CRIME ALONG RURAL INTERSTATE HIGHWAYS

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ABSTRACT

Crime occurs at a lower rate in rural areas than in urban areas (Weisheit, Falcone, and Wells 1994). However, crime rates may vary across rural areas. Rural areas with unique social or geographic characteristics may exhibit crime rates different from rural areas not possessing those characteristics. The present study builds upon research by Jarrel and Howsen (1990) that indicated interstate highway traffic in an area affects crime rates in that area. This thinking is applied to rural crime. Crime rates in rural areas are compared across levels of interstate highway presence. Findings indicate traffic along interstate highways may in fact have a noticeable influence on the occurrence of some types of crime, especially motor vehicle theft, robbery, and homicide.

INTRODUCTION

It is widely accepted that crime occurs at a higher rate in urban areas and that rural areas are safer than urban areas. Research supports this idea. A recent study by the U.S. department of justice utilizing data from the Federal Bureau of Investigation's uniform crime reports suggested that reported crimes per 100,000 members of the population were substantially higher for urban areas than for rural (Weisheit, Falcone, Wells 1994). These findings however may not tell the whole story and could lead to the incorrect assumption that all rural areas have lower crime rates for all types of crime.

Several past studies have suggested that rural areas with certain characteristics exhibit relatively high rates of crime. Rural communities undergoing rapid growth due to some economic event have experienced rates of crime that were greater than would be expected to occur by chance (Fruedenberg, Jones 1991).

It is possible that other rural areas having other unique characteristics may exhibit crime rates exceeding those found in rural areas without those characteristics. Jarrel and Howsen (1990) did not control for rurality but examined the effects of such characteristics as tourism opportunities, presence of a college student population, retail outlets, and traffic along interstate highways on crime rates. They found that conditions increasing the number of strangers (tourism, retail centers, interstate highways) in an area was positively related to crime rates in the area. According to their study, however, this was only true for property crimes and robbery. Violent crimes were not associated with the movement of strangers in an area.

The present study will apply Jarrel & Howsen's ideas to the phenomenon of crime in rural areas. According to their findings, rural areas that serve as retail centers offer many tourism opportunities or are intersected by interstate highways should have crime rates exceeding rural counties not having these characteristics. Interstate highway influence is specifically examined in this research.

The potential for relatively high crime rates along rural interstates may be due in part to isolated businesses along interstates making attractive targets (property for the taking with a quick escape route) for criminal activity and the stream of transients, perhaps many with criminal records, traveling cross country via the system of interstate highways. Interstate highways also present other sites conducive to criminal activity, not found in other rural counties. Included among these sites are rest areas and roadside parks along interstate highways. These facilities bring strangers into close proximity and travelers carrying large amounts of money or in possession of other forms of property may become victims of others who prey on travelers. These same conditions are not likely to exist in noninterstate rural counties and it makes sense that where they do exist the crime rate would be higher. Another point that must be considered is that rural interstate counties may have a larger effective population than reflected in official census reports of the resident population. People traveling through the county are not considered residents and are not considered as part of the base population when rates are calculated but the numbers of people along the interstate does in essence increase the population of the county. This may account for part of any crime rate variation that appears between rural interstate counties and rural noninterstate counties.

This research specifically examined the effect of interstate highways on rural crime. Crime rate comparisons were made between rural counties intersected by interstate highways, rural counties not intersected by interstate highways but bordering rural counties

with interstate highways, and rural counties without interstate highways and not bordering counties having interstate highway traffic. It was expected that rural interstate counties would have crime rates exceeding other rural counties.

METHODOLOGY

To test this hypothesis uniform crime report data for counties in Oklahoma exhibiting the aforementioned characteristics were examined. Mean crime rates for seven index crimes and three crime indexes were compared across levels of interstate traffic.

Unit of Analysis and Data Sources

The unit of analysis for this study was the county or county equivalent. Fifty-one Oklahoma counties met the rural county criteria used in this study and comprised the total sample examined. Data were obtained for these counties for the sixteen year period 1975-1990 from the Oklahoma State Bureau of Investigation. In addition to crime data, population data for each county, for each year, were obtained from the Census Bureau and interstate highway information was obtained by consulting the Rand McNally road atlas.

Variables

Dependent variables for this study were the 16 year mean rates for total crime, property crime, violent crime, homicide, rape, assault, robbery, burglary, motor vehicle theft, and larceny. Total crime rate was a composite index of the seven index crimes, property crime was an index of burglary, motor vehicle theft and larceny, and the violent crime index was constructed from homicide, rape, assault and robbery data.

Rates for a sixteen year period for each dependent variable were used to control any "outlier years" when crime rates could have deviated greatly from the general pattern for a particular county. If a single year or several separate analyses for different years were conducted it would be possible that these analyses may not provide reliable estimates of crime conditions for the counties. For example, during a single year it would be possible that a change in sheriff's department staff and reporting procedures could result in a single year having a lower or higher than "normal" reported crime rate. It is also possible that crime rates for a single year may be "naturally" lower or higher than normal in a given year and if that year were selected for study it could yield misleading results. The sixteen year rates for each county were obtained by first calculating yearly crime rates per 1000 members of the population. The yearly rates were then summed and divided by 16.

Interstate/rural was the single independent variable utilized. Three levels of this variable were generated by examining its two dimensions: presence of interstate highways and rurality. The first step in operationalization involved the classification of counties as rural. Attempts found in other studies to classify rural areas were not adequate for this study. For example, Wiesheit et al (1994) identify rural counties as those that lie "outside metropolitan statistical areas (MSA) and cover areas not under the jurisdiction of urban police departments." The dimension, "urban police department" is ambiguous and not useful for arriving at a definition for this study. If only the MSA criterion is used a number of counties having a subjectively "urban character (counties with communities having a population of 40,000)" would be included as rural.

For this study, an attempt was made to identify counties as rural by virtue of their population and their proximity to urban areas. It was felt that considerations of population should be limited sufficiently in order to isolate counties having a "rural quality" instead of just counties that were rurally located. Ultimately, a county was classified as rural if it was located outside a Metropolitan Statistical Area and had no community with a population greater than 10,000. It is maintained that this definition will adequately differentiate rural counties from urban counties or those having an "urban quality."

Interstate traffic was determined simply by the presence of an interstate highway within the rural county throughout the period 1975-1990. The three levels of interstate/rural were (1) interstate county (n=19)—rural county with an interstate highway, (2) interstate bordering county (n=20)—rural county bordering county with an interstate highway and (3) noninterstate county (n=12)—rural county without an interstate highway and not bordering an interstate county.

Data Analysis

Analysis of these data involved simple analysis of variance testing the statistical null hypothesis that crime rates were equal across

Table 1: Rural Crime Rates by Level of Interstate Highway Traffic
16 Year Mean Crime Rate

Crime	Interstate n=19	Interstate Border n=20	Noninterstate n=12	F	OSL
Total	26.854	22.066	20.393	2.66	0.08
Property	24.475	20.380	19.015	2.18	0.12
Violent	2.380	1.686	1.377	2.65	0.08
Homicide	0.073	0.068	0.046	3.09	0.05*
Rape	0.136	0.113	0.131	0.93	0.40
Assault	1.920	1.350	1.081	1.99	0.15
Robbery	0.251	0.155	0.120	5.26	0.01*
Burglary	8.717	7.651	6.788	2.56	0.09
Auto Theft	1.779	1.351	1.177	5.47	0.01
Larceny	13.979	11.378	11.050	1.47	0.24

NOTE: Rates are per 1000 population. Crime data are from the Oklahoma State Bureau of Investigation Uniform Crime Reports, 1976-1991.

NOTE: Interstate = rural counties intersected by interstate; Interstate Border = rural counties not intersected by interstate but bordering an interstate county; Noninterstate = rural counties not intersected by interstate and not bordering an interstate county.

*p<.05

levels of interstate/rural. To control for unequal cell sizes the SAS general linear models procedure for conducting analysis of variance was used (Glass, Stanley 1970). [Glass and Stanley claim that different computational procedures should be used when conducting One-Way ANOVAs with unequal samples (cells).] Separate ANOVAs were employed for each dependent variable. In addition Tukey's test of honestly significant difference was used to determine where significant differences existed in the event the null hypothesis was rejected.

FINDINGS

Null hypotheses were retained at the .05 level of significance for the analyses of total crime, property crime, violent crime, larceny, burglary, assault, and rape. Statistically significant crime rate differences were not identified across levels of interstate/rural for these crimes. Before discounting these findings based on statistical significance it should be considered that lack of statistical significance may be a function of the small sample size (N=51). The smaller sample size may result in a smaller standard error and less statistical precision. This condition may then result in noteworthy differences not being statistically significant (Hinkle, Wiersma, Jurs 1982).

Rejection (p < .05) of null hypotheses occurred for homicide, robbery, and motor vehicle theft. Significant differences were found

for these variables across levels of the independent variable. Tukey's test of honestly significance difference revealed that homicide, motor vehicle theft, and robbery rates in interstate rural counties was significantly different than the rates found in interstate bordering counties or noninterstate counties but differences between interstate bordering counties and noninterstate counties were not statistically significant.

Although the null hypothesis was rejected for only three of the 10 dependent variables, differences that were not statistically significant did appear in the anticipated direction for all dependent variables except reported rape. The sixteen year mean crime rates, for all variables were highest for counties intersected by interstate highways. For all dependent variables but one, rape, rates decreased as distance from interstate highway traffic increased. Counties that did not have interstate highway traffic but bordered counties having interstate traffic had lower rates of crime than counties intersected by an interstate. Also, counties not having interstate traffic and not bordering counties having interstate traffic had lower mean rates than counties bordering interstate counties.

CONCLUSIONS

Findings support the idea that crime rates in rural areas are not the same across all rural areas. Rural areas do not simply have a

generally low rate of crime. Crime rates may vary across rural areas. As suggested by studies of "boomtown" conditions in rural areas, characteristics unique to a particular rural area appear to be associated with crime rates. Interstate traffic is another condition that possibly contributes to variation in crime rates across rural areas.

Although the findings of the Jarrel and Howsen study were not perfectly replicated, there was support for the idea that interstate traffic has a noticeable influence on crime rates in a rural area.

The apparent relationship between interstate traffic and crime in rural areas may be due, as previously mentioned, to the presence of businesses along interstates and the easy access and quick getaway provided by exits along the interstate. The interstate may also provide a stream of transient criminals traveling cross country. Other population dynamics associated with interstate traffic (e.g., increased population, younger population) may also contribute to the higher crime rates found in rural, interstate counties.

The small sample size and exploratory nature of this research prohibits broad generalizations and definitive statements concerning the influence of traffic along interstate highways on crime in rural areas. However, the evidence does suggest a need for further research. Both localized and national studies of this topic using a variety of research methodologies are necessary. Future studies might consider utilizing a multivariate approach similar to that used by Jarrel and Howsen. Such an approach would overcome the present study's failure to control potentially confounding variables.

REFERENCES
Freudenburg WR, RE Jones 1991 Criminal behavior and rapid community growth: examining the evidence *Rural Sociology* 56 619-645
Glass GV, JC Stanley 1970 *Statistical Methods in Education and Psychology* Englewood Cliffs, NJ: Prentice-Hall
Hinkle DE, W Wiersma, SG Jurs 1982 *Basic Behavioral Statistics* Boston, MA: Houghton-Mifflin
Jarrel S, RM Howsen 1990 Transient crowding and crime *Amer J Economics Sociology* 49 483-493
Oklahoma State Bureau of Investigation 1976-1991 *Uniform Crime Reports* Norman, OK: University Printing
Weisheit RA, DN Falcone, LE Wells 1994 *Rural Crime and Rural Policing* (NCJ Publication No. 150223) Washington DC: USGPO