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ABSTRACT

A study of campus characteristics and crime rates used an economic theory of criminal choice to develop an explanatory model of campus crime. The model considered combinations of opportunities, incentives, and costs found on college campuses that may affect criminal choice. The components included location, accessibility, deterrents and wealth of the higher education campuses. National data on campus crimes and questionnaires sent to institutional research offices and campus police departments provided the data necessary to define the components of the model. The model and the components were analyzed using multiple regression analysis. The full model was found to define a significant, positive relation and to explain approximately 29 percent of the variance in campus crime rates. In particular significant positive relationships were found between the level of deterrents and campus crime rates, and the level of public transportation and campus crime rates. However, there was no significant relation between location and campus crime rates which suggests that no higher education institution can consider itself immune to crime. After analysis of the individual components, a revised model was developed that explained 31 percent of the variance in campus crime rates. (Contains 17 references.) (Author/JB)

THE INFLUENCES OF CAMPUS CHARACTERISTICS ON COLLEGE CRIME RATES

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Jean Endo
Chair and Editor
Forum Publications
Editorial Advisory Committee

The Influences of Campus Characteristics on College Crime Rates

ABSTRACT

This paper presents the results of a study that utilized an economic theory of criminal choice to develop an explanatory model of campus crime. The model considered combinations of opportunities, incentives, and costs found on college campuses that may affect criminal choice. The components included location, accessibility, deterrents and wealth of the higher education campuses. National data on campus crimes and questionnaires sent to institutional research offices and campus police departments provided the data necessary to define the components of the model. The model and the components were analyzed using multiple regression analysis. The full model was found to define a significant, positive relation and to explain approximately 29 percent (adjusted R square) of the variance in campus crime rates. After analysis of the individual components, a revised model was developed that explained 31 percent of the variance in campus crime rates.

INTRODUCTION

Reported crime on university and college campuses has increased dramatically over the last twenty years. During the 1980s, the Uniform Crime Reports (Federal Bureau of Investigation, 1990)reported that nearly 2,500 crimes of personal violence and more than 105,000 serious property crimes were occurring annually on campuses. In 1990, the UCR reported more than 2,600 violent crimes and approximately 120,000 property crimes occurred on campuses. Although some proportion of this increase may relate to improved reporting and recording of crimes on campus in recent years, concern about campus crime is being expressed by students and parents, and it has become an issue facing legislatures, regulatory agencies, and higher education institutions. The college campus is no longer perceived as a place with a special, erudite atmosphere protected from worldly happenings.

Crime on campus is a complex issue that colleges and universities face on a daily basis. Violent crime affects the working and learning environment as fear and caution replace friendliness and exploration. Property crime has less impact on human interactions, but can influence budget allocation, provision of equipment, and access to facilities. Higher education institutions must find ways to improve campus security, reduce crime on campus, and limit their exposure to liability claims.

The purpose of this study was to expand the investigation of the relations of campus characteristics and campus crime rates by developing and testing a model of these relations. The study was the first attempt to apply an economic theory of criminal choice to campus crime. In addition, the study attempted to improve on previous studies by using consistent data on campus characteristics, better definitions for campus characteristics, recent data on campus crime, and to include a broad representation of institutions in the sample. The study

addressed questions about which characteristics were significantly related to campus crime rates and whether groups of characteristics were related to each other. The study specifically looked at the relation between location and campus crime rates in order to confirm or reject popularly held beliefs on this topic.

RELATED LITERATURE

Given these issues and concerns, explanatory models that link the characteristics of university and college campuses to campus crime rates would allow institutions to consider different alternatives and to develop appropriate responses. Unfortunately, few studies have been done on the relation between campus characteristics and campus crime rates, and none have tested explanatory models. Most studies approached campus crime from one of three perspectives: (1) administrative or operational aspects, (2) legal and liability issues, and (3) studies of victims of campus crimes and programs for victims.

Only two studies analyzed campus crime and attempted to identify related campus characteristics. McPheters (1978) conducted the first study. He used an econometric model to test the hypothesis that campus crime was related to several independent variables. The independent variables included expenditures on security, student density on campus, percentage of students living in dormitories, campus facility data, location in an urban or rural area, and unemployment in the nearest city. McPheters tested the hypothesis using data from 38 institutions. Of the variables, the proportion of students living in dormitories and high unemployment levels in nearby cities were found to be significantly related to the campus crime rate.

Fox and Hellman (1985) conducted a more extensive study on location and other possible correlates of campus crime. Data on campus characteristics were

gathered on 222 colleges and universities and analyzed using crime rates calculated from 1979 campus crime data. The authors used an analysis of variance methodology to consider patterns of relative safeness of college campuses and campus crime by location within and outside of urban areas. The study concluded that location was not significantly related to the level of campus, although these was a difference in the mixture of violent and property crime by campus location. Fox and Hellman also did a correlation analysis of 33 campus characteristics and campus crime rates. The correlation analysis clarified the strength and direction of the relations. The researchers then attempted to obtain additional information about these relations by using principal components analysis to identify the primary dimensions of the characteristics. Campus crime rates were then regressed on the primary components. Only two characteristics, campus size and scholastic quality, were identified as having a significant, positive relation with campus crime rates.

CONCEPTUAL FRAMEWORK

Given the lack of previous explanatory research on campus crime, a review of the various theoretical frameworks for considering causes of criminal behavior indicated five main perspectives (Nettler, 1984; Pepinsky, 1980; Schafer, 1977): biological, psychological, cultural, social, and economic explanations. Consideration of these frameworks led to the selection of the economic theory for the development of a model of the relation between campus characteristics and campus crime rates. The economic explanation of criminal behavior views human behavior as rational. Economic choice theory proposes that "all individuals, criminals and non-criminals, respond to incentives; and if the costs and benefits associated with action change, the agent's choices are also likely to change . . . the decision to commit an illegal act is reach via an egocentric cost-benefit analysis" (Heineke, 1978, p. 2). Taylor (1978)

indicated that with the economic theory, a model of criminal behavior can be described in ways similar to normal economic behavior with little reference to psychological theories. An economic model provides for fairly direct empirical testing. Shortcomings of this model include the assumption that all criminals exhibit economically rational behavior and an equal weighting of all components that make up the decision.

Usin this theory, the study developed an explanatory model of campus crime that considered combinations of opportunities, incentives, and costs found on colleges that may affect criminal choice. The first component to be considered for the model was location. Although the studies by McPheters (1978) and Fox and Hellman (1985) did not find location significantly related to campus crime rates, location continues to be perceived as a factor in campus crime. Examples of this are found in Powell (1981), Smith (1988, 1989), and Bromley and Territo (1990). Within the economic framework, Hakim (1981) perceived location to be a prime opportunity factor in the crime decision. The criminal evaluates the net benefits of various sites and selection can be affected by transportation costs, familiarity with the environment, and possibility of recognition as an outsider. Therefore, the location of a campus may be defined by the surrounding area's crime rate. This definition differed from previous studies which considered location as an urban-rural dichotomy and might explain why location was not related to campus crime rates.

Accessibility of a campus to criminals was considered to be an opportunity and incentive factor for inclusion in the model. Visibility of the institution, such as a large, well-known campus, may attract criminals because of increased awareness of the campus and the areas associated with the facility (Pepinsky, 1980; Reiss, 1970). In addition, freedom of movement on and around the campus via heavily trafficked streets or mass transportation can increase

attractiveness of a campus for criminal choice. As indicated previously, Hakim (1981) included accessibility as part of the criminal decision making process.

The wealth or resources of the campus may increase incentives for property crime which makes up nearly 98 percent of all campus crime. Studies by Cohen and Felson (1979, 1980) supported that prosperity relates to an increase in theft because there were more goods to steal and more things left unguarded. Wealth also provides the campus with the ability to increase the number of deterrents to crime, such as the number of police and the use of alarm systems.

Deterrents to crime are the preventive measures implemented by campuses in order to limit criminal activity. A higher level of deterrent on a campus implies that decisions were made to invest in deterrents due to increased crime, greater demand for police services, and/or efforts to reduce the potential for liability claims. This scenario reflects the current climate toward crime at most higher education institutions.

The proposed economic model of criminal choice has four components and hypothesizes that the crime rates in the area surrounding a college or university campus, alone and in combination with the accessibility of the campus, level of deterrents, and the wealth of the campus explains the campus crime rates. Figure 1, Explanatory Model, provides a diagram of these relations.

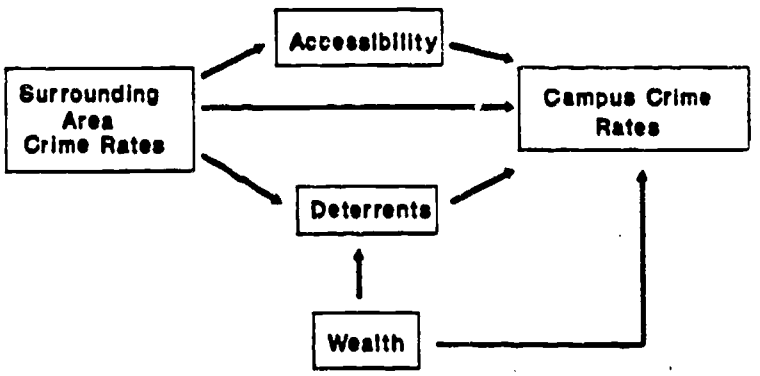

Figure 1

Explanatory Model

Five conceptual propositions were derived from this model:

1. Location is positively related to campus crime rates;
2. Location is positively related to the level of deterrents on a campus and the level of accessibility of a campus;
3. The level of accessibility of the campus is positively related to campus crime rates;
4. The level of deterrents is positively related to campus crime rates; and,
5. The level of wealth of a campus is positively related to the levels of deterrents and campus crime rates.

RESEARCH DESIGN AND METHODOLOGY

Operational definitions were developed for the components of the model. The criterion variable in the study was campus crime rate. This rate was the ratio of the total number of campus crimes to the campus population scaled by 1,000. To ensure commonality of the crime data used in the study, campus crime information reported by higher education institutions and published in the Federal Bureau of Investigation's Uniform Crime Reports (UCR) provided the data on campus crimes.

Campus population was defined to be more encompassing than in previous studies. The intent was to reflect the number of people that are on campus frequently. This study included unduplicated annual student headcount, faculty, and non-faculty employees in calculating the campus population.

Instead of defining location by an urban-rural dichotomy, this study used the crime rate of the community within which the higher education institution is located and the crime rate of the neighborhood of the campus. The first indicator was calculated from data available in the UCR. Because no crime data are available for the area specifically surrounding a campus, the latter

indicator was derived from the perceptions of the neighborhood crime rate by campus police. To further test location, an indicator was included for city population.

Indicators of the level of deterrents on a campus reflected measures of policing capacity. One indicator was a labor force measure, the ratio of full-time police officers to the campus population scaled by 1,000. Another indicator, the ratio of annual operating expenditures for the police department to the campus population, measured the level of resources supporting policing efforts. A third indicator addressed the level of deterrents by providing measures of the level of police involvement in outreach activities and of the use of security technology. Since campuses are increasing the level of deterrents as crime rates are going up, this component should be positively related to campus crime rates.

Accessibility and visibility of the campus to criminals was addressed through indicators that incorporated the following measures: square footage of the campus physical facility per campus population, campus population per acre, accessibility to automobiles, availability of public transportation, and percentage of residential students.

Indicators of campus wealth attempted to measure institutional aspects of wealth as well as that of the campus population, primarily students and faculty. Cost of tuition was used as a reflection of resources available to students and because it was significantly correlated with campus crime rates in Fox and Hellman's study (1985). The ratio of total university operating expenditures to campus population scaled by 1,000 was used as another indicator of campus wealth. Other indicators of resources also included the percentage of applicants for admission not accepted, the percentage of faculty holding a terminal degree, and the ratio of faculty to students. These indicators

addressed the concept that more competitive and high quality colleges and universities tend to be well funded.

Figure 2, Explanatory Model with Indicators, presents the full model, including the campus characteristics or indicators and anticipated direction of relations, tested in the study.

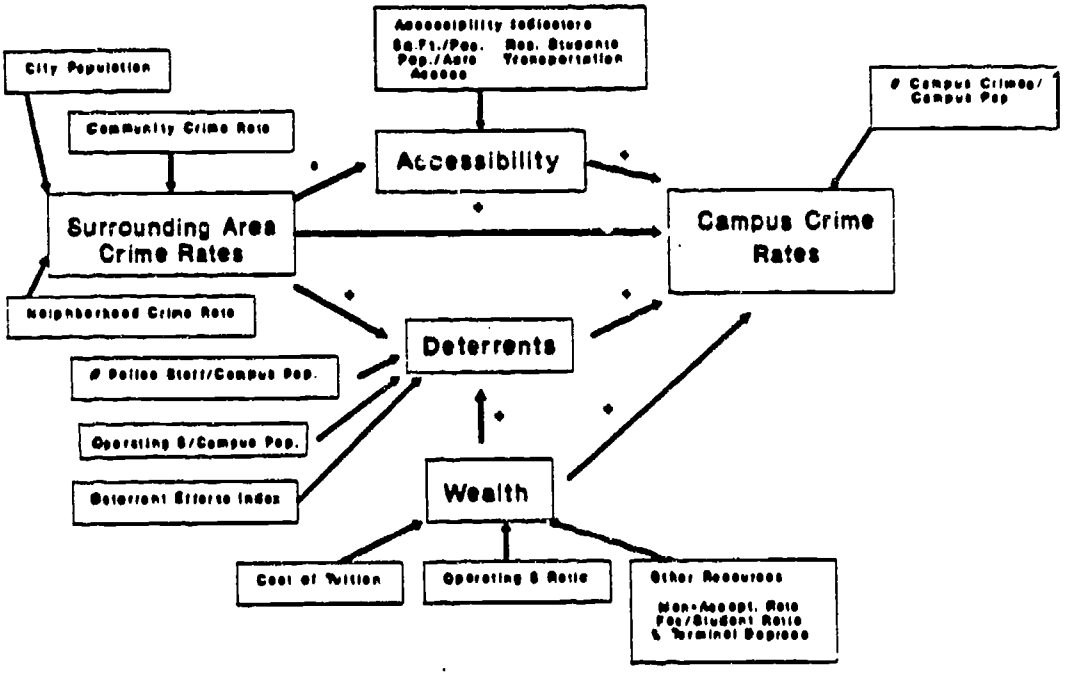

Figure 2

Explanatory Model with Indicators

In order to gather the data necessary to define campus characteristics, questionnaires were mailed to institutional research offices and campus police or security departments at the higher education institutions that reported crime statistics in the FBI's Uniform Crime Reports. This population included 392 institutions from 42 states. Public and private colleges, universities, community colleges and technical schools were part of the population. Institutions that are solely medical or health science facilities were excluded from the study because of their distinctive characteristics. The resulting population of 370 institutions equaled the sample for this study.

Two distinct questionnaires were used. The institutional research office questionnaire requested descriptive data, such as numbers of faculty, staff, and students; percentage of faculty with terminal degrees; percentage of residential students; percentage of admission applications accepted; cost of tuition and fees; annual expenditures; gross square footage of campus buildings; and numbers of acres. To facilitate completion and to ensure consistency of data definition, specific sources of data were identified by report and line numbers for most items on the survey. These sources, the EE0-6 report and the IPEDS IC and Finance Reports, are standard reports required by federal agencies.

The questionnaire sent to the campus police or security department gathered data for both factual components and belief indicators relating to policing capacity and campus location. Information on campus accessibility to mass transportation services, level of campus outreach services, extent of use of security technology, and scope of responsibility was requested through the use of closed questions with the format of a forced-choice checklist. Respondents were asked to check all of the choices that applied to their campus. The use of this format allowed the development of an overall score for one deterrent variable. For two belief indicators, accessibility of campus to automobile traffic and perception of neighborhood crime rates, a Likert-like rating scale was used. Respondents selected the level that most described their campus in these areas. Other questions requested information on the number and type of departmental staff members and annual operating expenditures of the department.

The validity of both questionnaires was evaluated through review by experts, five directors of institutional research or five police chiefs. These experts performed informal content and face validity checks on indicators and evaluated the format of the questionnaire. Revisions were made following the

review. Prior to distribution, a second face validity check was conducted on the police department survey. The experts rated the survey using a scale ranging from 1 (poor coverage) to 5 (excellent) coverage. The result was an average score of 4.4. When asked about consistency of the instruments, both teams of experts indicated that the format of the questionnaire, such as use of checklists and specification of sources, would promote consistency in responses.

Distribution of the questionnaires and data collection occurred over the period from December 1991 to April 1992. A total of 257 institutional research questionnaires (70 percent response) and 310 campus police questionnaires (84 percent response) were received. This response resulted in 241 sets matched by institution for a response rate of 65 percent. All matched-set questionnaires were reviewed for completeness of information. If data were missing, the respondent was contacted to get the required information. After this process was finished, there were 238 usable matched sets and a final response rate of 64 percent. A Chi-square (X^2) goodness-of-fit test was performed on the matched set to determine if there was a difference between the population and the sample in the distribution among types of institutions. The null hypothesis was tested. The X^2 equaled 2.81. With two degrees of freedom, X^2 must be 5.59 to be significant at the .05 level. Hence, it was inferred that the sample was adequately representative of the population under study.

The study did have several limitations. First, given the ex post facto nature of the study, no causal relations could be established; only possible explanations were developed. Second, most higher education institutions do not report crime data to the FBI. Approximately ten percent of all colleges and universities submitted data. This fact limited the population available and affected the representativeness and generalizability of the study. Third, the

best crime data available from the UCR were used, but may not accurately reflect the true level of crime on a campus. Only crimes reported to campus police are included in the UCR and many crimes, such as acquaintance rape, go unreported. A Towsen State University study found a high level of unreported crime on campuses (Cockey, Sherrill, & Cave, 1989). Definitional and jurisdictional problems also may occur in reporting campus crime. Thus, the true crime rate for campuses is likely to be higher than shown in the study.

FINDINGS

The null hypotheses testing the full model and the conceptual propositions were evaluated using multiple regression. Because the study was investigating influences or explanation, the significance level for all tests was established at 0.05.

The hypothesis for testing the full economic model (shown previously in Figure 2) stated that no significant relation exists between the predictor variables and campus crime rates. The multiple regression analysis showed that the model defined a significant relation between the campus characteristics and campus crime rates. The null hypothesis was rejected ($p < 0.05$). The R square value indicated that approximately 34 percent of the variance in campus crime rates can be explained through the model. The level of explanation dropped to 29 percent, a 14 percent decline in explanatory capability, when adjusted for the degrees of freedom.

The study next investigated the relations among the components of the model and between the components and the campus crime rates. This investigation was done by testing hypotheses developed from the conceptual propositions. The first hypothesis proposed that location is not positively related to campus crime rates. The result of the analysis confirmed the null hypothesis ($p = .32$). Even using more precise definitions of location, the analysis supported

findings in other studies about location and offered more evidence to contradict this long-standing myth. The lack of relation suggests that higher education institutions should be careful not to imply levels of safety in descriptions of location. The analysis also showed that location does not explain a significant amount of variance in campus crime rates, having R square and adjusted R square of 0.01 and 0.00 respectively.

The second hypothesis stated that location is not positively related to the level of deterrents or the level of accessibility on a campus. The multiple regression analyses of the two parts of the hypothesis had similar results. In both cases, the regression indicated the existence of weak, but significant, positive relations and required rejection of the null hypotheses ($p < 0.05$). The R square and adjusted R square indicated that about eight percent of the variance in the level of deterrents and only three percent in the level of accessibility was explained by location. This result indicated that location had little explanatory power in relation to deterrents and accessibility.

Accessibility was the next component of the model to be considered. The third hypothesis proposed that the level of accessibility of the campus is not positively related to campus crime rates. The multiple regression analysis indicated that a significant, positive relation existed and prevented acceptance of the null hypothesis ($p < 0.05$). Approximately 22 percent of the variance in the criterion variable was explained by adjusted R square. This finding suggests that campuses with higher crime rates are likely to be more accessible to people and various types of traffic, thus, providing greater opportunity for criminal access.

The deterrent component was the next aspect of the model to be tested. The fourth hypothesis stated that the level of deterrents is not positively related to campus crime rates. The analysis showed a significant, positive relation

and did not support the null hypothesis ($p < 0.05$). Over 25 percent of the variance in campus crime rates was explained by the deterrents component. This explanation level was higher than any other component and indicated the importance of the component to the total model. The result implies that campuses having a higher crime rate will utilize more deterrents than institutions with lower crime rates. This finding supported the concept that campuses recently have been increasing deterrents in response to demand and that a high level of deterrents may increase safety, but also facilitates the discovery and reporting of campus crimes. Lower crime rates may be a future impact of more deterrents.

The final hypothesis evaluated the wealth component and proposed that the level of wealth of a campus is not positively related to the level of deterrents or campus crime rates. The multiple regression analyses of the two parts of the hypothesis had similar results. In both cases, the regression indicated the existence of significant, positive relations and required rejection of the null hypotheses ($p < 0.05$). The R square and adjusted R square indicated that over 17 percent of the variance in the level of deterrents was explained by wealth and that wealth explained more than 10 percent of the variance in campus crime rates. The result suggests that wealthier campuses can provide more deterrents, but it also supports the concept that wealthier campuses offer more opportunities or targets for criminals.

These analyses suggested that the economic model and its components identified a significant relation and provided some explanation of campus crime rates. The analyses also suggested that some parts of the model did not contribute significantly to the explanation and that a more efficient model might be developed.

Using the information obtained from the analyses, the location component was eliminated from the model. Correlation analysis using Pearson's R was conducted on the variables of the other components to test the hypothesis that none were significantly correlated with campus crime rates. The correlation analysis showed that the null hypothesis could be accepted for two variables, accessibility to automobiles ($p = 0.14$) and campus population per acre ($p = 0.05$). These variables were eliminated from the model on that basis and a revised model was formulated as shown in Figure 3.

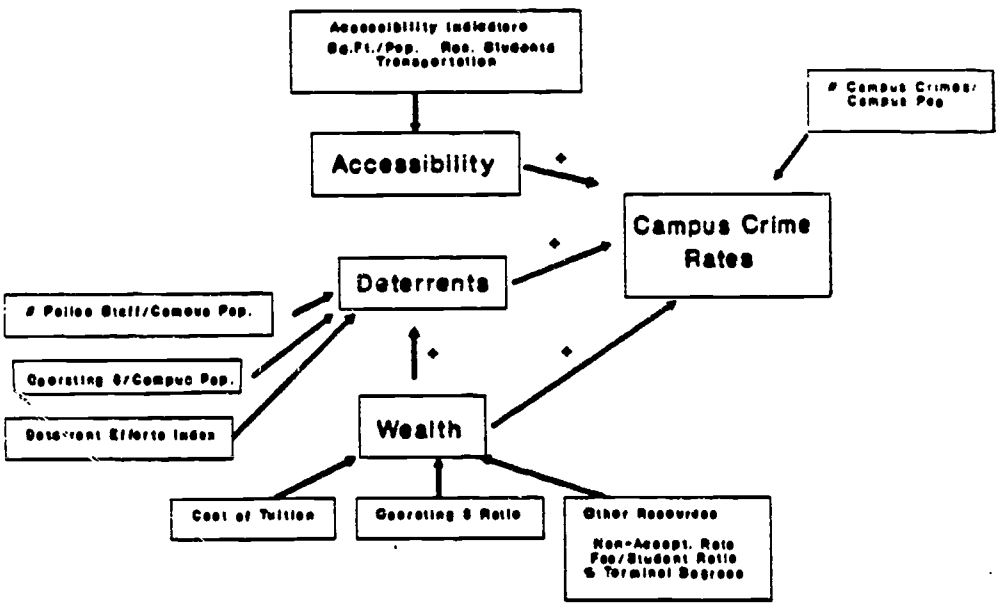

Figure 3
Revised Explanatory Model

The revised model with its three components having a total of 11 variables was tested. The predictor variables were entered into the analysis without regard to order or magnitude of effect. The multiple regression analysis indicated that the relation continued to be significant and that approximately 34 percent of the variance was explained. This result was similar to the

original model. When the adjusted R square was considered, the explanation level had changed from 29 percent in the original model to 30 percent, a slight improvement.

One last analysis was conducted on the revised model to take advantage of the power of step-wise multiple regression analysis and its ability to select and utilize variables according to the level of their contribution to the regression equation. This analysis indicated that approximately 33 percent of the variance in campus crime rates could be explained through four variables. While this percentage is slightly lower than either of the previous models, the adjusted R square increased to over 31 percent. In order of addition to the regression analysis, the four variables consisted of two deterrent variables, police department budget per campus population and level of deterrents; and two accessibility variables, percentage of residential students and level of public transportation.

The results of the step-wise analysis implied that knowledge of these variables explained as much variance as the 11 variables in the revised model or the 16 variables of the full model. The results also can be interpreted to support the conceptual basis of the model. The police department budget per campus population might be considered as a wealth indicator rather than a deterrent indicator. Each component of the model then was represented through the step-wise variables.

The positive relations of both police department budget per campus population and level of deterrents to campus crime rates suggests that reduction of crime rates may not be the result of increasing budgets or deterrents. As mentioned previously, more and better police programs and deterrents may succeed in raising campus awareness. This greater level of awareness and staffing may lead to a safer campus in reality, but also higher

crime statistics as more crime is discovered and reported. Given studies showing high levels of unreported crime on campuses, improved police services may encourage more reported crime. In addition, the ability of an institution to support a higher police budget could imply a wealthier campus and its concomitant attractiveness as a target for criminal activity.

The inclusion of the two accessibility variables, percentage of residential students and level of public transportation, support the concept that familiarity and opportunity increases with access. A residential population is likely to have access to all parts of the campus at all hours. A higher level of public transportation implies a relative ease of access to campus for students, staff, and criminals.

RECOMMENDATIONS FOR PRACTICE

Since a significant, positive relation was identified between the level of deterrents and campus crime rates, there may be a need to lower expectations held by university administrators and police departments of reducing crime rates by increasing the level of deterrents on campus. As stated previously, increased awareness may result in better reporting of crime and higher crime statistics.

Another significant, positive relation was found between the level of public transportation and campus crime rates. This relation implies that expansion of transportation services may increase access to the campus and opportunity for criminal acts. Obviously, the benefits of improved transportation may outweigh any potential increase in crime, but campus police departments might want to pay special attention to the newly served areas or during expanded hours of access.

The lack of a significant relation between location and campus crime rates suggests that no higher education institution can consider itself immune to

crime. The study evaluated location using city population, city crime rates, and perceptions of neighborhood crime rates by campus police. Institutions in high crime areas may have low crime rates and v'ce versa. This finding, and those from other studies on this topic, suggests that as institutions and authors try to describe the campus crime situation, references should be eliminated to location as a warning factor or confidence building aspect. As a liability issue, emphasis on the rural nature of a campus as a part of safety information may be risky.

The results of the study encourage higher education institutions to do self evaluation, to consider how their characteristics may be interacting with campus crime and efforts to improve campus security, and to be conscious of the complexities of campus crime. The study does not support comparison of an institution to the result of any analysis because the sample was not selected randomly. The results can not be considered representative of higher education institutions and should not be generalized.

RECOMMENDATION FOR RESEARCH

The present study examined an economic model of campus crime in order to expand the investigation of the relation between campus characteristics and campus crime rates. It was the first attempt to apply an economic theory of criminal choice to campus crime. The study had several limitations, some which can be addressed through further research. At the time of the study, many institutions did not record or report crime data for their campus. This fact limited the population available for study. With the implementation of the Student Right-to-Know and Campus Security Act of 1990, more higher education institutions will be recording crime data. Therefore, the opportunity exists to test the findings of this study or to expand the study using a random sample of the nation's colleges and universities. The larger population also will

allow survey instruments to be pilot tested for better validity of model indicators.

Campus crime is a very complex topic, and this study took one approach and used one set of components. Among these components, some proved not to be significant to the relation under study. There may be other components that should be included or other variables that better define the components. There may be other models that include components relating to size and type of institution, local unemployment, type of crime, or many other possibilities.

In addition, the study identified some specific relations that deserve further investigation. Time series analysis could be used to determine if over time the relation between deterrents and crime rates becomes negative.

CONCLUSION

Crime on campus is the reality that each higher education institution must accept. Violent crime has the attention of parents, the media, and the federal government. When statistics are known about even a portion of the property crime, trustees, administrators and funding agencies will be conscious of the other costs of campus crime. Few studies of campus crime have been done and there is much more to learn.

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