

BUS CRIME IN LOS ANGELES: II—VICTIMS AND PUBLIC IMPACT

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Abstract—This paper documents victims of bus crime and examines the extent to which fear of personal security affects bus ridership. Using data from a victimization survey of 1088 households in west central Los Angeles, it was found that frequency of bus use was the most important correlate of being victimized. Examining moderate and heavy bus users only, it was found that the elderly, women, Hispanics and low-income persons were more likely to be victimized than other subpopulations. There was a general perception that bus travel to downtown Los Angeles was more dangerous than travel within residential neighborhoods, and that night travel was much more dangerous than day travel. Women, Hispanics and persons of low education level were more likely to perceive bus use as dangerous, indicating a subpopulation correspondence between the likelihood of victimization and perceptions of safety from bus crime. In addition, persons who had been victimized by a bus crime or who knew persons who had been victimized were more likely to perceive bus use as less safe. Lastly, it appears that victims of bus crimes, persons who had witnessed bus crimes and persons who perceived bus travel as less safe may be less likely to use buses, especially on certain routes and during certain times, but these variables are secondary in importance to automobile access, the convenience of bus travel and age.

Transit crime is a serious problem for public transportation in the United States. For operators, it involves millions of dollars each year in vandalism and legal costs, and millions more in security measures. It involves public fear, which keeps many people from using public transportation. For those who use transit systems and who frequently have no other choice—people who are mostly poor, minorities and women—it involves continual risk.

This article examines the victims and public impact of bus crime in Los Angeles. It uses data gathered from a large survey of residents of west central Los Angeles, who were interviewed about their experience and perceptions with bus crime. The study was part of a broader project that estimated the scope of bus crime and examined environmental correlates of both bus and bus-related crimes. Information on the scope of crime was discussed in the earlier article in this issue (Levine and Wachs, 1986), whereas, the study report discusses the entire project (Levine and Wachs, 1985).

FEAR CONCERNING PERSONAL SECURITY IN TRANSIT SYSTEMS

Researchers are divided over whether the perception of safety affects actual ridership. Several studies have shown the importance of fear concerning security in affecting ridership. One study showed that rapid transit systems rank among the most feared settings (Savitz, Lalli and Rosen, 1977). A Carnegie-Mellon University study (1975, p. 17) stated that "it is readily evident even from the limited knowledge which exists, that patrons' perception of transit crime significantly affects their daily ridership patterns." Respondents ranked safety third among mode choice variables, with convenience and frequency ranking first and second, respectively. Richards, Jacobson, Pepler and Bloom (1980) found that in New York about one third of all men and about one half of

all women considered personal security as a major factor in using buses, and that non-users mentioned this more often than users. Johnson (1978) found that safety from crime was perceived as the most important attribute of a transit system, ranked ahead of seat availability and dependability of arrival. Godbey, Patterson and Brown (1979) have shown high levels of fear about using public transportation among the elderly, and Patterson and Ralston (1983) found that over 40% of an elderly group in Philadelphia saw bus crime as a major problem. Austin and Buzawa (1984) report that fear about personal security was the highest rated bus problem among a sample of riders in Detroit and that crime was the most important self-rated factor affecting frequency of ridership; non-users were not interviewed, however.

It is known that some people cope with bus crime by avoiding the bus system altogether (Feldman and Vellenga, 1977; Richards *et al.*, 1980), whereas of those who ride the bus, many choose to limit their travel to those times and places they consider safest. Biderman (1975) showed that a large percentage of bus riders in several cities take taxis at night to avoid risks of riding on public systems. Shellow, Romualdi and Bartel (1974) found that in Washington, DC, as many as 90% of respondents would not use any public transportation after 9 p.m., and almost no one would use the system after midnight. Richards *et al.* (1980) found slightly lower percentages in New York, where about 70% to 85% would not use the system during these same times. Other strategies involve parents imposing curfew on their children's usage, and people generally avoiding certain routes and areas (Feldman and Vellenga, 1977).

Other researchers, however, have maintained that crime perception is secondary to service-related determinants such as convenience, frequency, and travel time. For example, in a study comparing Milwaukee; Washington, DC; Baltimore and Chicago, patronage was unaffected

by concern with crime, but 53% of the respondents said they had no other means of transportation (Schnell, Smith, Dimsdale and Thrasher, 1973). In a Milwaukee survey, respondents ranked safety threats as sixth out of eight variables influencing bus usage (Roemer and Sinha, 1974) and in Washington, DC, respondents ranked safety threats as 9th out of 12 transit variables (Metropolitan Washington Council of Governments, 1974). The Southern California Rapid Transit District (SCR TD) conducted a Los Angeles bus ridership study in 1981 and found that 50% of nonusers but only 36% of heavy users didn't like buses because of the chance of being robbed or hurt (Data Sciences, 1981).

Fear of personal security compared to other ridership determinants

Few studies have adequately compared the effect of fear of crime with other transit variables in predicting actual ridership; several studies reported that non-users have greater fears than users (Data Sciences, 1981), but cause-and-effect were not clearly distinguished. Patterson and Ralston (1983) found that fear variables alone were able to predict bus usage in Philadelphia, but the level of prediction was low. In a small study of Santa Monica, CA, for predicting bus usage, feelings of safety in riding buses was the fourth most important variable after car ownership, race and educational level (Levine, 1982).

Subpopulation differences in fears of personal security on buses

There are some differences between subpopulations on the amount of fear involved in using transit. Several studies have found that women are more concerned about crime than are men (Olsen, 1973; Ferrari and Trentacoste, 1974; Thrasher and Schnell, 1974a; Richards *et al.*, 1980; Austin and Buzawa, 1984) but others have shown no gender differentials (Roemer and Sinha, 1974) or an interaction between sex and socio-economic status. Feldman and Vellenga (1977) found that white suburban women had the least fear of crime. The elderly as a special population have also been studied several times, and there is some evidence that they are more concerned about crime than younger persons (Ferrari and Trentacoste, 1974; Roemer and Sinha, 1974; Godbey *et al.*, 1979). Aside from sex and age, few socio-economic variables have been studied.

A key issue is whether these subpopulations are more vulnerable to crime on buses. Early studies of transit crime argued that men are more likely to be attacked on public transit (SRI, 1970; Carnegie-Mellon, 1975; Johnson, 1978), but differential exposure rates have not been examined recently. It has been suggested that in recent times women are more likely to be attacked, given that they use the system more than men. As the data to be shown indicate, fear of using buses in Los Angeles appears to reflect actual exposure risks.

Effects of crime experience on bus ridership

Several studies have examined the extent to which personal experience with crime is a factor underlying fear of using transit for security reasons. Thrasher and Schnell

(1974) found that there was higher concern if the subject had personally witnessed a transit crime. Roemer and Sinha (1974) argued that non-users are especially swayed by experience, whereas for frequent bus riders experience is less significant. Feldman and Vellenga (1977) stated that experience outweighs media exposure, and Austin and Buzawa (1984) argued that personal experience was a major factor underlying feelings of personal safety on transit. Richards *et al.* (1980) found that around 12% of riders in New York had been victims of a transit crime, and that less than 30% had witnessed a transit crime but around 70% knew someone who had been a victim. They found a relationship between experience with crime (direct or indirect) and personal fears about being a victim in using transit.

In short, there is contradictory evidence about the extent to which fear for personal security or experience with bus crime affects ridership. The effect of fear would be expected to interact with other variables in its effects, for example whether the person was "transit dependent," or the convenience and cost involved in using a bus.

A SURVEY OF WEST CENTRAL LOS ANGELES

A survey was conducted of residents of west central Los Angeles to estimate the amount of bus crime. The greater Los Angeles area has the largest all-bus transit system in the world, with the Southern California Rapid Transit District (SCR TD) operating a fleet of over 2900 buses and providing transportation to 1.8 million passengers a day, over an area of 2000 square miles.

The west central area of Los Angeles was selected for the survey primarily because it has the highest bus usage as well as the greatest amount of crime in the Los Angeles area (see Levine and Wachs, 1986, Fig. 1). This is an area that extends from downtown Los Angeles in the east to West Hollywood in the west, and from the Hollywood Hills in the north to the Crenshaw district in the south. It has about 1.1 million residents, comprising around 40% of the Los Angeles city population. The area is diverse ethnically and economically.

Sample Design

The survey was by telephone and the sample was drawn using random digit dialing. The method produces a relatively unbiased selection of all households that have telephones. We used a general household sample in order to understand the perceptions of both users and non-users of the bus system. The sample size was 1088 households. One adult, age 16+, randomly selected from within each household, was interviewed. The survey was administered by the Institute for Social Science Research at the University of California at Los Angeles between November 1983 and March 1984. Interviews were conducted in either English or Spanish. See Levine and Wachs (1986) or the study report (Levine and Wachs, 1985) for more details about the sample design and about possible design biases.

Questionnaire

The questionnaire explored bus usage, experience with bus crime and attitudes toward bus crime prevention.

Both household experience with bus crime and indirect experience were explored. *Household experience* was defined as either the respondent having been victimized by a bus or bus-related crime in Los Angeles or another member of the respondent's current household having been victimized. *Indirect experience* was defined as either the respondent having witnessed a bus or bus-related crime in Los Angeles or the respondent knowing another person who had been victimized by a bus or bus-related crime. For each level of experience, detailed questions about the location and circumstance were asked.

WHO ARE THE VICTIMS?

Bus use and victimization

Bus users are more likely to be victimized than non-users, obviously, and the heavier the use the higher the likelihood of victimization. To measure bus usage, respondents were asked how frequently they had taken a bus within the last 6 months. Five levels of ridership were distinguished:

1. Did not take the bus within the last 6 months;
2. Took the bus less than once a month;
3. Took the bus once or twice a month;
4. Took the bus 1 to 4 days a week;
5. Took the bus 5 or more days a week.

Taking this index as a proxy for continual usage, there was a definite relationship between use and exposure to bus crime (Fig. 1). Frequency of bus use was the most important factor predicting personal exposure to bus crime. For all respondents, 9% had been victims of a bus crime in Los Angeles and 19% had witnessed a bus crime. For heavy bus users (defined as persons who took the bus 5 or more days a week), 25% had been victims in Los Angeles and 35% had witnessed a bus crime. Because bus crime exposure is directly related to bus use, it is essential to separate out different levels of bus ridership to assess the effects of other variables on victimization. Heavy bus users would be those persons closest to the "true" probability of being victimized by a bus crime in that they ride the buses frequently and are exposed more often. The results are not completely conclusive but they

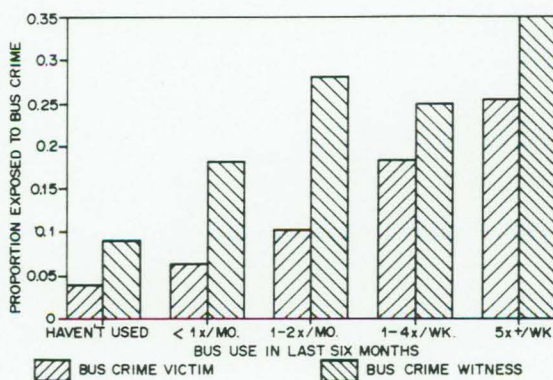


Fig. 1. Bus use and direct crime exposure (proportion exposed to bus crime).

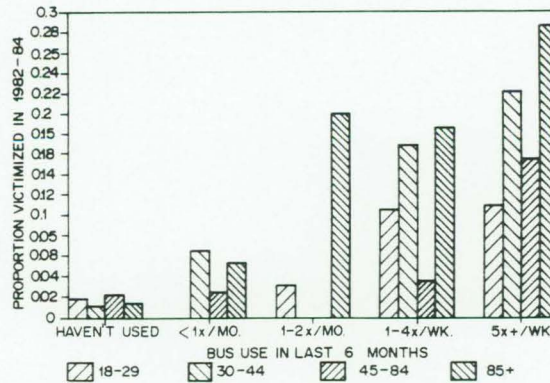


Fig. 2. Age of victims and bus use (proportion victimized in 1982-1984).

strongly suggest that among heavy users elderly, women, persons of Hispanic background and persons with lower incomes are more likely to be victimized.

The elderly as victims

The elderly appear to be more vulnerable to bus crime in Los Angeles than other age groups. There are two statistical problems that affect the interpretation. First, although the elderly are more dependent on buses than younger persons, they are also less likely to travel. An earlier study of the elderly in Los Angeles showed that most of today's transit-dependent elderly never drove, whereas those who drove in their youth continue to drive (Wachs, 1979). However, as people age, they travel less in all modes and environments. To assess the relative vulnerability of the elderly, therefore, the extent of bus use must be statistically controlled. Second, since people who have lived longer in a city are more likely to be victimized by a crime (bus or otherwise), elderly residents have a greater likelihood of having experienced a crime sometime in their lives. For those under 30 in the sample, 8% have been victims of a bus crime, but for those 65 or older, 17% have been victims.

To distinguish these factors, only those bus crimes that occurred in 1982, 1983 and the first part of 1984 (up till the completion of the survey) have been used, and these have been further broken down by the five levels of bus use (Fig. 2). For non-users and light users, there is little selectivity by age, whereas for moderate and heavy users (1 or more days a week on average), those age 65 and older are more likely to have been victimized since 1982. For those elderly (age 65+) taking the bus daily, more than one out of four (29%) were victimized between 1982 and 1984. It should be noted that sample sizes are small, but the consistency of the change across the four age categories strongly suggests that vulnerability increases with age.

Women as victims

From the sample as a whole, women were more likely to be victimized than men. Of the 108 victims in the sample, 75 were women (or 69%). However, women were also more likely than men to use buses. Of the women in the sample, 56% took a bus within the last 6

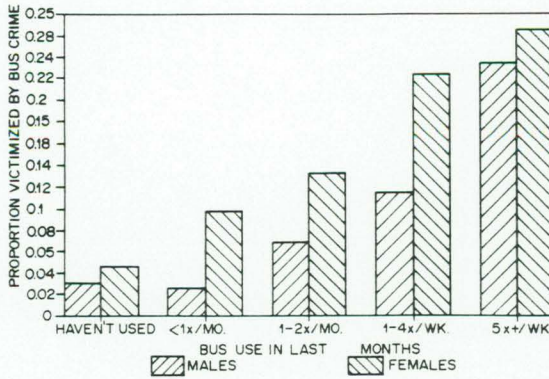


Fig. 3. Sex of victims and bus use (proportion victimized by bus crime).

months compared to 50% of the men. Controlling for bus use, however, women were still more likely to be victimized for each level of use (Fig. 3), though the differences were small for heavy bus users. What makes the comparison complex is the relationship to age, where both the elderly are more likely to be victimized and women constitute a higher proportion of the elderly population. It was found that women are more likely to be victimized for all age groups, but particularly so for ages under 65. For the elderly, however, men were almost as likely to be victimized as women.

Hispanics as victims

There were also some racial/ethnic differences in vulnerability to bus crimes. The causes are not clear, but they should be noted. Controlling for bus use, Hispanics (Latinos) were in general more likely to be victims than other ethnic groups. For persons of Hispanic background, 17% had been victimized by a bus crime, compared to 8% for Whites, 9% for Blacks, and 4% for Asians; there were too few American Indians in the sample to yield legitimate rates. This pattern also held for recent crimes.

However, the relationship changed both with bus use (Fig. 4) and with age. For heavy bus users, both Whites and Hispanics had high victimization rates (37% and 27% respectively) compared to lesser rates for Blacks (19%) and Asians (11%), with a high proportion of these crimes

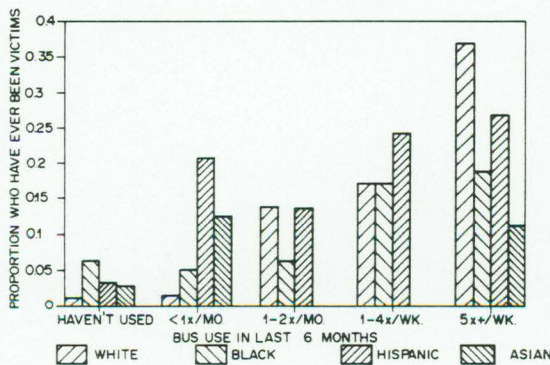


Fig. 4. Race of victims and bus use (proportion who have ever been victims).

occurring between 1982 and early 1984. Also, White and Hispanic elderly were very vulnerable. For younger persons, Blacks were more vulnerable than other ethnic groups, but their vulnerability decreased with age. Asians appeared to show a similar decrease with age, though the numbers in each age group were small.

Low income persons as victims

People of lower socioeconomic status were more vulnerable to bus crimes primarily because they were more likely to use public transit. For most indices of socioeconomic status, vulnerability was highest for those who were poorer. For example, Fig. 5 compares bus crime victimization with victimization from other crimes and there is an inverse pattern. Vulnerability to other crimes increased with income, whereas vulnerability to bus crime decreased. Persons of lower income were less likely to own cars (and, therefore, less likely to experience car theft or car break-in, both common crimes in Los Angeles) and were less likely to be burglarized than those with higher incomes. Housing tenure was also a particularly sensitive index, showing greater vulnerability of renters compared to owners, especially with increasing bus use. This may reflect both housing location and income. In Los Angeles, rental units are more likely to be located on busy, congested streets, exposing their inhabitants to ecological hazards as well.

A model of bus crime vulnerability

Using the SAS (1980a) *Proc Logist* program and building a series of "dummy" interaction terms, a series of descriptive logistic models for bus crime victimization was developed. The functional form of the equation was

$$P = 1/(1 + \exp(-\mathbf{X}\mathbf{B}))$$

where P is the probability that a respondent had been victimized (with a 1 indicating that the respondent had been victimized and 0 indicating that the person had not been victimized), \mathbf{X} , is a vector of independent variables, and \mathbf{B} is a vector of regression parameters*.

Table 1 presents the logistic regression model for "lifetime" bus crime victimization in Los Angeles, that is whether the survey respondent had ever been a victim of a bus or bus-related crime in Los Angeles. The most important variable predicting bus crime victimization was frequency of bus use. The next two variables were interaction terms associated with aging: elderly women and elderly Hispanics (of both sexes) were more likely to

*The logistic function is frequently modeled in the logit (or log of the odds ratio) form.

$$L = \log(P/1-P)$$

where P is the probability of occurrence of the dependent variable. It can be shown that the logits are a linear function of the independent variables, though the logistic probabilities are not (i.e. the logistic probabilities are bounded by 0 and 1, whereas the logits are not). For more information, see Hanushek and Jackson (1977, chapter 7).

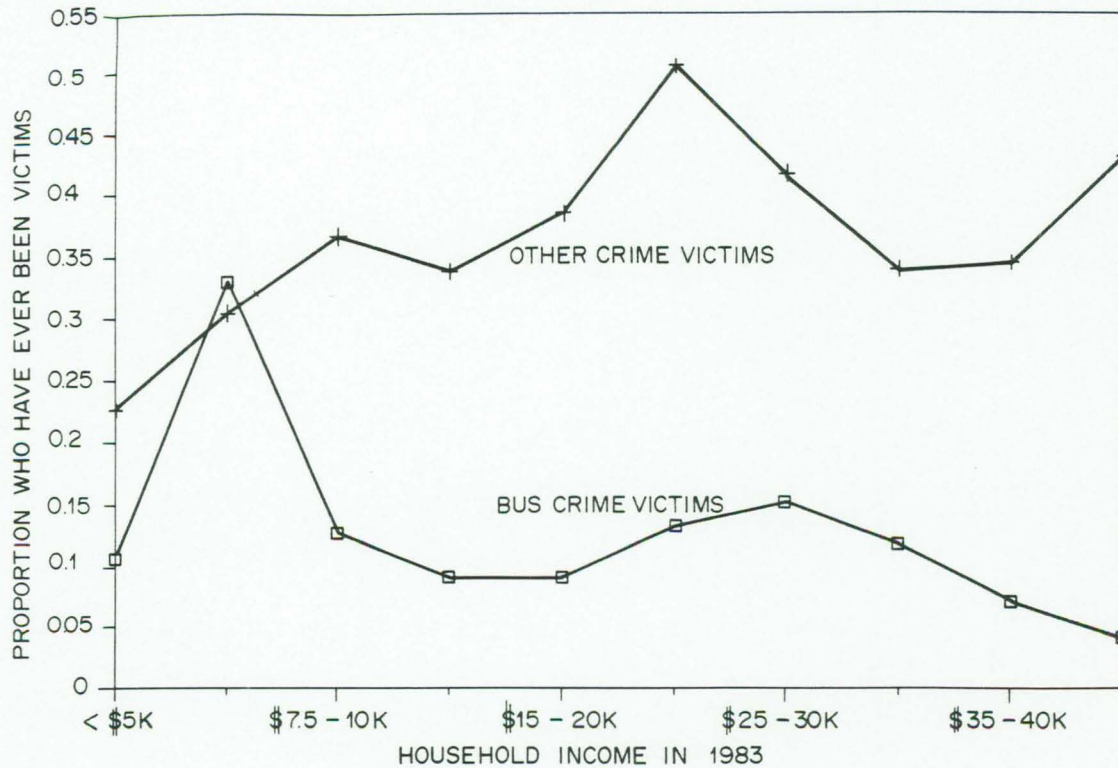


Fig. 5. Income and victimization (proportion who have ever been victims).

have been victimized. Lastly, renters were more likely to have been victims. In short, what the model suggests is that people who use the bus frequently and who are more likely to be "transit-dependent" (elderly, women, Hispanics and low income persons) are those who face the greatest exposure to crime on the system.

COST TO THE VICTIMS OF BUS CRIME

To the victims of bus crimes, there were monetary, physical and emotional costs. There were 108 victims of bus-related crimes of whom 97 were victims of serious

(Part I) crimes (see Levine & Wachs, 1986). Of these 97 persons, 92 experienced a theft of some sort. Eighty-one of these persons estimated the value of the loss; these estimates were not evaluated for accuracy. The average loss was \$168, whereas the median loss was \$60, varying from a low of \$1 to a high of \$2500. For crimes occurring in 1983 and 1984 (up to the time of the interview), the average value of the loss was \$199 although the median loss was \$45.

About one fifth of the victims were injured and many experienced serious injuries. The average number of days required to recover from an injury was about 23, with a

Table 1. Predictors of Lifetime Victimization in Los Angeles (Logistic regression coefficients)

Independent Variable	Logistic Regression Coefficient	Standard Error	Chi-Square	p
Intercept	-3.75	0.27	188.38	—
Frequency of Bus Use in Last 6 Months	0.55	0.07	56.57	****
Elderly Hispanics (age 65+)	0.02	0.01	10.67	**
Elderly Females (age 65+)	0.01	0.004	10.51	**
Renters	0.67	0.31	4.90	*

Note. Dependent variable: Victim of bus crime in Los Angeles. D² (pseudo R-square) = 0.16

N = 1088

**** p < .0001

** p < .01

*** p < .001

* p < .05

range varying from 1 day to a high of 90 days. Over half of the injured victims took longer than a week to recover. Twelve of the 23 injured victims lost work days from the injury, with a mean around 21 days, varying from a low of 1 day to a high of 90 days.

There was undoubtedly financial loss from this, either to victims or to employers, which was not measured directly. A rough estimate can be made by generalizing to the larger population and assuming that general sample rates apply for 1983. If 12 persons out of 97 victims (or 12.4% of all Part I victims) lost work days through injury, with the mean number of work days lost being 21, and if the annual number of bus crimes was around 23,000 (see estimates in the earlier article in this issue), then about 59,892 work days were lost within the area covered by west central Los Angeles (12.4% of victims' lost work days \times 23,000 victims \times 21 work days lost). Assuming an annual average income of \$21,000 (the mean household income of the sample) and an average of 240 working days a year, the employment cost of bus crime is around \$5,240,550 (\$87.50 a day average wage \times 59,892 work days lost). Victims won't absorb all this loss because there will be employee benefits in many jobs and workman's compensation for others. Further, some households have more than one wage earner and the actual "lost" income would be less. But even if these estimates are on the high side, they indicate that bus crime loss is expensive. There is a cumulative financial cost of bus crime to victims, employers and the taxpayers as a whole.

There were also legal costs to the victims, though these are minimized because only a minority of bus crimes were reported (42%) and in an even smaller minority of cases was the criminal caught for the crime. Of the victims, in only four cases did the person know whether the criminal was caught. In three of these cases, the victim had to go to court. The court hearings took 1 day each and two of the three victims lost 1 work day because of the court hearing. In terms of involvement in the legal system because of the crime, only a minority of victims become involved. For these, there was a "cost" in time and, possibly, income loss that had to be borne.

For most victims, there was emotional disturbance from having been victimized. Of the 108 victims (either a serious or less serious crime), 83 stated that they were emotionally upset. Ten of these persons lost work days through emotional upset, with a mean of about 7 days and a range that varied from 1 day to 14 days.

BUS CRIME AND THE PUBLIC

People who have not been victimized are also affected by bus crime. All respondents (whether they had taken a bus within the last 6 months or not) were asked how safe from crime they perceived bus travel in Los Angeles under four conditions. Table 2 presents the proportion of the sample who perceived bus travel as safe or very safe. Not surprisingly, bus travel in the neighborhood is perceived as more safe than bus travel to or from downtown Los Angeles, and night travel is perceived as more unsafe than daytime travel. The four items tend to correlate

highly with each other and have been added to form a "Likert-type" scale called "Perceived Safety from Crime of Bus Travel." For those unfamiliar with attitude scaling, this is a standard procedure, whereby single items are summed to measure an attitude more clearly; it is assumed that multiple measures in combination will measure the common dimension of an attitude, whereas individual items are subject to both unique elements and those common to the attitude (See Maranell, 1974, pp. 231-272). For example, if a respondent stated that it was *very safe* to take a bus in the neighborhood during daytime (scored as "4"), *safe* to travel to downtown during daytime (scored "3") but *unsafe* to travel in the neighborhood in the evening (scored as "2") and *very unsafe* to travel to downtown in the evening (scored as "1"), then this person's scale score would be "10" (4 + 3 + 2 + 1).

Several multiple regression models were constructed to examine the relationship of background and crime exposure to perceptions of safety. Table 3 presents the standardized model, which fits the data best. Women, Hispanics and persons with less education perceived bus travel as less safe from crime than males, other ethnic groups and persons of higher education. As seen in the last section, these three groups are among those who are more vulnerable to bus crime. In other models (not shown), age did not show a simple effect, although there was a weak interaction effect; elderly who use buses frequently perceive that they are less safe.

In addition to demographic selectivity, exposure to bus crime affects the perception of safety from crime on buses. People who had been victimized by a bus crime or who had another member of their household victimized by a bus crime perceived that bus travel was less safe. Slightly more important was knowing other persons who had been victims of bus crimes. All these variables are statistically significant.

It should be mentioned that these are exploratory hypotheses that fit the data. By using a stepwise regression model, those variables that show the strongest relationships have been selected; the *R*-squares will be artificially high (although in these cases, not particularly so). In other words, the data suggest that the perception of safety on buses is partly a function of crime experience, with those who have been exposed to crime perceiving bus travel as less safe. In addition, persons who have characteristics associated with greater risk of exposure also appear to perceive bus travel as less safe.

Fear of personal security and bus use

To what extent does the perception of safety from crime on buses affect ridership? Several multiple regression models were developed to predict frequency of bus use during the previous 6 months. The independent variables were demographic characteristics, "transit dependency" (having a driver's license, the number of household automobiles), perceptions of bus convenience and reliability, and personal experience with crime ("dummy" variables measuring whether the respondent did or did not have experience). Table 4 presents the standardized regression model which best fits the data (having the

Table 2. The perception of bus travel safety (Percentage indicating "safe" or "very safe")

	%
NEIGHBORHOOD TRAVEL DURING THE DAYTIME	79%
NEIGHBORHOOD TRAVEL DURING THE EVENING/NIGHT	29%
TRAVEL TO/FROM DOWNTOWN L.A. DURING THE DAYTIME	61%
TRAVEL TO/FROM DOWNTOWN L.A. DURING THE EVENING/NIGHT	10%

highest *R*-square and having all coefficients statistically significant).

People who didn't have driver's licenses, who lived in households without cars, who found taking buses as more convenient and who were younger were more likely to have used buses during the previous 6 months. On the other hand, persons who had been victimized by a bus-related crime and persons who had witnessed a bus-related crime were less likely to have used a bus in the previous 6 months. Lastly, persons who perceived that bus travel was more safe were more likely to have used buses over the previous 6 months, although this was the weakest of the significant variables.

These models, however, ignore simultaneity and may mix up cause and effect (e.g. bus use can alter perceptions of safety as well as the other way around). It is possible that people who don't often use buses will see buses as being less safe and less convenient; the perception may be a rationalization of their behavior. It is impossible to truly distinguish these factors in such a model. We tried to estimate these by using two-stage least squares estimation setting up three models with being a victim, the perception of safety from crime, and frequency of bus

use as the dependent variables and the predicted values of each being used as independent variables in the other equations (see Wonnacott and Wonnacott, 1981, p. 319). However, because there was such a strong association between bus use and frequency of victimization, due undoubtedly to many victims being transit-dependent, any independent effect of victimization or perception of safety on bus use was minimized. In other words, there was not a simple relationship between victimization experience or the perception of safety from crime and bus usage, primarily because so many of our respondents had no alternatives to using the bus.

Undoubtedly, people distinguish different routes and different times in their perception of safety from crime, as Table 2 showed. The effect of fear of crime on ridership would vary according to these perceptions, with some routes and times being seen as perfectly safe and others as more dangerous. Unfortunately, we do not have data on the frequency of travel to specific trip destinations, so an equation relating fear of crime and travel on specific routes cannot be estimated. Nevertheless, it does seem probable that people will adjust their behavior to avoid dangerous situations that they are aware of, whether it involves not using the system altogether or changing routes and times to minimize personal risks.

CONCLUSION

Whether the perception of safety was a major factor in predicting ridership or not, many, if not most, bus riders found security lacking at different times and locations. This is a serious problem that confronts transit systems in the United States. One can be cautious about generalizing; this, after all, is only one study in one city. But the congruence of these results with other studies does tend to reinforce concerns about safety on bus and rail systems. Most aggregate and behavioral transit models tend to ignore these "hidden," psychological factors. People base their transportation decisions on several fac-

Table 3. Predictors of perceived safety of bus travel in Los Angeles (Standardized multiple regression coefficients)

Independent Variable	Standardized Regression Coefficient	<i>t</i> -Value	<i>p</i>
Females	-.19	-6.34	***
Hispanics	-.15	-4.33	***
Education Level	0.11	3.20	**
Victim of Bus Crime in L.A.	-.06	-2.01	*
Other Household Member Victim of Bus Crime in L.A.	-.07	-2.50	*
Know Victim of Bus Crime in L.A.	-.11	-3.64	***

Note. Dependent variable: Perceived safety of bus travel. $R^2 = 0.13$

**** $p < .0001$

*** $p < .001$

** $p < .01$

* $p < .05$

Table 4. Predictors of bus use in Los Angeles (Standardized multiple regression coefficients)

Independent Variable	Standardized Regression Coefficient	t-Value	p
Respondent			
Has Driver's License	-.34	-11.13	****
Number of Cars in Household	-.22	-7.24	****
Convenience of Bus Travel	0.19	6.79	****
Age	-.16	-5.69	****
Victim of Bus Crime in L.A.	-.17	-6.15	****
Witnessed Bus Crime in L.A.	-.18	-6.61	****
Perceived Safety of Bus Travel	-.06	-2.23	*

Note. Dependent variable: Frequency of bus use in last 6 months. $R^2 = 0.39$

**** $p < .0001$

*** $p < .001$

** $p < .01$

* $p < .05$

tors: time, cost and convenience; safety from crime is only one of these. Yet, most riders of public systems have to deal with security problems continually. These are people who frequently do not have alternatives (elderly, women, minorities, low income persons). Whether they adapt to the dangers over time is, again, less important than the existence of significant crime on transit systems and the risks to which they are exposed.

There are probably also indirect effects of transit crime that influence ridership over the long term. In recent years, there have been a number of successful lawsuits against transit agencies for injuries sustained from crimes committed on or near agency premises (Riley and Dean, 1985). Although the legal liability of a transit operator in a transit crime has never been clearly established, it is probable that the number of such legal actions has been increasing. One consequence of these suits may be to significantly increase personal injury insurance costs to transit agencies. With increasing costs over an extended period of time, transit fares must inevitably increase with a subsequent decrease in ridership. The existence of transit crime and its effects on the perception of safety in using the system is certainly not going to increase ridership in any way and can only harm the system. It would seem that it is in the long-term interest of transit agencies to reduce crime on their systems and thereby help to increase the perception of safety in using them.

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