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Abigail G. Orscheln
University of Missouri-St. Louis, ago35f@umsl.edu

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Routine Activity Theory at the Census Tract-Level

Abigail Orscheln
B.S. Criminal Justice Systems, Truman State University, 2015

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Advisory Committee

Matt Vogel, Ph.D.
Chairperson

Janet Lauritsen, Ph.D.

Adam Boessen, Ph.D.

Routine Activity Theory at the Census Tract-Level

Abstract:

The purpose of this study is to better understand predictors of neighborhood crime in metropolitan areas through a routine activity theory (RAT) lens. This paper examines whether neighborhood-level aspects of RAT have varying explanatory power for different crimes. This is accomplished by drawing on a sample of census tracts from the National Neighborhood Crime Study (NNCS). Using these data, multiple independent variables are regressed on four different types of crime using an ordinary least squares (OLS) regression. The results do not suggest that there is a strong degree of variation in the ability of specific measures to predict specific forms of offending. Insofar as these measures truly capture elements of RAT, the findings indicate that RAT is efficient in explaining crime rates in general, and does not do an especially good job in differentiating crime acts in disaggregated scales. However, of the different measures, vacant housing is an especially robust predictor of each type of crime, suggesting that features of the physical environment of a neighborhood contribute to criminal behavior above and beyond shared characteristics of neighborhood residents. This suggests that situational crime prevention can be an effective crime control method by increasing security of an area to dissuade potential offenders and using target hardening.

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Acknowledgments

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INTRODUCTION

In the late 1960s and early 1970s, the economy was booming, poverty was declining, and joblessness was low. By all accounts, crime rates should have been constrained as the well-accepted motivations for crime were relatively small at the time. However, in a somewhat contradictory nature of crime trends, property and violent crime increased through this period. Routine activity theory (RAT) was first developed to provide a rather concise explanation of this phenomenon. RAT assumes that for crime to occur, motivated offenders, suitable targets, and a lack of capable guardians have to come together in time and space. To explain this period of increased property and violent crime, RAT stated that goods became more compact and expensive and female labor force participation left homes vulnerable to predation (Cohen and Felson, 1979).

Multiple studies of RAT have been conducted at the individual and household-level (Osgood and Anderson, 2004; Roth and Roberts, 2015; Ngo and Paternoster, 2011), as well as macro-level nation, state, and city-level (Copes, 1999; Bennett, 1991; Ashby and Tompson, 2017). Despite the robust tradition of empirical tests of RAT, comparatively few studies have examined neighborhood-level differences in offender motivation, guardianship, and target suitability and their attendant consequences for neighborhood crime rates. Using neighborhoods as the unit of analysis, as opposed to larger geographical areas, has benefits because census tracts have more homogeneity in their ecological structure than larger aggregate areas, such as cities or states. Using higher units of analysis can potentially bias estimates of RAT indicators, such as percent female-headed households, which can exist heterogeneously in a larger area (Parker, 1989).

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Past studies have found mixed support for RAT, but with generally supportive findings. However, studies have not looked at how RAT, at the census-tract level, explains different types of crime differently (i.e., robbery, burglary, motor vehicle theft [MVT], and larceny). For example, does RAT have dissimilar explanatory power when comparing a property crime, such as burglary, to a violent crime, such as robbery? There could be differences in RAT explanations because of the differences in targets and capable guardianship. Burglars target houses and the guardians are the residents and neighbors of the house. Robbers target people and the guardians are the people who are nearby. In MVT, automobiles are the target and in larceny any item other than automobiles are the target, with capable guardians being whoever is present. Given these differences, it could be expected that RAT factors have varying degrees of explanatory power.

The current study fills this gap in the literature in two ways. First, it provides a neighborhood-level examination of the aspects of RAT most strongly associated with crime rates. Second, it empirically evaluates a novel hypothesis suggesting that the key elements of RAT should exert varying effects on specific forms of offending, thus anticipating more nuanced linkages among guardianships, target suitability, and their potentially countervailing relationships with property offending, acquisitive crime rates, and violence.

The purpose of this study is to better understand predictors of neighborhood crime in metropolitan areas through a routine activity lens. This study uses data from the National Neighborhood Crime Study to explore the applicability of RAT to

neighborhood-level crime by examining the relationships among crime rates and a series of indicators intended to capture aggregate levels of offender motivation, target suitability, and guardianship. As discussed below, measures of guardianship and target suitability seem to exert the strongest influence over larceny rates. There are also unexpected negative relationships between RAT factors and crime.

The following section first provides a detailed overview of RAT, and then reviews the pertinent research testing the key tenants of the theory. The final part of the section ties in research on social disorganization and crime concentration, both of which indirectly support the key aspects of RAT and help frame the importance of testing RAT at the neighborhood level.

THEORETICAL BACKGROUND

Routine Activity Theory

In the United States, there was an increase in crime rates during the 1960s and 1970s that was contradictory to the social and economic living conditions at the time (National Commission on the Causes and Prevention of Violence, 1969: xxxvii). Post-1960, the Census Bureau reported that more metropolitan areas were showing indications of progress that would point toward increased well-being and decreased crime. For example, the proportion of blacks in metropolitan areas who completed high school rose from 43% to 61% between 1960 and 1968, the unemployment rate significantly dropped, the median family income rose, and the number of persons living at or below the poverty level declined by around two million persons (National Commission on the Causes and

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Prevention of Violence, 1969: xxxvii). Despite these trends towards social and economic well-being, the Uniform Crime Report (UCR) (Uniform Crime Report, 1976) showed that crime rates had been skyrocketing during this time period; for example, robbery rates increased by 263% and aggravated assault rose by 164% (See Figure 1). To explain these conflicting crime, economic, and social trends, Cohen and Felson (1979) developed RAT for analyzing crime trends and cycles by examining how patterns of everyday life can affect criminogenic opportunity. Specifically, they argued that the changing structure of routine activity was responsible for increasing suitable targets and decreasing capable guardians.

To help explain why crime rates were rising when people were better off socially and economically, Cohen and Felson (1979) looked towards the patterns of everyday life that had been changing. Specifically, they observed that crime increased as people began spending more time away from home, especially as more women entered the labor market, in the years following the Second World War. The notion of a structural shift in leisure time and employment patterns was corroborated by the U.S. Census Bureau, which showed that the percent of female college students rose by 118% between 1960-1970, the married female labor force participant rate increased by 31%, the percentage of the population living alone increased by 34%, and the number of vacations taken from 1967-1972 increased by 81% (Census Bureau). Overall, this meant that more households were empty during the day and more people were in public, which could leave them open as potential targets for crime.

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Cohen and Felson (1979) explicitly argued that the "dramatic increase in the reported crime rates in the U.S. since 1960 is linked to changes in the routine activity structure of American society and to a corresponding increase in target suitability and decrease in guardian presence," (p. 598). Target suitability is the reflection of value or "the material or symbolic desirability of a personal or property target for offenders," (p. 591). Targets can be people, things, or places; for example, a wallet is a common target for pickpocketing and a person alone on the street is a common target for robbery. The level of target suitability depends on a variety of factors, such as the offender proximity to the target, potential yield, and accessibility (Hough, 1987). Guardianship is characterized by whether or not the guardian is visible to the motivated offender, whether they are available to act as a guardian, whether they are willing to act as a guardian, and whether they are capable to monitor and intervene if necessary (Reynald, 2009). Though official police presence is a common indicator of guardianship, the presence of people going about their regular routine activities, security cameras, and/or security officers all increases the guardianship of an area, person, or object.

RAT diverged from other prominent criminological theories in that it did not focus on the criminality or characteristics of offenders. Rather, it placed the circumstances in which offenders carry out predatory criminal acts at the forefront. This idea was influenced by Hawley's (1950) human ecological theory, which asserted that communities were not simply areas in which people lived in together, but rather they consisted of symbiotic and communalistic relations existing over space and time. Hawley (1950) proposed three temporal components of community structure that strongly

influenced RAT. The first was rhythm, or the regular pattern of when events occur. For example, the rhythm of crime rates during the day tends to fluctuate with work patterns of an area (e.g., burglary is higher when most people in an area are at work). The second was tempo, or the discrete number of times an event occurred within a time frame (e.g., the number of burglaries that occur in a census tract over a day or the number of times people left their home to go out at night over a year). The third was timing, or the coordination of different, independent activities (e.g., the coordination of an offender's rhythm with that of their victim's that puts them in the same place at the same time [Hawley, 1950]). These three elements helped shape how Cohen and Felson looked beyond just the spatial elements of crime to consider the spatio-temporal requirements of a successful criminal encounter. These requirements are the convergence of three factors in time and space: 1) motivated offenders, 2) lack of capable guardians, and 3) a suitable target. The lack of any one of these three factors is enough to prevent the "successful completion of a direct-contact predatory crime," (Cohen and Felson, 1979, p. 589).

Furthering the importance of both the spatial and temporal dimensions of crime, Cohen and Felson (1979) argued that the everyday spatio-temporal organization of social activities could account for fluctuations in crime, between places and over time. These routine activities, as they called them, could be used to explicate the key elements of crime. Furthermore, Cohen and Felson (1979) proposed all three factors had to occur, but that the most important elements would be guardianship and suitable targets. Most studies of RAT assume offender motivation to be ubiquitous and that increases or decreases in the number of motivated offenders will not affect crime rates. Rather, crime

is more likely to increase when opportunities increase (via structural changes or changes in routine activity). This is why a large portion of tests of RAT use victimization data, not offender data (Birkbeck and LaFree, 1993). Because the focus is on opportunity, not offenders, attempting to reduce crime through exerting social control over offenders, such as parents imposing rules over their children or the state imposing jail time for offenses, is not as effective as modifying opportunity structures that will prevent individuals from being vulnerable to predation. In other words, modifying opportunity through situational crime prevention, which incorporates managerial and environmental change to make crime more difficult and risky, will lower crime more than simply attempting to deter criminals with rules or the threat of sanctions (Clarke, 1997).

Though Cohen and Felson (1979) argued that motivated offenders were less important in understanding crime fluctuation, they acknowledged the increase in the percent of the population ages 15-24 during the era they studied. This population shift could have affected the number of motivated offenders. This is important because the peak age for committing crime falls in this age range (Loeber and Farrington, 2014). Cohen and Felson (1979) offered a different perspective, suggesting that males aged 15-24 are also the demographic that spends the most time participating in activities away from home, which leaves them susceptible to predatory crimes. Also, during this time the overall population dispersed into more households (Census Bureau) which enlarged the market for expensive goods (e.g., television sets, automobiles, etc.), potentially increasing the willingness of people to purchase goods from the black market, thus

increasing demand for stolen goods, incentivizing robbers and burglars, and contributing to higher rates of acquisitive crime.

A plethora of studies have found multiple factors that influence target suitability. People living in single-adult households, adolescents and young adults, and those who were employed outside of their home all influence target suitability because they are more likely to spend more time away from home due to the fact they are less obligated to spend time participating in household activities (Sampson, 1987; Langan and Innes, 1985; DeGrazia, 1961; Cohen, Kluegel, Land, 1981). This means that areas with higher concentrations of these populations (i.e., single-adult households, males ages 15-24) are likely to have higher rates of crime. For crimes like burglary, when higher proportions of people are away from home, there is a reduced level of guardianship in the area. For crimes like robbery there are more potential targets because more people are out. By the same logic, Cohen and Felson (1979) asserted that areas with more married individuals would have lower rates of victimization because married individuals are less active, thereby increasing capable guardianship and decreasing target suitability because they stay home.

Contrary to Cohen and Felson's assertion that inactiveness lowers the likelihood of victimization, multiple studies have found that unemployed individuals and handicapped individuals actually have unusually high rates of victimization (Kennedy & Forde, 1990; Sampson & Lauritsen, 1994). Possible explanations for this relationship have suggested that people living in areas of high unemployment tend to live in areas with a greater proportion of motivated offenders (Cantor and Land, 1985). The higher

risk of victimization among handicapped people may be because physically and mentally

vulnerable populations have a lessened ability to resist motivated offenders (Health

Canada, 2004).

Overall, RAT is a fundamental addition to literature because it discusses

opportunity structure rather than offender propensity. Most traditional crime theories

focus more on the offender, a focus Cohen and Felson (1979) reject. Other theories also

try to explain the effect of structural, ecological, and social conditions on crime without

explaining how they contribute to the opportunity to engage in crime. Such work includes

that of Bonger (1916), Durkheim (1951; 2014), Henry and Short (1954), Fleisher (1966),

who have all attempted to link crime with economic conditions. Though there has been

some empirical support for this relationship, there has also been a considerable amount of

inconsistent results (Cohen and Felson, 1979).

Testing RAT

Empirical tests generally support the key tenets of RAT. For instance, Groff

(2007) conducted a spatio-temporal analysis of street robberies to determine whether a

shift in the routine activity away from home increased the likelihood of street robberies.

She posited that as time spent away from home increases there would be a concurrent

increase in the aggregate rate of street robbery as well as a change in the spatial pattern of

street robberies. She found strong support for RAT at both the micro- and macro-level by

showing a significant relationship between an increase in time spent away from home and

the rate of street robberies. Andresen (2006) also investigated the spatial dimension of

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burglary, violent crime, and motor vehicle theft at the city-level in Vancouver, British Columbia. Using social disorganization theory and RAT, he found support for the correlations between crime and high unemployment rates and high proportions of young populations.

The link between unemployment and crime is notoriously convoluted. Early studies of crime and the economy suggested that unemployment would drive up crime rates, presumably by increasing motivation to acquire money through illicit channels. However, empirical studies have presented mixed evidence of crime and unemployment. This may, in part, be due to how researchers conceptualize the role of unemployment in crime causation. For instance, Shaw and McKay (1942) argued that unemployment was indicative of social disorder, suggesting that neighborhoods with high unemployment rates lack the resources to informally regulate imprudent conduct of neighborhood youth. RAT provides a slightly more nuanced role of unemployment on crime.

Cantor and Land (1985) created a model based off of RAT that combined the motivation effect and opportunity effect of unemployment on crime, which they believed previous models had missed because the two effects can counterbalance each other. This means that the relationship between structural effects, unemployment, and crime could have been misinterpreted by previous models that did not take this into account. To prevent the elimination of structural effects, they used deterministic polynomial difference filters, which involve taking differences of successive values of each series, to eliminate secular trends (Cantor and Land, 1985). They found that the relationship between unemployment and crime was lagged at the macro-level unit of analysis. In other

words, individuals who become unemployed do not immediately turn to crime, but as their financial hardship increases, so does their motivation to commit crime. Second, the opportunity effect was stronger than the motivation effect − unemployment had both positive and negative effects on the crime rate because it increases the motivation to commit crime but decreases the opportunity to commit crime. This decrease in opportunity is attributed to the increased amount of time unemployed individuals stay home where they cannot 1) offend and 2) be victimized by property or violent crimes, which lowers overall crime rates. Because opportunity has a stronger effect, they posited that increases in unemployment should result in decreases in crime in the short run but increases in the long run (Cantor and Land, 1985).

Ha and Andresen (2017) tested Cantor and Land's (1985) findings of the unemployment effect on crime using census tract data in Vancouver, Canada. They used a decomposition model to allow for identification of short- and long-term effects, and controlled for different routine activity and social disorganization variables. They found that, for property crimes, unemployment and housing values had the most impact on crime concentration. What this means, for example, is that unemployment shifts routine activity towards the home, which provides increased guardianship, and decreases the rate of some forms of crime, such as motor vehicle theft. Overall, they found support for Cantor and Land (1985).

Social disorganization and crime concentration

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Social disorganization theory (Shaw and McKay, 1942) attempts to explain why some neighborhoods have higher crime rates than others using structural and social conditions. In this macro-level theory, Shaw and McKay (1942) argue that neighborhood characteristics − such as poverty, racial heterogeneity, and residential instability – lead to social disorganization, or the inability of a community to realize its common goals and maintain effective social control, which leads to crime. The main principle of this theory is that social disorganization affects the ability of a community to exert social control over its residents (Shaw and McKay, 1942). RAT is predicated on a similar logic, but asserts that it is not the lack of social control over offenders that leads to crime; rather, these conditions interact in a way that leads to an increase in opportunity to be victimized and a decrease in capable guardianship (Cohen and Felson, 1979).

Building off of RAT and Shaw and McKay (1942), who found that certain locations were more prone to crime than others, Sherman et al. (1989) conducted a study on crime hot spots at the city-level. They found that the 4,166 robbery calls in Minneapolis between December 15, 1985, and December 15, 1986, were located in only 2.2% of the city. Their study of predatory offenses show that these crimes were dependent on where motivated offenders were most likely to come into contact with suitable targets and in the absence of capable guardians. Specifically, they found that crime hot spots shared many of the same common elements. The most crime-ridden hot spots were at high traffic intersections that had a bus depot, homeless shelters, bars, a downtown mall, parks, and adult bookstores. Such places had higher crime rates because they had high foot traffic and at least some illegal behavior (meaning there was less of a

chance of police involvement) (Sherman et al., 1989). These elements correspond with

Cohen and Felson's (1979) assertion that areas with higher suitable targets and fewer

capable guardians will experience more crime.

Rhodes and Conly (1981) conducted a micro-level study that found that offenders

get their environmental cues about people and places from observing regular, everyday

routine activity. These observations aid offenders in choosing their targets because they

can create cognitive maps about what people are going to do (e.g., when they leave and

return from work, when they go shopping, when they go to school, etc.) and what places

were going to be like (e.g., heavy traffic times, times when people are more drunk, etc.).

They also found supporting evidence that crime is clustered in certain areas and

specifically that most crime takes place within two miles of offender's homes. This is

because the better an offender knows an area, the better they are able to identify suitable

targets and at what times there will be a lack of capable guardians (e.g., when guardians

are at work or on vacation) (Rhodes and Conly, 1981).

Bursik (1988) studied the distribution of crime across neighborhoods. This study

was an expansion of the framework of social disorganization theory (Shaw and McKay,

1942) and RAT (Cohen and Felson, 1979). Shaw and McKay (1942) found that low

economic status, ethnic heterogeneity, and high residential mobility led to disruption of

community cohesion. One major idea of Bursik's work was that residential turnover leads

to the inability of local communities to realize the common values of their residents or

solve commonly experienced problems. When residential instability occurs there are

fewer network ties between neighbors, which means there is a decrease in the presence of

capable guardians (Bursik, 1988). This lack of capable guardianship exists because of the

lack in strength of local networks which affects community self-regulation, according to

Greenberg et al. (1982). Greenberg et al. found that local community social control,

exerted by capable guardians, is affected by informal surveillance, which is part of

routine daily observation of neighborhoods by citizens; movement-governing rules,

which is the avoidance of neighborhoods that are viewed as unsafe; and direct

intervention, which includes questioning of people about suspicious activity by citizens

of an area (e.g., parents questioning neighborhood children). Bursik's (1988) findings

were supported by Krivo, Peterson, and Kuhl (2009) who found in their analysis of

census tract and city-level data that people are less willing to work across racial barriers

to come to collective resolutions to neighborhood issues, such as crime.

Sampson (1987) looked at family disruption effects on informal social controls at

the city-level using the theoretical framework of Cohen and Felson (1979). They

disaggregated homicide and robbery data by race and age in cities that differed vastly in

family structure, economic deprivation, and male joblessness. They found support for

Cohen and Felson (1979) idea that families provide a source of informal control by

watching over their neighbor's property and the neighborhood children. With only one

parent in the household, there is a diminished ability to provide capable guardianship

because it decreases the number of people who can provide informal neighborhood

supervision, which allows for more offenses to occur (Greenberg et al., 1982).

A good deal of RAT research has focused on the social structure of

neighborhoods, explicitly assuming that interaction between neighbors forms the key

component of guardianship, and thereby criminal opportunity. However, comparatively less research has focused on the physical structure of neighborhoods as mechanisms of informal control. For instance, many disadvantaged and socially disorganized neighborhoods are characterized by blight, manifested in boarded up, unoccupied homes. Vacant housing, then, is directly associated with a decreased size of informal social networks. Likewise, the placement of vacant homes might block sightlines, decreasing the supervisory capacity of neighbors to watch other inhabited building for signs of foul play. Such mechanisms are internally consistent with research on offender decision making and foretell that vacant housing should have a direct, independent effect on rates of burglary. Jones and Pridemore (2016) examine the association between home vacancy and crime during the 2005-2009 U.S. housing crisis by examining 126 major metropolitan statistical areas. They found that there was a significant association between home vacancy and burglary rates. However they found no relationship between home vacancy and robbery rates, which differs from the previous findings of Ellen et al. (2013) who found that foreclosure-related vacancies were related to both property and violent crime, though more pronounced for property crime.

CURRENT STUDY

This research expands current criminological literature by first examining neighborhood-level aspects of RAT most strongly associated with crime rates. Second, it empirically evaluates a novel hypothesis suggesting that the key elements of RAT should exert varying effects on specific forms of offending, thus anticipating more nuanced

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linkages among guardianships, target suitability, and their potentially countervailing

relationships with property offending, acquisitive crime rates, and violence.

This study has one main research question: how are lack of capable guardians,

suitable targets, and motivated offenders associated with different types of crime? From

this research question, eight hypotheses about crime are drawn. The dependent variable,

crime, refers to the three-year tract rates of burglary, robbery, motor vehicle theft, and

larceny. The hypotheses are:

H_1: Unemployment rate is negatively associated with crime.
H_2: Percent female-headed households is positively associated with crime.
H_3: Percent renters is positively associated with crime.
H_4: Percent vacant housing is positively associated with crime.
H_5: Percent recent movers is positively associated with crime.
H_6: Tract racial heterogeneity is positively associated with crime.
H_7: Percent males ages 15-24 is positively associated with crime.
H_8: The factors of routine activity theory will have differing explanatory power for different types of crimes.

The relationships put forth in the hypotheses stem from previous research. The

measures of percent female-headed households and vacant housing are expected to be

positively associated with crime because they reduce the number of capable guardians in

an area that act to prevent victimization (Groff, 2007; Jones and Pridemore, 2016; Ellen

et al., 2013). Percent young males should be positively correlated with crime because this

population is known to spend more time away from home which increases the likelihood

of victimization for both direct predatory crimes and home burglary (Groff, 2007;

Sampson, 1987; Langan and Innes, 1985; DeGrazia, 1961; Cohen, Kluegel, Land, 1981).

Larson et al. (1996) found from the time between 5th and 12th grade, adolescents spent a

decreasing amount of time – approximately 35% in 5th grade to 14% in 12th grade – with

their family. The unemployment rate, however, should be negatively associated with crime because this population tends to stay home more which increases capable guardianship as well as decreases their own target suitability (Ha and Andersen, 2017; Cantor and Land, 1985). Whether the proportion of suitable targets or the proportion of capable guardians is more influential on crime rates was not elaborated on by Cohen and Felson (1979). However, I expect that an increase in capable guardianship will affect crime rates more than an increase in suitable targets because they decrease the motivation and ability to commit crime, regardless of the number of targets available.

Drawing on social disorganization theory, I similarly propose that percent renters, percent recent movers, and percent racial heterogeneity are all positively associated with the dependent variables. It is expected that higher percentages of these populations hinder the ability and willingness of an area to provide guardianship, which increases the opportunity structures to commit crime (Shaw and McKay, 1942; Bursik, 1988; Krivo, Peterson, and Kuhl, 2009).

For the final hypothesis, nuances in RAT explanations of different types of crime are expected because of the dissimilarities in targets and capable guardianship. For example, burglars target houses and the guardians are the residents and neighbors of the house. Robbers target people and the capable guardians are the people who are nearby. In MVT, automobiles are the target and in larceny any item other than automobiles are the target, with capable guardians being whoever is present. Given these differences, it could be expected that RAT factors have varying degrees of explanatory power.

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METHODS
Data

      The current study uses data from the National Neighborhood Crime Study

(NNCS) collected by Ruth D. Peterson and Lauren J. Krivo. Data were collected for

9,593 census tracts in 91 cities and 64 metropolitan areas in the United States between

1999 and 2001. Census tracts included in the sample were located in urban cities with

populations of at least 100,000 in 1999. The primary purpose the NNCS was to assemble

tract-level crime, using census data, and sociodemographic data for different cities across

the United States. One strength of this data set is that it permits analyses of crime at the

census tract-level, which is important for understanding the research question of this

study in the context of RAT. Other strengths include detailed information on contextual

characteristics, labor markets, housing markets, and sociodemographics.

      My four dependent variables are 1) the rate of burglary from 1999-2001, 2) the

rate of motor vehicle theft from 1999-2001, 3) the rate of robbery from 1999-2001, and

4) the rate of larceny from 1999-2001. Crime rates were measured at the census tract-

level in urban areas. For some cities not all three years of data were available, so crime

rate estimates were calculated or 2002 data was substituted. I disaggregate crime types to

examine whether the tract-level measures of RAT operate differently for these crime

types.

      The independent variables used to measure lack of capable guardianship and

target suitability include female-headed households, percent vacant housing, the

unemployment rate, and percent young males aged 15-24 as reported in the 2000

decennial census. These variables, deduced from Cohen and Felson's (1979) RAT, intend to capture the victimization where 1) houses are targeted because no one is home and 2) more people are out in public areas who are more likely to be victimized because they come into more contact with motivated offenders.

Drawing from Social Disorganization Theory (Shaw and McKay, 1942; Bursik, 1988), this study controls for percent renters, percent recent movers, and ethnic heterogeneity. Bursik (1988) posits that crime is overall more likely in certain neighborhoods because residential turnover (percent renters and percent recent movers) leads to the inability of local communities to solve common problems and realize their common values. Shaw and McKay (1942) found that multiple factors, including residential mobility and ethnic heterogeneity increased the levels of crime in a neighborhood because these factors disrupted neighborhood cohesion. Finally, these models control for tract population.

Analytic Strategy

This study employs ordinary least squares (OLS) regression analyses using four dependent variables, four independent variables, and four control variables. Drawing from Osgood (2000), OLS is the standard approach to analyzing per capita rates of crime when there are not issues of low base rates of crime. Because this study uses three years of compilation data, there are not low base-rates of crime. To double check, the

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distribution of crimes was examined and only a small percentage of census tracts

experienced little to no crime.[1]

RESULTS

Table 1 presents the descriptive statistics for the independent and dependent

variables. The average census tract had a rate of 12.4 burglaries, 11.0 MVTs, 42.1

larcenies, and 4.7 robberies. The average census tract had an unemployment rate of 8.5,

17% female-headed households, 48% renters, 7% vacant housing, 50% recent movers,

7% males ages 15-24, and 38.5% racial heterogeneity.

Table 2 presents the results of the OLS model of female headed households,

unemployment, vacant housing, males ages 15-24, recent movers, renters, and racial

heterogeneity regressed on the burglary rate. The results presented include the

unstandardized regression coefficient (B) and the x-standardized coefficient (β)[2]. The

results presented in this table demonstrate that all the variables had a positive effect on

the burglary rate. The smallest effect for the β coefficients was for percent renters where

a standard deviation increase in the percent renters was associated with a .026 increase in

the rate of burglary for a census tract. The largest effect was for percent vacant housing,

where a standard deviation increase in percent vacant housing was associated with a

4.111 increase in the rate of burglary for a census tract.

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[1]Negative binomial or Poisson models are the preferred way of modeling crime at small units of
aggregation as they overcome the issues of small populations having low base-rates of crime. Because there
some tracts in this study where zero crime was reported for the four types of crime studied, a negative
binomial model was run. Results were not significantly different from the OLS results.
[2] Using x-standardized beta is usefully for interpreting coefficients as a one standard deviation increase in x
resulting in a β increase in the rate of y. Because y is a non-latent variable, it was not necessary to
standardize it.

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For MVT (Table 3), the smallest positive effect was for tract racial heterogeneity, where a standard deviation increase is associated with a 1.000 increase in the rate of MVT for a census tract. The largest positive effect was for percent vacant housing, where a standard deviation increase in percent vacant housing was associated with a 2.784 increase in the rate of burglary for a census tract. Unemployment rate and percent renters also had small positive effects on MVT rate. Female-headed households, males ages 15-24, and percent recent movers all had small negative effects on the MVT rate.

For larceny (Table 4), all but two variables had a positive effect. The smallest positive effect was for tract racial heterogeneity, where a standard deviation increase is associated with a 1.757 increase in the rate of larceny for a census tract. The largest positive effect was for percent vacant housing, where a standard deviation increase in percent vacant housing was associated with a 16.444 increase in the rate of larceny for a census tract. Female-headed households had a large negative effect, with a one standard deviation increase in percent female-headed households was associated with a 15.256 decrease in the larceny rate. Males ages 15-24 had a negative effect on the larceny rate. Unemployment rate, percent recent movers, and percent renters all had positive effects on the larceny rate.

For robbery (Table 5) four out of seven variables had positive effects. The smallest positive effect was for tract racial heterogeneity, where a standard deviation increase is associated with a .192 increase in the rate of robbery for a census tract. The largest positive effect was for percent vacant housing, where a standard deviation increase in percent vacant housing was associated with a 1.772 increase in the rate of

robbery for a census tract. Similar to the regression on MVT, female-headed households, males ages 15-24, and percent recent movers all had small negative effects on the robbery rate.

Most of the relationships presented in the models are statistically significant, but there is meaningful difference in the magnitude of the predictors across crime types. These models generally indicate that percent vacant housing is the strongest predictor of each type of crime, which suggests that physical environments may be more important than other neighborhood characteristics examined in determining the factors that impact crime rates the most. The control variables, percent recent movers, percent renters, and racial heterogeneity also have strong effects on crime, which can indicate that processes other than those proposed by RAT are some of the strongest drivers of neighborhood crime. Likewise, the models do not suggest a strong degree of variation in the ability of specific measures to predict specific forms of offending.

DISCUSSION

Over the past four decades, there has been a strong tradition of empirical tests of RAT. Multiple studies have been conducted at various levels of aggregation, especially at the individual and large scale macro-levels. However, comparatively few studies have examined neighborhood-level differences in guardianship and target suitability and their attendant consequences for neighborhood crime rates. The present study investigated these the applicability of RAT at the census tract-level through multiple OLS analyses of

factors expected to be related to the routine activity that increase people's susceptibility to victimization.

There were two main objectives of this study. The first objective was to conduct a neighborhood-level examination of the aspects of RAT and their association with crime. Second, it empirically evaluates a novel hypothesis suggesting that the key elements of RAT should exert varying effects on specific forms of offending, thus anticipating more nuanced linkages among guardianships, target suitability, and their potentially countervailing relationships with property offending, acquisitive crime rates, and violence. The investigation yielded multiple findings, most notably that 1) some, but not all the factors associated with routine activity were positively associated with crime, and 2) factors were more highly associated with larceny than burglary, robbery, and MVT.

Most of the hypothesized relationships were not confirmed across crime types. For unemployment, where contrary to expectation – a negative correlation – I found that unemployment was positively associated with crime. For three of the four models, percent female-headed households and males ages 15-24 were negatively associated with crime, which was unexpected.

The strongest association between the examined routine activity factors and crime was for vacant housing. Vacant housing is an especially robust predictor of each type of crime, suggesting that features of the physical environment of a neighborhood contribute to criminal behavior above and beyond that shared characteristics of neighborhood residents. In this case, vacant homes may diminish guardianship.

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The main research question of this study is whether the different RAT predictors of crime had varying degrees of explanatory power for different crimes. The models do not suggest there is a strong degree of variation in the ability of specific measures to predict specific forms of offending. Insofar as these measures truly capture elements of RAT, the findings indicate that RAT is efficient in explaining crime rates in general, and does not do an especially good job in differentiating crime acts in disaggregated scales. However, of the four crime types, robbery had the highest amount of variance explained – approximately 31%.

CONCLUSION

This research expands current criminological literature by looking at how different predictors of crime, using a routine activity approach, explain different types of crime. Cohen and Felson (1979) assert that the routine activities that increase a person being away from home will increase their level of victimization. This informed the main research question of this study, which asked how are lack of capable guardians, suitable targets, and motivated offenders associated with different types of crime? Overall, there was a small, but significant effect of the independent variables on crime and the relationships were more pronounced for violent crime. This study found mild support for routine activity while controlling for residential instability and social disorganization.

These findings support past studies. For example, it is likely that time spent away from home increases the number of empty homes, which leaves them as suitable targets because offenders can get in and out without getting caught, and with no one home and

no neighbors at home there are not as many capable guardians around to protect personal property. These two populations are also more likely to spend time away from home, which increases their chances of predatory victimization.

While most of the hypotheses were not supported by the data, there are limitations to this study that need to be considered. First, this study used UCR data. UCR data is inherently flawed because it is affected by the the crime that goes unreported to and unrecorded by the police. This could potentially skew the data. Second, it cannot be distinguished from this data that lack of capable guardians, suitable targets, motivated offenders, and crime lined up together in time and space. The data used can only distinguish that these factors occurred in the same area within a large time frame – approximately three years – and not necessarily at the same moment in time. For example, a spike in crime could have influenced more people moving away from the area, which could increase vacant housing, percent renters, and percent recent movers. This could result in a reciprocal relationship, where the dependent and independent variables affect each other instead of the one way relationship that was hypothesized. Third, it is difficult to separate suitable targets from lack of capable guardians because the two can influence each other (i.e., what makes someone a suitable target could be that they have no capable guardians). Future studies should attempt to find variables that do not overlap.

The findings of this paper provide further suggest that situational crime prevention can be an important preventative measure against crime. The analyses show that areas with higher levels of people more likely to be away from home as well as

diminished capable guardianship have increased levels of burglary, MVT, robbery, and larceny. Examples of these kinds of situational crime prevention tactics include smart planning in gas station layouts to increase capable guardianship and lower suitability as a target, increased amounts of security cameras to increase capable guardianship, and adding deadlocks on home doors to decrease suitability of being a target. All of these dissuade offenders because it makes their target less suitable and provides guardianship. Overall, while a focus on offenders is still important, this study finds that more attention should be paid to increasing capable guardianship and decreasing suitability as a target.

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<div align="center">References</div>

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Tables and Figures

Figure 1. Violent and Property Crime Rates per 100,000 People from 1960-1968

Source: Uniform Crime Report
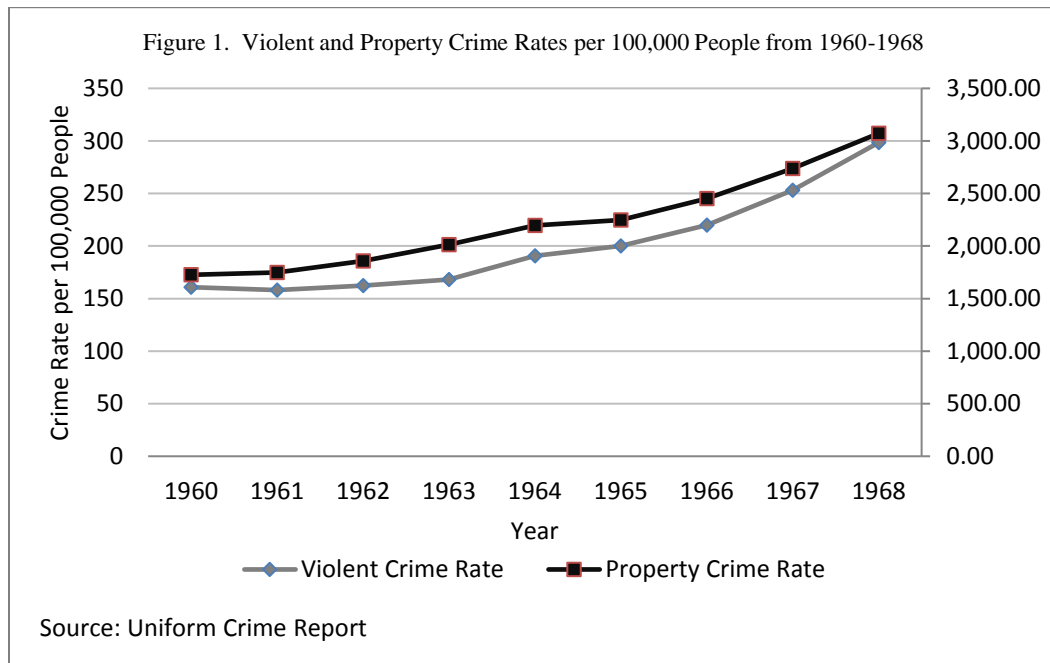
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Figure 2. Hypothesized Relationships Between Independent and Dependent Variables.

Independent Variables	Dependent Variables			
	Burglary	MVT	Larceny	Robbery
Unemployment Rate	-	-	-	-
Percent female-headed households	+	+	+	+
Percent Renters	+	+	+	+
Percent Vacant Housing	+	+	+	+
Percent Recent Movers	+	+	+	+
Racial Heterogeneity	+	+	+	+
Percent males ages 15-24	+	+	+	+

Routine Activity Theory at the Census Tract-Level

Table 1. Summary of Census Tract-Level Statistics for Variables Used in the Analyses (n = 9,593).

Variable	M	SD	Minimum	Maximum
Burglary Rate	12.36958	10.96845	0	247.8873
Motor Vehicle Theft Rate	11.03418	12.94827	0	380.0738
Larceny Rate	42.09429	65.63718	0	1609.375
Robbery Rate	4.674382	6.390003	0	124.8826
Population	3971.882	2122.317	301	23960
Unemployment rate	8.576	7.022	0	65.519
Female-headed households	17.180	11.826	0	96.063
Percent Renters	48.485	24.872	0	100
Percent Vacant Housing	7.551	6.305	0	71.145
Percent Recent Movers	50.849	14.400	9.585	100
Racial heterogeneity	.385	.199	0	.805
Percent males ages 15-24	7.286	3.483	0	44.200

Note. Values indicate average across 1999-2001

M = mean. SD = standard deviation

Source: National Neighborhood Crime Study

Routine Activity Theory at the Census Tract-Level

Table 2. Ordinary Least Squares Regression Model of Burglary (n = 9,593).

		Burglary Rate 1999-2001			
	B	SE	β	p>t	
Unemployment Rate	.091	.022	.640	.000	***
Female-Headed Households (%)	.035	.013	.419	.006	**
Vacant Housing (%)	.652	.019	4.111	.000	***
Males Ages 15-24 (%)	.054	.032	.187	.096	
Recent Movers (%)	.023	.010	.326	.026	*
Renters (%)	.002	.006	.036	.805	
Racial Heterogeneity	4.665	.565	.927	.000	***
Constant	2.649	.490	---	.000	***
Adjusted R^2		.184			

Note. B = regression coefficient SE = standard error β = X-standardized regression coefficient

*p <.05. **p<.01. ***p<.005 (two-tailed tests of statistical significance).

Source: National Neighborhood Crime Study

Routine Activity Theory at the Census Tract-Level

Table 3. Ordinary Least Squares Regression Model of MVT (n = 9,512).

	MVT Rate 1999-2001				
	B	SE	β	p>t	
Unemployment Rate	.240	.027	1.687	.000	***
Female-Headed Households (%)	-.032	.016	-.379	.041	*
Vacant Housing (%)	.441	.023	2.784	.000	***
Males Ages 15-24 (%)	-.144	.039	-.504	.000	
Recent Movers (%)	-.038	.012	-.552	.002	***
Renters (%)	.087	.007	2.150	.000	***
Racial Heterogeneity	5.029	.688	1.000	.000	***
Constant	3.056	.597	---	.000	***
Adjusted R^2		.137			

Note. B = regression coefficient SE = standard error β = X-standardized regression coefficient

MVT = Motor Vehicle Theft

*p <.05. **p<.01. ***p<.005 (two-tailed tests of statistical significance).

Source: National Neighborhood Crime Study

Routine Activity Theory at the Census Tract-Level

Table 4. Ordinary Least Squares Regression Model of Larceny (n = 9,593).

	Larceny Rate 1999-2001				
	B	SE	β	p>t	
Unemployment Rate	.654	.012	4.590	.000	***
Female-Headed Households (%)	-1.290	.007	-15.256	.000	***
Vacant Housing (%)	2.608	.010	16.444	.000	***
Males Ages 15-24 (%)	-.512	.017	-1.782	.000	***
Recent Movers (%)	.205	.005	2.957	.000	***
Renters (%)	.332	.003	8.254	.000	***
Racial Heterogeneity	8.844	.302	1.757	.001	***
Constant	12.753	.262	---	.000	***
Adjusted R^2		.110			

Note. B = regression coefficient SE = standard error β = X-standardized regression coefficient

*p <.05. **p<.01. ***p<.005 (two-tailed tests of statistical significance).

Source: National Neighborhood Crime Study

Routine Activity Theory at the Census Tract-Level

Table 5. Ordinary Least Squares Regression Model of Robbery (n = 9,593).

	Robbery Rate 1999-2001				
	B	SE	β	p>t	
Unemployment Rate	.233	.012	1.634	.000	***
Female-Headed Households (%)	-.026	.007	-.305	.000	***
Vacant Housing (%)	.281	.010	1.772	.000	***
Males Ages 15-24 (%)	-.106	.017	-.369	.000	***
Recent Movers (%)	-.055	.005	-.789	.000	***
Renters (%)	.067	.003	1.653	.000	***
Racial Heterogeneity	.965	.302	.192	.001	***
Constant	.964	.262	---	.000	***
Adjusted R^2		.313			

Note. B = regression coefficient SE = standard error β = X-standardized regression coefficient

*p <.05. **p<.01. ***p<.005 (two-tailed tests of statistical significance).

Source: National Neighborhood Crime Study