction that we hope to underscore the importance of the need for close, empirically based, and situationally specific, studies of crime. The second and more specific focus of the present discussion centres on the urban landscape and the movements and activities of people therein.

It has become something of a 'truism' over the past decade or so for those writing in the field of criminology to acknowledge the complexity of the social environment. Despite such attentions, the field remains surprisingly open to objections from the critical Left, and a movement known as "Left-Realism" in particular (Evans 1992; Lowman 1992). It is our contention, however, that of the theoretical approaches within Environmental Criminology, "Pattern Theory", as developed by Brantingham & Brantingham (Brantingham and Brantingham 1993; Brantingham and Brantingham 1998) provides the most comprehensive attempt to engage this complexity directly. As an example of environmental criminology "in action," the analytic potential of pattern theory is explored in the context of calls for police service and the locations of licensed public houses (including bars, hotels and cabarets).

After reviewing the existent literature pertaining to crime and the urban landscape, this study will explore the spatial distribution of selected calls for police service in the immediate surrounds of 66 bar locations in the Downtown core of the City of Vancouver, British Columbia. (Please consult Figure 1, below, for the locations of

individual premises and area road network.) Building on the theoretical and empirical studies reviewed below, this thesis will provide a foundation for more detailed, and micro level analytical studies. Given the newness of the Vancouver Police Department's CAD (Computer Aided Dispatch) data to academic researchers, it is necessary to proceed with caution. While others have explored police CAD records (see, for example, Brantingham, Brantingham et al. 1991; Buckley 1996), none have focused entirely on Vancouver's Downtown planning district. Also, recent improvements in data archiving and computer aided mapping software and affordable computer hardware, have made it advisable first to establish general procedures for the mapping of CAD data, and then from this base, develop general pattern analysis strategies, rather than attempting a primarily micro-level analysis. Fortunately, this thesis is not alone in preparing the Vancouver CAD data in this manner. Exciting work is currently underway by a fellow researcher at the Crime Prevention and Analysis Laboratory, at Simon Fraser University (Bryce 1999). The Bryce study is also a thesis length exploration, which will help to formalise and evaluate empirical investigative techniques utilising CAD records of this kind.

The study itself is comprised of three consecutive months of Vancouver Police Department CAD records, beginning in April of 1996 and ending in June of that same year. For the study period, the VPD handled some 26,000 calls for the entire city each month. Given the volume of dispatches, and the specific interest of this thesis in the possible effects of licensed premises on such incidents, we decided to restrict our interest to the Downtown Local Planning Area (see Figure 3). This region of the city of Vancouver contains the largest number of licensed premises, and therefore, was

considered the most useful area to illustrate the explanatory power of pattern theory, with its ability to consider multiple "cones of resolution" (Brantingham and Brantingham 1993; Brantingham and Brantingham 1998). By observing the calls for police service that fall within a pre-set buffer, or area surrounding individual licensed premises, in such a small area, one can see how strongly one's choice of scale affects one's interpretation of the spatial patterning of reported criminal activities. What one takes to be a 'hotspot' or an obvious concentration of calls for police service at the macro level, may not be so clear if one looks at the same spatial relationship at the meso- or, perhaps more especially, the micro level. It is argued that such distinctions help one to begin to understand why some bars are, or become, so-called "problem premises" while others, in seemingly identical circumstances, do not.

Chapter II: Topical Review of the Literature

Crime in urban areas

One of the most intellectually satisfying aspects of what may be broadly brushed as "environmental criminology" is the seemingly endless web of contingent circumstances. It is the overreaching importance of context, or, as the Brantinghams' prefer, "backcloth" (Brantingham, 1998), that makes the theoretical and methodological literature diverse. The following section outlines in brief, five key areas for criminologists who are interested in the intersections of time-space and urban place in general, and of how these issues can assist this study's discussion of licensed drinking establishments and distribution of reported crime in particular.

As one would expect, the context of urban crime is complex. In general, many of the factors that influence the day-to-day movement of people in the course of legitimate activities also play a role—to greater or lesser degrees—in illegitimate activities as well (Brantingham and Brantingham 1978; Brantingham and Brantingham 1984; Bottoms 1994). Analysis of the patterning of general routine activities can be useful in identifying and predicting concentrations of illegitimate activity (Davidson and Locke 1992; Brantingham and Brantingham 1995; Eck and Weisburd 1995; Brantingham and Brantingham 1998). Such analysis is, in our opinion, eminently useful for any effort at developing proactive crime prevention and improving the general community experience.

Crime, many authors have recognised (see especially the works of the Brantinghams, 1984, 1998 and Eck and Weisburd 1995), is not randomly distributed across the urban landscape. While this topic sees a more sustained discussion at a later

section entitled "Routine Activities" (see below), this process can in part be better understood when one considers the character of the built environment.

Crime, Public Transit and Road Networks

Efficient public transit is a highly desirable amenity for any modern city, and cities such as Vancouver must continue to pursue improved transit and road networks. Unfortunately, criminally inclined people also appreciate improved transit. Recent research has demonstrated a clear connection between public transit routes and most types of property crime (Brantingham, Brantingham et al. 1991; Buckley 1996). Similar connections exist between crime concentrations and road network structure (Beavon, Brantingham et al. 1994). This line of research suggests that when new road/transit networks are developed, the possible impact on emergency services (fire, ambulance, but especially policing) should be considered (Whin-Yates 1999). The negative consequences of transit and traffic improvement can be reduced and controlled.

Land Use: Variations

Public, residential, and mixed land use areas each have distinctive influences on how crime occurs (Frisbie, Fishbine et al. 1977; Bottoms 1994; Homel and Clark 1994; Rose 1994). Single family residential areas have the lowest crime levels; multi-family areas have higher amounts of crime. Commercial areas have still higher levels. This should not be surprising. Normal activities in these areas are different, and so too, the opportunities for crime (Bottoms and Wiles 1992). The presence of situations that can trigger crime are different. Residential areas primarily experience property crimes; commercial areas experience more property crimes as well as concentrations of some

types of personal violent crime. Residential areas have different community "tolerances" for unusual behaviours: for example, most residential neighbourhoods would not permit persons to "hang out" on street corners for very long, whereas more commercial (public) places actively encourage people to gather, hoping they will become customers, generate income for the businesses in the area and create an attractive, active milieu.

Mixed land use areas are more dynamic still—balancing "neighbourhood" and "commercial" expectations. Again, time of day appears to be a useful tool for analysis: the same space may be commercial for one period and more private at another. Time of day matters; in a mixed land use area the same space may be commercial for one period and more private at another. Overall the layout of land uses, when considered with respect to public transit and street networks help identify where crime hot spots occur.

Criminality of Place

Each hot spot is different. Its character depends on the history of the area and its character as a place. This difference is called the criminality of place (Eck and Weisburd 1995). These differences lead to the need to analyse problems and develop site and situation specific solutions. This approach is called situational crime prevention (Clarke 1983; Brantingham and Brantingham 1993). When used in support of existing sources of guardianship, situational crime prevention strategies may improve public safety—both in physical (Bottoms 1994; Homel and Clark 1994; Barnes 1995; Felson and Clarke 1997; Newman 1997) and attitudinal contexts (Neal 1991). While the approaches vary by crime and context, it is perhaps best to give the example of drinking establishments. It has been shown that problems associated with licensed premises (bars, pubs, and cabarets) can be mitigated through more stringent licensing restrictions and enforcement,

by altering "last-call" and closure times, and by different traffic safety approaches. From a design perspective, site-specific alterations in how patrons move to and from various licensed premises and otherwise use the "space" (Roncek and Maier 1991; Stockwell, Somerford et al. 1992; Stockwell 1993; Stockwell 1993).

Crime Prevention and Crime Analysis

Hot spots are targets for policy and crime prevention activities. Effective approaches require expertise. This expertise can come from experience, but organisationally it is supported through crime analysis. With most planning departments and law enforcement agencies having access to relatively powerful computers it has become vital these organisations develop standard operating procedures for information accumulation, storage and dissemination. Resource sharing can help to simultaneously improve data collection accuracy and co-ordination while reducing the amount of resources needed through the elimination of redundant technological and human resources allocation (B.C. 1991; Brantingham and Brantingham 1995; Rich 1995). Crime analysis displayed in mapping can also aid in the development of integrated planning strategies, where police and other city agencies work in teams to respond to both existing and anticipated "hot spots" (Sherman 1995).

Crime analysis, however, is not simple. It requires both managerial attentions and technical services in a rapidly changing computer world. The city of Vancouver, and the Downtown district in particular, is presented with a special challenge. It is an area of growth and change, of new transit lines and improved road networks, of increased population densities—all of which can have significant impacts on crime. Crime analysis

will need to focus on current issues, but at the same time, forecast possible future problems

Development of Theory

Given the complex and varied possible set of all inputs into the urban crime equation, it is necessary to establish some conceptual, or theoretical, landmarks by which we may guide our discussion. Although Environmental Criminology arguably remains in its early and formative years, it is already rich with a burgeoning literature. From the various positions that can be broadly cast as being within an Environmental Criminology perspective, this thesis is particularly influenced by Pattern Theory, as introduced by Paul and Patricia Brantingham of Simon Fraser University.

Origins and Influences

The Brantinghams' most recent articulations of pattern theory, (e.g. 1998; 1993) grew out of the authors' earlier works (e.g.1978; 1984) which set out the foundations of environmental criminology as a new field of scholarly inquiry. While this is not the place to discuss the origins and influences of pattern theory in any sustained way, it is necessary, however, to cover the general development of the perspective and to situate it within the wider sub-discipline of environmental criminology. The first and most basic influence is the classical tradition within criminology, which predates the Brantinghamian corpus. The next two elements that are covered in this brief review, the rational choice perspective (Ronald Clarke), and the routine activities perspective (Marcus Felson), developed concurrently, yet independently of the Brantingham model. The final element

to be given treatment here, is the work of Anthony Bottoms, and, although he does not use the term himself, his work can be thought of as a consequence theory. Environmental criminology in general, and pattern theory in particular, share the classical school's concerns and basic assumptions regarding the ontological nature of crime and that the individual actor/agent is, in at least a general way, responsible for his or her actions. This connection with the classical school is a source of much consternation among environmental criminology's critics from the left (Atchison[1]). From such a perspective then, the idea of rational, and therefore responsible, agents prepares the ground for the realism in environmental criminology to become right realism. To make such a de facto linkage between right realism and environmental criminology is in many cases inaccurate. As will be seen in the detailed description below, the field is more complex. If agents are rational, they are capable of assessing risk and gain (at least at some level) and thus, capable of being 'deterred' from certain behaviours via formal and informal methods of social control. Pattern theory, and other perspectives within environmental criminology, to a greater or lesser degree, share this 'classical' interest in the individual and his or her social context. It should be noted however, that although there is room here for perspectives that follow from these general assumptions to speak of criminals as somehow pathological, pattern theory does not take up this line of thinking. The vast majority of people are assumed to be typical (normative) in every way, but there are of course widely differing abilities in how people perceive and interact with their social context. Crime is thus seen as a natural by product of human interaction with other humans and their shared environment (see especially Brantingham and Brantingham

[1] For my exposure to the critical left's ontological objections to "right realism" I am indebted to a fellow graduate student, Chris Atchison.

1998). Some environmental criminologists, such as (Cornish and Clarke 1987), or (Felson and Steadman 1983; Felson 1986), for example, stay more closely to this micro level approach, but as we shall see, pattern theory also attempts to encompass the meso and macro levels as well. As a primary concept in pattern theory, the notion of rational choice requires further elaboration.

The two authors most directly connected with the rational choice perspective are Derek Cornish and Ronald Clarke. These two have collaborated on several occasions, although only their 1987 article (Cornish and Clarke 1987) and edited collection of (Cornish and Clarke 1986) are considered here, with the intention of providing an understanding of how the individual agent decides to engage in an illegal act, and, in the process, attempt to intervene strategically so as to reduce the number of such digressions (1987: 933-34). While Cornish and Clarke (1987) acknowledge that not all individuals appreciate a given set of circumstances in precisely the same way, Karl-Dieter Opp's (1997) account is more useful to our present discussion. For Opp, there are two general levels of rational choice theory, wide and narrow. The former is more flexible than the latter, and in the end, its inclusion of a "limited rationality" widens the explanatory scope of this model considerably (1997: 47-9). Pattern theory is particularly amenable to this conception of rational choice, for if one cannot count on all persons taking precise stock of the risks and benefits of an as yet unrealised criminal act, and if one wishes to deter the individual from choosing to actualise this potential, then one cannot simply increase the 'risks' and expect that crime commission will be deterred in any systematic or meaningful way. One must recognise the mutability of individual perceptions of what risk might be and if it is even considered at all. The Brantinghams' model of the environmental

backcloth represents an attempt at sorting out various of the possible complications that can surface in this regard (1993: 268).

Routine activities

Routine activities theory starts with the idea that crimes are for the most part, natural outcomes of human interaction (rather than those of pathological individuals) which are connected to the day-to-day movements of persons. Marcus Felson and Lawrence Cohen are the primary writers connected to routine activities theory (Felson and Cohen 1981; Felson 1986). While routine activities theory can be applied to individual level analysis, its principle benefit to pattern theory is in the aggregate. Through the accumulated experience of many individuals engaging in regular and repeated activities (such as shopping or working) certain parts of either the material or social landscape become central. People will tend to accumulate at predictable locations, depending on the circumstances that brought each person to the area in question in the first place. Such activity centres, or "nodes", become—to the individuals who frequent it—a known or familiar space. This concept is imported, with minor adjustments, from the Brantinghamian notion of "awareness space", which was first developed in the late 1970s (Brantingham and Brantingham 1978), and most recently in their 1998 and 1993 works. In terms of attempting explanations of crime patterns, routine activities theory suggests that experience of an area ("legitimate" or otherwise) gives rise to opportunities for engaging in criminal acts. One possible example could be a newspaper delivery person who discovers that one residence is unoccupied and decides to "slip in" and steal something. Notice how such an explanation of a criminal act does not require premeditation, or a pathological agent. Pattern theory would tend to look at routine

activities at a less detailed level and connect these with decision making models similar to the Cornish and Clarke concept of rational choice (Brantingham and Brantingham, 1998; 1993; 1984). An important distinction should be made upon this point, however: the Brantingham and Brantingham (1978) decision model does not require a strictly "rational" component, but rather a sliding continuum of consciousness, with actions resulting from a chain of inputs—some of which are not formally recognised by the agent(s) in question, rather than true decisions, stemming from a consideration of potential risks and benefits, as suggested by Cornish and Clarke (1987). Such flexibility is a common theme in pattern theory, as the backcloth metaphor suggests (Brantingham and Brantingham, 1998).

Principles & objectives of pattern theory

The primary intention of pattern theory is to understand the criminal event, and to begin to explain why it is not randomly distributed across space-time. Criminal events tend to collect in characterisable ways; it is these patterns that require attention so that crime may be more understood more completely. A use of pattern theory is to help devise crime prevention policies that are available for implementation within the complex urban landscape. The Brantinghams reject unicausal explanations and set out instead to provide a more inclusive discussion about how crimes occur (Brantingham and Brantingham, 1993: 264). They suggest that it is useful to consider the following as a partial solution: "(1) the actual process of committing a crime; (2) the general crime templates and activities of offenders at the moment of crime commission; (3) offenders' readiness or willingness to commit a crime; and (4) the interaction of process, template, activity, and readiness as they are arrayed on the environmental backcloth" (1993: 266). These four

points make up what they have termed the "environmental backcloth," which forms the conceptual backbone of pattern theory.[2] This is a full program to be sure, for it seeks to integrate generalised explanations of criminal behaviour on each of the micro, meso and macro levels. This follows Giddens' comments from *The Constitution of Society*: "all human beings are knowledgeable agents. That is to say, all social actors know a great deal about the conditions and consequences of what they do in their day-to-day lives" (Giddens 1984: 281).

The Brantinghamian Position: Crime as Event

For the Brantinghams, crime is a function of the interaction of three core elements that, when considered together, result in what they term a "crime event" (Brantingham and Brantingham 1993). It is the process by which law, criminal motivation and opportunity conjoin that leads to crime. Without the prior existence of a law, or set of laws, no act can, in the strictest sense, be considered criminal. Also, the Brantinghamian perspective argues that there must also exist a person who is sufficiently motivated to commit an act defined by law as "illegal"—a position largely shared by Ronald V. Clark and others of the rational choice camp (Felson, Baccaglini et al. 1986; Hirschi 1986; Cornish and Clarke 1987; Felson and Clarke 1997). The third and final component requires that the criminally inclined individual have the opportunity to actualise, or make good, his or her illicit intentions. By establishing these three aspects of any given criminal event, one

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[2] The Brantinghams prefer the term "backcloth" rather than "context" for a number of reasons, but foremost of these it would seem is that it forcefully reminds the reader that the concept involves more than the immediate, physical environment--a particular problem, I should think, for the majority of their readership who are intimately connected to geography and human ecology. In this sense, the new term is reminiscent of the way in which context is employed in the disciplines of history or anthropology (and the more humanistic varieties of sociology). Equally important, though, is the term "backcloth" which allows for a more intuitively conceivable analogy, one that is also amenable to the notion of 'patterning'. On the

quickly realises that simple cause-effect explanatory models fail to capture any but the most simplistic explanations of criminal activity.

The language that the Brantinghams use is crucial. This process is seen not as an act but instead as an event. The implications of this distinction are as follows. First, unlike a specific *act*—consider the image of Hume striking a billiard ball with a cue—an *event* cannot be so readily reduced. This call for a more inclusive and systematic assessment of crime-events also suggests that there is more room for social forces in this dynamic than many critics—particularly those from the Left—might suggest. While pattern theory draws heavily upon neo-classical notions of liberalism, individual agency, and responsibility, there is, however, no suggestion in any of the Brantinghams' many writings on the subject that social (institutional) forces are not present in the crime-event coupling. This point is best illustrated in their acknowledgement of Anthony Bottoms' work on the economy and public housing (Bottoms 1994; Brantingham and Brantingham 1998). It is this connection between Bottoms and the Brantinghams that will be explored in more detail in the context of policy implications for pattern theory.

Ordering of Events: Patterns in Crime

The argument that crimes are not randomly distributed events throughout the urban landscape is a core theme throughout the Brantinghams' writings. While this may not seem an especially innovative stance, its simplicity is deceiving. Even the most cursory of discussions of the imbalance between either the perceived or officially recorded crime rates of one area in comparison with another will typically result in such statements as: "You don't need a map to tell me that more crime occurs in the Downtown Eastside than

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importance of literary style as an aspect of theoretical development (see Giddens, 1984: 285 and C. W.

in the rest of Vancouver." In one, limited sense, this is true; however, a systematic, geographic analysis of reported criminal activity quickly shows that not only are some areas more prone to crime problems (such as the Downtown), but also that certain types of criminal activity are often reported in identifiable patterns as well. It is in the identification of these non-random occurrences of crime that pattern theory holds its greatest promise.

Mills, 1959: 121-8).

Chapter III: Bars and Crime

It clear that both pattern theory and routine activities perspectives argue for a renewed interest in the way in which people interact with time-space. The present study will embrace this approach by focusing on a specific land use within Vancouver's downtown planning area. However, it is first necessary to visit the existing literature covering the role of bars and crimes known to police.

Frisbie's 1977 Minneapolis Study

One of the earliest studies that empirically explored the possible relationship between "crime and on sale establishments" bars and calls for police services is that of Frisbie (Frisbie, Fishbine et al. 1977; see chapter 13 in particular). Given the prevalence with which latter studies reference the Frisbie's piece, it will be considered here in some detail. The Frisbie study examines the possible explanations as to why licensed establishments may contribute to crime in Minneapolis, Minnesota. Although the study and the data contained therein are more than twenty years old (the study period was from July 1, 1974--June 30, 1975), and the main focus of the study centres upon criminal violence, Frisbie's analysis remains useful for this thesis. Firstly, Frisbie suggest that the attributes of the licensed premises environment itself contribute to the occurrence of criminal activity. Firstly, patrons typically carry cash and other valuables. Although this was decidedly the case twenty years ago, it would not seem unreasonable to assume that this is still the case, despite the increasing popularity of bank debit (or Interact) cards, and increased credit card security could help make bar patrons less suitable targets for the criminally inclined. Secondly, the aspect of social inhibition is suggestive. In the context

of alcohol consumption and various levels of inibriation), both potential victims and offenders may become involved in activities or situations that they would not consider doing. Finally, Frisbie argues that, in the main, inibriates' offenses typically take place close to the establishment in question (223-4).

In order to begin to determine if "on sale establishments" contribute to the clustering of crimes across urban space, Frisbie used each licensed premises as a central, or nodal point, and measured concentric 0.1-mile rings outward up to 0.5 of a mile. Crimes known to the police were then plotted, and the frequencies for each ring tallied. Frisbie expected, and found, that "for both assaults and other crimes" an "unmistakable clustering of crimes around these facilities" (226). Frisbie compared the expected proportion of crimes per 0.1-mile ring (generated by dividing the percent of total possible crimes by the percentage of area covered by that same 0.1-mile ring). Using this method, Frisbie determined that the first 0.1-mile ring experienced over ten times as many calls than was expected. Further, he found that the next outward ring contained fewer crimes of interest and than expected, with the remaining three rings (out to a maximum of 0.5 miles from an on-sale establishment) showing a similar trend. Such findings do support Frisbie's contention that bars, or "on-sale" establishments appear to be a focal point for criminal activity.

Linkages: Bars and Crime in the Literature

The earliest and most influential of the micro studies on the possible linkages between bars and violence is that of (Graham, Rocque et al. 1980). In a remarkably detailed observational study of barroom behaviour in Vancouver, Graham and her

colleagues at Simon Fraser University took stock of a range of situational variables, including the prevalence of visibly intoxicated patrons, whether or not food was available, the actions of bar staff, the degree of crowding, lighting, range of entertainment offered. Graham found, like Frisbie (1977), that not all bars are were problematic: indeed, according to Graham, some licensed premises did not contain any violence during the observation period. Those that did, 29 out of the 185 establishments visited, tend to be what Graham refers to as "skid row" bars (289). These problem premises tend to show similarities in terms of bar atmosphere, or setting, and appeared to attract—almost exclusively—patrons of minimal economic means. Furthermore, these premises tended be, not surprisingly, located in the most economically and socially depressed area of Vancouver, the Downtown and the Downtown Eastside (the latter has been since renamed and redistricted, and is currently known as "Strathcona") Planning Areas (See Figure 3). Tomsen provides a more recent study along similar lines to that of Graham, looking at situational variables for licensed premises in Australia (Tomsen, Homel et al. 1991).

In the two decades since Frisbie's Minneapolis study, many researchers have continued to explore the bar-crime nexus. Some focus on the physiological affects of alcohol consumption itself (Pernanen 1981; Roman 1981); the criminality of bars as "place" (Felson, Baccaglini et al. 1986; Sherman, Gartin et al. 1989; Sherman 1995); risky lifestyles of bar patrons (Kennedy and Forde 1990); or on the role of government in the policing licensed establishments (Homel and Tomsen 1991; Homel, Tomsen et al. 1992; Stockwell, Somerford et al. 1992; Stockwell 1993; Stockwell 1993; Homel and Clark 1994). While each of the studies mentioned above represent valuable contributions

to the field, the following three studies are particularly instructive. The first two, led by Dennis Roncek (Roncek and Pravatnier 1989; Roncek and Maier 1991), attempt to demonstrate an empirical link between bars and crime. It has long been theorised, recalls Roncek, but never empirically established, that bars contributed to criminal activity in the immediate surrounds. This is what he and co-author Mitchell Pravatiner set out to answer in their 1989 article based on nineteen-year-old police data for Cleveland. This study is especially noteworthy, in that this study clearly demonstrates the value of data archiving. The authors use census block level analysis to determine if blocks with higher concentrations of bars (more bars per block) also contain more crimes known to police, a technique which Roncek initially applied in 1981 with Bell, and again with Maier in 1991. Roncek and Pravatiner share the basic observation of the Frisbie study, that bars tend to simultaneously attract persons (potential targets and offenders) and help to provide circumstances (alcohol consumption) that are conducive to violence, crimes against persons and property (Roncek and Pravatnier 1989). Furthermore, the Roncek and Pravatiner piece represents yet another voice suggesting that despite such generalisations, not all bars are criminogenic. This trend is also supported in Roncek's (with Maier) 1991 study. The third and final study reviewed here is that of Richard and Carolyn Block (1995), which takes a macro approach to the formation of "hot spot areas" and "hot places" surrounding licensed premises in Chicago. Similar to the works of the Brantinghams (Brantingham and Brantingham 1984; Brantingham and Brantingham 1993; Brantingham and Brantingham 1993; Brantingham and Brantingham 1995) the Blocks find that not all bars share similar generator or attractor effects (147; 158). The Blocks find that bars tend to contribute, in an overall sense, to violence, property and

drug-related offences. As with the Brantinghams, the Blocks concentrate on street address level data, and use GIS (Geographic Information Systems) software to conduct their analysis.[3]

[3] While the Blocks use STAC (Spatial and Temporal Analysis of Crime) for their 1995 study, the Brantinghams, and this author use MapInfo. Both GIS computer mapping software packages, though, share similar challenges in terms of address/coordinate matching.

Chapter IV: Licensed Premises in Vancouver

It is necessary, at this point, to outline the methodology behind the present thesis, and set out the analytical strategy employed therein. There are three main elements that need to be developed in this spirit. Firstly, the nature of calls for police service as a data source requires further elaboration. Secondly, in order to establish the context in which bars are situated, it is instructive to briefly consider the mission and practices of liquor licensing policy for Vancouver; and finally, a short commentary on the role of geographic information systems (GIS) analysis in the study of crime.

Calls for Police Service

A discussion of official police records

At its basic level, computer aided dispatch (CAD) records are simply a log of incidents that require police attentions. CAD data are generated several ways. In Vancouver, like most North American cities, the first and most frequent source of CAD records occurs when the police dispatch office receives a telephone call requesting the police action from the emergency (911) telephone service. When a 911 call (or any other communication) becomes known to the dispatch office, the call is entered into a computer database using a standard, fixed set of data entry fields, most of which are filled out at the time of the call. In this process, once the pertinent information is obtained, the appropriate police units are sent, or dispatched, to the location in question. It is during this recording process, that the dispatcher assigns each call a code and a priority for police response. The second way in which the CAD database is updated occurs when the police themselves alert the dispatch office. In all cases, each incident is entered into the CAD file as a separate entry. Paul

and Patricia Brantingham, co-directors of the Crime Prevention and Analysis Laboratory (CPAL), receive these records—with some deletions to protect privacy of individuals involved—from the Vancouver Police Department,. Their version of the VPD CAD file contains over seventy separate fields, including such information as the time, description and priority of the incoming call, when the police were dispatched, the location of the incident in question, and various other administrative particulars. Table 1, below, illustrates some of the variety of information that is captured in the CAD data.

Table 1 – Vancouver Police Department CAD Data

Temporal Information	**Location**	**Incident Description**	**Administration**
call date and time (hrs, min, seconds)	Street name, street number	initial complaint code	priority of call
dispatch time (time of, total time spent on scene, etc.)	**House / unit number**	**final complaint code (confirmed by attending officer)**	**Complaint number**
actual time of incident	Cross street	description of incident	disposition of incident

This thesis used the Brantingham data, which is archived in the Crime Prevention and Analysis Laboratory, at Simon Fraser University, located in Burnaby, British Columbia. Given the sensitivity of the information contained in the CAD data, this author first sought and obtained clearance from the Chief Constable of the Vancouver Police Department before beginning this research.

Caveats for CAD Based Research

The literature is replete with warnings against the uncritical use of official sources of data (see especially (Sherman, Gartin et al. 1989; Evans 1992)). At a general level, police- (and other "official" or government-) generated statistics are considered by many

researchers to be problematic. The range and severity of the critique varies widely depending on one's epistemological and ideological preferences, but any position will contain the following elements. The first criticism stems from a basic social control perspective which suggests that, like other state controlled institutions or organisations, the police operate with certain inherent biases that effectively result in unequal surveillance and, therefore, control, of certain (usually non-normative) citizen groups. In terms of official police records, what one would find then is not a "true" depiction of criminal behaviour but instead, a non-representative catalogue of crimes or near crimes of marginalised populations (Kinney 1999).

One must acknowledge that politico-governmental directives will affect policing practices in varying degrees and in varied circumstances. Nevertheless, it is the position of this author that for the large majority of police activities, and the records generated therefrom, that the official records represent the best information available to crime analysts (see also Sherman, Gartin et al. 1989). Further, to discard official data as simply a record of police behaviour, and to dismiss its value to the study of crime, is to ignore an entire realm of criminological inquiry. When used with caution and at least some sense of its possible biases, police data can provide a rich source of information. Pattern theory is particularly well placed in this regard, given its facility in focusing on multiple cones of resolution and to identify what it is that the police "do" and where, with a surprising level of accuracy, "where" they do it.

A second concern with official statistics as a data source concerns the ability of any reporting or detecting strategy, regardless of its socio-political affinities, to capture the "true" picture of crime. This problem, that of our collective inability to capture the

"dark figure" of crime, has become so popularised as to have almost taken on a life of its own. Similarly to the social control objections to the use of official data sources, it would appear, in this author's opinion, that something of a middle ground is appropriate. One way to explore the possibility of the dark figure being present but not necessarily distorting in its effect, would be to examine reported crimes (or crimes known to the police) over time. It is clear that there are deficiencies in CAD data, but the consistency of reporting levels for various crimes (Brantingham and Brantingham 1984) suggest that police generated data, such as CAD records, can still provide researchers with a reliable depiction of the distribution of crime occurrences. Stated in another way, if one were to graph the true distribution of crimes against a line representing known crimes, the two lines would correlate highly, even if the total (absolute) counts differed.

The very nature of a data collection methodology that relies, in the main, upon citizens reporting incidents via telephone has several obvious limitations. Primary among these is that people with ready access to a telephone will be more likely to report incidents to the police than someone without (Sherman, Gartin et al. 1989). Similarly, those persons with telephone access, and for the purposes of this thesis, those addresses that are fitted with active telephone services, will tend to be over represented in computer-aided dispatch (CAD) data. This error will be embellished further still, as, not surprisingly, those persons with restricted telephone access will under report incidents to the police. This problem must constantly be kept in mind when assessing the distribution of calls for Vancouver's Downtown district, as, and this is especially true of the Downtown-East, this area contains some of the most impoverished area residents for all of Vancouver (Bryce 1999; City of Vancouver 1999). The amount of under reporting for

the Downtown would be counter-balanced by policing strategies that tend, informally at least, to focus more often and with more vigour than other areas of both the city at large, and the district in particular.

The accuracy of reporting levels is also subject to the limits of the CAD architecture itself. As mentioned previously, the VPD dispatch records are extensive, allowing for a wide range of information to be captured. Nevertheless, no collection of fields is perfectly suited for information capture. The problem for criminal justice researchers, stems from the simple fact that the CAD files were tested and created to suit a particular need: the timely and orderly dispatch of police resources to specific locations. The structure of the CAD database was not created with the criminologist in mind. It was instructive for this researcher to notice that the priority level associated with a particular incident did not equate into an evaluation of the seriousness of the call in most cases, but rather, it turned out to be a priority of how soon the police needed to respond. Serious incidents may be scored low on priority if, for instance, enough time had already passed such that immediate police response was not required. For instance, an assault with a weapon reported several hours after it occurred might not result in a high priority being assigned to the incident, whereas an assault without a weapon, but *in progress* may.

A further challenge for those who would use CAD data involves the decisions made by both dispatcher and the officers on scene. Coding choices, while standardised for both types of personnel, are subject to a certain amount of discretion. This is particularly true of the officer or officers on the scene. For each incident, the officer on record has to confirm the initial incident code (established by the dispatch office), or alter it if needed to more accurately reflect the incident. An example of this might be an initial

call comes across the radio requiring that officers attend an attempted auto theft in progress, while, after attending the scene, the officer of record decides that the incident was more accurately classified as a theft from auto. Although no attempt was made to make any systematic study of such irregularities, a cursory examination of several months of data suggest that, in most cases, such a discrepancy can be attributed to errors in reporting from the general public, who may be unable to distinguish between certain types of incidents.

CAD data can also be distorted, either unintentionally or purposively, in a temporal and spatial manner as well. Time differences may be manifest in the reporting of certain types of calls. Theft from auto, for instance, is most often reported when it is first noticed, or shortly thereafter. Fortunately, the VPD CAD architecture is able to handle multiple time descriptions, including the time of the call itself, the time of the incident and the time officers arrive on the scene. It is important to recognise that such deviations from the true time are not systematic or predictable. Care must be taken when using the reported time as a variable in any study. As a part of the analysis in the present thesis is time specific, this point will be explored more fully in the next section. Spatial errors take a form similar to those of time. Just as reported time may be vague, so may the reported address. When perusing the data, one quickly notices what appears to be a convention of recording general addresses by reporting the street name and a hundred-block street number, such as 100 East Hastings Street. Such an address can be taken two ways: firstly, it can be used in accordance with its literal meaning: 100 East Hastings Street. Secondly, and this would appear to be the most prevalent usage in the VPD data, is that hundred-block addresses are best thought of as vicinity locations, rather than a

specific address. Fortunately, this data set often contains further clues as to the specificity of the address, such as the inclusion of cross-streets and descriptive text entries indicating "x00 block". A further indication of address accuracy can be found in the corresponding call description, with certain orders of calls being intrinsically more space specific than others. A break and enter of a home is decidedly accurate to the street address level, while a reported disturbance caused by a public gathering of tavern patrons at closing time may be more usefully considered an areal incident. Again, care must be taken to avoid attributing a false sense of accuracy to CAD data, despite the fact that almost any given record contains a street address. This point is taken up in more detail in the methodology section (see below).

One final consideration of the limits of CAD data involves the intentional obscuring of either the time or place of the reported incident. This issue is especially pertinent to this thesis, for licensed premises managers (and or owners) have a vested interest in avoiding repeated visitations from the local police department. Tavern or night-club staff may be reluctant to link their establishment to behaviour that requires police intervention, and rather than not calling the police at all, it is possible that the police are told to attend an incident that is in the area, but not in the premises itself. In a separate examination of liquor licensing for the City of Vancouver, this author found that consistent citations of disorderly conduct could lead to fines and even temporary or permanent suspensions of the establishment's liquor license (Kinney 1999).

Obviously, correcting such distortions is not possible without considerable effort and a triangulation of data collection strategies. For the purposes of this thesis, it is sufficient to recognise that there is, in all likelihood, an under reporting of calls for police

service that would otherwise indicate an on-premises incident. In an attempt to capture incidents of this sort, and to explore the possibilities of "crime generator" or "crime attractor" arguments (e.g. Brantingham and Brantingham, 1998) this thesis uses circular buffers of 0.1-mile (or approximately 160m), 50m, and 100m respectively to capture incidents that are more likely to be related to the bar or tavern than those occurring beyond these encatchment areas.

Strengths of CAD Data

Although much of the following is visited in the form of rejoinders to the challenges raised above, a brief summary of the strengths of CAD records is instructive. Perhaps the most important benefit is that of consistency. With the automation afforded by CAD, such databases represent perhaps the largest unfiltered data set available (Sherman, Gartin et al. 1989: see especially pp. 35-36). Through the use of data triangulation techniques (the employment of more than one source of data to explore a phenomenon of interest) CAD records can provide a baseline measure of incidents known to police over extended periods of time. Other forms of crime data capture, such as Uniform Crime Reports, rely heavily on the criminal justice administrative process. Police files may be incomplete and, thus rendered inactive, by the lack of a complainant, witnesses or some other required element which would result in the entire file being excluded from monthly reports or the like.

Liquor Licensing Policy in Vancouver, British Columbia

The following section examines aspects of the British Columbia Liquor Control and Licensing Branch (BCLCLB)[4] policy and its activities as a supplemental data source for studying the potential role of bars, pubs and taverns in the distribution of crime in the urban landscape. Police calls for service, when directed to a bar location directly, reveal only the most serious of incidents. Naturally, not all problems that originate or take place within the licensed premises make it to the attention of the police; in fact, it would seem reasonable to assume that most incidents do not get reported to the police department, and therefore, for a more detailed understanding of how bar related incidents do or do not make it into police dispatch records is of some consequence. The social dynamic that underlies this process is complex and requires a short discussion at this time. It has been suggested (Tomsen, Homel et al. 1991; Homel and Clark 1994; Morris 1998) that bar staff, particularly doormen or "bouncers", may actually escalate or even initiate incidents that could lead to police intervention. Often problems that begin in the bar or tavern spill out into the nearby neighbourhood, and thus, introduce an ecological aspect to the bar-crime dynamic. Areas have their own situational complexities—economic, health, social and criminal—and as such, not all incidents that are within close proximity to a licensed premises can (or even should) be considered bar related.

Unfortunately, consistent and study period specific data were not available for all specific premises, and therefore, our present discussion of the role of the Liquor Licensing Branch must remain preliminary. Nevertheless, such licensing and

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[4] This section is incorporated from part of an unpublished essay; see Kinney (1999) in the References section, below.

enforcement records would be invaluable aid to any attempt at extending the present thesis.

The British Columbia Liquor Control and Licensing Branch (BCLCLB) of the Ministry of the Attorney General is typical of governmental agencies, in that its authority stems from the law. Although not a study in the legislation behind the LCLB, the present section examines the main elements of the Liquor Control and Licensing Act, especially sections such as s.20(1) pertaining to the enforcement/punitive powers of the body.

Liquor Control and Licensing Act

Section 20 (1) of the Liquor Control and Licensing Act outlines the powers of the General Manager of the LCLB. The S.1 and pertinent subsections (a) through (c) reads as follows:

> (s. 20.1) Notwithstanding this Act, the general manager may, with or without a hearing, cancel or suspend a license for
>
> (a) the licensee's failure to comply with the requirements of this Act or regulations;
> (b) conviction of the licensee of an offense under the laws of Canada or the Province or the by-laws of a municipality or regional district, where the offense relates to the establishment or the conduct of it;
> (c) persistent failure to keep the licensed establishment in a clean and orderly fashion (cited in *Liquor Control and Licensing Enforcement Policy*, 1982: 1; hereafter cited as *Enforcement Policy*).[5]

Sections 20.1 (a) and (b) establish foundational powers of the General Manager. For the purposes of this discussion at hand, however, the most interesting Section is (c), which provides the LCLB with a wide range of discretionary powers, which are replete with opportunities for selective enforcement of non-conforming establishments. A further

[5] To the author's knowledge, this Act has not since been amended.

example of how the control of unsanctioned users of the urban landscape can be seen in Section 46.1 (b), which provides the following directive to licensees to

> forbid a person to enter [the] licensed establishment if for any reason he [sic] believes the presence of that person in the licensed establishment to be *undesirable* or that the person is intoxicated; but in reaching that opinion, he [sic] shall not contravene the *Human Rights Code*." (Quoted in *Enforcement Policy*, 1982: 13; emphasis added.)

Finally, disorderly conduct is also mentioned in other sections of the Act. Sections 24.1 and 24.2 allow for an immediate suspension of a license for permitting of behaviours thought to be "riotous, boisterous, drunken, or disorderly in nature" (quoted in *Enforcement Policy*, 1982: 11). S.45 identifies sale of alcohol not only to obviously drunken patrons, but even those "apparently under the influence of liquor" (quoted in *Enforcement Policy*, 1982: 11). From an urban planning and law enforcement perspective, the advantages of maintaining "orderly" establishments is obvious. Unfortunately, the mobilization of images of social hygiene is equally apparent. The sociological implications of this theme will be taken up again later in this paper.

Purpose of liquor licensing governance: Vancouver, BC

A more recent statement regarding liquor licensing takes the form of a Policy Report on "Urban Structure and Licensing" (11 Jul 96). This report is a useful document to explore at some length, for it establishes a series of social concerns that pertain to enforcement practices within a context of diverse users of urban space. Consider the following statement of Council policy:

> The Central Area Plan adopted by Council in December 1991, calls for the creation of a central area that has a mix of activities with quieter neighbourhoods where people live close to more active areas where people shop and play as well as work; and where the public streets are the primary scene of public life. (Urban Structure and Licensing Report, 11 Jul 96.)

The concern at this point is to provide a safe, aesthetically pleasing neighbourhood that lends itself to economic stability.

Aside from the "Annual Enforcement Reports" published by the Province, the LCLB publishes literature relating to programs and policies that are designed to assist with the provision of "an orderly, problem free, and economically viable environment in licensed establishments in order to protect the public interest" (Annual Enforcement Report, 1990/91: 1). Such initiatives will be outlined in brief below, and then explored more critically in the later sections of this paper.

LCLB Programs

The final aspect of the LCLB policy to be examined is its manifestations in the form of various programs. The impact of licensing policy on the hospitality industry can be seen in the mandatory Responsible Beverage Service Program, with its familiar slogan "serving it right" (Annual Enforcement Report, 1990/91). Brought about by liquor industry personnel, police and planning officials, this program represents the standard form of policing licensed drinking establishments. The Police Walk-through Program is another area to be examined. Unscheduled premises checks by police, or by LCLB inspectors, could result in punitive action being taken against the licensee. As will be seen, this standard may be altered by the addition of Closed Circuit Television (CCTV) cameras. Although hailed as something of a "silver bullet" (Bannister et al., 1998: 22) in the arsenal of crime control, there remain, not surprisingly, several less than happy implications for such a plan (Graham, 1998: 89).

Actions taken by the LCLB, or its representatives need not be overtly punitive. Consider, for example, the ability of LCLB inspectors to decide if an establishment would "benefit from a referral to a Local Hospitality Industry Liquor Licensing Advisory Committee (HILLAC)" (Annual Enforcement Report, 1990/91). Obviously, it would be valuable to ascertain whether or not this form of control is applied evenly, across all licensed premises. Unfortunately, this moves beyond the analytical focus of this thesis, and must remain a question to be addressed in a future study.

Enforcement and Control Options

LCLCB in action: a review of actions taken against licensees

This section will critically examine the various options available to the provincial LCLB in general, and the Vancouver Liquor Licensing Branch in particular. Typical violations that would expose licensees to sanction include but are not limited to failure to comply with the provisions of the Liquor Control and Licensing Act, or "persistent failure" to operate a premises in a "clean and orderly fashion" (see S. 20.1 (c), cited in *Enforcement Policy*, 1982: 1). Such controlling strategies offer significant room for selective enforcement by both police officers and LCLB inspectors.

Given the range of punishments available, what is the general character of the actions taken by enforcement officials (including agents acting for or on the behalf of the police, municipality and the LCLB)? The following section examines a selection of such activities for 1990-1991. These examples are not intended as a representative sample of enforcement activities, but are, instead offered as specific instances of how selective enforcement could be operative.

A typical course of action taken against public drinking establishments involves citations for overcrowding, the presence of underage patrons, and "over service" (Annual Enforcement Report, 1990/91). For the Downtown and Eastside districts, however, the situations that initiate LCLB and or police attention manifest a different focus. In fact, the degree of concern apparently was sufficient to warrant an "Update on Licensed Premises within the Downtown Eastside to July 31, 1995" (Chief Constable, Administrative Report, 30 Aug 95: hereafter cited as "Chief Constable, 1995"). A search of the LCLB archive reveals that no such document exists for premises outside of the Downtown Eastside. In total, 12 establishments were suspended between January 1994 and July 1995 for at least one business day, although few were forced to close for longer than five business days. In order to be included in the Chief Constable's report, the licensed premises had to have been identified as having either of the two following conditions:

(a) a "significant number of police calls or incidents, other than of a routine or positive nature"; or
(b) a "significant incident occur in, or in relation to the operation of, the premises; or being the subject of complaints from the public to the police regarding the operation of the premises" (Chief Constable, 1995).

One must await subsequent empirical study of calls for police service by specific business license before it will be possible ascertain whether certain locations receive a disproportionate amount of police attentions. Nevertheless, given the councils repeated expressions of concern for the sustainability of new businesses and liveable neighbourhoods (Vancouver Liquor Licensing Commission, 14 Sep 95; Vancouver Liquor Licensing Commission, 7 Jun 95; Policy Report, 1996;) the following enforcement records are illustrative.

The Balmoral Hotel, which is located in the centre of the "skid row" district (159 East Hastings Street) is on record for a number of almost monthly citations. The Chief Constable's (1995) report lists the following incidents, culminating in a two-month suspension:

Table 2: Balmoral Hotel Incident Summary

(a)	Jan 94:	under age patron drinking in the bar
(b)	Feb 94:	several drunk patrons
(c)	Mar 94:	minor in premises, over-service
(d)	Jul 94:	no rear door control
(e)	Aug 94:	suspension by City Council, two months, over-service, lack of control
(f)	May 95:	liquor seized for analysis
(g)	Jul 95:	Show Cause Hearing regarding business license

Source: Chief Constable, 1995; exact wording used)

A similar "problem" premises, the Ivanhoe Hotel, located at 1038 Main Street (a similar socio-economic area) shows a similar pattern, both in routine and character of detected incivilities.

Table 3 - Ivanhoe Hotel Incident Summary

(a)	Jan 94:	5 under-age patrons
(b)	Feb 94:	off-duty doorman drunk and involved in fight, several drunks ejected
(c)	Mar 94:	disturbance and over-service
(d)	Jun 94:	two drunks, over-service
(e)	Nov 94:	minors and drunks in premises

Source: Chief Constable, 1995; exact wording used)

Obviously one must be cautious when examining only two cases. However, the remaining 10 businesses are similar in both number and seriousness of reported/enumerated infractions (Chief Constable, 1995).

Classifications of Licensed Premises

Both the Balmoral and the Ivanhoe share a similar liquor license classification. As Class A licence holders, these establishments are usefully considered a licensed hotel, lobby, or lounge with earlier opening and closing hours, and a variety of live entertainments—such as exotic and or nude dancers. Although there are additional classifications, the other license class considered in this thesis is that of nightclubs, bars, cabarets, which hold a Class C license. This category of liquor license allows later closing periods, where Class C licenses can close at 02:00hrs, rather than at midnight (00:00hrs), as is the case with Class A licenses, but must observe a later opening time, usually 21:00hrs, or 9pm. See below, Tables 4 and 5 for the list of premises by address and license classification, and Figure 1 for the spatial distribution of these same premises against the street network for the Downtown District.

Table 4 - List of Class A Liquor Licenses for Downtown (Study) Area (n=34)

Address	Premises Name	License Cat
101 E Hastings St	Sunrise	A
1038 Main St	Ivanhoe	A
122 E Hastings St	Ciros Pub	A
122 E Hastings St	Brandiz	A
159 E Hastings St	Balmoral	A
160 E Hastings St	Regent Hotel	A
180 W Georgia St	Sandman Inn	A
203 Main St	No 5 Orange	A
210 Abbott St	Dominion Hotel	A
235 E Hastings St	Empress	A
25 E Hastings St	New Dodson	A
300 Cambie St	Cambie Hotel	A
315 Carrall St	Ranier Hotel	A
320 Abbott St	Metropole Hotel	A
340 Cambie St	Stadium Inn	A
35 W Hastings ST	Funky Winkerbeans	A
412 Carrall St	Pennsylvania Hotel	A
435 W Pender St	Niagra Hotel	A
455 Abbott St	Heritage House	A
488 Carrall St	West Hotel	A
50 W Cordova St	Hildon	A
515 Seymour St	Clarence Hotel	A
518 Richards St	Marble Arch	A
620 W Pender St	Piccadilly	A
700 Main St	Pacific Hotel	A
74 E Hastings St	Grand Union	A
755 Beatty St	Georgian Court Hotel	A
755 Richards St	Rose & Thorn	A
755 Richards St	Kingston Hotel	A
900 Seymour St	Dufferin Hotel	A
917 Main St	Cobalt	A
928 Main St	Old American Hotel	A
BC Complex	MV Boontown	A
E Hastings St&&Columbia St	New Columbia	A

Table 5 - List of Class C Liquor Licenses for Downtown (Study) Area (n=32)

Address	Premises Name	License Cat
1019 Seymour St	Penthouse	C
1036 Richards St	Richards on Richards	C
1055 Homer St	Star Fish	C
1250 Richards St	Graceland	C
1275 Seymour St	Luv-A-Fair	C
1320 Richards St	Mars Club	C
147 E Pender St	Good Luck	C
15 Water St	Purple Onion	C
157 Alexander St	Archimedes Club	C
212 Carrall St	Spinning Wheel	C
216 Carrall St	Blarney Stone	C
23 W Cordova St	Talk of the Town	C
313 Carrall St	Ponys	C
339 W Pender St	Mrs T's	C
346 Water St	Aztech	C
398 Richards St	Madisons	C
400 W Hastings St	Georgian Club	C
455 Abbott St	The Lotus Club	C
573 Homer St	BC Marine Assoc	C
579 Dunsmuir St	Railway Men's Club	C
6 Powell St	Gas Town Music Hall	C
6 Powell St	Club Mora	C
66 Water St	Town Pump	C
695 Cambie St	Greater Vancouver Media	C
7 Alexander St	Twilight Zone	C
730 Main St	Brickhouse	C
818 Richards St	Reds	C
856 Seymour St	Hollywood North	C
871 Beatty St	Johnny Loves	C
99 Powell St	Club NRG	C
BC Complex	Rage (750 Pacific Blvd)	C
BC Complex	Yuk Yuks (750 Pacific Blv	C

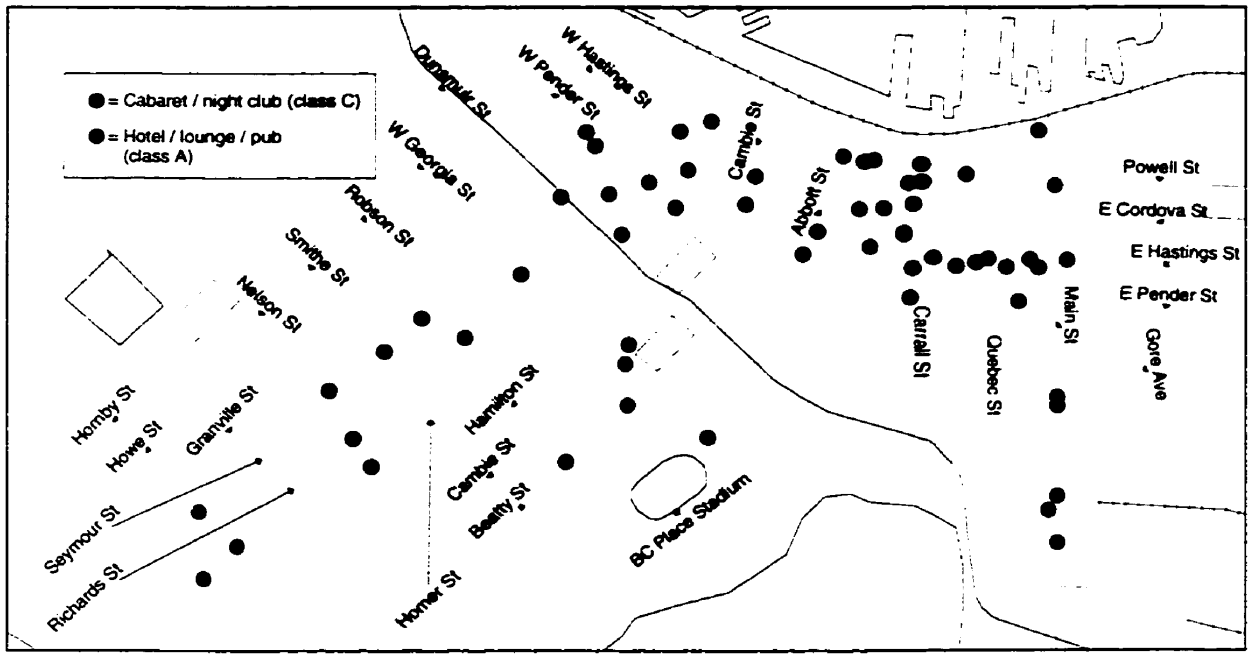

Figure 1 - Location of Class A and C Licensed Premises

Geographic Information Systems (GIS) Analysis

Description of GIS methodology

This thesis proceeds with point pattern analyses derived from visual interpretation of how the underlying data fit with pattern and routine activities theory. According to these perspectives, it is expected that the nature of the built environment will impact upon how users—visitors and residents alike—move about and otherwise make use of the Downtown Area. In order to capture this sense of the built environment, we turn to a genre of computerised mapping software known as Geographic Information Systems, or "GIS". Such applications allow technicians to generate digital maps of a wide variety of phenomena, ranging for example, from various classifications and densities of trees in a particular area that is to be reforested, to the density of gasoline service stations in an

urban centre. For our present purposes, of course, we are interested in capturing the locations of specific calls for police service for Vancouver's Downtown district.

Using the Vancouver Police Department CAD data, the author and fellow researcher at the Crime Prevention and Analysis Lab, Peter Bryce, were able to plot over 97% of all calls for police service for the three-month study period.[6] Briefly, the process (known as "geocoding") consists of linking street address level information contained in the original CAD file, and converting it into a format acceptable to the GIS software. Idiosyncrasies in naming or numbering of the streets generally results in the GIS software's rejecting the entire address, and moving it into a "missing" case category. The GIS program used in this thesis, MapInfo Professional (v. 5.0), requires further that addresses be reported in variables with restricted formatting options.[7] Unfortunately, the format of the CAD data that was available to the researcher did not correspond to the format "expected" by MapInfo. Unadjusted, each month of VPD dispatch records geocodes successfully at approximately 50%; to improve on this address matching ratio, it was necessary to alter the original data set via two additional software programs, Microsoft Excel and the Statistical Program for the Social Sciences (or "SPSS"). Simple data cleaning required alterations to the CAD data. For instance, addresses such as "100 Main" needed to be altered to reflect its status as either a road, street, boulevard, or drive; and thus, "100 Main" was recoded into a new variable with the cleaned street name and street number: "100 Main St". Spelling errors, such as "E Hatings" street instead of what

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[6] The author would like, at this point, to thank Professors Patricia and Paul Brantingham (co-Directors of the Crime Prevention and Analysis Laboratory at Simon Fraser University) for their extensive and repeated efforts in this matter. Without their kindly attentions, such a lofty geocoding success rate would not have been possible.

[7] All analysis for this thesis was conducted on Windows 95 workstations connected to the CPAL network server, which runs Windows NT 4.0. SPSS version 8.0 was used to generate all frequencies and descriptive statistics.

would be the proper entry, "E Hastings St", were easily corrected in either Excel Macro or SPSS syntax editors. By using small script files in this way, one is able to ensure that precisely the same alterations occur for each CAD file. The following is a sample of two elements from the data-cleaning program (in SPSS syntax file format). Both of these files remove cases from the analysis for which there is either no address to geocode or the nature of the call does not involve a police incident.

Table 6 - Syntax File, The Removal of Un-geocodeable Addresses

```
FILTER OFF.
USE ALL.
*deletes all cases where location not known.
SELECT IF(stname ~= "NK LOC").
SELECT IF(compcode ~= "SRV").
SELECT IF(stname ~= "CITY OF VANCOUVER").
SELECT IF(stname ~= "COV").
SELECT IF(stname ~= "LOUGHEED HY").
SELECT IF(stname ~= "ANNEX").
SELECT IF(crossx ~= "PCCD").
SELECT IF(crossx ~= "PD1D").
SELECT IF(crossx ~= "PD2D").
SELECT IF(crossx ~= "PD3D").
SELECT IF(stname ~= "CAMBIE YARDS").
SELECT IF(stname ~= "POLICE GARAGE").
SELECT IF(stname ~= "HQ").
SELECT IF(stname ~= "JAIL").
```

Part one removes all cases from the CAD file that have either no known location, such as "NK LOC", or one that is so general as to not be useful to plot ("CITY OF VANCOUVER"). In addition, we remove all calls that have specific addresses, such as the police headquarters ("HQ") or the "JAIL", but would, if plotted, provide misleading point accumulations. For example, it would confuse analysis of Main Street if the VPD building were included every time it was referred to in the dispatch record. Similarly, advice to the dispatcher or communications that are administrative in nature are also

filtered out of the mapped data. Examples of such exclusions can be seen in Table 7, the second component of the SPSS syntax file.

Table 7 -Syntax File, the Removal of Administration Calls

```
*deletes all code 6 calls (administrative, dispatcher advice only).
SELECT IF(compcode ~= "06").
SELECT IF(compcode ~= "61").
SELECT IF(compcode ~= "62").
SELECT IF(compcode ~= "MVAPOL").
SELECT IF(compcode ~= "INCPH").
SELECT IF(compcode ~= "FLWUP").
SELECT IF(compcode ~= "FU").
SELECT IF(compcode ~= "GENGB").
SELECT IF(compcode ~= "HQ").
SELECT IF(compcode ~= "ASSREQ").
SELECT IF(compcode ~= "AFIRE").
SELECT IF(compcode ~= "MISCTR").
SELECT IF(compcode ~= "MISCQC").
SELECT IF(compcode ~= "HAZARD").
SELECT IF(compcode ~= "COVER").
SELECT IF(compcode ~= "AEHS").
SELECT IF(compcode ~= "SPATT").
SELECT IF(compcode ~= "FOOT").
SELECT IF(compcode ~= "DTL").
EXECUTE.
```

Hastings Street, a central pathway for the Downtown area (see Figure 2), is often abbreviated when entered by dispatch personnel. Common data entry shifts like "E Hastings" or "E Hast" can safely be converted to the MapInfo readable form "E Hastings St". One must be especially careful when conducting such alterations, for any errors in "scrubbing" (or cleaning) the data will be replicated.

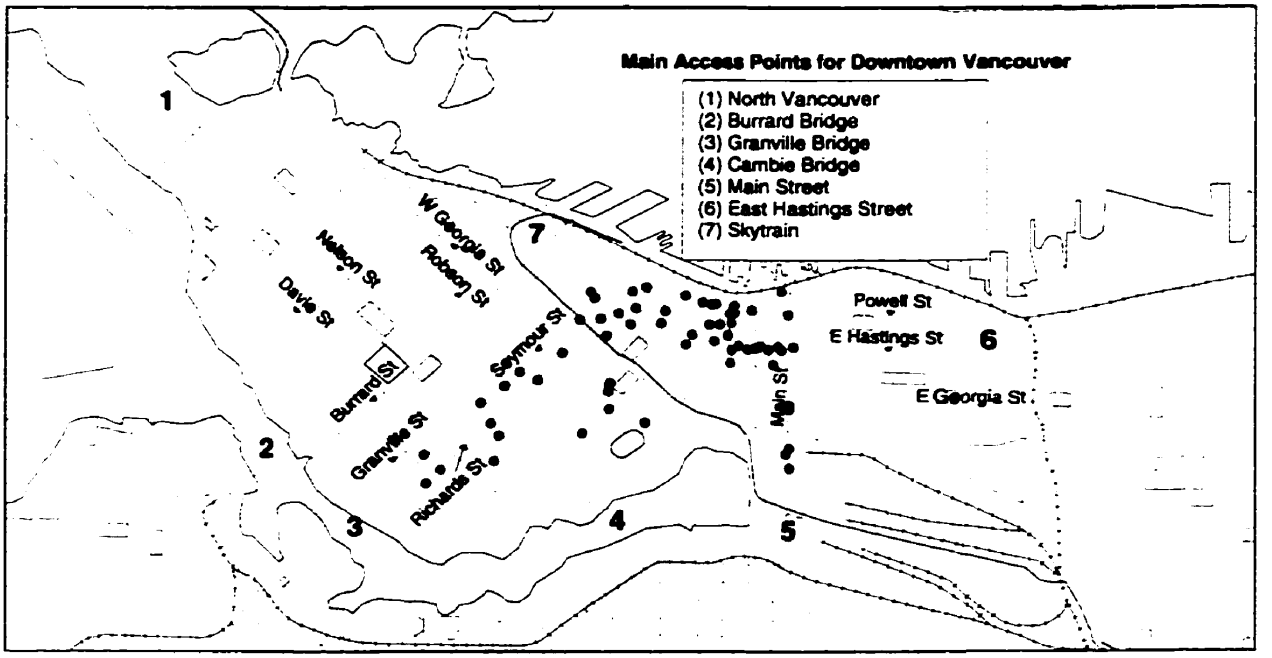


Figure 2 - Main Access Points for Downtown Vancouver

Just as East Hastings Street is well known, and easily recognised by those officers who work in the Downtown area, so too are "special" addresses. Special addresses are locations that are identified not by street name and street number, but by popular or business names. If sufficiently well known, landmarks (bridges, parks, and the like) or places of business (hotels, bars, sports complexes, etc.) commonly will not contain full street name or number information when entered into the CAD data. "Columbia Hotel", while without ambiguity for either dispatch or police personnel, is unrecognisable by the GIS software. Either one has to "train" the GIS program to recognise that "Columbia Hotel" is actually "303 Columbia St", or alter the record itself by replacing any address field that contains the offending special name and replace it with a strict rendering of full street address information before the GIS software attempts geocoding. This "scrubbing" process is extremely time intensive, given the number of possible combinations of street

name abbreviations, derivations and special addresses, coupled with nearly 30,000 records for each month of CAD data.

Once the GIS software is able to recognise address information, it is able to assign spatial co-ordinates to each record. All of the fields that pertain to any one record are linked to the object plotted on the computer map. This makes identification of points or clusters of points relatively simple. For instance, it is possible to define certain boundaries around map objects of interest, and tabulate the total number of other objects "occurring" within the identified boundary. For this thesis, we generate first a street network map of the study area and the licensed premises contained therein, and then plot all the addresses for each call for police service onto the same map. It is then possible to tabulate all of the calls that were located within predefined distances from each bar location. Frequency distributions, generated through SPSS, allow for identification of the different categories of calls found in any one query.

Advantages of GIS-based Analysis

The primary advantage of employing a GIS supported methodology is its flexibility. Computerised (digital) maps of dispatch records allow researchers to empirically analyse both the location and type of incident that precipitated police intervention. By observing calls for police service over time, one is able to see if certain areas tend to accumulate more police visitations than others in terms of total calls, or if certain areas or land uses tend to dominate police services under certain time or incident-specific situations. Of course trends in the CAD data can be established via traditional statistical techniques where the levels of measurement permit, but GIS analysis can reveal trends without the use of statistical techniques.

A second feature of GIS analysis stems from the visual representation of space. Recurrent patterns, by their very natures, are not easily recognised as such; that which we observed every day is not truly *seen*. As casual observers of crime (loosely defined), we may have general assumptions regarding what areas of a given city are safe, to be avoided, or contain high crime rates. As valuable as these perceptions are, they are not helpful when one wishes to assess the character of the distribution of crimes known to the police across urban space. Perceptions may be reinforced by an array of mitigating factors, other than first hand knowledge of an area, or its "share" of the city's crimes. With the spatial distribution of all calls for police service available in point map form, one is able to build a picture of a given area's actual loading of police activity. A further benefit of the visual side of computerised crime mapping is its descriptive power. Maps appear to be easily understood by planning, or management staff, and field personnel alike. It may be understood that the Downtown region has a higher concentration of calls for police service than any other area in Vancouver, but what may not be so obvious, however, is the potential for distinct patterns within this generally "understood" phenomenon.

Limitations for GIS-based Analysis

As with any methodology, there are several inherent limitations. The first and most basic limitation involves the base map. For Vancouver, the base map (a collection of symbols other map objects, such as streets, parks, civil boundaries, etc.) that resembles a common street map that one might carry in one's vehicle. Unfortunately, computerised base maps also suffer from the effects of age (Block and Block 1995: 155). The base map used in this thesis was generated by a commercial software company based on land survey

information based on 1994 data. This circumstance results in dispatch records indicating an incident address that the base map does not recognise as legitimate. The most common form of this complication occurs when an existing street is extended, or perhaps renamed. If the GIS software is unable to match a given address with the base map, the address in question will not be geocoded.

In order to control, or at least reduce, the error entailed in address matching difficulties, we make use of newly created "special" address. Most often special addresses are bridge locations, for example the North and South ends of the Cambie Street Bridge. Other special addresses were created to capture sections town that have had recent road extensions or entirely new developments; examples of this nature include assigning calls that involve large parks or beach front landmarks. As a procedure, special address creation involves placing an object on the digital city map, calculating the co-ordinates of the newly created object and geocoding all cases that refer to the special address to the newly generated map co-ordinates. In this manner, any references to locations involving the BC Complex (a covered sports facility with several small lane and alleyways), the only example of a special address used for the Downtown area, can be attributed to the special address location. The benefit of enduring this procedure is that many calls that are given CAD street address information to such popular places do not conform to regular street name and street number conventions. Instead many calls would indicate "Gate 5 entrance" as the location—an address not known to the mapping software. By creating the special address for all such calls, these incidents are not lost to the analysis completely, although strictly speaking, the absolute accuracy of the incident's spatial positioning is slightly inaccurate (as all calls to BC Place are given the

exact same point locations on the area map). It is up to the researcher to recognise and report to his or her audience when geocoding procedures involve several special addresses that may have varying degrees of location accuracy. For this thesis, the only such address is BC Complex, and it does not pose significant threats to the spatial depiction of calls for police service. BC Complex is identified by name on most maps included in the text, and is easily found in the south central area of any Downtown or study area map.

Chapter V: Methodology

In order to explore the potential impact of licensed premises on the distribution of calls for police services for the study area, it is necessary to first consider the general patterning of police responses in a wider context. To capture this contextual background, this thesis moves from general to specific levels of analysis in order to determine if the frequency distributions change noticeably as one moves from larger to more focused areas of analysis.

This thesis examines the distributions of calls for police service at two basic levels of focus. The first is comprised of area-based frequency distributions for successively smaller regions. Through this process, the general city-wide and city sub-area trends can be established. We generate frequency distributions based on the total calls contained within three separate regions. The first region to be analysed is the City of Vancouver, as defined by the municipal geographical boundaries. This represents the entire area for which the Vancouver Police Department is responsible. The second region incorporates the Downtown district (which contains all of the licensed premises considered in this study), and the two adjacent districts, the West End to the west, and Strathcona to the east. The third and final region to be examined is the Downtown district in isolation from all other districts (see Figure 3 overleaf).

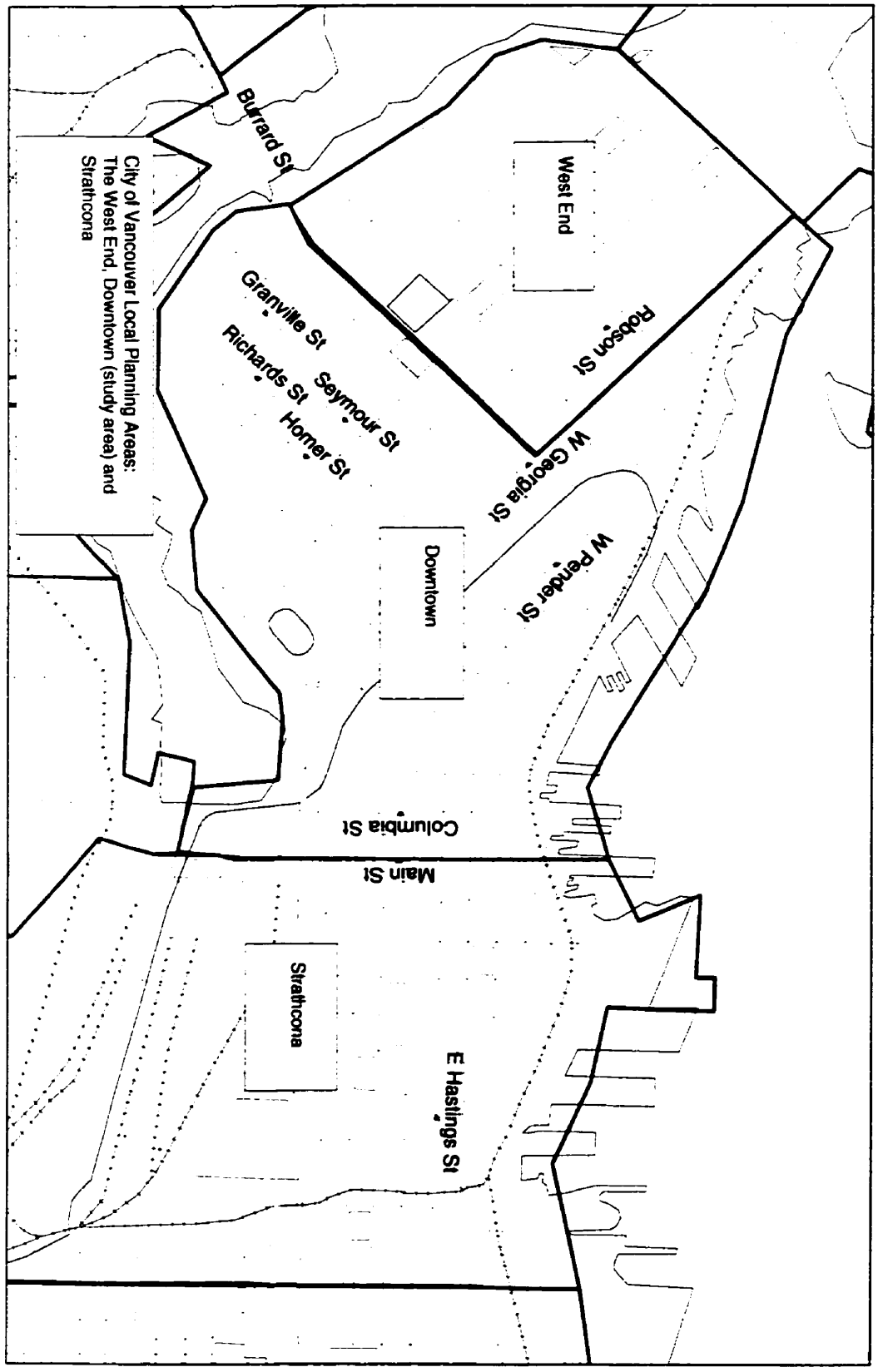


Figure 3 - West End, Downtown and Strathcona Planning Areas

After compiling these area-based distributions, one can then move on to the second level of analysis. The main objective of this thesis is to examine the possibility that the existence of licensed premises will have an observable impact on the distribution of either (1) specific calls for police service, or (2) classifications of calls. If bars tend to impact the distribution of incidents requiring police attendance, then the nature and number of such incidents should change noticeably with proximity to licensed premises. Thus, the frequency and type of incidents that occur in or near to licensed premises should appear "different" than those for the City or even the Downtown area. To capture all incidents that are proximate to licensed premises, three contiguous buffer zones are used. The first buffer extends outward 0.1-mile (or approximately 160 meters) from any given licensed premises street address. As this buffer appeared to be too large given the size of the Downtown area, frequency totals are generated using this buffer zone for the first month, April 1996, only. The second and third buffers, of 100m and 50m respectively, are used for all three months of the study period (see Figure 4, below).

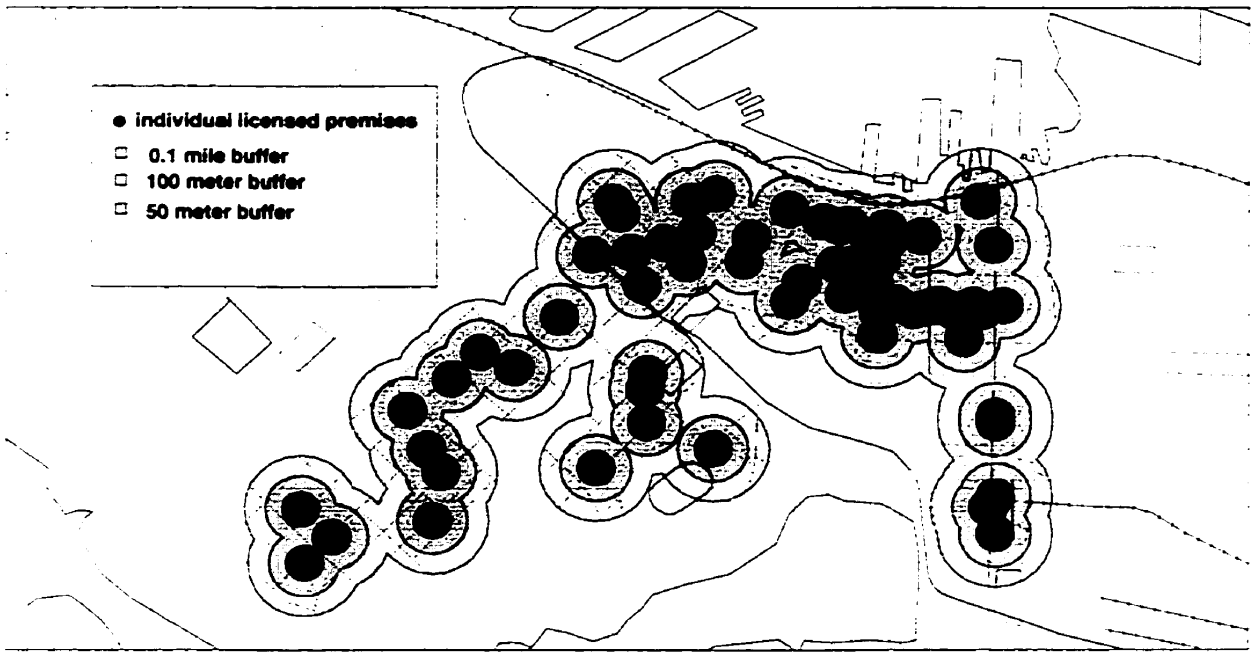


Figure 4 - Bar Buffer Zones

In addition to the area and bar buffer region analysis, we also consider two time periods. The first timeframe contains all incidents without time restriction, while the second, referred to as "bar time" incidents (or calls for police service). When selecting incidents for bar time, only those dispatches that occur between the 22:00:00 and 03:59:59hrs (that is, between 10pm until 4am the following morning) are included in any subsequent analysis. We chose this six-hour block for it is thought to capture the vast majority of incidents that could be related to licensed premises. It must be stressed, however, that we, in no way, are trying to argue that all calls that simply occur during this period are related, directly or otherwise, to licensed premises. To make this assertion would dramatically overstep the explanatory power of both our data and methodology, while at the same time understating the complexity of the socio-economic character of the Downtown core. By rigorously limiting both times of day and spatial distance from

licensed premises, we can increase our confidence that those calls that meet both criteria are at least partially affected by the presence of a bar, night-club or tavern. Just as with spatial proximity to bar locations, the temporal restriction to the peak bar operating and patron dispersion times should, if licensed premises affect the distribution of calls for police service, change the nature and frequency of incidents within all three bar buffers.

In order to determine whether or not bars have an impact on incidents requiring police service, this thesis utilises two assessment strategies, neither of which should be considered as distinct from the other. The first strategy involves the computation of a series of frequency distributions that reveal total counts for each possible incident, the coding of which is done by police and dispatch personnel, and is contained within the CAD record. These frequency distributions are based upon several different populations that capture all calls within various predetermined geographical boundaries, such as the city limits, local-planning areas, or bar buffer zones as discussed above. As these counts represent 100 percent of all possible calls they are not true samples, and thus, probability based statistical tests, such as ANOVA or Student's *t* are not appropriate. Therefore, when considering if a given incident (an assault, for example) occurs in one geographic/time area more frequently than another, the difference is significant. What is less certain, however, is whether or not any such difference is sufficiently large to claim substantive significance, that is to say, if the difference is meaningful sociologically. In this sense, although the data are gathered and treated quantitatively, the final assessment is a qualitative one in that patterns and concentrations are determined by visual pattern recognition on behalf of the researcher's subjective judgement, and not mathematical or geometric model.

Induction is also prevalent in the identification of hotspots, or concentrations of calls in any given urban space. No formulae are used to identify concentrations of calls for police service in this thesis. This process is available, and has been used in previous work on crime and place analysis (most notably in the works of Block and Block 1995), but as this thesis represents a 'first cut' at the Downtown Vancouver area, such efforts are, in this author's opinion, premature. As an alternative to simply allowing call/incident density to determine which areas are hot and which are less active in the CAD records, we use instead, visual analysis to compliment our frequency distributions by area.

Variables of Interest

Given the wide variety of incidents contained in the dispatch records, it is not possible to consider each individually. Instead, only the most frequently occurring incidents are discussed in any systematic way. In a fortunate happenstance, the ten most frequently occurring incidents comprise approximately 50% of all incidents for any given distribution. Typically frequent incidents that often occur within the second quartile range (50^{th} percentile) include: theft from auto, "annoying person", theft report, motor vehicle accident, fight, noise complaint, warrant, suspicious person/circumstances, and "wagon" calls. Several of these cases require further explanation. Annoying person calls are usually aggressive panhandlers, or persons who may otherwise appear threatening to the so-called "normal" users of the Downtown area.

Even though this handful of incidents can tell us much about the nature of calls for a given area, it was also of benefit to classify all incidents into the following five categories.

(1) Crimes or reported crimes involving violence. Such incidents would include assaults, fights, calls involving a knife, firearm or similar weapon.

(2) Crimes or reported crimes against persons where the violent element was either not present or unclear. Abduction, threats, family trouble, cab trouble and purse snatching are typical examples.

(3) Crimes or reported crimes against property. These incidents are typified by calls reporting theft from auto, theft of an auto, break and enter ("burglary") and theft.

(4) "Incivilities" calls or incidents that, criminal or perhaps "near" criminal", that so detracted from the liveability of the area that someone felt compelled to call for police attendance. Mischief, disturbance, noise compliant, "annoying" or suspicious persons reports are typical constituents of this category.

(5) "Other" incidents are those that cannot be considered as (1) through (4) above. Typical instances of this category include motor vehicle calls (accidents, traffic incidents, etc.), found property, found person, and holding suspect cases. These cases are excluded from the categorical frequency distributions, as they are too varied in character and meaning.

It is recognised that many crimes against persons (2) could be coded as (1) violent, but in the interests of keeping that category conceptually rigorous, we preferred to keep them separate. This is particularly important, as violence is thought in the literature to be a class of crime associated with bar time behaviour. Of particular interest, the CAD entry of "licensed premises check" had to be excluded from the analysis and coded as "(5) other", as such events are most often police initiated, and as such, do not necessarily capture actual incidents.

Chapter VI: Results

In this section, the results of each of the three months under study (April, May and June, 1996) will be reported. Several area totals will be presented briefly to provide the background character of the area in which the licensed premises under study are located. Various frequency distributions are generated for each month, according to various selection criteria including time of day and liquor license classification. Before moving to these findings, it is worth recounting, briefly, what the totals actually count. These calls represent all reported or otherwise known incidents requiring police service that can be given a street address. Data entry errors where the actual street name or street number is either missing or incomplete resulted in the case being dropped from the analysis. Moreover, a dispatch record may not be included in this particular analysis if it was of an administrative nature, such as a police unit notifying dispatch that they would be unavailable in the police garage for a certain period of time (for a sample of such exclusions, please see Tables 6 and 7, above). One final note regarding the reporting of incident or call frequencies is that we must remember that these numbers represent incident counts, not numbers of crimes or of criminal events. Thus, if the police attend a parking lot and charge four people with assault, our data would still record this as one incident. In addition, it should be remembered that such incidents do not represent all crime in the area (the Dark Figure problem).

April 1996: City Area Calls for Police Service

For the month of April, a total of 24,872 calls were plotted on a computer generated map of Vancouver's street network. The location of each of these calls was determined by the

street address given to each call for police service, as contained in the Vancouver Police Department CAD data file. A frequency distribution for all mapped calls (n=24,874) reveals that three types of calls accounted for nearly one-quarter of all calls. Theft from auto (10.1%), audible alarm (8.3%) and motor vehicle accident (5.7%) and break and enter at 5.5% are the only calls to account for 5% or more of all calls. Given the wide variety of specific calls, the city-wide totals were recoded into five categories, incidents involving violence, persons, property, incivilities and other. It is important to realise that in all tables the "other" category is expressed as a percentage of the total *n*, while the category percentages are taken from the total 100 percent of included or "valid" cases. Thus, the "other" category is comprised of 4690 or 18.9% of the total cases. Although these cases are excluded from the categorical analysis, they are included on all maps. Property-based calls are the modal category, with nearly half (48.7%) of all incidents by category (see Table 8, below).

Table 8 – April 96: City totals by category

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	violence	1118	4.5	5.5	5.5
	persons	1294	5.2	6.4	12.0
	property	9836	39.5	48.7	60.7
	incivilities	7934	31.9	39.3	100.0
	Total	20182	81.1	100.0	
Missing	other	4690	18.9		
Total		24872	100.0		

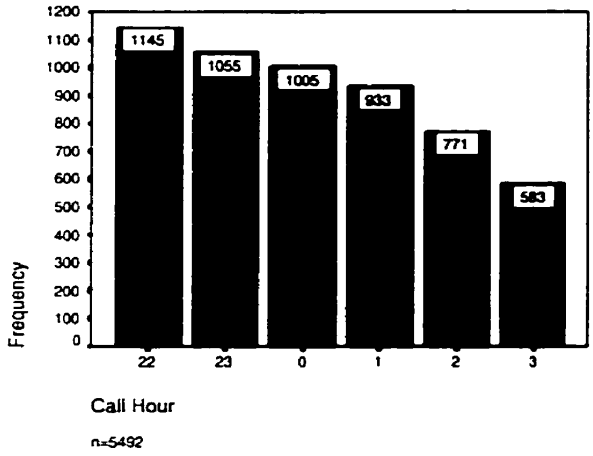
When one examines the total city numbers selected for "bar time", or 10pm through until 4am, one notices a shift in the category percentages.

Table 9 - April 96: All Bartime Calls for City

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	violence	417	7.6	9.0	9.0
	persons	338	6.2	7.3	16.3
	property	1324	24.1	28.5	44.8
	incivilities	2566	46.7	55.2	100.0
	Total	4645	84.6	100.0	
Missing	other	847	15.4		
Total		5492	100.0		

In all, bartime calls account for 22.1% of the total calls fielded by the VPD. The nature of this time period also seems to have some effect on the individual incident frequencies. No longer is theft from auto the modal category, as is the case without a time restriction. In its place, the incidents described in the CAD data as "audible alarm" constitute single most frequent incident across the city from 10pm until 4am. Theft from (4.9%) auto certainly remains a prominent category among the top five most frequent calls, where it is joined with "noise" (8.2%), "suspicious circumstances" (5.4%) and "suspicious persons" (4.8%). "Disturbance" and "person annoying" show similar counts, with 4.6 and 4.7 percent respectively. While hourly frequency totals were not explored systematically in this thesis, the bartime frequency totals by bar hour help illustrate the utility of the six-hour time block as a unit of analysis.

Figure 5 – April 96: Monthly Bartime Hourly Call Totals



The hourly frequency totals steadily drop when considering the entire city. When considering that in Vancouver, no bar may serve alcohol past 02:00hrs (2am), and all patrons must leave the premises (without taking any alcohol off the premises with them), the author felt that capturing calls for service from 4am onward could not be defended as being in any meaningful way as "bar-related".

Downtown Planning Area

Figure 6, shows all calls (n=5223) for police service for the Downtown Planning Area, as defined by the City Planning Department for the City of Vancouver.[8] The top ten calls for service constitute more than half (51.1%) of all incidents

[8] The district boundaries have been altered slightly. Main Street, for instance, is the North/South divider between the Downtown and Strathcona planning areas. While major streets make for convenient boundaries for planning purposes, such borders may confuse point pattern analysis. The actual boundary used in this analysis has been moved eastward to allow calls on both sides of Main Street to be tallied in all Downtown Area totals. Further, where a licensed premises buffer area crosses over into what is properly considered Strathcona, we have opted to include these calls, rather than cut the buffer short along the true district boundary. This allows all buffers to function to their fullest extent, particularly with the larger buffer radii, such as the 0.1 mile (160m) and 100m buffers.

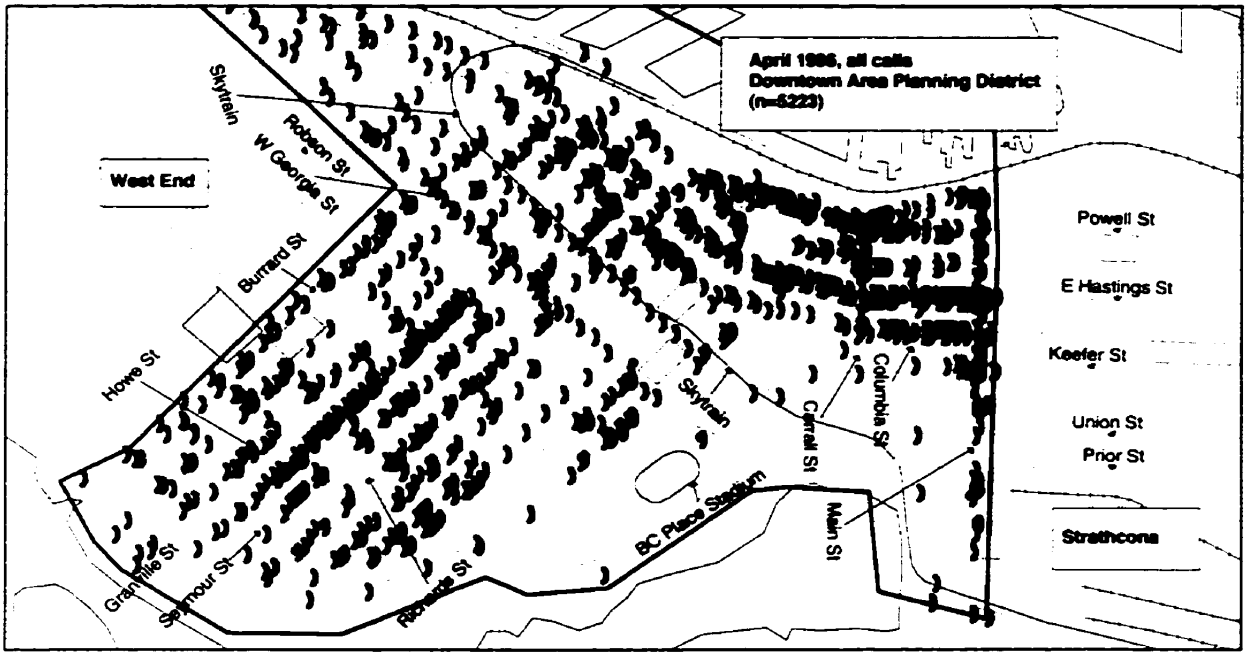


Figure 6 - April 1996 All Calls For Downtown Area

Theft from auto, which typically includes the theft of items from inside a vehicle, such as a stereo, compac discs, parking change and other personal effects, is the modal call type at 15.6%. Individuals who are either under or have an outstanding warrant are the next most frequent (5.6%). Theft report, person annoying, audible alarm, wagon call, motor vehicle accident, suspicious circumstances, seized property, and mischief reports round out the top ten calls. When considered by our categories of interest (Table 10), we find that property and incivilities calls are about even (44 and 43.2% respectively). Violence calls increase proportionally, moving up 2.3% to 7.8% of area totals.

Table 10 - Downtown Area Calls by Category

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	violence	345	6.6	7.8	7.8
	persons	226	4.3	5.1	12.8
	property	1955	37.4	44.0	56.8
	incivilities	1920	36.8	43.2	100.0
	Total	4446	85.1	100.0	
Missing	other	777	14.9		
Total		5223	100.0		

In terms of change from the city-wide percentage, incivilities calls increased approximately 4% when looking at the Downtown area in isolation.

Under the bartime restriction (Table 11), the Downtown frequencies continue to change. The already familiar theft from auto is once again modal (8.9%) of the total bartime calls (n=1283), but not to the same degree as for the same area without time restriction (see above). Once more the top ten call types account for about one-half (50.6%) of all calls. The composition of these ten calls changes, however, from that seen for the same area without the bartime restriction. Wagon call (5.8%), fight (5.1%) show a stronger prevalence than previously seen. Licensed premises check (4.6%) occurs 59 times, but due to the proactive nature of this police activity, it has to be excluded from the category analysis. It is important to notice that such incidents account for 31% of the 190 excluded bartime cases. Warrant, disturbance, noise complaint, and person annoying continue to populate the first and second quartile ranges. Assault calls nearly double for the bartime period, growing from 2.5 to 4.1 percent. Table 11 provides the frequencies by our designated categories of interest.

Table 11 - April 96: Downtown Bartime Calls

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	violence	156	12.2	14.3	14.3
	persons	45	3.5	4.1	18.4
	property	292	22.8	26.7	45.1
	incivilities	600	46.8	54.9	100.0
	Total	1093	85.2	100.0	
Missing	other	190	14.8		
Total		1283	100.0		

The incivilities category is clearly dominant in terms of percentage share of the 1093 valid cases, but also interesting is the relative percentage shift downward of both property and persons calls, with dramatic increase for violent incidents. The violence category grows from7.8 to 14.3% for the bartime only set.

April 1996: Bar Buffer Distributions

All Calls Within 0.1 Mile (160m) of a Licensed Premises

Frisbie, et al. (1977) used 0.1 mile concentric rings to capture crimes known to police in their seminal study, and so we reproduce that buffer here as a starting point for our analysis. Unfortunately, due to limitations of time and space, this thesis considers buffers of this size for the first month (April) of analysis only. The buffer zone, when compared to the layout of the Downtown district, was simply too large an area to merit repeated application. Nevertheless, the 0.1 mile buffer (see Table 12, below) does provide an intermediary area of focus, bridging the area totals (city and Downtown district) and the two main bar buffers of 100m and 50m.

We follow a similar procedure in reporting the buffer totals as with reporting the area totals for the city and Downtown district, above. Table 12, provides a summary of the totals for all aspects considered within the 0.1 mile buffer zone. Notice that the other

category is expressed in terms of total percent, while the remaining categories take the form of valid percentages and totals. One further comment regarding the total calls for all licensed premises (3624) is necessary; combining Class A and C licensed premises totals will not equal 3624. This is due to the fact that when considered separately each license class buffer has some overlap, and thus 'double-counts' incidents occur. This is particularly true of the largest bar buffer (0.1 mile) which contains considerable bar buffer overlap. Such counting procedures are not problematic however, in that we are not concerned to show differences between license types in this analysis, but rather, merely to explore the possibility that bar location may affect the distribution of crime and or police resources. We must await more sophisticated measurement techniques before it is possible to tease out the differences between the available license types on this score.

Although there are simply too many individual call frequencies to report here, the following are illustrative. For the month of April there are 3624 calls within 0.1 mile of any licensed premises, regardless of license classification. The same area with the bartime restriction drops 25.8% to a total of 935. Of the total 0.1 mile buffer

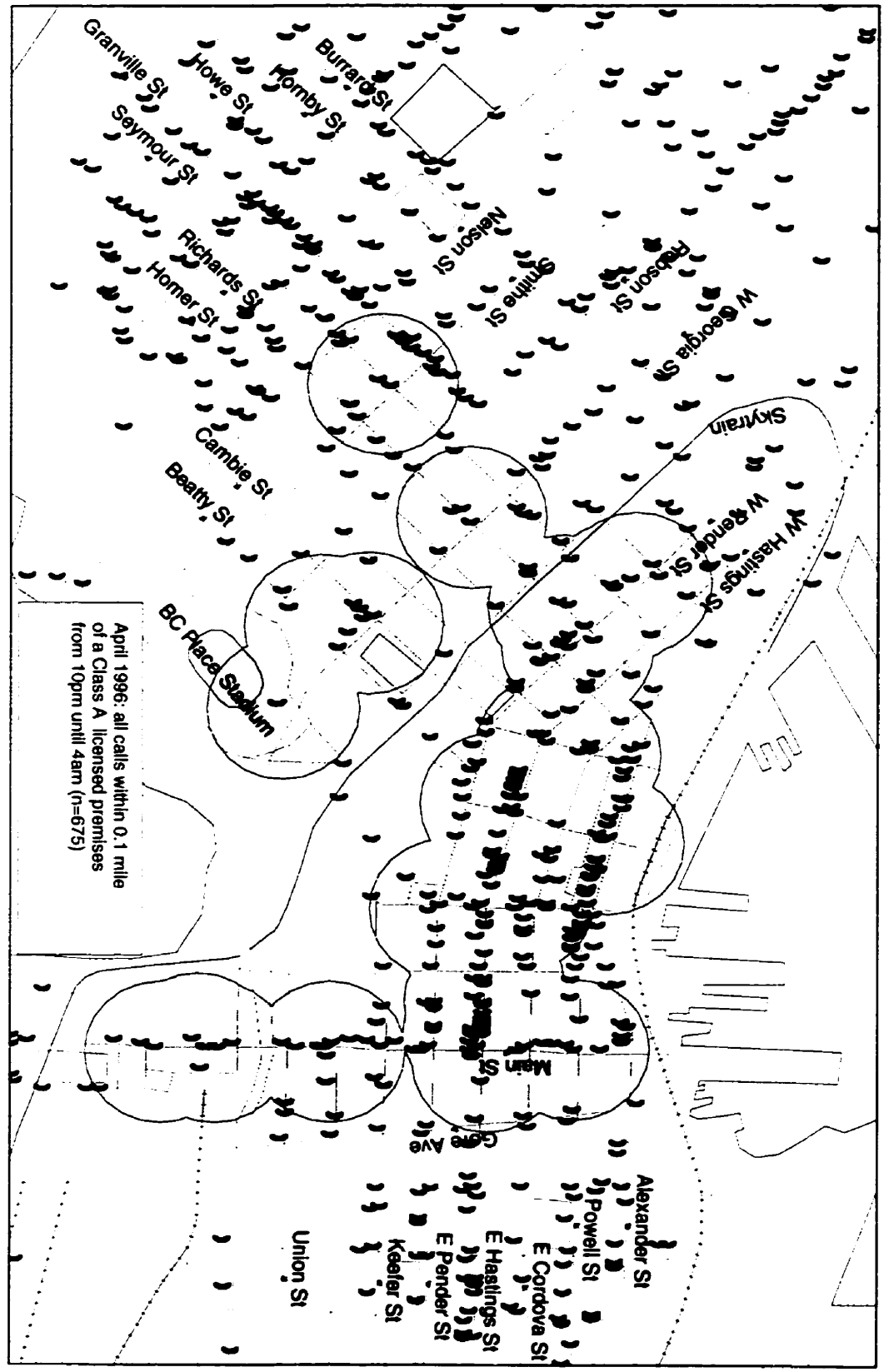


Figure 7 - All Bartime Calls within 0.1mile of a Class A Premises

total (3624), theft from auto continues to dominate (13.2%), with warrant (6.5%), wagon calls (4.9%), person annoying (4.8%), audible alarm (4.7), theft (4.5%), and suspicious circumstances (2.9%) among the top ten incidents, which account for 52.5% of all calls. Bartime restriction follows similar patterns, with the exception that wagon calls (n=66: 7.1%) and fight (5.5%) bracket theft from auto, which only just lost the modal position by a single incident (n=65) at 7.0%. Also for bartime calls, noise complaint (4.5%) and actual assault calls (4.4%) move into the top ten. The categorical breakdown by premises type can be seen in Table 12, below.

Table 12 - April 96: 0.1 mile Buffer Totals

	time	*total calls*	*violence*	*Persons*	*property*	*incivilities*	*other*
all licensed premises	all	**3624**	**274**	**142**	**1218**	**1498**	**492**
	percent		8.7	4.5	38.9	47.8	13.6
all licensed premises	bartime	935	121	36	183	465	130
	percent		**15**	**4.5**	**2.7**	**57.8**	**13.9**
Class A	all	**2754**	**194**	**116**	**874**	**1216**	**354**
	percent		8.1	4.8	36.4	50.7	12.9
Class A	bartime	675	75	29	132	356	83
	percent		**12.7**	**4.9**	**22.3**	**60.1**	**12.3**
Class C	all	**3176**	**249**	**127**	**1085**	**1311**	**404**
	percent		9	4.6	39.1	47.3	12.7
Class C	bartime	830	111	32	169	727	103
	percent		**15.3**	**4.4**	**23.2**	**57.1**	**12.4**

All Calls Within 100m of a Licensed Premises

Without the time restriction, the ten most frequent individual call classes account for more than half (51.8%) of all calls occurring within 100m of any licensed premises (n=2841). Call types closely resemble those found for the 0.1mile buffer, with the top ten

calls being identical, although the order of prevalence changes slightly, with audible alarm and person annoying swapping 4th and 5th positions. The same pattern holds true of the bartime calls. The first four calls are the only ones that are individually greater than 5%: wagon call (7.8%) remains the modal incident, theft from auto a close second at 6.9%, disturbance and fight reports (5.3 and 5.2% respectively). These similarities are reflected in the categories of interest, reproduced in Table 13, below.

Table 13 - April 96 100m Bar Buffer Totals

	time	total calls	violence	persons	property	incivilities	other
all licensed premises	all	2841	209	115	922	1229	366
	percent		8.4	4.6	37.3	49.7	12.9
all licensed premises	bartime	807	99	37	151	420	100
	percent		14	5.2	21.4	52	12.4
Class A	all	2052	152	95	581	969	255
	percent		8.5	5.3	32.3	53.9	12.4
Class A	bartime	512	56	26	97	278	55
	percent		12.3	5.7	21.2	60.8	10.7
Class C	all	1648	114	52	636	625	221
	percent		8	3.6	44.6	43.6	13.4
Class C	bartime	453	58	17	100	220	58
	percent		14.7	4.3	25.3	55.7	12.8

All Calls Within 50m of a Licensed Premises

Using the 50m bar buffer, the total number of calls occurring within 50m of a licensed premises is 1744. Theft from auto (11.5%) and warrants incidents (9.2%) dominate this distribution. The remaining eight call types, that when combined with the two just mentioned, account for 51.8% of all 1744 calls. As with the previous bar buffer zones, wagon, seized property, audible alarm, theft report, person annoying, assault report, and

fight report are the most frequent calls. When the 50m bar buffer is filtered to exclude all calls that do not fall between the 10pm to 4am bartime period, the total number of calls falls by 28.3% to 494 (see Figure 8, below). When considered individually, the top ten bartime calls within the 50m buffer appear similar to the 100m bartime calls. Wagon, warrant, theft from auto, licensed premises check, fight, disturbance, audible alarm, person annoying, suspicious circumstances and noise complaint make up the top ten calls, which account for more than half of all observed calls (52.4% of 494). Table 14 shows the results of our recoded categories of interest.

Table 14 - April 96: 50m Bar Buffer Totals

	time	*total calls*	*violence*	*persons*	*property*	*incivilities*	*other*
all licensed	all	**1744**	**152**	**78**	**529**	**779**	**206**
premises	percent		9.9	5.1	34.4	50.7	11.8
all licensed	bartime	494	60	22	92	258	62
premises	**percent**		**13.9**	**5.1**	**21.3**	**59.7**	**12.6**
Class	all	**1255**	**109**	**67**	**311**	**634**	**134**
A	percent		9.7	6	27.7	56.6	10.7
Class	bartime	318	32	19	55	183	29
A	**percent**		**11.1**	**6**	**19**	**63.3**	**9.1**
Class	all	**585**	**54**	**15**	**247**	**184**	**85**
C	percent		10.8	3	49.4	36.8	14.5
Class	bartime	207	32	5	45	89	36
C	**percent**		**18.7**	**2.9**	**26.3**	**52**	**17.4**

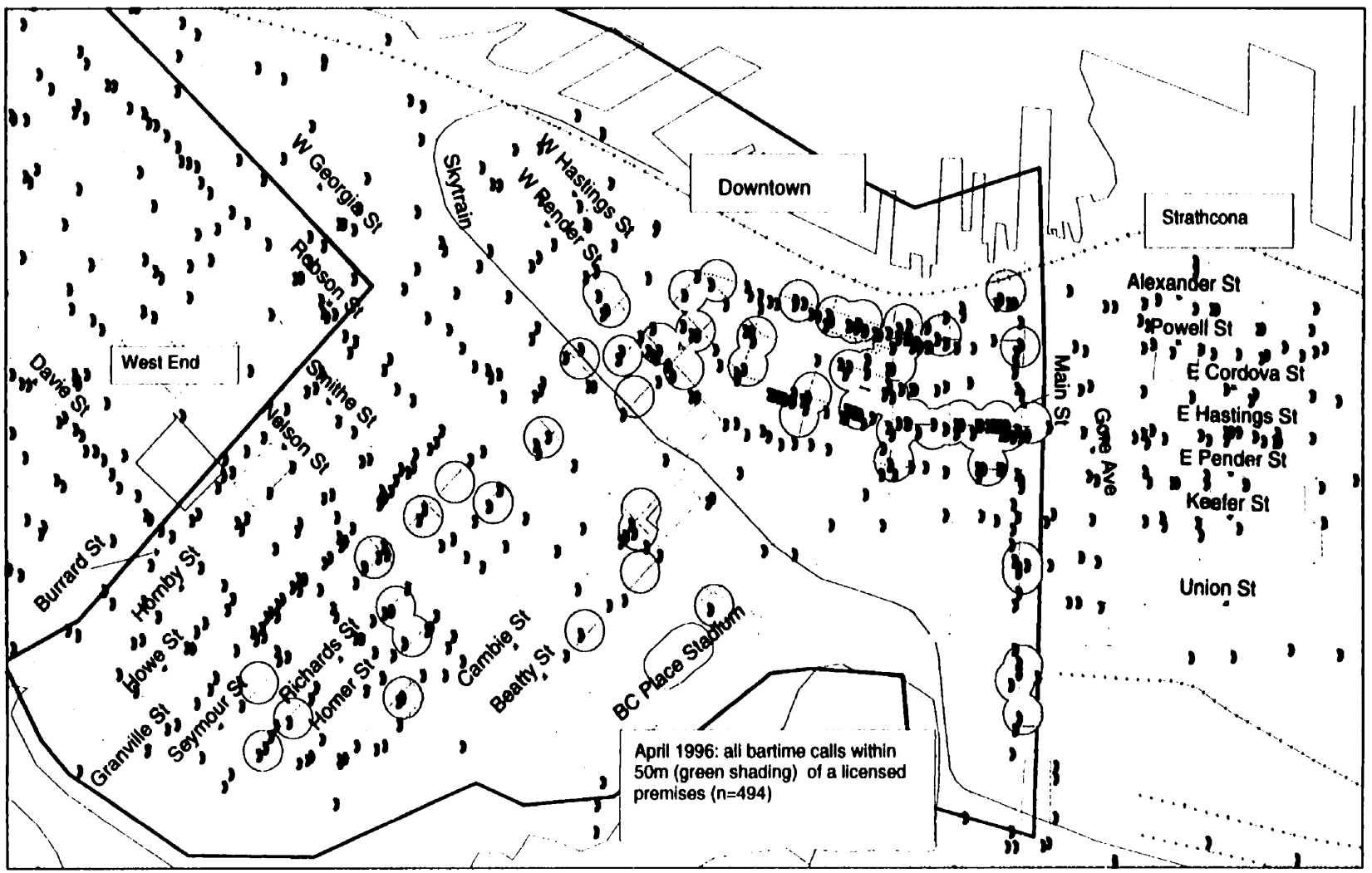


Figure 8 - April 96: All Bartime Calls Within 50m of a Licensed Premises

May 1996: City Area Calls for Police Service

For the month of May 1996, we plotted a total of 25,974 calls for police service. As seen previously in the April data, property-related calls are the most frequent (48.7%) among our five categories of interest (see Table 15, below). Similarly, incivilities calls remained a close second (39.7%), with violence (5.6%) and person-related (6.0%) calls showing similar proportions as for April. Similarities with the April data also carry over into the bar buffer zone percentages. However, such linkages will not receive any extended attention here, but rather in the next section.

Table 15 - May 96: City Totals (All Calls)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	violence	1186	4.6	5.6	5.6
	persons	1258	4.8	6.0	11.6
	property	10254	39.5	48.7	60.3
	incivilities	8373	32.2	39.7	100.0
	Total	21071	81.1	100.0	
Missing	other	4892	18.8		
	System	11	.0		
	Total	4903	18.9		
Total		25974	100.0		

The May 1996 percentages for the categories of interest change markedly as one moves in focus from the city totals to the 100m and 50m bar buffer zones. For example, incidents involving violence increase from 5.6% for the entire city without time restriction to 9.3% of all calls within 100m of a bar. The percentage increases further, to 10.8% of all calls within 50m of a licensed premises, again without time restriction (see Table 16, below, for the various bar buffer totals).

Table 16 - May 96: 100m Bar Buffer Totals

100m Buffer	time	total calls	violence	persons	property	incivilities	other
all licensed	all	2916	238	104	985	1229	360
premises	percent		9.3	4.1	38.5	48.1	12.3
all licensed	bartime	805	102	35	183	379	106
premises	percent		14.6	5	26.2	54.2	13.2
Class	all	2039	183	80	585	952	239
A	percent		10.2	4.4	32.5	52.9	11.7
Class	bartime	546	68	26	113	275	64
A	percent		14.1	5.4	23.4	57.1	11.7
Class	all	1681	127	56	653	625	220
C	percent		8.7	3.8	44.7	42.8	13.1
Class	bartime	462	58	22	114	198	70
C	percent		14.8	5.6	29.1	50.5	15.2

The change in the violent crime increases dramatically when one selects calls according to bartime hours. Of all calls occurring during bartime and within 100m of a licensed premises within the Downtown study area (n=805). 14.6% fall within the violent category of interest. The light green shading around each licensed premises in Figure 9 contains these 805 incidents. with those calls falling outside the buffer not being counted. The percentage of violent crime increases once again to 17.1% (n=499. see Table 17. below) when one restricts the bar buffer to 50m and holds the other conditions constant.

Table 17 - May 96: 50m Bar Buffer Totals

50m Buffer	*time*	*total calls*	*violence*	*persons*	*Property*	*incivilities*	*other*
all licensed	**all**	**1778**	**171**	**64**	**559**	**792**	**192**
Premises	percent		**10.8**	**4**	**35.2**	**49.9**	**10.8**
all licensed	bartime	499	74	20	99	239	67
Premises	**percent**		**17.1**	**4.6**	**22.9**	**55.3**	**13.4**
Class	**all**	**1215**	**127**	**50**	**316**	**600**	**122**
A	percent		**11.6**	**4.6**	**28.9**	**54.9**	**10**
Class	bartime	328	46	15	54	176	37
A	**percent**		**15.8**	**5.2**	**18.6**	**60.5**	**11.3**
Class	**all**	**637**	**55**	**16**	**251**	**230**	**85**
C	percent		**10**	**2.9**	**45.5**	**41.7**	**13.3**
Class	bartime	192	31	5	44	75	37
C	**percent**		**20**	**3.2**	**28.4**	**48.4**	**19.3**

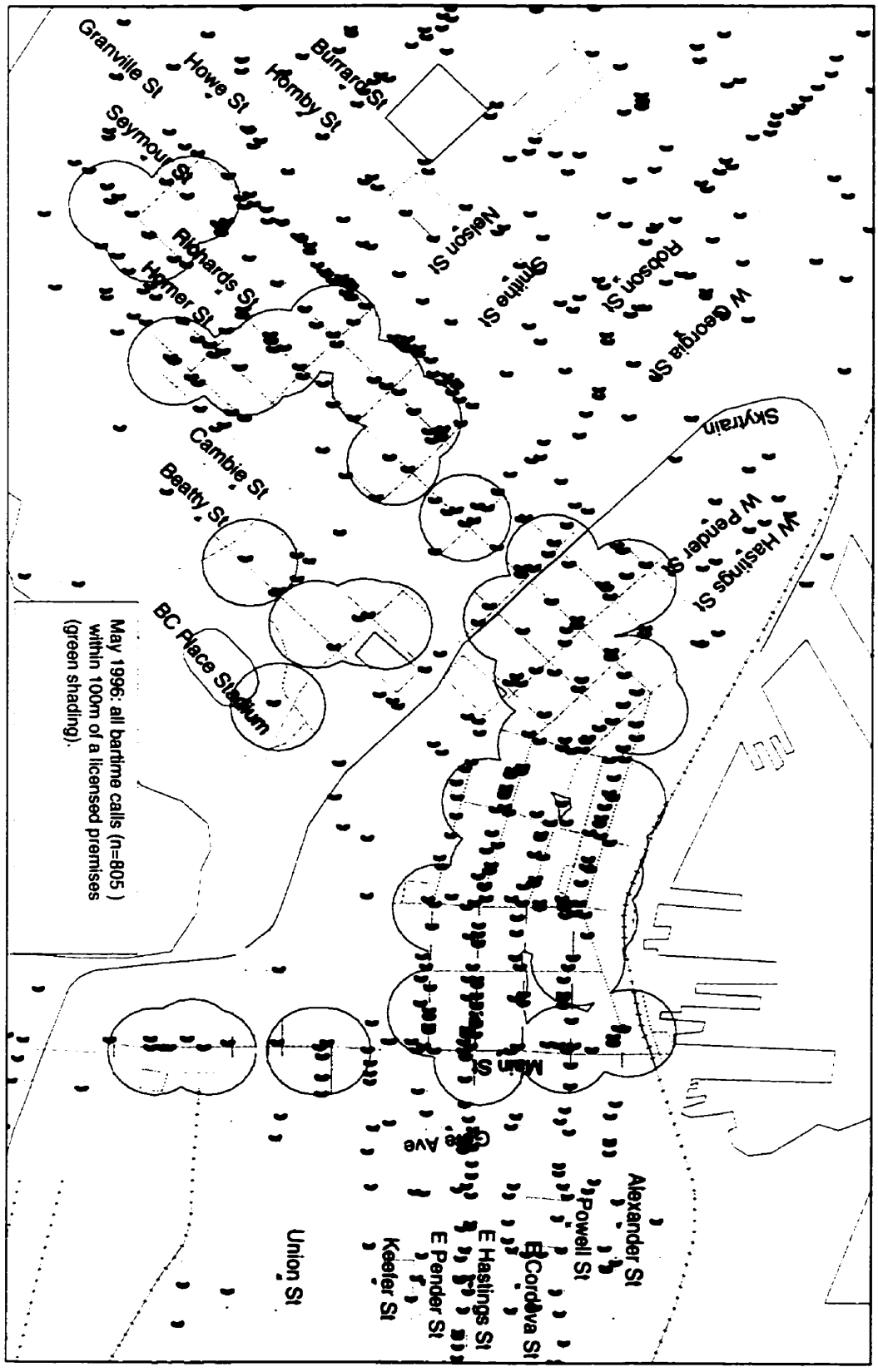


Figure 9 - May 96: All Bartime Calls within 100m of a Licensed Premises

June 1996: City Area Calls for Police Service

The third and final month examined in this thesis is that of June 1996. Table 18 (below), shows, once again, property (46.5%; n=21,987) to be the modal category for the city during June. Incivilities (41.9%) is less frequent than property calls, while violence and persons categories remain almost equivalent, each accounting for approximately six percent of the four categories of interest.

Table 18 - June 96: City Totals (All Calls)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	violence	1251	4.7	5.7	5.7
	persons	1291	4.9	5.9	11.6
	property	10223	38.7	46.5	58.1
	incivilities	9222	34.9	41.9	100.0
	Total	21987	83.2	100.0	
Missing	other	4440	16.8		
Total		26427	100.0		

Tables 19 and 20 (below) summarise the contingent distributions of our four item categories of interest by buffer and time categories for licensed premises.

Table 19: June 96: 100m Bar Buffer Totals

100m Buffer	Time	total calls	violence	Persons	property	incivilities	other
all licensed	All	3177	230	127	1075	1388	357
Premises	Percent		8.2	4.5	38.1	49.2	11.2
all licensed	Bartime	872	94	28	207	444	99
Premises	Percent		12.2	3.6	26.8	57.4	11.4
Class	All	2242	175	99	647	1073	248
A	Percent		8.8	5	32.4	53.8	11.1
Class	Bartime	592	61	21	116	327	67
A	Percent		11.6	4	22.1	62.3	11.3
Class	All	1898	124	71	728	758	217
C	Percent		7.4	4.2	43.3	45.1	11.4
Class	Bartime	559	59	17	161	254	68
C	Percent		12	3.5	32.8	51.7	12.2

Table 20 - June 96: 50m Bar Buffer Totals

50m Buffer	Time	total calls	violence	Persons	property	incivilities	other
all licensed	All	1972	169	76	612	942	173
Premises	percent		9.4	4.2	34	52.4	8.8
all licensed	bartime	559	68	14	124	269	57
Premises	percent		13.5	2.8	24.7	59	10.2
Class	all	1349	127	53	351	696	122
A	percent		10.4	4.3	28.6	56.7	9
Class	bartime	351	44	8	55	211	33
A	percent		13.8	2.5	17.3	66.4	9.4
Class	all	717	51	25	281	287	73
C	percent		7.9	3.9	43.6	44.6	10.2
Class	bartime	250	27	7	75	105	36
C	percent		12.6	3.3	35	49.1	14.4

Figure 10, below, shows all bartime calls for the month of June 1996 for all licensed premises in the study area. Two further figures 11 and 12 depict by liquor license class, all call within a 50m buffer zone for both 24 hour and bartime periods. As the results are quite similar to April and May, they are not reported here in order to save space.

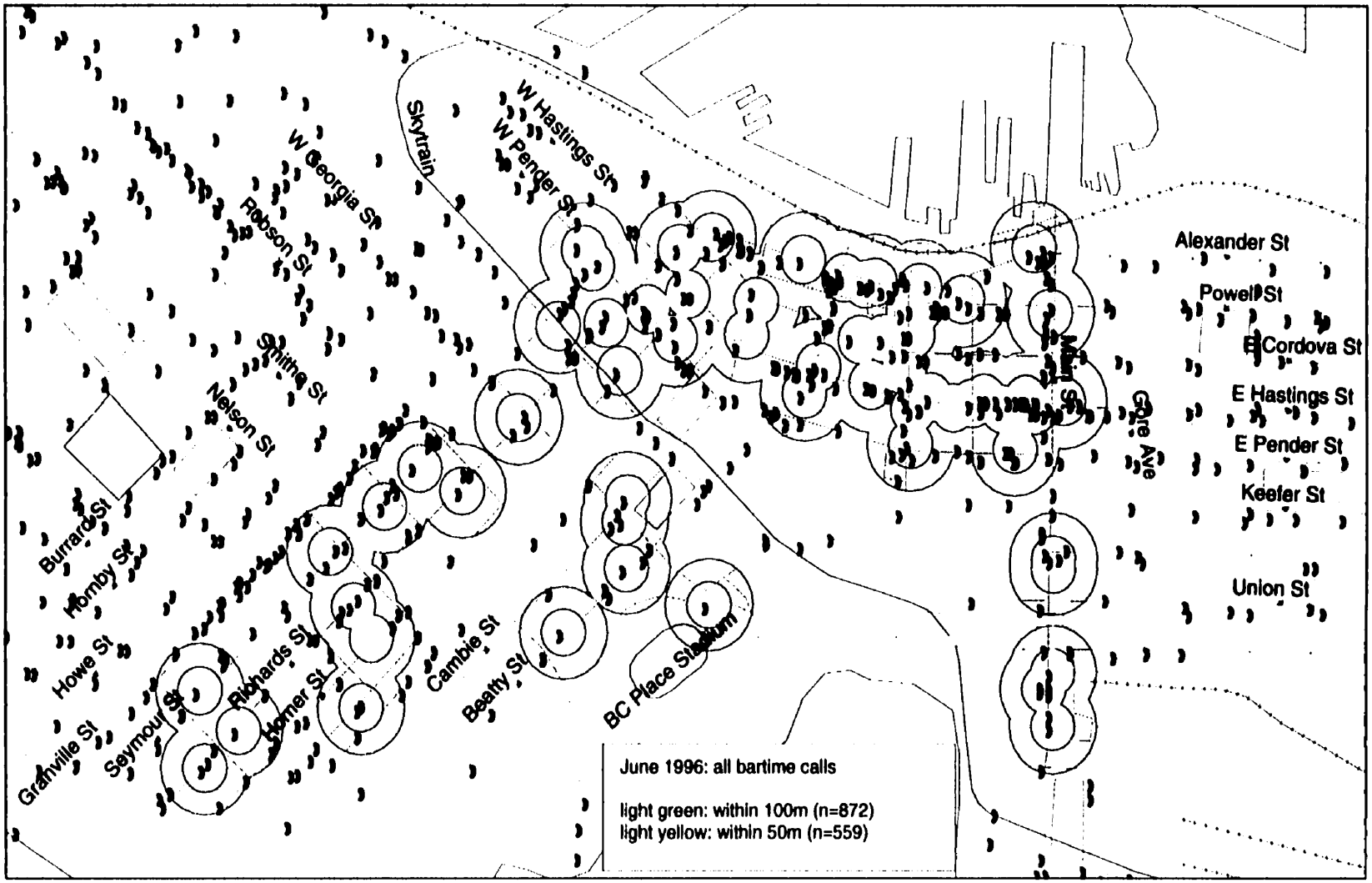


Figure 10 - June 96: All Bartime Calls Within 100 and 50m of a Licensed Premises

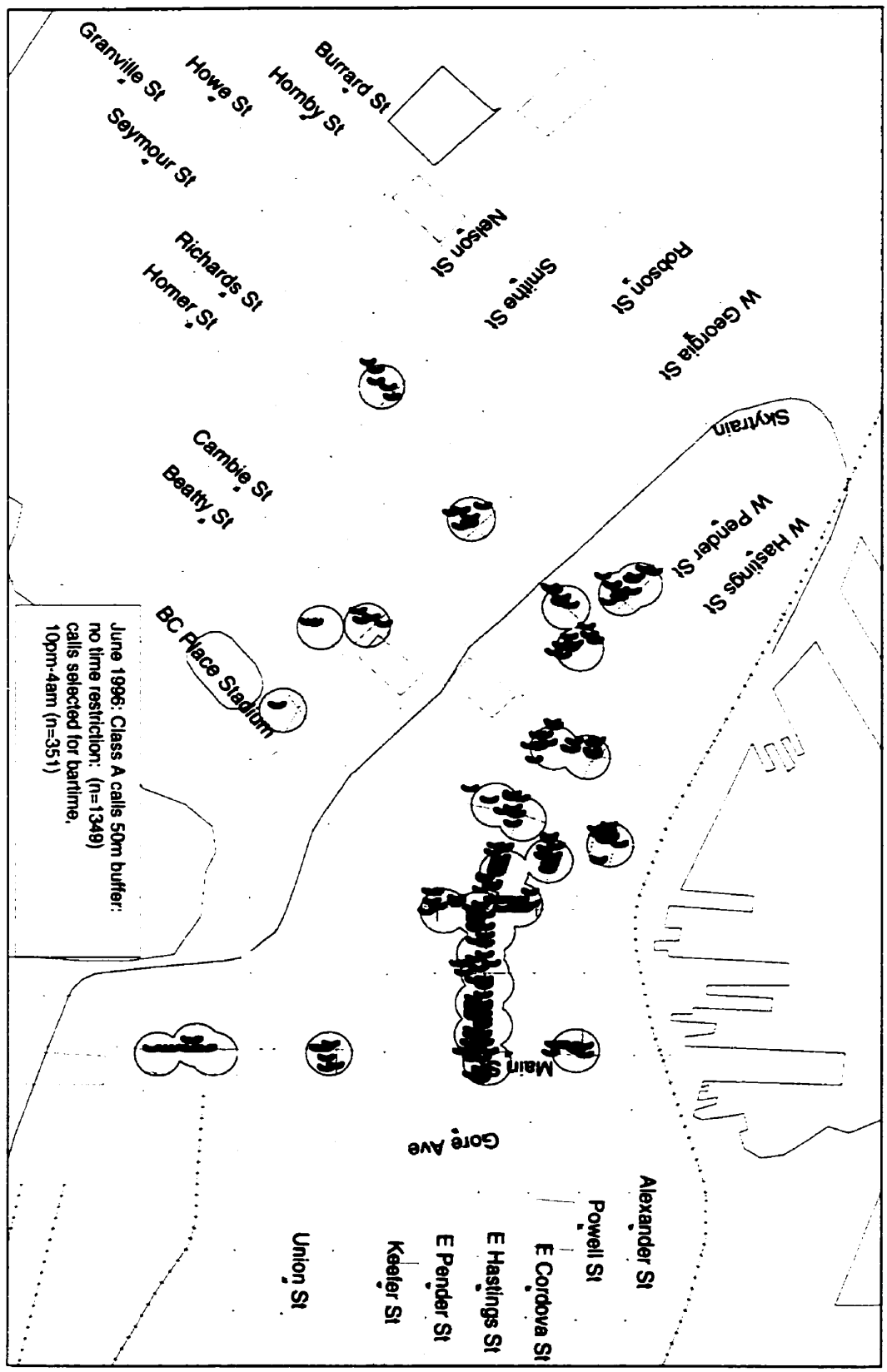


Figure 11 - June 96: Class A 50m Bar Buffer (24hr and Bartime)

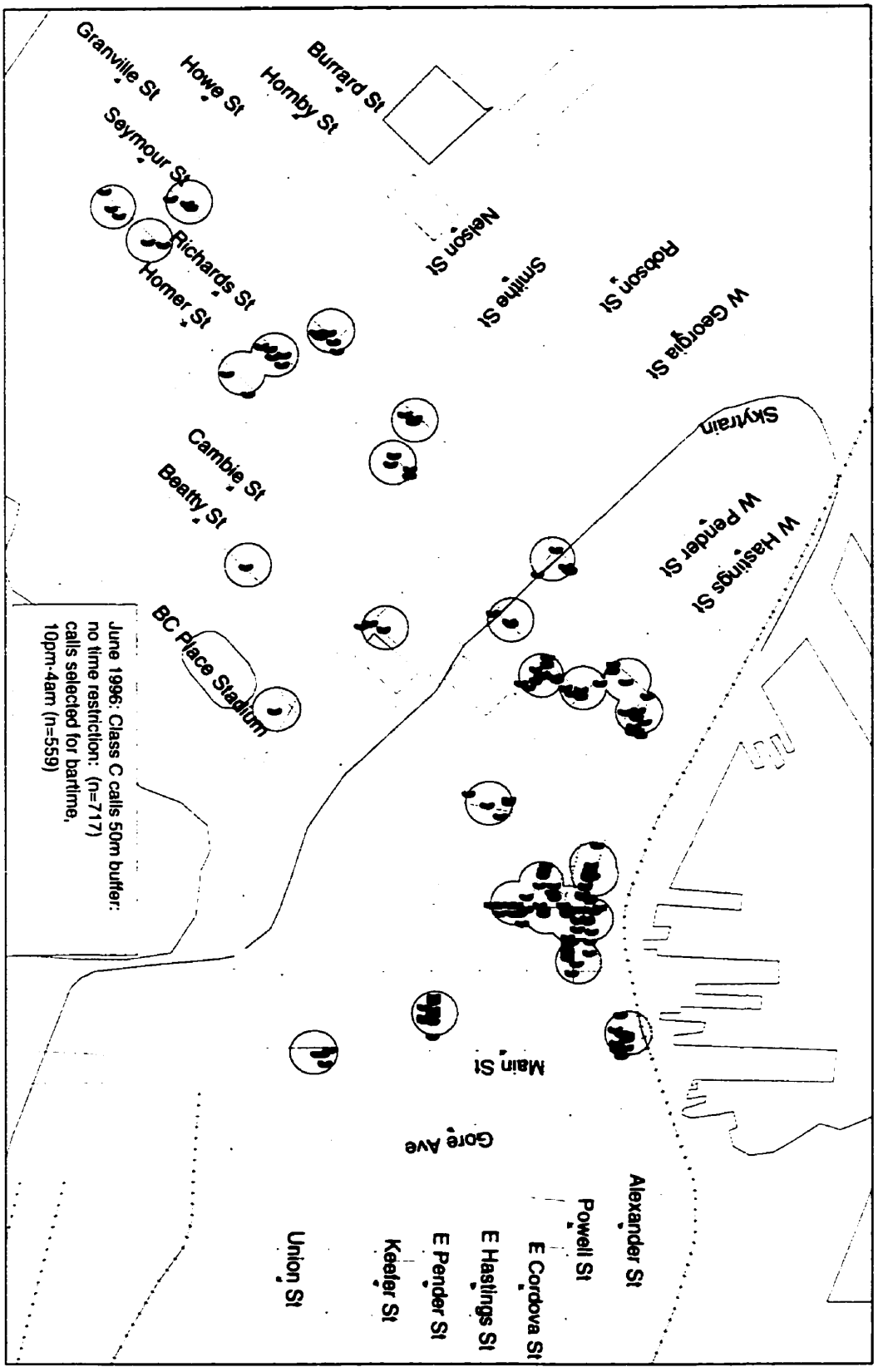


Figure 12 - June 96: Class C 50m Bar Buffer (24hr and Bartime)

Chapter VI: Discussion

Distribution of Class A and C Licensed Premises

Before examining the distributions of calls for police service reported above, it is necessary to first comment on the spatial orientation of the licensed premises included in this study. The distribution of licensed premises by license class is interesting in that it seems to conform to the socio-demographic composition of the Downtown district. The farther one moves away from the economically depressed Strathcona Area to the more affluent West End (see Figure 4), one notices a distinct drop off in Class A, and a corresponding increase in Class C, licences. Figure 1 (see above) reveals two basic patterns across license classification. Class A hotels, pubs and taverns tend, in the main, to be located in the eastern section of the Downtown district, with particular densities along the two main pathways leading to the Downtown core from the east: Main and East Hastings Streets (see also Figure 2). The east is noticeably more impoverished than the central and western areas of the Downtown core: this demographic trend is even more marked for the Strathcona District (Vancouver 1999). The hotel strip along East Hastings Street bounded by Carral Street and Main Street, and from East Hastings Street south along Main Street (Figure 1, and as well, Table 4) is among the most visibly impoverished establishments included in this thesis. The hotels Balmoral and Ivanhoe—two constituents of this micro area—are exemplary in this regard, and have already been discussed in connection with the liquor licensing enforcement practices in a previous section. While the Class A premises tend to concentrated along the Hastings corridor, the Class C bars (cabarets and night-clubs) appear to show a similar trend, in a different local, along Seymour Street and Richards Street in the Downtown West.

Differnce Between Bar Buffer and Area-based Distributions

For all three months included in this thesis, a marked difference between area-based totals (such as those found for the entire city, or Downtown District) and the various bar buffer distributions is evident. The claim of difference, once again, must be qualified in that it is a subjective judgement of difference, and not a statistically derived condition. This does not, however, detract from the importance of the observed distinctions, as the data reported above reflects the total population of all incident-based calls for which geographic co-ordinates could be generated, and as such, any difference may be considered real, that is, a representation of the realities of the areas of interest.

When considering our four categories of interest, that is, incidents involving: violence, persons, property and incivilities, the percentage share of each changes noticeably as one moves from the city or even from Downtown Vancouver into bar buffer zones. For instance, city-wide distributions without time restrictions for the month of April 1996 show property as the modal category (Table 6). Nearly identical percentage breakdowns follow for May (Table 13) and June (Table 16). The exact percentages are reproduced in the following table.

Table 21 - Review of Monthy City-wide Categories of Interest

Category	**Valid % (April)**	**Valid % (May)**	**Valid % (June)**	**3 Month average**
Violence	5.5	5.6	5.7	5.6
Persons	**6.4**	**6.0**	**5.9**	**6.1**
Property	48.7	48.7	46.5	48
Incivilities	**39.3**	**39.7**	**41.9**	**40.3**

When compared to the bar buffer totals, also without the use of the bartime restriction, one finds that the composition of these categories changes as well. For all three months, the bar buffer percentages by the same categories of interest, for all licensed premises, incivilities calls increase approximately 10%. Property-based calls witness the same magnitude shift, but in the opposite direction, falling from a three-month average of 48% (Table 19) to between 34% (for June, at 50m buffer for any licensed premises; see Table 18) and 38.9% (for April, at 0.1-mile buffer for any licensed premises; see Table 10). Violence also increases when one selects for the spatial restriction of any of the three bar buffers explored in this study. The three-month average of 5.6% increases from a low of 8.2% (June, at 100m buffer for any licensed premises; Table 17) to a maximum of 10.8% (May, at 50m bar buffer for any licensed premises (Table 15). These findings seem to support the general contention that proximity to licensed premises appears to have an effect on the distribution of calls for police service.

If the proposition that bars do play a role in the distribution of crime across urban space is supportable, and by extension, the explanatory momentum of the above analysis, then the results should be even more distinct when selecting for bartime events. This contention is supported by the data. When comparing the April, May and June buffer totals for the 24 hour period and for the 6 hour "bartime" period, one notices that for all buffer zones (50m, 100m and 0.1-mile) the 24 hour period contains roughly 3.5 times as many calls as for the bartime period alone. All else being equal, one would expect that bartime calls would account for one-quarter of all calls, a conservative estimate, given that relatively few people (and hence, opportunity for incidents to take place) are active during the 6 hour bartime block compared to other time periods.

Calls coded by our categories of interest also support the idea that bar location plays a role in the distribution of crime. Violence percentages for all buffer zones during bartime hours show increases over even the bar buffer totals without time restriction. Incivilities calls also increase while property calls decrease. This pattern is consistent for all three months, with most buffer totals falling between 12 and 14%, with the exception of May at the 50m level, which peaked at 17.1% (Table 15). Incivilities totals for each of the three monthly bar buffer zones saw percentages between 54 and 59%--decidedly higher than the city-wide three month average of 40.3%. Property incidents also drop in proportion to the rises in incivilities calls under the same conditions.

Between Bar License Class Differences

The most immediate difference between the two classes of liquor license for the Downtown study area is the imbalance between the absolute number of incidents for each class within both the 100 and 50m buffers. The loading of calls found within Class A buffers (both 100 and 50m) is even more dramatic when one considers the total area of the encatchment areas. Although there are 34 Class A premises in the study area, as compared to only 32 Class C, the total buffer area for the former is actually slightly smaller than for the latter. Table 22 summarises the total area for each of the buffer areas considered in this analysis. Using the smallest (50m) buffer as the base of 1.0, we notice that the Class A buffer area ratios 50m, 100m and 0.1-mile buffers are 1: 2.9 : 5.5, respectively. The area ratios are even more pronounced for Class C establishments, with the 100m and 0.1-mile buffers being 3.1 and 6.5 times as large as the 50m area.

Table 22 - Buffer Area and Incident Ratios by License Class

License	Buffer	Area (km^2)	Perimeter	Area Ratio*
Class A	50m	.2073	6.881	1.0
	100m	**.5947**	**8.607**	**2.9**
	0.1-mile	1.130	9.050	5.5
Class C	**50m**	**.2093**	**7.527**	**1.0**
	100m	.6562	10.45	3.1
	0.1-mile	**1.361**	**11.98**	**6.5**

(* rounded to one decimal place)

The next table illustrates the ratio of total calls for Class A buffers to Class C buffers.

Table 23 – Ratio* of Total Class A to Total Class C Buffer Calls

Buffer	April Incident Ratio	May Incident Ratio	June Incident Ratio
50m	2.1:1	1.9:1	1.9:1
100m	**1.2:1**	**1.2:1**	**1.2:1**
0.1 mile	1:1	No data collected	No data collected
50m bartime	**0.5:1**	**0.5:1**	**1.4:1**
100m bartime	1.1:1	1.2:1	1.1:1
0.1 mile bartime	**0.8:1**	**No data collected**	**No data collected**

(*rounded to one decimal place)

Observing the ratios by buffer size (indicated by row in Table 22, above), it is apparent that for the three months for which data were plotted, that Class A establishment 50m buffer zones (without time restriction) collected approximately twice as many incidents, or calls for police service, as its Class C counterpart—this, despite the fact that the Class A buffer zones entail smaller total surface (encatchment) area. This trend is not consistently observed for the 100m buffer zones, or during bartime hours for any buffer size. Given that data were only collected for three months, we are not able to establish which ratios are genuine trends, and which are anomalous. The fact that the bartime call ratios fluctuate from between 0.5:1 and 1.4:1 underscores the need for caution when exploring total counts. Although a useful first step, the analysis of total counts is limited

to providing only a general comparison of how much police activity takes place by license classification. What remains is to establish the frequencies of separate categories, or even specific calls, for both Class A and C establishments.

Categories of Interest and License Classification

Given the wide range of possible comparisons, the following section discusses only the major differences observed in the frequency distributions for the categories of interest for April, May and June 1996. Unless otherwise indicated, the following data are found in Tables 13-14, 16-17 and 19-20, above.

For all three months the incivilities category for the 50m Class A buffer zones during bartime consistently accounts for over 60% (63.3, 60.5, 66.4 percent for April, May and June, respectively) of all calls for that time period. Class C establishments, under the same conditions, see only between 48 and 52 percent. Although less marked, the same trend holds for the 100m buffer during bartime. This imbalance is in the direction suggested by relevant theory. Given the typically depressed socio-economic demographics characteristics shared by patrons of the typical Class A hotel along the strip of bars on East Hastings Street, it is not surprising to find that bulk of police service entails incidents such as annoying person, disturbance, and noise complaints. It must be stressed, once again, that such characterisations are necessarily general, and best thought of as representative of those premises along the East Hastings and Main Street major traffic arteries. Such premises are noticeably less affluent than similarly licensed pubs that are located in the western quadrant of the Downtown, such as those found along Richards Street. Clearly, socio-economic variables, which this thesis did not attempt to isolate or otherwise "control for", play a significant role in this dynamic. The simple

documentation of accumulated incidents in and near licensed premises must not be taken as an establishment of a cause and effect. According to pattern theory, and most varieties of environmental criminology, crime, like any other sociological phenomenon, has an ecological element. Urban places, spaces and even varieties of land use possess a range of characteristics that have the potential to attract crime, generate crime, or remain neutral or ambivalent to the entire process.

As already noted in the results section, violence calls are most prominent in Class C bartime buffer zones. Just as with the incivilities category, violence percentages are higher for bartime buffer zones than for either the city as a whole, or even the Downtown planning area under the same time restriction. Although not as dramatic a difference between A and C licensed premises as for incivilities, it is still large enough to warrant further attention. As suggested in the literature reviewed previously (see Blum 1981; Felson, Baccaglini et al. 1986; Fagan 1991; Homel and Tomsen 1991; Homel, Tomsen et al. 1992; Stockwell 1993; Homel and Clark 1994), violent incidents, such as assaults, fights or weapons calls, are often assumed to be related to the public drinking house. Although it is well beyond the scope of this thesis to empirically explore why Class C establishments appear to be more active in terms of violence-based calls than their Class A counterparts, the data for the three month study period would seem to support this pattern. At a purely conjectural level, this difference may be attributable in part to a combination of the demographic that patronises night-clubs. Perhaps the combination of youth, the social atmosphere of the night-club scene, and the high volume of persons in a confined area combine to facilitate aggressive and or potentially violent situations. The author's casual and unsystematic observations of night-clubs and licensed hotels in

Vancouver suggest that the former are attended by younger persons with more spending power than the latter.

The differences between A and C premises classifications on the two categories of calls thought to be most relevant to the study of bars and the distribution of calls for police service are sufficiently large to suggest further investigation. Obviously the data collection strategy employed in this thesis does not permit the testing of differences by license class in any statistical way. The employment of highly sophisticated spatial analysis techniques, which allow one to compile non-overlapping encatchment areas—would permit a thorough comparison of the relative individual incident occurrence counts between the two groups (see generally, Blum 1981; Felson, Baccaglini et al. 1986; Fagan 1991; Homel and Tomsen 1991; Homel, Tomsen et al. 1992; Stockwell 1993; Homel and Clark 1994). Given our present concern to explore the potential for a loosely defined "bar effect" on how incidents requiring police attendance are distributed across Vancouver's downtown urban landscape, what remains to be discussed is the distribution of individual calls by license class.

Individual Calls and License Classification

The final component to be discussed is the character of the distribution of individual incidents. Figure 13 and 14 show graphically the distribution of incidents occurring within 50m of a licensed premises for April 1996. Bartime fights, assault reports and other violent incidents are almost equivalent for the month of June, with May (Table 17) showing slight differences. April shows the largest difference between Class A and Class C establishments on violent incidents during bartime. The specific calls that drive these differences are not easily identified. Strictly, fight and assault reports do show slightly

higher percentages for Class C premises (again within the 50m bartime buffer: Table 14), but given the small numbers of total bartime calls (n=207 for Class C; n=318 for Class A), such percentages are prone to seemingly large percentage shifts. Wagon calls also appear to occur more often in the Class A 50m bartime buffer (8.8%, n=28) than for Class C (5.8%, n=12). Noise complaints (coded as "incivilities" in the categorical distributions) are radically higher for Class C 50 bartime buffers (6.3%, n=12) as compared to only1.3%, or n=4 for Class A establishments under the same conditions.

Figures 14 and 15 illustrate the 50m bartime buffer for Class A and Class C premises, and provide an excellent opportunity to expand our thoughts on the ecology of crime. Notice in both of these maps, the 50m bar buffer extends outward roughly one block to either side. In Figure 15 (Class C premises), the 50m buffer zone does not extend from Seymour Street (southwest corner of the map) onto an incident cluttered Granville Street. Clearly, both the 100m and 0.1-mile buffers would include the Granville strip calls. At this juncture, we are not able to determine if this is a positive or a negative consequence. However, it would seem advisable to reserve the most confidence for those calls collected in the smallest buffer size available, for those calls occurring both during bartime and within 50m of a licensed premises, one can be relatively confident that the incident and the bar stand a good chance for being related in some way. Obviously, the degree to which these calls are actually related is not obtainable. However, we can observe bar buffer collections over extended periods of time in order to determine if the buffer totals change with the passage of time. We can then treat the bar 'effect' much like the dark figure of crime: the exact numbers are not knowable, but what we can observe is reflective of the fluctuations of the real figure.

These night-time maps also illustrate the concentration of calls, even during bartime (10pm until 4am), along the major pathways. Granville Street is one such major thoroughfare, and East Hastings Street being the other. Powell and East Pender Streets, which bracket E Hastings Street (to the East) and Robson and Davie Streets (to the West) appear to be only slightly less active. The Hastings, Powel and Pender Streets seem to demarcate not only the most active area for the study area in terms of calls or incidents requiring police attention, but the concentration for both classes of licensed premises strongly suggests that researchers, planners and police personnel alike, consider this to be an entertainment area. Similarly, the collection of Class C night-clubs along Seymour, Richards and Homer Streets makes it extremely difficult to even begin to attempt to connect incidents with any one particular premises.

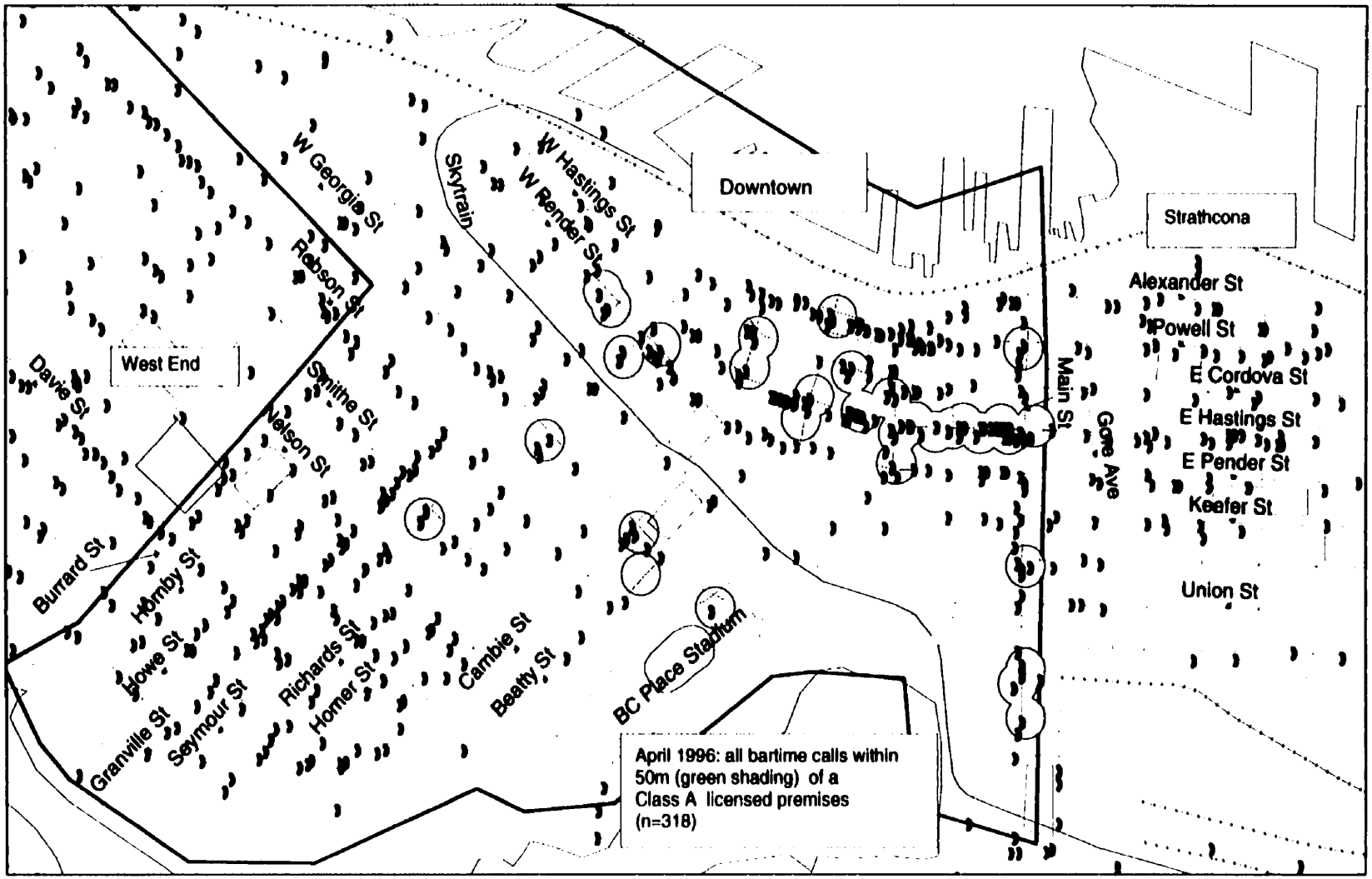


Figure 13 - April 96: All Class A 50m Bartime Calls

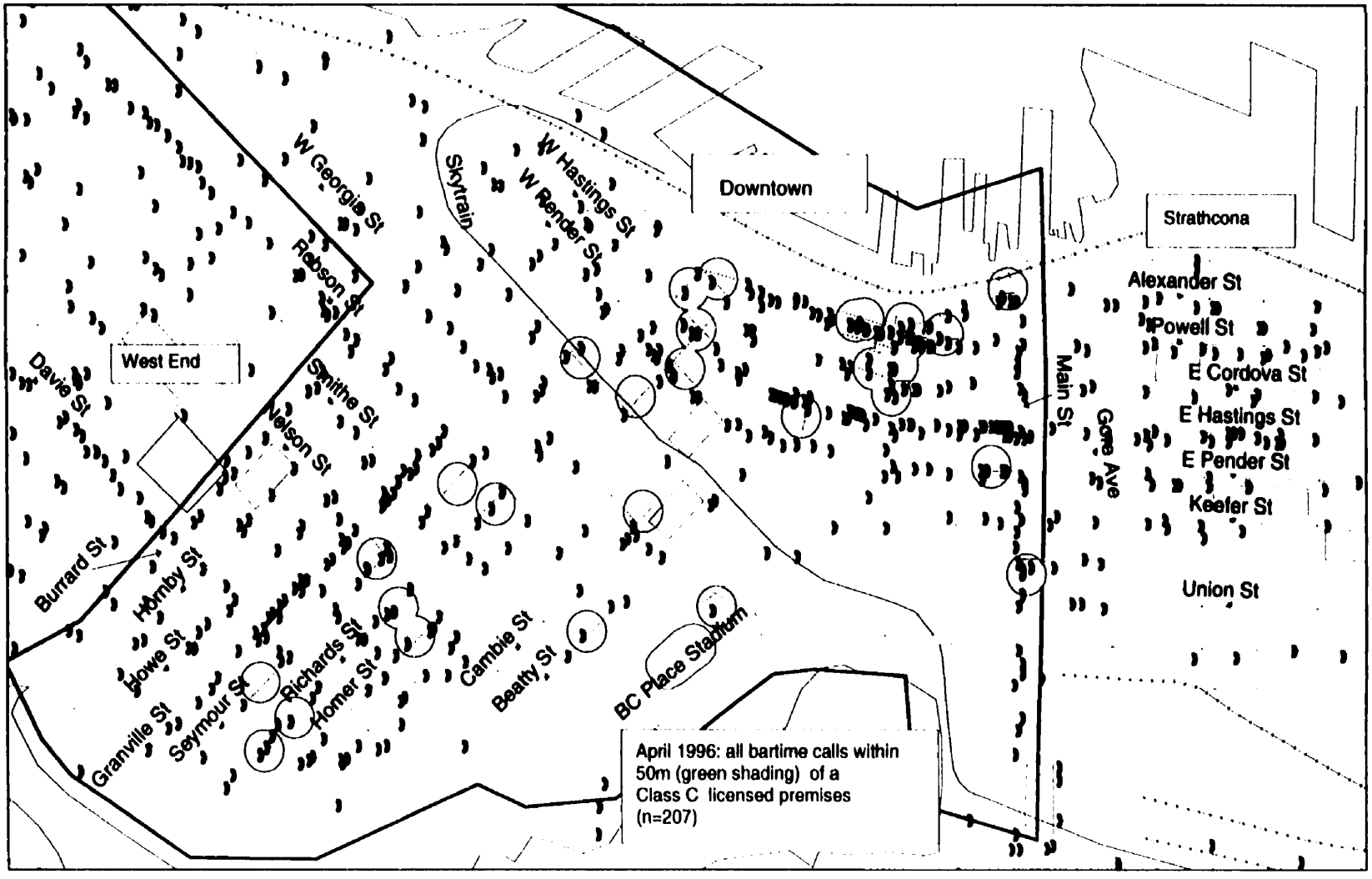


Figure 14 - All 50m Class C Bartime Calls

The complexities, unfortunately for the research continue as one moves to a finer cone of resolution. Taking as our example, the Powell, East Hastings and East Pender "entertainment district", when we look more closely at the point data (see Figure 15, below) we notice that the patterning is not so simple as the earlier view suggests.

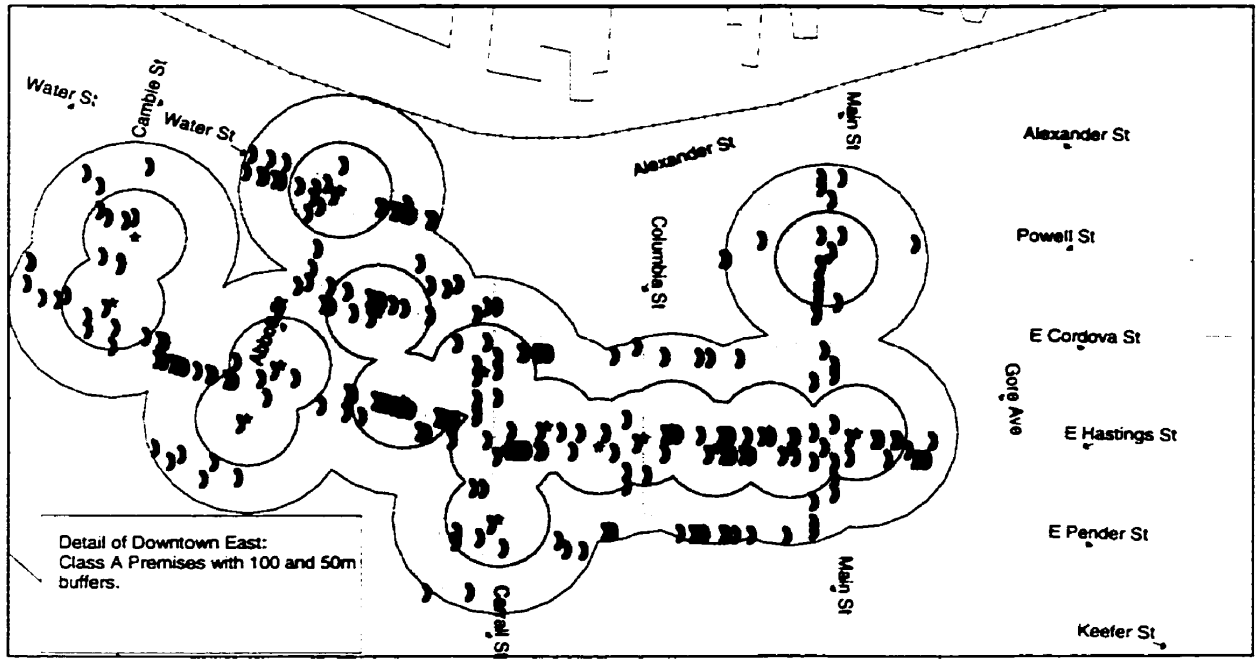


Figure 15 - Detail of Class A 50 and 100m Buffers

Although East Hastings remains central in both location and call activity, one begins to notice the effects of the other streets—particularly Abbott, Carall and Columbia Streets, which run perpendicular to the Hastings corridor. One must be cautious in his or her point pattern analysis however; mapped in their current format, these data are best thought of as call location markers, and not a true point frequency measure. This is because the maps contained in this thesis do not show how many times each specific location was visited by the police, an so, it is impossible to visually determine if one address is "hotter" than another; to do this, one must have recourse to the CAD data itself. Therefore, true hotspot analysis is not feasible given the mapping strategies used.

Research Implications and Future Directions

As an exploratory case study of the impact of licensed drinking establishments in the spatial distribution of calls for police service, this thesis has met the following objectives. Firstly, it has established the utility of CAD data records in the mapping of incidents requiring police attendance. While this particular work focuses on bars, clubs and pubs as particular types of land use as a backdrop for considering the CAD records, the possibilities for considering other types of land use are considerable. Second hand and pawn shops, arcades, pool halls, massage parlours, and the like are but a few of the other types of land use that could be examined for patterns in police dispatch records.

A second positive outcome from the present study is the recognition of the complexities entailed in the examination of patterns in crime. Sections of cities certainly have divergent characteristics: the downtown district looks markedly different in terms of calls for police service than the city considered as a whole. But such differentiation also exists within sub areas. There are segments of the Downtown that appear to be relatively inactive, at least in terms of the CAD data. The selection of buffer zones (micro areas within the Downtown area) and "bartime" calls also represent avenues for continued examination in future work. Furthermore, these same areas may differ widely on what time of day they draw more or less police attention. This complexity is further enhanced when one considers the ecology of separate spaces within the urban neighbourhood. The eastern section of Hastings Street, it would appear, and here we come close to what Eck terms "criminality of place" has its own "flavour" of police interaction. Obviously, not all of the incidents that occur in a given area can be attributed to the local bar or pub—even if said call occurs within an established buffer zone. Pattern theory suggests that the

routines of urban life—travel, work and play (among others)—have significant impacts on how people make use of, and become familiar with, the urban landscape. Socio-economic factors also combine to further frustrate simple explanatory modelling, as does the fact that night time populations are not likely to resemble the demographics suggested by the census data, which are based upon the residential population.

As a partial step towards improving our understanding of how bars and pubs may be involved this process, simple temporal and spatial restrictions were imposed on the data. By selecting for calls occurring between 10pm and until 4am, one is more confident that activities taking place may have something to do with the nearby bar or tavern. Our confidence in this linkage improves with the added spatial restriction. If an event takes place both during bartime hours and within 50 or 100 meters of a licensed premises. Such restrictions can help alleviate some of the difficulties involved with not having an accurate population with which one might compute incident rates, or some similar measure.

Finally, the present thesis has helped to map out several avenues for future research. Primary among these is the need for a more sophisticated geographical unit of analysis. While the buffer zones and license class analysis suggested that Class A pubs and Class C cabarets differed in the character and absolute number of calls for police service, the buffer zone was limited in its ability to assist with the identification of problem premises. Along with more sophisticated geographic techniques to analyse the spatial distribution of calls for police service, one also should look towards improving the temporal component as well. Differing parts of the day could be identified and then selected and compared with other time periods. More specialised coding strategies, or

perhaps multiple coding schemes could be implemented so that one could isolate only, for instance, violent and or aggressive male behaviour. This project would benefit tremendously from the introduction of a qualitative component. Such an innovation would help improve data triangulation and provide more of the context in which bars function. Management strategies and staff training are two particular areas that this author would like to see explored in the near future.

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Appendix A – Coding Schedule for Calls of Interest

The following is the complete syntax file used to code the CAD data when in SPSS format. Notice that "compcode" represents the complaint code, and thus the compcode that equals "LPC" (or "licensed premises check") is assigned a value of '0' (or other, in our classification scheme), while "PARK" or parking complaint is coded as a '4' or incivilities category.

```
RECODE
 compcode
        ('LPC'=0) ('PARK'=4) ('MENTAL'=4)  ('KPEACE'=4)
        ('HARASS'=2) ('HTRNGB'=0) ('SDEATH'=4) ('MSCHF1'=4) ('DRUGAR'=4)
        ('HSUSP'=0) ('CHRNIC'=0) ('CABTRB'=2) ('MVAPED'=0) ('DRCOMP'=0)
        ('CASUAL'=0) ('INSEC'=0) ('DOWN'=4) ('PROWLR'=4) ('SUICID'=4) ('DTX'=4)
        ('FEVID'=0)('STNREC'=0) ('FPERS'=0) ('PURSE'=2) ('RPTS'=0) ('BOAT'=0)
        ('ROB1'=2) ('MVAIMP'=0) ('SHOTS'=4) ('TFAUTO'=3) ('AUDIBL'=3) ('BNE'=3) ('THEFT'=3)
        ('SUSCIR'=4) ('BNE1'=3) ('ANNOY'=4) ('WARANT'=4) ('SUSPER'=4) ('STAUTO'=3)
        ('NOISE'=4) ('LPROP'=0) ('MSCHF'=4)  ('MSCHF1'=4) ('VEHREC'=0) ('ATTHFT'=3)
        ('MVAHNR'=3) ('WAGON'=4) ('SEIZED'=4) ('ARREST'=4) ('SHOPL'=3) ('FPROP'=0)
        ('MVA'=0) ('THEFT1'=3) ('MPERS'=0) ('FPERS'=0) ('LPORP'=3) ('THREAT'=2)
        ('THREAT1'=2) ('IMPERS'=0) ('THFT1'=3) ('BREACH'=4) ('SILENT'=3) ('ATTBNE'=3)
        ('ATTBNE1'=3)  ('FRAUD'=2)  ('FRAUD1'=2) ('IMP'=4) ('ROBBRY'=2)
        ('EXPOSE'=4)  ('MVACYC'=0)  ('SCREAM'=4) ('69'=0) ('FRAUD1'=3) ('ARSON'=3)
        ('INTRUD'=0)  ('EXTORT'=2)  ('EXTORT1'=2) ('DUMPED'=0) ('JUMPER'=0)  ('C4'=0)
        ('OBSCPH'=0) ('DEMO'=0) ('FTS'=0) ('ABDUCT'=2) ('EXPL'=4)
        ('FIRE'=0)  ('PCRT'=0) ('WRSDWN'=0) ('CBACK'=0)
         ('MISCFA'=0) ('MVACTY'=0)  ('INFO'=0) ('TCRT'=0) ('CPO'=0) ('MVAFAT'=0) ('PSP1'=3)
        ('T'=0)  ('FIGHT'=1)  ('ASLT1'=1)  ('KNIFE'=1)  ('GUN'=1)  ('HOLDUP'=1)  ('HALARM'=1)
        ('SXASLT'=1) ('STAB'=1)  ('BOMB'=1)  ('HOMCID'=1)  ('OFFTRB'=1)  ('PERSON'=1)
        ('ASLT'=1) ('FIGHT1'=1) ('KNIFE1'=1)  ('GUN1'=1)  ('HOLDUP1'=1)  ('HALARM1'=1)
        ('SXASLT1'=1) ('STAB1'=1)  ('OFFTRB1'=1)  ('PERSON1'=1) ('SCRT'=0)
        ('DIST'=4) ('DIST1'=4) ('IMPGB'=0) ('FAMTRB'=2) ('MVAINJ'=0) INTO
 rcompcod .
VARIABLE LABELS rcompcod 'compcode category'.
EXECUTE .

MISSING VALUES rcompcod ("0.").
VALUE LABELS rcompcod
 .000000000000000 "other"
 1.00000000000000 "violence"
 2.00000000000000 "persons"
 3.00000000000000 "property"
 4.00000000000000 "incivilities"
.
```