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**HOT SPOTS OF BUS STOP CRIME:
THE IMPORTANCE OF ENVIRONMENTAL ATTRIBUTES**

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HOT SPOTS OF BUS STOP CRIME: THE IMPORTANCE OF ENVIRONMENTAL ATTRIBUTES

Abstract

This study focuses on bus stop crime and seeks to identify the environmental attributes that can affect the bus rider's security while at the bus stop. Using crime data for the years 1994 and 1995 made available by the transit division of the Los Angeles Metropolitan Transportation Authority, the study discusses some general characteristics of bus stop crime. Following the argument of criminologists that certain place characteristics can affect the incidence of crime, the study employs qualitative research methodology (observation, mapping, interviews and surveys) to examine in detail the physical and social environment around the ten most dangerous bus stops in Los Angeles. It finds an abundance of "negative" environmental attributes and a general lack of "defensible space" elements. It also finds that different types of crime tend to occur under different environmental conditions. The paper discusses design responses as an approach to crime prevention at bus stops.

Introduction

Crime and fear of crime affect many aspects of everyday life in our cities. Without question, ample reasons justify people's deep-felt concerns about crime. The US has the highest rates of violence anywhere in the world (Currie, 1985), with homicides "*from four to twelve times higher than in other countries.*" (Bureau of Justice Statistics, 1992). In 1990, 2.3 million Americans said they had been victims of violent crime (Friedman 1993, p.451). Even though experts assure us that crime rates have actually declined over the last few years, studies show that fear of crime among the general public is running high. Especially in inner city neighborhoods, fear of crime dictates life (Leavitt and Loukaitou-Sideris, 1995). It holds the elderly hostage in their own homes, prevents people from using public transportation, forces merchants to close their shops early, discourages investment, thereby increasing the cost of living, working, or operating a business. Studies of Los Angeles inner city corridors found that crime was the prominent concern of residents in the area (Loukaitou-Sideris 1994 and 1997a).

Over the past two decades many criminologists have argued that a crime must be viewed as an event that occurs at a specific site in a specific situation (Brantingham and Brantingham, 1993b, 1991,

1981, 1978; Gottfredson and Hirshi, 1990; Barlow 1990; Felson, 1987). Empirical studies have shown that crime is concentrated heavily in a few "hot spots" (Sherman et. al. 1995, 1989). Crime place research has examined crime incidence at special purpose structures and facilities (high schools, taverns, bars, liquor stores, apartment buildings, and public housing). This study will examine a particular type of urban setting—the bus stop-- and its predisposition to crime. The purpose of the research is to examine the environmental factors that may create opportunities for crime at bus stops. The following section first summarizes what we know about bus stop crime, and then reviews the literature of crime prevention through environmental design. The remainder of the paper turns to empirical research to examine the physical and social context of the ten most dangerous bus stops in Los Angeles.

The Problem: Preponderance of Bus Stop Crime

Since the early 1900s passenger security has been a concern of transit operators. Guidelines and rules of proper behavior in transit vehicles were widely adopted in the beginning of this century. Some transit companies even allowed vehicle drivers to carry weapons to protect themselves (Mitre Corporation 1979). But overall transit crime did not attract wide public attention as a serious problem till the 1960s. Then, in response to increasing incidents and public concern many transit companies instigated their own transit policing.¹ This included primarily the enclosed environment of the bus. Few transit companies directed any efforts to increasing the security of the open environment of bus stops.

Today, crime at bus stops remains understudied even though it is particularly troubling and affects the safety and quality of life of millions of bus passengers. Transit crime (crime on the bus or train or at the bus stop or rail station) is quite persistent, albeit underreported in large urban centers. Surveying 1,088 households in Los Angeles, Levine and Wachs (1986a) found that the actual incidence of transit crime was 20 to 30 times greater than that listed in official reports. Similarly, Gray and Hoel (1992) have argued that transit crime may be far greater than is shown in published statistics. Thrasher and Schnell (1974) have shown that the problem of security is widespread among transit companies in the US. They have estimated that transit riders run twice the risk of being victims than non-transit riders. Indeed, this is exactly the perception of the general public. A nationwide survey has shown that only 16.9 percent of respondents considered the bus to be the safest mode of transportation; at the same time 58.9 percent of

those asked believed that the automobile is the safest mode (Ball and Mierzejewski 1992). Researchers have argued that the perception of personal security can have a significant influence on travel patterns (Lynch and Atkins 1988). Residents responding to a survey of Los Angeles inner city corridors cited “lack of safety” as the most important deterrent to using public buses (Loukaitou-Sideris, 1993). Public concerns over safety may be one of the most important reasons why many choose not to use transit, even though this seems to be more of a concern in large cities than in smaller ones (Hartgen et al. 1993).

A number of studies and research projects have focused on transit crime. The majority of these studies have examined rail systems and subway stations (LaVigne 1997, Poister 1996, Levy 1994, Scnell et al. 1973). There is less information on crime on buses and even less data available for crime at bus stops. Yet, police data indicate that the majority of reported transit crime is conducted in buses and at bus stops. In Los Angeles incidents reported on buses and at bus stops increased 500 percent from 1988 to 1992, while average weekday ridership fell by about 11 percent during the same period (Lopez, 1993).

Some important studies on bus stop crime were conducted in the 1980’s (Pearlstein and Wachs 1982; Levine and Wachs 1985; Levine and Wachs 1986a; Levine and Wachs 1986b, Levine, Wachs and Shirazi 1986c). The researchers used survey data to study the extent and characteristics of bus stop crime. Findings from these studies showed bus stop crime to be concentrated spatially and temporally. A limited number of city bus stops tend to attract an excessive amount of crime incidents. A disproportionate number of crimes occur during the rush hours of late afternoon and early evening, yet the serious crimes take place mostly at night, when there is little pedestrian presence at the bus stop (Pearlstein and Wachs 1982).

Research has also focused on the vulnerability as well as the perceived levels of insecurity of different sub-populations to bus stop crime. Women, children, the elderly, and the physically handicapped are typically found to be the most fearful of bus stop and subway settings (Wekerle and Whitzaman, 1995, Patterson and Ralston 1983). Two major surveys on security conducted in the United Kingdom in the mid-1980s found that waiting at the bus stop was a major source of concern and fear among women (in Lynch and Atkins, 1988). As expected, persons already victimized were more fearful than those who have not been exposed to bus crime (Levine and Wachs, 1986a).

The importance of enhancing security for transit passengers was officially recognized in 1991 in the Intermodal Surface Transportation Efficiency Act (ISTEA). Section 3013 of this Act requires that transit operators “*expend not less than 1 percent of funds received ...for transit security projects.*” Similarly, the *1995 Report and Recommendations of National Leadership Conference on Transit Security*, sponsored by the Federal Transit Administration Office of Safety and Security, recommends that transit operators upgrade and redesign their facilities and equipment to enhance safety. Yet, there is no clear understanding as to what type of strategies are successful in stopping crime and reducing the fear of victimization (National Leadership Conference on Transit Security 1995).

In general, it can be said that even though studies have found that more transit crime occurs at bus stops (Levine, Wachs and Shirazi, 1986) most transit agencies tend to concentrate their crime prevention efforts on transit vehicles and not on the public realm of the bus stop. For example, the Los Angeles Metropolitan Agency’s efforts to battle bus crime include emergency alarm buttons for drivers and uniformed and undercover police on buses. In contrast, the bus stop environments are most often devoid of any facilities that can possibly deter crime.

Hartgen et al. (1993, p.3) discuss the following four broad categories of countermeasures that can tackle transit crime: 1) more security and patrol; 2) use of technology (surveillance cameras, radio contact, emergency systems on vehicles); 3) better information (media campaigns, posters, help-line instructions, anti-drug messages); and 4) design actions (better lighting, recessed walls, platform layouts that increase visibility).

Typically transit authorities give more attention to the effective deployment of transit police and use of security hardware in transit vehicles than to environmental design actions (Transit Cooperative Research Program 1994). This study focuses on situational crime prevention at bus stops seeking to analyze and "design out" the physical environmental factors that may create opportunities for crime. But first we have to understand which specific elements of the built environment promote or hinder criminal actions. The next section presents a brief survey of the literature on crime prevention through environmental design.

The Role of Environmental Attributes in Crime Prevention: Literature Review

The literature on crime prevention through environmental design attracted particular attention in the 1960s and 1970s. Jane Jacobs (1961) in her book *The Death and Life of Great American Cities* argued that modern city design typically undermines people's ability to observe public streets, thus breaking down informal social control of criminal activity. She argued that crime and physical environment are related in a systematic, observable and controllable manner. Jacobs viewed natural surveillance ("eyes on the street") as a good deterrent of criminal activity. In a similar manner Jeffrey (1971) argued that the crime prevention strategy with the greatest potential involved heavy reliance on design and physical changes that could help reduce criminal opportunities in the environment. The theoretical discussions of Jacobs and Jeffrey drew attention to the importance of investigating the crime-physical environment connection. Schlomo Angel's (1968) study of street crime in Oakland, California, focused on the relationship between crime and population density. Angel studied commercial streets and found that "*the physical environment can exert a direct influence on crime settings by delineating territories, reducing or increasing accessibility by the creation or elimination of boundaries and circulation networks, and by facilitating surveillance by the citizenry and the police*" (Angel 1968, p.15). Angel asserted that crime is related to the intensity of activity on the street. As intensity of use increases from very low to low, enough potential victims are on the street to warrant the attention of potential offenders. But with higher levels of use, crime falls because there are enough people to assure informal surveillance of the site. Angel considered the commercial strip environment as particularly vulnerable to crime, because the linearity of the commercial strip thins out the intensity of activity, thus making it easier for individuals to commit crime.

The most influential empirical study and one of the earliest to examine the crime-environment connection was conducted in the early 1970's by Oscar Newman and George Rand. Focusing on public housing developments, this work highlighted a number of physical factors that were hypothesized to contribute to the high levels of crime and fear present in these developments. In a series of publications Newman (1972, 1976, 1981) elaborated the idea of *defensible space* -- an environment that exhibits physical characteristics, through its layout, that allows residents to assume primary authority for ensuring

their safety. Newman (1972, p.50) argued that defensible spaces display: 1) *Territoriality*, defined as “*the capacity of the physical environment to create perceived zones of territorial influence.*” According to Newman individuals or groups with a sense of ownership or territory are more likely to protect “their” space against criminals. 2) *Natural surveillance* defined as “*the capacity of the physical environment to provide surveillance opportunities for residents and their agents.*” 3) *Proper location*, which involves the juxtaposition of space with “safe zones” (clean and well maintained spaces).

During the 1980s British academics also proposed similar theories about the relationship between crime and environment (Hough et al. 1980; Poyner 1983; Coleman 1985). In his book *Design Against Crime*, Poyner (1983) suggested that accessibility (easy access to and escape from a site) is an important element to be considered in strategies for crime prevention. Studying neighborhoods in Atlanta Greenberg and Rohe (1984) found that their physical characteristics, such as the number of housing units per structure, the commercial use of land, the street type, and the physical insulation from surrounding areas had a direct effect on crime levels. All these studies were characterized by a faith in the ability of the physical environment to influence the occurrence of crime.

While the Federal Government gave some support to Crime Prevention through Environmental Design (CPTED) programs in the 1970s, interest in environmental crime prevention languished in the US (Clarke et al. 199X). In recent years however new theories have emphasized the importance of place (Eck and Weisburd 1995; Eck 1996). Thus, we have witnessed a resurgence of interest in the role of the built environment to exacerbate or mitigate crime (Cooper Marcus and Sarkissian 1986; City of Toronto 1992; Wekerle and Whitzaman 1995, Block and Block 1995; Taylor and Harrell 1996). Researchers observed that a limited number of sites and situations constitute the loci for the vast majority of offenses. Environmental psychologists call these high-crime spots “crime generators” or “hot spots” (Nasar and Fisher 1993, Sherman 1995, Buerger et al. 1995). Crime researchers have suggested that crime is strongly related to the aggregate elements of the physical environment such as nodes, paths, end edges (Brantingham and Brantingham 1993a). High-crime bus stops constitute hot spots, in other words nodes of criminal activity.

The new generation of studies in the 1990s has shifted attention from a macro scale -- e.g. the ecological studies of large city areas exemplified by the work of Shaw and McKay (1929) -- or a meso scale -- e.g. studies that focused on city neighborhoods (e.g. Greenberg and Rohe 1984) or large public projects (Newman 1972, 1976) -- to a micro scale. Some recent studies have used the block as a unit of analysis (Perkins et al., 1993); others have concentrated on the role of certain facilities or features of the built environment (Roncek and Meier 1991; Spelman 1993; Block and Block 1995). This stream of research, within which this study also falls, is concerned with micro-level situational correlates of crime and seeks to understand the environmental factors that may create opportunities for crime. It is informed by new criminological theories such as the routine activity theory (Cohen and Felson 1979; Felson 1994), and rational choice theory (Cornish and Clarke, 1986) that argue that as opportunities for crime increase, more crimes will be committed. Conversely crime declines as opportunities are reduced. Finally, crime pattern theory (Brantingham and Brantingham, 1993b) seeks to explain the distribution of crime across places and time. The theory explores the interaction of offenders with their physical and social environments that influence offenders' choices as targets. The concept of place is central, as characteristics of place affect the likelihood of crime (Eck and Weisburd 1995).

Research on the micro-environment of crime settings has shown that surveillability, that is the possibility of surveillance of a site by bystanders, and signs of care that give the appearance that there are natural guardians who may intervene, can have a strong effect in discouraging potential criminals (Brantingham and Brantingham 1993a). At the same time criminologists have argued that signs of dereliction and “incivilities” – physical conditions such as litter on or near property, graffiti, exterior dilapidation and the like, and social behaviors such as boisterousness, loitering, drunkenness, and panhandling -- contribute to higher incidence of crime (Perkins et al., 1993; Skogan, 1990; Taylor et al., 1984). The relationship of physical incivilities to crime is central to the well-known “broken window” thesis first popularized by Wilson and Kelling (1982). A broken window left unrepaired sends a signal that social control is attenuated in the area. Sensing that no one is in control, potential criminals are apt to prey on the locality. The immediate environment of many high-crime bus stops is full of “broken windows”, both literally and metaphorically. Abandoned commercial and industrial structures, boarded

up doors and windows, broken benches, cracked sidewalks, uncollected trash and litter give the impression that this is a “no-man’s land.”

Studies have shown that certain features of the micro-environment help attract crime. For example, it is easier for criminals to commit crimes near major paths and edges of social activity (Brantingham and Brantingham 1993a). The greater the number of escape routes (streets and alleys) in the vicinity of a site, the easier is for a criminal to escape. The type of surrounding land uses can have an effect on crime, with certain land uses (e.g. liquor stores, taverns, pawn shops, pool halls, vacant lots and abandoned buildings) considered as "crime generators." Other features of the built environment are viewed as having the potential to detract crime. Such "defensible space" features include lighting, good visibility, places to sit outdoors, actual and symbolic barriers, and territorial symbols (e.g. neighborhood watch signs, alarm signs, watch dogs, home personalization signs) (Perkins et al. 1993).

The literature on crime prevention through environmental design and defensible space can be helpful in understanding and mitigating crime at bus stops. Studies including this one have found that a disproportionate amount of crime occurs at a small number of bus stops. In other words, these bus stops can be considered as hot spots of criminal activity. In their early study of bus stops Levine and Wachs (1985, 86) found that contributing environmental conditions are important for crime prevention and called for more research that can obtain “*more extensive case studies to define a broader range of variables.*” This research intends to do exactly that by a careful analysis of the physical and social environment of the ten most dangerous Los Angeles bus stops.

Methodology

In studying the relationship between neighborhoods and criminal activity researchers usually employ one of two methods: quantitative and cross-sectional or qualitative and ethnographic (Buerger et al. 1995). This study utilized the latter approach, which has the advantage of describing street-level interactions at a bus stop and relating them to its spatial characteristics.

To distinguish the ten most dangerous bus stops in Los Angeles this study analyzed crime data obtained by the Metropolitan Transit Authority Police for the period 1/1/94 to 12/31/1995.² From the database were excluded crimes against the transit system and other incidents irrelevant to the study (such

as glue sniffing, gambling, grand auto theft, traffic injuries, lost and found reports, etc.). We concentrated on bus stop crime incidents, which were either crimes against persons (robbery, assault, rape, theft, etc.) or crimes involving public nuisance or public offense (drinking in public, drugs violation, etc). Such crimes were chosen as particularly relevant for the bus stop environment and for passenger victimization. This yielded a total of 3,111 reported bus stop crime incidents in the two-year period under study. Based on this data³ we identified the ten most dangerous bus stops in the city of Los Angeles⁴ and proceeded to utilize qualitative research methods in order to analyze the specific micro-environment of each of these bus stops. More specifically:

1. We conducted structured observations⁵ at the ten locations during specific time frames (early morning, mid-day, and late afternoon) on weekdays and weekends and collected information regarding bus stop crowding, pedestrian circulation, gender of passengers, and behavioral patterns of people waiting at the bus stop. We also obtained ridership data for average weekday and weekend passenger boardings for all ten bus stops.
2. We created a block environmental inventory by systematically mapping the surrounding land uses (radius of about 300 feet around each bus stop). Based on findings from other studies we considered the following land uses as "negative": liquor stores, check cashing establishments, "hot sheet motels", adult bookstores/movie theaters, parking lots, vacant storefronts or lots, and abandoned buildings. We also mapped the possible escape routes as well as the signs of "incivility" and blight (litter, vandalism and graffiti, run-down establishments). Finally we mapped "positive" or "defensible space" elements, such as surveillance opportunities and visibility from surrounding establishments, lighting, proximity to police sub-station, public phones, etc.
3. We interviewed several security officers who patrol these bus stops and merchants at surrounding commercial establishments.
4. We surveyed a systematic random sample of 212 transit passengers⁶ at six high-crime bus stops to identify their experiences with bus stop crime, their perception of security, and desired changes.

Bus and Bus-Stop Crime in Los Angeles: General Trends

Viewed system-wide buses and bus stops in Los Angeles are no more unsafe than other parts of the urban environment. Taking into account that there are approximately 1.2 million people riding the Los Angeles buses every year, the total number of 4,645 bus and bus stop incidents reported for the two-year period is relatively low.⁷ If we were to only concentrate on serious (Part I) crime we would find that system-wide there are less than five violent (reported) crimes per 100,000 passengers. However, this offers little comfort to the hundreds of inner city bus passengers that get victimized on the bus or at the bus stop. In fact, when we try to map crime incidence we find a major spatial concentration. About half of all the crimes are committed in a 13-square mile area that includes Downtown and the adjacent neighborhoods to the west (Lopez 1993). Even within this area crime is not equally dispersed but rather concentrated at specific hot spots. This study found that seven of the most dangerous bus stops are located in the downtown area, while the other three are at the western fringes of downtown.

During the two-year period under study there were 1,534 bus crime incidents and 3,111 bus stop crime incidents. In other words, bus stop crime accounted for 67 percent of transit crime, while bus crime accounted for only 33 percent of transit crime. The vast majority of crimes at the bus stop were public nuisance crimes or involved narcotics or drinking in public. Robbery was the fourth most common crime accounting for 8 percent of all bus stop crime. On the other hand, assaults with hands or feet accounted for more than one third of the reported bus incidents. It is likely that most serious crimes on buses are brought to the attention of the driver, and hence, get reported to the transit police. This is probably not the case for bus stop crime. We hypothesize that many bus stop crimes go unreported because there is no one present to report the crime to. Moreover, bus stops often lack public phones, which makes reporting even more difficult.

Bus stop crime in Los Angeles is not only spatially concentrated, but also temporally. The most dangerous time to be waiting at Los Angeles bus stops is during late afternoon. This is consistent with the findings of Pearlstein and Wachs (1982). Our observations at the ten bus stops showed that the late afternoon and early evening hours are the most crowded in terms of people waiting or passing by.

Looking specifically at crimes against persons system-wide, we found that most incidents occur between

12:00-5:00 p.m. (Figure 1). However, most serious crimes tend to occur between 10:00 p.m.-12:00 a.m., when there are not many people at the bus stops. The most dangerous days of the week are Friday and Saturday, presumably because people have wallets full from a week's work (Figure 2).

Analysis of the MTA transit police database showed that 55.2 percent of the victims were Latinos, 21 percent were blacks, 16.4 percent were white, and 7 percent were Asian. About sixty percent of the victims were male and forty percent were female. This overrepresentation of male victims is partly due to the fact that there are more male passengers. While we do not have the gender breakdown for all Los Angeles riders, our observations and counts showed that on average there were 56 percent males and 44 percent females waiting at the ten high-crime bus stops.

Ten High-Crime Bus Stops

Consistent with the hot spot theory, the ten high-crime bus stops identified in this study have much more crime than the aggregate crime that occurs at thousands of other bus stops in Los Angeles. More specifically, crime incidents in these ten bus stops for the two-year period under study accounted for 18 percent of the total crime incidents at all bus stops! Nine of these stops accounted for 12 percent of all bus stop nuisance crimes; seven of these stops had over 11 percent of all assaults; and five bus stops had more than 8 percent of all bus stop robberies. These figures are astonishing, if we consider that there are about 19,650 bus stops in Los Angeles. Even after taking ridership data into consideration, normalizing crime incidents per capita, we find that depending on the bus stop, it is 20-30 times more likely to get victimized in these bus stops than in other Los Angeles bus stops. The police officers who patrol the area speculated that these crime incidents are grossly underreported because victims do not believe that the transit police can recover the lost property or find the perpetrators. In addition, a great number of undocumented immigrants are fearful of authorities and tend not to report crimes. This speculation was confirmed by our survey. About one third of the respondents (31.1%) reported that they had been victims of crime at the bus or bus stop over the last five years.

The spatial concentration of bus stop crime at certain bus stops in and around Downtown can be partly explained by the fact that ridership levels are much higher in Downtown because of the many bus transfers that happen in the area. However, this does not explain why certain high-ridership bus stops in

and around the same area report no crime incidence while others have excessive levels of crime. To understand this better we decided to look closely at the physical and social context around ten high-crime bus stops.

We found these high-crime bus stops situated in commercial areas at the intersections of multi-lane streets. Often they are not visible from the surrounding shops and lack adequate lighting, public phones, or near-by police sub-stations. Empty lots and vacant, semi-vacant, and dilapidated buildings neighbor many bus stops. Potential criminals can find many escape routes in the near vicinity that include alleys and mid-block connections. Bus stop sites with many public drinking offenses are adjacent to (not surprisingly) liquor stores or bars. The surrounding environment of those case study stops is often derelict and forbidding, suffering from physical incivilities, trash and graffiti. It is usually the co-existence and combination of the following elements that aggravates the incidence of crime at these bus stops.

Bad Neighbors

Spring and Fourth: This bus stop is situated at what the police consider to be "a very-very heavy corner for crime" (Photograph 1). Located in front of a boarded-up building the bus stop is surrounded by a multitude of negative land uses that include a check cashing establishment, two bars, a liquor store, a Single Room Occupancy (SRO) hotel, two vacant buildings, and a number of surface parking lots. There is no visibility of the bus stop from the surrounding establishments, which are either vacant or blocked, while the different alleys and vacant lots provide opportunities for potential criminals to hide or escape. Signs of physical and social incivilities abound as litter gathers at the sidewalk and street, graffiti often appears at the boarded-up storefronts, prostitutes make their presence obvious at the street corner, mostly male SRO residents loiter and drink beer at the sidewalk, and the smell of urine is strong at the bus stop. According to the police, the most common crimes here are public drinking, public nuisance, and narcotics. The four reported robberies occurred after victims had cashed checks at the near-by establishment.

Seventh and Main is characterized by police officers as "one of the busiest crime corners in the city." At the edges of Skidrow this bus stop also suffers from "bad neighbors"—negative land uses that

can be considered crime generators. These include three bars, a pawn shop, a couple of SROs and liquor stores, an adult bookstore, and a check cashing facility. All four neighboring blocks have alleys that provide convenient space for criminals to hide and wait for their victims or escape after a crime.

Santa Monica and Highland (Photograph 2) located in Hollywood also suffers from “bad neighbors,” with a liquor store, a pawn shop, a check cashing store, and an adult bookstore at the same corner. The other three corners are dominated by public storage buildings and surface parking lots. The visible presence of a male prostitution ring and drug trafficking is not reassuring for transit passengers. Many merchants and bus riders reported that the adjacent alley has been the site of many crime incidents, even a murder. Most said that they avoid this dark and unsafe bus stop at night.

Desolation and Lack of Surveillance

Hill and Third: At first glance this bus stop is a rather pristine spot in the midst of downtown's hustle and bustle. With adequate pedestrian lighting, shade from trees, a bus shelter, and benches this bus stop seems to ensure adequate comfort for bus riders. Yet, the data show a high number of "incivilities": drinking, loitering, panhandling, urinating in public, and more importantly, drug and narcotics violations. A careful analysis of the environment in the vicinity of this bus stop gives some explanation why this bus stop is classified among the most problematic. The potential for surveillance of the bus stop from surrounding establishments is non-existent as it is only surrounded by surface parking lots and parking structures (Figure 3). Liquor is easily available from the Grand Central Market across the street, and the grassy area behind the bus stop provides a semi-secluded setting for drinking. A near-by tunnel entrance, a pedestrian ramp, and a parking structure provide ample hiding places for drug activity. A total of nine negative land uses are found in the near vicinity. Most crimes here occur during the early evening hours, when there is less business activity (deliveries, street cleaning) and less pedestrian activity than in the morning and afternoon.

Alvarado and Pico: This bus stop (Photograph 3) is located at Pico-Union, a low-income inner city neighborhood at the western fringes of downtown. Situated in front of a large fenced vacant lot the bus stop lacks any formal or informal surveillance. The other corners of the intersection also lack street and business activity, being occupied mostly by vacant lots or stores. The only business in operation at

this intersection, a mini-mall, has no good view of the bus stop. To make matters worse, a near-by alley is a well-known spot for drug exchange, drinking, gang activity and loitering.

Crowding

Broadway and Fifth and Broadway and Seventh (Photograph 4). These two bus stops are at the heart of Broadway. This is a bustling retail street that has become a unique social and commercial place for mostly Latino immigrants. These two bus stops are characterized by intense pedestrian activity and ample opportunities for informal surveillance from the surrounding establishments. The predominant crime here is purse snatching. Police officers explained that many criminals working in pairs take advantage of the crowding and victimize those waiting at the stops or coming off the bus. Also, according to some merchants interviewed, the adjacency of jewelry stores seems to attract criminals, who steal mostly gold chains, and then try to sell them. Most merchants believed that their presence helps deter crime but complained that crowding, lack of adequate lighting, and lack of police surveillance as responsible for the unsafe situation at these bus stops. The lack of amenities rather than the presence of disamenities, is perceived to be responsible for the problems. There are no pedestrian lights, bus shelters, benches, or public phones. The absence of trashcans results in a heavy concentration of litter around the bus stops, which brings to mind the "broken window" effect. The sidewalks are very narrow and accentuate the problems of crowding. In this situation, it is not difficult for criminals to blend into the crowd and steal from captive transit riders. Most crime incidents at these stops occur between 12:00 and 2:00 p.m. when crowding peaks.

Pico and Vermont: This bus stop situated in Pico-Union experiences at a somewhat smaller scale the problems of the two bus stops on Broadway. Also situated in front of commercial establishments, it clearly lacks pedestrian amenities. The merchants interviewed believe that their presence is positive for deterring crime—even though in some cases their view of the bus stop is obstructed because of painted windows. Pickpockets are very common, due mostly to the large numbers of bus riders that overflow the narrow sidewalk. Bus riders at this bus stop complained about buses that do not stop, thus accentuating the overcrowding of the bus stop and increasing their chances of being victimized.

Broken Windows

Pico and Hoover: If James Q. Wilson and George Kelling (1982) wanted to find an example to illustrate their argument for "broken windows" and their effect on crime, they could have easily chosen the bus stop at the north-east corner of Pico and Hoover (Photograph 5). Situated amongst empty lots filled with trash, dilapidated buildings, and vacant stores-some with broken windows-the bus stop is a haven for gang activity and narcotics violations. No one seems to be really in control with the exception of the drug dealers. All surrounding merchants are very aware and scared of this situation. The police officer interviewed speculated that some merchants have to pay protection money to the gangs. The few bus passengers that we found waiting for the bus asked for better police protection, adequate lighting, and general cleaning and upkeep of the bus stop and sidewalk.

Easy Escapes

Wilshire and Alvarado: A large number of reported crime incidents at this bus stop, which is situated at the western fringes of downtown, also involve drug-related crimes and robberies. According to merchants many people get assaulted as they enter the bus. The physical environment is quite conducive to such activity. As we observed, the immediate bus stop vicinity provides ample places for stashing drugs and curb parking for motorist-clients. More importantly, the location of this bus stop, near seven different escape routes, provides ample opportunities for criminals to disappear after their crime.

The View of Bus Riders

Police crime data and statistics are often incomplete because they concentrate on the characteristics of the criminal and the victim, but ignore the importance of the crime setting (Maltz et al. 1991). Furthermore, they only reflect the cases reported to the police. To complete the examination of high-crime bus stops we turned to the users and conducted a survey of a random sample of 95 female and 107 male bus riders, whom we found waiting at six high-crime bus stops⁸. The majority of respondents were Latinos (77.3%) and African-Americans (13%). Very few Asians (4.8%) and whites (3.9%) were part of the sample. This particular racial composition was also confirmed by our observation findings, which showed mostly Latino and some African-American riders at the high-crime bus stops.

The survey showed that the vast majority of respondents were captive bus riders. Half of them were members of carless households, while almost another third (30.9%) reported only one vehicle. They were mostly poor. Over one third of the sample reported household income less than \$10,000, while about one half of the sample stated that they earned less than \$20,000. Almost three quarters of the respondents relied heavily on the bus system, using it everyday to access a number of destinations; prominently work (86.9%), shopping (54.6%), friends and relatives (44.1%), and school (34.9%). Interestingly, seventy-two percent of respondents claimed that they liked riding on the bus, because it is convenient (30.4%), affordable (16.4%), and the only means they have to reach their destinations (29.8%). However, they disliked the crowding, the long waits, the lack of punctual service, the dirtiness, and above all, the lack of safety.

Probing the matter further, we found that safety concerns are prominent among these bus riders. Bus stops were quite scary settings for many . Exactly half of the respondents stated feeling unsafe at the bus stop, while only a quarter reported feeling unsafe on the bus. Almost a third (31.1%) claimed to be victims of some crime when on the bus or at the bus stop during the last five years⁹. Forty-five percent of these incidents were at the bus stop; eighteen percent inside the bus; while for another thirty-seven percent of the incidents the site of the crime (bus or bus stop) was not reported. Over half of the crimes reported by survey participants involved robbery. In addition, almost a third of the respondents (32%) stated that a friend or relative had been a victim of bus or bus stop crime over the last five years. The following table shows the types of crimes that these respondents perceive as present at the bus stops and in the buses.

Insert table here

When asked to indicate remedies for bus stop crime the vast majority of respondents (86.7%) argued for more policing. However, environmental and design attributes also figured in their responses, such as better lighting (46%), bus shelters (32.8%), better locations (25.9%), cleanliness (25.9%), public phones (21.2%), and better visibility (19%).

Environmental Responses to Bus Stop Crime

Crime is a "wicked" problem and fight against it requires a coordination of approaches. Clearly, intensive police deployment and surveillance of bus stops will decrease the incidence of crime. But the police alone is often unable to ensure the safety of buses and bus stops. In Los Angeles the 245-transit police force is stretched thin trying to protect approximately 2,000 buses and 19,650 bus stops. Another approach that can complement police surveillance is what criminologists call opportunity blocking. Careful design and siting of bus stops can help to "harden the target" or in other words make crime more difficult for potential offenders.

The land uses that surround a bus stop seem to be quite crucial for its safety. Negative land uses (liquor stores, bars, seedy motels, check cashing establishments, pawn shops, adult book stores and movie theaters) can generate crime because they can concentrate potentially criminal elements or encourage anti-social behavior. Siting a bus stop near these establishments should be avoided or at least carefully monitored. Other features of the micro-environment may matter as well. General neglect, graffiti and litter in the vicinity are signs that no one really cares about or regulates the area; that its physical and social context are vulnerable. On the other hand, proximity to well-maintained businesses shows that there are local stakeholders.

Placing a bus stop in front of surface parking lots, vacant buildings or other dead space isolates the people waiting for the bus. As our data showed, most serious crimes tend to occur at desolate settings with no activity. Proximity to active businesses with open storefronts enhances the visibility of the bus stop from the surrounding establishments and possibly its safety. Good bus stop sites ensure surveillance opportunities from surrounding businesses. Good lighting and appropriate shelter design (that does not block views) offers visibility from passing traffic and neighboring establishments, but also does not obstruct the view of those waiting inside. Other features of the micro-environment, such as walls, bushes, tunnels, etc. that offer opportunities for hiding and can create entrapment spots should be avoided or modified. If this is costly, it may be preferable to move the bus stop to a more appropriate site. Unlike rail stops which are fixed features of the built environment and cannot be moved easily, relocating bus stops to new sites is relatively simple.

Studies of residential crime have shown that corner houses are more susceptible to victimization, simply because the intersection offers more escape routes for criminals. Conversely, houses on cul-de-sacs seem to score better in terms of safety. We noted that the high-crime bus stops are not only situated on intersections, but also in the near vicinity of alleys which offer multiple escape routes for criminals. In some cases, blocking or gating the entrances and exits of these alleys may be the best "defensible space" strategy.

Different types of crime occur under different environmental conditions. While serious crimes tend to happen in more isolated situations, pickpockets seek crowding. In such cases environmental design can again help to decrease opportunities for crime. Specific design solutions can include the widening of the sidewalk or the creation of nubs that extend the sidewalk only at the bus stop site. These nubs can help minimize the conflict between bus patrons and pedestrian traffic (Fitzpatrick et al. 1997). Specific bus shelter designs that use bars or other design elements to separate bus patrons from the pedestrian flow can be helpful in cases of extreme crowding. Finally, avoidance of excessive use of sidewalk "paraphernalia" (newspaper stands, signs, poles, etc) at the bus stop site can help to increase the functional space of the sidewalk.

Epilogue

This study sought to understand the linkage between criminal activity and environmental factors through empirical observation, mapping, and survey research. Empirical research in this study indicated that environmental attributes and site characteristics have an effect on crime. Obviously more research is needed to better understand and measure the effects of the physical environment on bus stop crime. Case study research by its nature can only investigate interactions in a limited interval of space. In a follow-up study we plan to use a much larger sample of bus stops with different crime levels. The employment of quantitative research methodology can possibly help the objective measurement of the effects of certain environmental indicators on bus stop crime.

Bus stops are important settings for many citizens. They are places that bus riders have to spend time waiting for their buses. They should be safe and comfortable. Good planning and design in

conjunction with police surveillance can definitely increase the odds that the ride home or to work will be a safe one!

Endnotes

¹ During the first part of the century the policing of buses and trolleys was usually the responsibility of municipal law enforcement agencies.

² Crime incidents occurring at buses and bus stops would be typically dealt with by the MTA transit police and not the LAPD. With a recent restructuring, however, the MTA transit police became part of the LAPD, but is still operating as a distinct transit crime division.

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⁹ Thirty-six percent of the female respondents and twenty-nine percent of the male respondents said that they have been victimized.

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Figure 3

Diagram of Land Uses around Bus Stop on Hill and Third

Photograph 1

Bus Stop on Spring and Fourth, in Downtown Los Angeles

Photograph 2

Bus Stop on Santa Monica and Highland in Hollywood

Photograph 3

Bus Stop on Pico and Alvarado in Pico-Union, Los Angeles

Photograph 4

Bus Stop on Broadway and Seventh in Downtown Los Angeles

Photograph 5

Bus Stop on Pico and Hoover in Pico-Union, Los Angeles

Table: Problems perceived by bus riders as present at the bus stop or bus

Numbers of Responses (total sample N=212)

Perceived Problem	Bus Stop		Bus	
	Frequency	Percentage	Frequency	Percentage
Panhandling	181	85.4%	100	47.2%
Drunkenness	179	84.4%	144	67.9%
Vandalism	141	66.5%	148	69.8%
Obscene Language	130	61.38%	125	59.0%
Drug use/sales	95	44.8%	29	13.7%
Verbal & Physical Threats	95	44.8%	88	41.5%
Pickpockets	93	43.9%	74	34.9%
Jewelry Snatching	84	39.6%	47	22.2%
Robbery	73	34.4%	47	22.2%
Violent crime (rape, aggravated assault, murder)	22	10.4%	6	2.8%

Source: Author's survey

Figure 1

Distribution of Daily Bus Stop Crime in Los Angeles Bus Stops from 1/1/94-12/31/95
(Source Los Angeles Metropolitan Transportation Authority Data Base)

Figure 2

Weekly Distribution of Bus Stop Crime in Los Angeles Bus Stops from 1/1/94-12/31/95
(Source Los Angeles Metropolitan Transportation Authority Data Base)

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