

ABSTRACT

HAWKINS, KRISTINA JEAN. Perceived Risk of Victimization: Individual and Contextual Effects Revisited. (Under the direction of Dr. William Smith).

The purpose of the current analysis is to look at both individual and contextual causes of perceived risk of victimization. Specifically, the present work builds directly on the contributions of Rountree and Land (1996) and goes beyond their work in several ways. The current work includes additional census tract measures and redefines a key concept index. Drawing upon routine activity theory, social disorganization theory and social disorder theory, the current analysis includes individual, neighborhood, and census tract level predictors of perceived risk. Data collected on neighborhood characteristics and crime rates in Seattle, Washington in 1990 is used. Using a multi-stage sampling design, 5,302 individuals were surveyed. Multinomial logistic regression is used in this analysis. General support is found for routine activity theory, social disorganization theory, and social disorder theory. Most notable, however, support is found for including census tract level measures. Suggestions for future research are discussed.

PERCEIVED RISK OF VICTIMIZATION: INDIVIDUAL AND
CONTEXTUAL EFFECTS REVISITED

by
KRISTINA HAWKINS



A thesis submitted to the Graduate Faculty of
North Carolina State University
in partial fulfillment of the
requirements for the Degree of
Master of Science

SOCIOLOGY AND ANTHROPOLOGY

Raleigh

2006

APPROVED BY:


Chair of Advisory Committee

BIOGRAPHY

While calling Cary, NC “home” now, I moved to the Raleigh area in 1999 with the sole intention of attending graduate school here at North Carolina State University. Much to my dismay, I was terribly disappointed with the program in which I was accepted. I decided to withdraw and take the time necessary to figure out what Master’s program most closely matched my career interests and goals. Two years later, I found a program where both the coursework and the faculty seemed they would enable me to achieve my career goals. I worked full-time and went to school part-time; nevertheless, the four-year journey to completing my Master’s degree has been both most challenging and most rewarding.

TABLE OF CONTENTS

LIST OF TABLES	iv
1. INTRODUCTION	1
2. LITERATURE REVIEW.....	3
3. SAMPLE	13
4. DEPENDENT VARIABLE	14
5. INDEPENDENT VARIABLES	15
6. ANALYSIS	22
7. DISCUSSION.....	32
8. CONCLUSION	41
9. TABLES.....	46
10. NOTES.....	51
11. LIST OF REFERENCES	53
12. APPENDIX	56

LIST OF TABLES

TABLE 1.	Descriptive Statistics	46
TABLE 2.	Individual Level Measures	47
TABLE 3.	Neighborhood Level Measures	48
TABLE 4.	Census Tract Level Measures	49
TABLE 5.	Census Tract Level Measures	50

Perceived Risk of Victimization: Individual and Contextual Effects Revisited

The perceived risk of victimization literature consistently finds that those who report perceiving high risk of criminal victimization typically have the lowest victimization rates. Most acknowledge this is quite an interesting paradox. Why should those “objectively” the safest from victimization perceive the highest risk of victimization? Over 200 articles, books, conference papers and monographs have been published on perceived risk and fear of crime, and yet, this paradox persists (Hale 1996). One can ask what triggers or cues people to perceive high risk of victimization when official victimization rates indicate that they are not likely to fall prey to such victimization? Previous research has found that it is both individual characteristics and contextual factors that significantly affect perceived risk of criminal victimization.

Sociodemographic variables, such as race and gender, and contextual factors, such as neighborhood integration and heterogeneity, all influence risk perceptions. Previous studies find that those who are female, white and/or elderly often report perceiving high risk despite the fact that they typically have low victimization rates (Wilcox *et al.* 2003; Smith and Torstensson 1997; Rountree and Land 1996; Smith and Hill 1991; Skogan and Maxfield 1981; Garafalo 1979). These findings, in other words, exemplify the paradox mentioned above. In addition, research drawing upon routine activity theory finds that individuals who have increased exposure to risk or who exhibit target attractiveness are more likely to report high risk perceptions (Wilcox *et al.* 2003; Miethe and McDowall 1993; Cohen and Felson 1979). Thus, both sociodemographics and routine activity measures should be considered when attempting to explain individuals’ risk perceptions.

Individual-level analysis alone, however, may be unable to offer an explanation as to why certain environments often cue individuals to perceive high risk. Individuals' risk perceptions typically emanate from the context of the area where they reside—their neighborhood. The question, then, is what is it about certain neighborhoods that cause some individuals to perceive a high risk of criminal victimization?

Drawing upon social disorganization theory, researchers find that ethnic heterogeneity, residential stability, and poverty affect neighborhood environments. More specifically, neighborhoods that are disorganized, or characterized by ethnic heterogeneity, lack of residential stability, and elevated levels of poverty, are often associated with high risk perception among residents (Wilcox *et al.* 2003; Markowitz *et al.* 2001; Snell 2001). Moving beyond the social environment addressed by social disorganization theory, social disorder theory holds that the physical attributes of a neighborhood are of equal importance when assessing neighborhood environments. Consider that individuals often characterize physically deteriorated neighborhoods as “dangerous”, and therefore, often report high perceived risk in those particular environments (Bursik and Grasmick 1993; Skogan and Maxfield 1981; Stinchcombe *et al.* 1978). In sum, it is arguable that both the social and physical characteristics of a neighborhood affect individuals' perceived risk.

Measuring at both the individual and the neighborhood level is most prudent, as evident in the research of Rountree and Land (1996) who use 1990 data from Seattle, Washington, to create hierarchical logistic models to test individual, neighborhood, and census tract level variables in an attempt to identify the causes of perceived risk. They conclude that variables at each level are significant determinants of perceived risk. These

findings will be discussed in depth later in this paper, but in brief, Rountree and Land (1996) find that both individual and contextual variables are significant when assessing high perceived risk.

While these findings have notably contributed to the perceived risk literature, it is arguable that a different method and altered or additional measures could produce different results. The purpose of the current analysis is to expand upon the work of Rountree and Land (1996) by using multinomial logistic regression (instead of logistic regression), redefining a key independent variable used by Rountree and Land--the incivility index--to include only those measures that reflect social disorder, and introducing several socioeconomic indicators at the census tract level. Of these differences, it may be that the use of multinomial logistic is among the more important differences between the current analysis and that of Rountree and Land. Specifically, perceived risk is conceptualized as having three categorical answers, rather than two. The hope is such that utilizing multinomial logistic regression in addition to altering the operationalization of some variables and knowing more about the census tract environment, which is conceptualized as a more expansive "neighborhood," will add explanatory power to the models.

Literature Review

Initially it is important to define "perceived risk". Much of the literature does not identify perceived risk as a concept independent of fear of crime. As a result the perceived risk literature is inextricably entwined with the fear of crime literature. Thus, it becomes important to define and understand the proposed differences and arguable similarities between these two phenomena.

Perceived risk of victimization can be defined as a cognitive assessment regarding one's safety from crime or sites and situations that are publicly associated with crime (Liska and Reed 1988). Fear of crime, however, in its most rudimentary form, can be defined as "an emotional response of dread or anxiety to crime or symbols that a person associates with crime" (Ferraro, 1995: 8). Thus, in theory, these two concepts are distinctly different. In fact, many fear of crime analyses are criticized for using measures that arguably measure perceived risk of victimization, not fear of crime (Ferraro 1995, Stanko 1992, Smith and Hill 1991, Ferraro and LaGrange 1987, Warr and Stafford 1983, and Garafolo and Laub 1979). It should be noted, however, that some argue that these two phenomena cannot be considered two distinct concepts and measured independently from one another because it is difficult to determine what the respondent is thinking when answering the question (Smith *et al.* 2001).

One of the most widely used survey questions within the fear of crime and perceived risk literature is "How safe do you feel or would you feel being out alone in your neighborhood at night?" This question is used in the 1990 Seattle data and has been used in countless fear of crime studies. It is worded in such a way that it is intended to measure a cognitive assessment of one's area; therefore, it is supposed to measure perceived risk. It could, however, be measuring fear, as it asks about the respondent's "feelings." Ferraro (1995) argues that much of the fear of crime literature has been measuring risk and labeling it as fear. Consequently, many of the studies that have significantly contributed to explaining high perceived risk are in fact titled or labeled as "fear of crime" studies. In conclusion, it should be noted that this analysis, though referencing several "fear of crime" studies, is attempting to assess individuals' risk perceptions.

Having addressed important concept and measurement issues, it is only now appropriate to discuss perceived risk and its proximate causes. Recall that perceived risk is affected by both individual and neighborhood level characteristics. First consider the sociodemographics of those who report high perceived risk. It is women and the elderly who consistently report perceiving high risk of victimization (Wilcox *et al.* 2003; Smith and Torstensson 1997; Rountree and Land 1996; Smith and Hill 1991; Taylor *et al.* 1984; Skogan and Maxfield 1981; Garafalo 1979). There are numerous explanations put forth as to why these two particular groups are more likely to perceive high risk.

One of the most widely discussed arguments is that these two groups perceive being vulnerable—socially, physically or ecologically (Smith *et al.* 2001; Smith and Torstensson 1997; Liska and Reed 1988; Smith and Hill 1991; Skogan and Maxfield 1981). For example, women and the elderly may feel unable to successfully defend themselves against would-be criminals, and therefore, they report high perceived risk. Also consider that women are uniquely socially and physically vulnerable to rape. Again, this could arguably increase their perceived risk of victimization. In sum, vulnerability and/or a perception of vulnerability may lead to high perceived risk.

It is not only specific characteristics of individuals, but also certain aspects of their lifestyle that may affect their risk perception. There are two main ways in which an individual's lifestyle may affect his risk perception: exposure and opportunity. Cohen and Felson (1979) argue that time spent outside of the home affects exposure to risk of personal victimization because motivated offenders, suitable targets and the absence of capable guardians converge in space and time. Thus, individuals experience differential exposure to

risk depending on their lifestyle. Individuals who spend more time outside the home are more likely to be exposed to greater risk of victimization, and consequently, may perceive high risk. The argument follows that perceived risk might in fact be correlated with objective risk.

Rountree *et al.* (1994) actually find that risk of violent victimization is increased by a high level of exposure to risk—time spent outside of one’s residence. They argue that those who spend a lot of time away from the home have an increased objective risk, and subsequently, report high subjective risk. Stafford and Galle (1984) also find that exposure to risk affects an individual’s perceived risk. They argue, “if high objective risks lead to fear, it is only because people perceive high probability of victimization, meaning that perceived risks must mediate the relationship between objective risks and fear of crime” (180). To summarize, increased exposure resulting in high perceived risk is contingent upon individuals being aware of the objective risk and their exposure to this risk.

While perceived risk may be affected by individuals being aware of their increased exposure to risk of victimization, it can also be affected by individuals realizing that they exhibit target attractiveness and thus provide motivated offenders with opportunity. Miethe and McDowall (1993) argue that “individuals’ routine activities influence victimization risks because these factors reflect proximity to motivated offenders and give off cues to would-be offenders about the climate for predatory crime in a particular geographic area” (743). In essence the question is whether or not an individual provides a would-be criminal with an opportunity to commit a criminal act?

Individuals who exhibit target attractiveness are more likely to be viewed by criminals as a “good opportunity”. Consider that an individual who has multiple access routes to her residence or who lives on a corner is more likely to provide criminals with an optimal opportunity for victimization. Recall that Cohen and Felson (1979) contend that when opportunity and lack of capable guardians converge in time and space, the risk of victimization is greatest. Taking safety precautions would be one example of guardianship, and taking safety precautions has a significant effect on risk perceptions (Wilcox *et al.* 2003; Rountree and Land 1996). Thus, individuals who take more safety precautions are more likely to report high perceived risk. While the temporal order of this relationship is not certain, it is important nevertheless to acknowledge the existence of the relationship between taking safety precautions and reporting high perceived risk.

Considering sociodemographics and lifestyle when assessing individuals’ perceptions of risk of criminal victimization is important, but these individual level variables alone cannot sufficiently explain high perceived risk. Individuals are social beings. Consequently, it is critical to consider the environment in which they live. That is, macro level indicators may be of equal importance as micro level indicators. Miethe and McDowall (1993) acknowledge the importance of including contextual factors in that “most sociological theories assume that social structural conditions have a direct impact on individuals’ behavior independent of their personal characteristics” (743). In other words, neighborhood level measures are valuable because regardless of the biological make-up of individuals, contextual factors are going to influence individual risk perceptions.

In order to understand how a neighborhood environment can affect risk perceptions among residents, it is helpful to define what a neighborhood is. Unfortunately, there is no agreed upon definition, yet, most simply, a neighborhood can be defined as a “small physical area embedded within a larger area in which people inhabit dwellings” (Bursik and Grasmick 1993: 6). While accurate, this definition fails to account for the social aspects of this area. Taking a systemic approach to neighborhood organization, Berry and Kasarda (1977) consider the local community to be a “complex system of friendship and kinship networks and formal and informal associational ties . . .” (56). Hence, a neighborhood is a socio-physical area; therefore, both the social and physical aspects of this area must be considered when assessing the effects of neighborhood environments on high perceived risk.

Social disorganization theory addresses the social aspects of neighborhoods. Shaw and McKay (1969) argue that neighborhood characteristics, such as population turnover, ethnic heterogeneity, and poverty, lead to high crime rates. The basic premise is that socially disorganized communities lack a sense of community, are comprised of weak institutions, include residents who do not know their neighbors, and include people who do not know how to collectively solve problems (Bursik and Grasmick 1992; Shaw and McKay 1969). In turn, it is argued that socially disorganized neighborhoods are unable to act collectively in order to exercise informal social control, and subsequently, are more likely to experience criminal activity (Bursik and Grasmick 1992; Shaw and McKay 1969).

Perceived risk studies have extended this argument to claim that residents of socially disorganized neighborhoods are more likely to perceive high risk (Wilcox *et al.* 2003; Markowitz *et al.* 2001; Snell 2001). Snell (2001) finds that both heterogeneity and poverty

affect fear of crime. More specifically, he finds that as both the African American population percentage and the poverty level increase, reported fear of crime also increases. Wilcox *et al.* (2003) finds that poverty, proportion of the population that is non-white, and residential stability all have significant effects on perceived risk.

Social disorganization also affects the social bonds formed among neighborhood residents. Drawing upon the systemic definition of neighborhood, residents who live in socially disorganized neighborhoods are less likely to develop social ties with their neighbors and/or to their neighborhood. Consider that Warner and Wilcox Rountree (1997) find that heterogeneity significantly lowers social ties among residents, while residential stability significantly increases them. The existence of these social ties, or lack thereof, is also important when assessing perceived risk.

The argument is that residents who have developed social ties are less likely to report high perceived risk. A neighborhood with strong social ties is likely to possess a sense of community, and therefore, exercise informal control in an attempt to control the amount of crime in the community. In fact, Skogan and Maxfield (1981) looked at ten neighborhoods in 3 cities and find that neighborhood integration, including both residential and social ties, is strongly negatively related to the incidence of crime-related conditions. Arguably, if a community is able to control (at least to the extent possible) the crime level within the neighborhood, then residents will more likely report lower perceived risk. Skogan and Maxfield (1981) only find “a weak to moderate tendency for people enjoying stronger social and residential ties to their neighborhoods to report being less afraid” (122). Rountree and

Land (1996), however, find a significant, negative relationship between social integration and perceived risk.

As discussed above, social disorganization theory addresses the social aspects of neighborhoods. Social disorder theory contends, however, that the physical characteristics of a neighborhood are of equal importance. Social disorder refers to visible, physical signs that the neighborhood has socially and/or physically deteriorated. The most common “signs of crime”, a concept introduced by Stinchcombe *et al.* (1978), are abandoned buildings, unsupervised teenagers, vandalism, litter, and visible drug use. These signs serve as cues of possible danger because many people have learned to associate them with the occurrence of crime (Bursik and Grasmick 1993; Skogan and Maxfield 1981). Moreover, these signs of disorder and incivility symbolize a breakdown of community-accepted standards of public behavior and create a sense that the community is out of control (Skogan 1990; Lewis and Salem 1986). As a result, the existence of this disorder and incivility is likely to increase perceived risk.

Both Markowitz *et al.* (2001) and Lewis and Maxfield (1980) find that the level of incivility or disorder in a neighborhood is likely to affect residents’ risk perceptions. Wilson and Kelling (1982) further contend that it is not simply disorder that affects risk perceptions, but specifically, it is disorderly people that may lead to high risk perception. Nevertheless, it seems that regardless of whether it is physical or social disorder, these visible signs of neighborhood deterioration do cue residents to perceive high risk of victimization.

Some studies, in fact, suggest that disorder is perhaps the best predictor of perceived risk. Skogan and Maxfield (1981) find a significant correlation between measures

of local disorder and perceived risk. They conclude that signs of disorder are one of the most important predictors of high perceived risk, even when community integration and personal vulnerability are taken into account. Similarly, Snell (2001) finds that disorder is more important in explaining fear of crime than is the number of family and friends in the neighborhood. In sum, these empirical analyses lend support to social disorder theory in that physical aspects of neighborhoods are significant predictors of residents reporting high perceived risk.

In the analysis below an attempt is made to study perceived safety of neighborhoods by re-analyzing data collected in Seattle in 1990. The present work builds directly on the contributions of Rountree and Land (1996). The current study goes beyond their work in several ways. One of the more important ways is that several characteristics of the census tracts surrounding the neighborhoods studied are incorporated into the models. While Rountree and Land include the burglary count at the census tract level, this analysis includes several socioeconomic measures at the census tract level in addition to the burglary count in an attempt to identify characteristics of the social and physical environments of those areas that may affect residents' risk perceptions.

Also, the current analysis addresses some specific measurement issues that are not addressed by Rountree and Land. First, the incivility index is redefined for this analysis. The incivility index used by Rountree and Land includes five measures, whereas, the index used in this analysis only includes three¹. This analysis includes a more restricted incivility index in an attempt to more narrowly define what constitutes neighborhood incivility. Second, this analysis groups the dependent variable categories differently. Rather than

dichotomizing the dependent variable into “safe” and “unsafe” responses as Rountree and Land do, this analysis attempts to more fully utilize the categorical nature of this variable and group respondents into three categories: “very safe,” “somewhat safe,” and “somewhat/very unsafe.”

In addition to addressing measurement issues not addressed by Rountree and Land, the current analysis uses a different method of analysis than that used by Rountree and Land. They use hierarchical logistic modeling, whereas, this analysis uses multinomial logistic regression. The decision to use multinomial logistic regression for this analysis coincides with the decision to focus on the value of the categorical nature of the dependent variable. Considering multinomial logistic regression is best-suited for analyses with categorical dependent variables, utilizing this method of analysis may produce different results. Multinomial logistic regression, as done here, compares the probability of “very safe” to “somewhat/very unsafe”, whereas, the logistic regression approach of Rountree and Land compares “very/somewhat safe” to “very/somewhat unsafe”.

Finally this analysis introduces two individual-level measures that are not included in Rountree and Land’s models--prior personal victimization and social interaction. Both of these measures are included because of the potential theoretical contributions. Moreover, much of the literature, as discussed above, contains arguments that these two measures are significant indicators of high perceived risk.

By building upon the contributions of Rountree and Land (1996) and extending their work, it thought that this analysis will significantly contribute to a better understanding of why certain individuals report high perceived risk of criminal victimization. In their

attempt to explain high perceived risk, Rountree and Land primarily draw upon the arguments of three theories: routine activity theory, social disorganization theory, and social disorder theory. Their analysis lends support to the arguments presented by all three theories. Consequently, it is likely the current analysis will lend support to all three theories, as well.

Sample

This analysis uses data collected on neighborhood characteristics and crime rates in Seattle, Washington in 1990². Using a multi-stage sampling design, 5,302 individuals were surveyed. Respondents were clustered within 300 city-block pairs and 100 of the city's 121 census tracts (Miethe and McDowell 1993; Miethe and Meier 1994). The remaining 21 census tracts were classified as "unstable" because they had changed boundaries over the last several decades, and therefore, were omitted from the sample. For each of the 100 census tracts, three city-block pairs were non-randomly selected. One block in each pair had to contain a street address where a burglary had been reported to law enforcement officials in 1989, the year prior to the survey. A sample of the residents from the three city-block pairs within each tract was drawn using a reverse telephone directory as the sampling frame. An average of 18 households was sampled per neighborhood. After cases with missing data were deleted, the remaining sample consists of 5,025 individuals. Seattle Census Data from 1990 are also included. Census data of the 100 tracts are used to offer tract-level socioeconomic and demographic characteristics and official crime counts. In short, context at both the neighborhood and tract level are analyzed.

Dependent Variable

Perceived risk is indicated by asking respondents, “Is your neighborhood safe from crime?” Respondents chose from very safe, somewhat safe, somewhat unsafe or very unsafe. For this analysis, however, respondents are grouped into only three categories: 1) very safe, 2) somewhat safe, and 3) somewhat and very unsafe. Respondents who answered somewhat and very unsafe were grouped together into one category. This is because the current analysis is only concerned with whether or not respondents report feeling unsafe, not the degree to which they feel unsafe. Nearly one quarter (24.4%) of respondents report perceiving their neighborhood as somewhat or very unsafe.

The operationalization of perceived risk is noteworthy. It makes an explicit reference to crime and asks respondents for a cognitive assessment of the crime threat in their neighborhood. This question, then, is not meant to tap the emotional aspect of fear, rather it is assessing respondents’ perceptions regarding risk of criminal victimization in their neighborhood. Of course, there may be some overlap of fear and perceived risk, as one cannot tell what the respondent had in mind when he/she answered the question—fear or risk? The aforementioned two aspects of the question are important because many of the measures used within the fear of crime and perceived risk literature are widely criticized for validity problems. More specifically, criticism has been put forth because some analyses claim to report findings on fear of crime when in fact they are measuring perceived risk, not fear (Hale 1996; Ferraro 1995; Stanko 1992; Smith and Hill 1991; Ferraro and LaGrange 1987; Warr and Stafford 1983; Garafalo and Laub 1979).

Independent Variables

It is possible that the context that affects individuals' perceived risk can extend beyond their immediate neighborhood to include an area as expansive as the census tract; therefore, not only individual and neighborhood level, but also census tract level variables are included in this analysis.³ It should be noted that the neighborhood, defined essentially as a 64 square block radius in this analysis (subjects were asked about the area four blocks in every direction from the subject's home), and the census tract are common levels of analysis when looking at possible ecological explanations for high perceived risk (Rountree and Land 1996). Choosing to use all three levels of analysis, individual, neighborhood, and census tract, however, warrants further discussion.

Several studies have found that environmental stimuli (i.e., signs of disorder or incivility) affect individuals' risk perceptions (Markowitz *et al.* 2001; Wilson and Kelling 1982; Skogan and Maxfield 1981; Lewis and Maxfield 1980). This type of environmental stimuli can transcend space; therefore, an individual may observe signs of disorder or any other symbol of crime beyond his street or block boundaries, and yet, these stimuli may affect the individuals' perception of risk in his neighborhood. Thus, it is important to include all three levels of analysis in order to fully account for the ecological variables that may affect individuals' risk perceptions (Rountree and Land 1996; Rountree *et al.* 1994). Findings within the perceived risk literature, routine-activity theory, and social disorganization and social disorder theories determine what explanatory variables are included in this analysis.

Individual level

The perceived risk literature suggests that several sociodemographic variables affect perceived risk. (See Table 1 for descriptive statistics.) In addressing the perceived risk paradox, age, race, and sex are included in this analysis. Recall that each of these variables is important in assessing perceived risk because those that express the most fear (females, elderly, and whites) typically have the lowest victimization rates—the paradox. It is important to note that race dummy variables for both whites and blacks are tested. While whites comprise a majority (85.5%) of the Seattle population, blacks are the largest minority population (6.2%). Similarly, a dummy variable is created for age. A dummy variable is created instead of using the continuous variable because the perceived risk literature contends the “elderly” or “older” individuals consistently report high perceived risk. Respondents are categorized as older if they were 60 years and older. Older respondents account for 29.8% of the population.

In addition to sex, race, and age, marital status and educational attainment may also influence individuals’ perceived risk. A variable is created to measure whether or not respondents are married. Also a dummy variable of respondents’ educational attainment is created to serve as a proxy for socioeconomic status. Respondents are categorized based upon whether or not they had at least a high school diploma. One argument for dichotomizing the education variable based upon high school graduation is that Smith *et al.* (2001) found that education empowers people to perceive low risk, albeit independent of neighborhood factors, and the crucial difference was between those with and without a high school diploma. It could also be argued that individuals who have not graduated from high

school are significantly more likely to live in neighborhoods that are decayed and disorganized because they lack economic means necessary to live elsewhere. Residents of decayed and disorganized neighborhoods are more likely to report high perceived risk.

Sociodemographic variables alone do not account for differential perceptions of risk of victimization. Neighborhood attachment affects perceived risk. Individuals who exemplify greater neighborhood attachment typically report perceiving less risk. One measure of neighborhood attachment is ownership status. Individuals who own their residence are argued to be more willing to invest time and energy into their community -- they have a greater stake in the community than absentee owners or renters (Rohe and Stegman 1994).

Another measure of neighborhood attachment is social interaction. Social interaction is measured here as an index of how familiar respondents are with others in the neighborhood, including whether or not they know most of their neighbors' names, whether or not they recognize strangers on their block, and whether or not they participate in a block-neighborhood association. How long residents have lived at their current address is also included as a measure of attachment. Consider that residents who have resided longer at their current address are more likely to have established social bonds with their neighbors.

Exposure to risk of criminal victimization is also important when considering varying perceptions of risk; therefore, routine activity measures are included. Recall that routine activity theory posits that when motivated offenders, suitable targets, and the lack of capable guardians against violation converge in space and time the risk of criminal victimization is

high (Cohen and Felson 1979). This analysis considers both individual and household target suitability, as well as lack of capable guardians.

One essential component of individual target accessibility is exposure to motivated offenders. The amount of time spent outside of the residence is one way of tapping “exposure”. Respondents are asked to report the number of evenings spent out of the home the week prior to the survey. Similarly, a variable measuring whether or not respondents are “home oriented” is created using respondents’ reported job status. Respondents who are unemployed, homemakers, or retired are categorized as being “home oriented”.

In addition to individual risk factors, characteristics of residential target suitability are included. The number of evenings per week the home is left unoccupied is included, as is whether or not the respondent lives alone. The number of access routes (e.g., whether or not there are ground floor windows and an alley behind the home) is also considered when assessing if the residence is a suitable target. Of similar importance is whether or not the respondent’s home is located on a corner. The perceived value of the home, specifically its contents, is also important in a residence being targeted for crime. This is measured using an index of expensive household goods in the respondent’s home, including a portable color television, a VCR, a 35 mm camera, a personal computer, and a bicycle or motorcycle. The measures discussed above collectively represent residential target suitability or accessibility.

The final component of routine activities theory represented in this analysis is guardianship. Assessing the presence or lack of capable guardians against violation, includes indices of safety precautions engaged in by respondents and number of guardianship barriers to the residence. Safety precautions include use of locks on doors, installation of extra locks,

use of a light-timer device or leaving lights on, membership in a crime prevention program, ownership of a security system, ownership of a dog, ownership of a weapon, or having neighbors watch property when away. The index of guardianship barriers includes whether or not there is a tall fence or hedge present and an empty or vacant lot next door.

Finally, prior victimization is also important in when considering perceived risk. Both personal and property victimization are measured. Prior personal victimization is determined if respondents had been attacked or mugged within four blocks of their residence, whereas, prior property victimization was measured as whether or not the respondent had experienced an attempted or completed break-in at their current residence. Distinguishing between personal and property victimization is significant because some argue that they affect perceived risk differently (Smith *et al.* 2001).

Neighborhood Level

The specific context being analyzed at this level is the block pair and the surrounding 64 square block area. Specifically, the neighborhood is defined as the area within four blocks of the respondent's residence. Social disorganization theory contends that the social context of a neighborhood is critical when assessing neighborhood environments, while social disorder theory argues that the physical context of the neighborhood cannot be ignored. Both social disorganization and social disorder are hypothesized to significantly affect perceived risk.

A lack of neighborhood social integration is arguably an indicator of social disorganization. Integration is measured as an index aggregating individual level responses to the following items: whether or not respondents have friends or relatives on their block,

have lunch or dinner with neighbors, borrow items from their neighbors, watch neighbors' property when away, help neighbors with a problem, and recognize strangers on their block. This measure of social integration is indicative of whether or not residents are in a position conducive to expressing and upholding community-oriented goals and norms.

Ethnic heterogeneity is another measure of disorganization and is computed by multiplying the percentage of the population that is white by the percentage of the population that is black. The degree of ethnic heterogeneity is important to consider because some argue that more heterogeneous neighborhoods are more likely to evoke perceptions of an unsafe neighborhood among residents (Wilcox *et al.* 2003; Snell 2001). Ethnic heterogeneity may affect risk perceptions in that increased heterogeneity may lead to isolated groups within the neighborhood. More specifically, Shaw and McKay (1969) posit that ethnic heterogeneity may lead to value disagreement, and subsequently, to difficulties in cooperative crime-fighting actions. In short, the multiplicity of ethnicities leads to groups being unable or unwilling to identify common goals and rules for the neighborhood; therefore, neighborhoods with increased heterogeneity are more likely to lack the type of community sentiment necessary for residents to feel safe.

In addition to the social aspects of the neighborhood environment, some physical characteristics of the neighborhood are also important in the risk perceptions of residents. Neighborhood incivility, a measure of social disorder, is an index of aggregated individual responses to questions about the presence of abandoned buildings or vacant lots, vandalism, and poor street lighting on their block. Individuals often associate neighborhood incivilities with crime and the risk of victimization. Also associated with a high risk perception is the

number of strangers, who may be possibly motivated offenders, in the area. An index of the number of busy places in the neighborhood is used to measure neighborhood traffic and serve as a proxy for the presence of strangers in the area. Busy places include fast food restaurants, bars, convenience stores, parks or playgrounds, shopping malls, office buildings, hotels or motels, and bus stops.

In addition to measuring the physical and social environments at the neighborhood or block-pair level, the current analysis includes physical and social context measures at the census tract level, as well. Drawing upon the argument that a census tract can be conceptualized as a physically more expansive “neighborhood,” census tract level contextual variables may also affect risk perceptions.⁴ Consider that individuals are specifically asked about their risk perception in their neighborhood, which is a 4 block square radius from their residence; however, the simple fact is that residents’ lives are not confined to that area. It is likely they travel beyond their immediate neighborhood to shop, eat, or visit family and friends. Thus it seems logical that the area that extends beyond the block pair boundary may also affect their sense of environment—their perceptions of risk. Also, it is possible that attributes of the census tracts reflect characteristics that are not otherwise measured (i.e., not measured with the questions asked about the four block area).

An example of a characteristic of an area that is not otherwise measured is the extent of owner-occupied residencies. The percentage of residences within the tract that are owner occupied, as opposed to renter occupied is included in the analysis. Areas with a high proportion of renters are hypothesized to have high perceived risk because renters are considered more transient and less likely to develop strong neighborhood attachment (Rohe

and Stegman 1994). Recall attachment is associated with less perceived risk. An area's socioeconomic status is also associated with the perceived risk in that area. Two measures of SES are included at the tract level: the percentage of the population that is below the poverty level and the percentage of the population that does not have a high school diploma. Areas with low SES statuses are associated with high perceived risk because they are more likely to be disorganized and have visible signs of disorder, both of which may be associated with greater occurrence of crime. It is these symbols of crime that often trigger a heightened risk perception.

Unsupervised teenagers in an area may also affect risk perception because unsupervised youth are more likely to engage in deviant behavior (Shaw and McKay 1942; Sampson and Groves 1989). The percentage of teens (ages 12-19 years old) in the tract population is computed. The percentage of single-parent households is also included as a possible indicator of unsupervised youth in the area. Consider that single-parent households often have half the parental resources of two-parent households, which could affect the degree of youth supervision.

Finally, the residential burglary counts for each tract are included. The counts are official counts from the Seattle Police Department and are an average of the counts for the years 1989 and 1990. It would be haphazard not to include a measure of official crime counts because, quite simply, some people perceive high risk of victimization because the threat of victimization is actually high.

Analysis

Multinomial logistic regression is used in this analysis. Multinomial logistic regression performs Newton-Raphson maximum likelihood to estimate models with discrete independent variables (Stata Reference 1999). This method is well-suited for this analysis primarily for two reasons. First, the intent of this method is to allow for between-category comparative analysis for categorical dependent variables with more than two outcomes. Second, using multinomial logistic regression allows the inclusion of both continuous and categorical independent variables. (For a detailed explanation of the model for the multinomial logit, please refer to Greene 1997, Chapter 19.)

In multinomial logistic regression, one category of the dependent variable is designated as the reference category, and then the probability of being in another category is compared to the probability of being in the reference category (Menard 2002). The reference category chosen for this analysis is “very safe”. It should further be noted that the only category of comparison discussed in this analysis is “somewhat/very unsafe”.

The probability of individuals’ reporting feeling unsafe, as compared to very safe, is analyzed using a multilevel model, which includes three levels of analysis: individual, neighborhood, and census tract. The first model (Table 2) includes all of the individual level measures. The second model (Table 3) includes all of the significant individual level variables from Model 1 and the neighborhood-level contextual variables. The final models (Tables 4 & 5) include the significant individual and neighborhood variables and tract level variables; however, two individual level variables that were not significant in Model 1 were included in Model 3 because they were significant in Model 3 (that is, their effect was

suppressed in Model 1, but emerged in Model 3).⁵ It should be noted that for presentation purposes, all of the tables present only those variables that are found to be significant within each model, respectively.

While an in-depth discussion of the significant individual level findings will follow, it warrants mentioning that the following variables were also controlled for in this model (i.e., they are omitted from the table, but were included in the equation): race, marital status, employment status (*home oriented*), education, age, live alone, years at current residence, number of evenings spent outside the home, number of nights the home was unoccupied, and number of expensive goods in the home. Thus, it is important to remain cognizant of the fact that this model is rather inclusive, and therefore, lends to a more conservative analysis.⁶ That being said, the findings from the individual level analysis (Table 2)⁷ show, surprisingly, that only one of the socio-demographic measures included is significant—gender. It is noteworthy that previous studies have found age, race, and marital status significantly affect perceived risk (Wilcox *et al.* 2003; Smith *et al.* 2001; Smith and Torstensson 1997; Rountree and Hill 1996; Smith and Hill 1991; Taylor *et al.* 1984; Skogan and Maxfield 1981). Most find that individuals who are older, white, or single report a high perceived risk. Possible explanations for their lack of significance in this model will be discussed in depth later.

Sex has a coefficient of .401 and is significant. The coefficient is the effect on the log odds of falling in a particular category; therefore, the log odds of feeling unsafe in one's neighborhood to feeling safe increase by .401 for females in comparison to males. To look at the relative odds (rather than the log of the odds), look at the exponentiated coefficient (Column 3), which indicates that being female increases the odds of feeling unsafe in one's

neighborhood by 49% as compared to feeling safe. Numerous studies find that females consistently report perceiving greater risk than males do. One possible explanation put forth is that females have a sense of “ecological vulnerability”, and therefore, perceive greater risk of victimization (Smith *et al.* 2001; Smith and Torstensson 1997). It is arguable, then, that females are more sensitive to their surrounding environment.

Both social disorder and social disorganization theories put forth the argument that the surrounding environment, or the context of one’s neighborhood, is important when assessing perceived risk. Of the neighborhood attachment variables, both renting one’s residence and socially interacting with one’s neighbors significantly affect risk perceptions. Those who rent their residence are significantly more likely to report feeling unsafe—98.3% more likely. Considering the argument that those who rent are less likely to develop neighborhood attachment, this finding is in the expected direction. Renters are more likely to be living near other renters rather than homeowners and thus are arguably in more transient neighborhoods. Such neighborhoods are less likely to have residents who invest time or energy into a community effort (Rohe and Stegman 1994).

Social interaction has a negative relationship, therefore, indicating that individuals who report knowing their neighbors and interacting with them are less likely to report perceiving their neighborhood as somewhat or very unsafe. In fact, for every unit increase in social interaction, the log odds of feeling unsafe decrease by .310. In other words, individuals who know their neighbors are 26.7% less likely to report a heightened sense of risk (i.e., $\exp(B) = .733$).

Finally, when considering the effect of social interaction on perceived risk, it may be important to evaluate the interquartile range effect, which is reported in Column 4 of Table 2. Interquartile range effects are presented as a way to standardize the variables' effects, which so far have been discussed in terms of metric coefficients. Interquartile range effects are only calculated for interval level variables and, as stated above, provide a standardized measure, allowing the comparison of the relative strengths of each variable. An interquartile range effect represents the effect on the dependent variable of changing the independent variable from the average low value to the average high value (i.e., the lowest quartile value to the highest quartile value). Dummy effects are calculated for nominal and ordinal measures in order to provide a means of comparison for all the variables included in the analysis. This effect is calculated by exponentiating the interquartile range effect. With a .538 interquartile range effect, social interaction has a relatively strong affect on high risk perception, representing a 46.2% reduction. This finding is generally consistent with other findings in the literature. The argument is such that individual's who have developed neighborhood attachment socially interact with their neighbors and are able to exercise informal control within their community. The argument continues that neighborhoods where informal control is exercised are less likely to exhibit social or physical symbols of crime, which often serve as cues for heightened risk perception.

Some aspects of routine activity and opportunity theory also significantly contribute to high perceived risk. Individual target suitability, however, does not seem to significantly affect perception of risk. Neither the number of evenings spent out of the home (*evenings out*), nor the respondent's time spent in the home (*home oriented*) affect individuals'

perceived threat of victimization. Rather unexpectedly, these findings indicate that individuals' exposure to risk does not significantly affect their risk perception.

Residential accessibility, on the other hand, does significantly affect how individuals perceive risk. The more access routes one has to her residence, the more likely she is to report feeling unsafe in her neighborhood. The interquartile range effect (1.306) also indicates a relatively strong effect on perceived risk. Those who reside on a corner are also more likely to report feeling unsafe. Actually, those who do not live on a corner are 31% less likely to report a heightened perception of risk of victimization. It seems, then, that individuals are aware of whether or not their residence is vulnerable to victimization, and in turn, this realization affects whether or not they feel unsafe.

The third component of routine activity theory, lack of capable guardians, also significantly affects risk perception. Taking more safety precautions and having more guardianship barriers to one's residence significantly increases the log odds of feeling unsafe in one's neighborhood. Both safety precautions and guardianship barriers have fairly strong effects on high perceived risk with interquartile range effects of 1.342 and 1.269, respectively.

Finally, Model 1 indicates that prior victimization is significant in predicting perceived risk. Individuals who have not experienced personal or property victimization in their neighborhood are significantly less likely to report feeling unsafe in their neighborhood. Specifically, individuals who have not experienced personal victimization are 75.7% less likely than their victimized counterparts to report a heightened perceived risk of victimization. While the findings on prior victimization are mixed, it could be argued that

those who have been victimized are more likely to respond to contextual stimuli. The argument could continue that those who have been victimized in the past could be more likely to perceive an increased number of symbols of crime, and therefore, are more likely to report feeling unsafe.

Model 2 indicates that neighborhood characteristics also significantly affect perceived risk, as depicted in Table 3. Prior to continuing the discussion of the significant neighborhood level findings, it should be noted that this model also controls for ownership status (*rent*) and on corner residence, both of which are measured at the individual level and neither of which were found to be statistically significant. Now, recall that “neighborhood” is defined as the area within four square blocks of the respondent’s residence. It is both the social and physical characteristics of the neighborhood that influence residents’ perceptions of risk. Increased neighborhood integration decreases the odds of residents’ reporting feeling unsafe. For every unit increase in a neighborhood’s perceived integration level, residents in that neighborhood will be 40.4% less likely to report a heightened perceived risk of victimization. This lends support to the argument that social integration and neighborhood attachment contribute significantly to the way residents perceive their surrounding environment. Increased neighborhood interaction among residents could lead to residents feeling that their neighbors will act collectively to prevent crime and will intervene in the event they fall victim to a crime.

Ethnic heterogeneity also significantly affects residents’ perceived risk. The interquartile range effect indicates that going from an average low-heterogeneity neighborhood to an average high-heterogeneity increases residents’ likelihood of reporting

feeling unsafe by 48.3% relative to feeling “very safe”. This lends support to the argument that high percentages of heterogeneity can act as a barrier to social interaction and neighborhood attachment, and consequently, residents in heterogeneous neighborhoods are less likely to think their neighbors will intervene in the event of a crime. Another argument put forth that is supported here is that ethnic heterogeneity significantly affects perceived risk because many people report being afraid of individuals who are not of the same race/ethnicity (Chiricos *et al.* 2001).

Heightened perceived risk is also affected by the physical characteristics of neighborhoods. Neighborhood incivility is the strongest of both the individual and neighborhood level indicators in determining whether or not residents perceive high risk. Consider that residents who live in neighborhoods with average high levels of incivility are two times more likely to report a heightened perceived risk than residents who live in a neighborhood with average low levels of incivility. This effect also indicates that of the neighborhood contextual measures, incivility seems to have the strongest affect on perceived risk. This may suggest that individuals do in fact associate signs of incivility with symbols of crime. It seems, then, that individuals perceive areas with abandoned buildings, poor street lighting, and vandalism as environments that are conducive to criminal activity, and therefore, perceive an increased chance of being victimized.

Residents also seem to associate busy places with an increased risk of victimization. For each additional busy place a neighborhood includes, the odds of residents reporting high perceived risk increase by 13.9%. Individuals who live in neighborhoods with more busy places are likely to encounter more strangers in the streets, and strangers may be perceived,

albeit somewhat subconsciously, as scary or threatening. Consider that if and when people think about being victimized, they nearly always envision a stranger as the perpetrator.

It is not only neighborhood level indicators, but also census-tract level indicators that significantly affect residents' perceived risk. After controlling for busy places, percent housing units owned, percent single-parent households, percent of population with no high school diploma, and the robbery count, this census tract level model indicates that individuals who reside in census tracts with high burglary counts are more likely to report perceiving high risk of victimization (Table 4). In fact, the interquartile range effect indicates that residential burglary count is the strongest predictor of high perceived risk at the census tract level. Residents who live in a tract that has an average high level of burglary counts are almost 70% more likely to report high perceived risk than those residents who live in tracts with average low levels of burglary. This could lend support to the argument that in some contexts subjective and objective risks of victimization actually coincide.⁸

Also lending support to the argument that subjective and objective risk may coincide in certain environments is the fact that the percentage of teenage population in a census tract significantly and positively affects risk perception. The interquartile range effect indicates that those who live in tracts with an average high percentage of teens are 24.5% more likely to report perceiving high risk of victimization in their neighborhood compared to those who live in census tracts with an average low percentage of teens. Research going back as far as Shaw and McKay (1942) argues that groups of unsupervised youth are more likely to engage in delinquent behavior, and therefore, a higher percentage of teenage population may be indicative of a higher objective risk. Many people often associate groups of teenagers with

delinquent behavior. In short, residents who live in census tracts where there are more teenagers are more likely to find groups of unsupervised youth, and in turn, perceive high risk of victimization.

The poverty level of the census tract also significantly affects the perceived risk of residents. Individuals who reside in census tracts with higher percentages of the population living below poverty are significantly more likely to report high perceived risk. In fact, for each percentage point increase in the population below poverty, residents are more than 100% more likely to report feeling unsafe in their neighborhood. Going from a tract with an average low below poverty percentage to a tract with an average high below poverty percentage increases the likelihood of reporting high perceived risk by 28.5%. While poverty is a valuable indicator of socioeconomic status, poverty alone admittedly lacks significant theoretical explanation as to why some individuals perceive high risk. Specifically, poverty of an area may be referring to any number of several causal mechanisms that could bring about lower perceptions of safety.

In order to determine if the poverty measure was suppressing other tract-level effects, I estimated a final model with all of the tract level measures excluding poverty. Thus, this model controls for busy places, percent single-parent households, and robbery count in addition to the significant individual level variables listed in Table 5. Without the poverty measure, both percent of housing units owned and percent no high school diploma become significant indicators of high perceived risk. In comparing the interquartile range effects for the tract level measures (excluding poverty), the strongest predictor of high perceived risk is now percent of housing units owned.

As the percentage of houses owned in a tract increases, residents of that tract are significantly more likely to report high perceived risk. In fact, in looking at the interquartile range effect, individuals who reside in areas with an average high percentage of ownership (i.e., at the 75th percentile) are 80.4% more likely to report feeling unsafe than those individuals who live in areas with an average low percentage of ownership. Perhaps homeowners are more likely to perceive high risk because they perceive that they have more to lose in the event of victimization. Homeowners are financially invested and aware that moving out of the neighborhood could be costly; therefore, they may be more sensitive to the risk of victimization. Or it is possible that those who live in tracts characterized with high percentages of ownership perceive the areas' target suitability—the value of the home and the respective contents may be perceived as attracting burglars.

Discussion

The analyses presented above lend considerable support to including census tract level measures in addition to neighborhood level measures when assessing the surrounding environment of individuals who report high perceived risk of criminal victimization. Census tract measures, which serve as a proxy for the social and physical environment beyond one's physical neighborhood (i.e, block-pair), are found to significantly affect perceived risk. Arguments within the literature have been long withstanding that context is critical when analyzing perceived risk. It is arguable that analyzing context as the four blocks around a block-pair or neighborhood environment alone is not sufficient, as the census tracts, conceptually defined as more expansive neighborhoods, also seem to offer valuable macro-level predictors of high perceived risk.

Rountree and Land (1996) acknowledge the importance of census tract level measures in evaluating high perceived risk, and subsequently, include the burglary count in their analysis (of course, the data used here are the same as those used by Rountree and Land). While they do find that the burglary count significantly affects perceived risk, the burglary count alone may not sufficiently represent the social and physical environment of the area. Consider that the current analysis finds that the poverty level, percent teenager, percent home-owner (as opposed to renter), and percent with high school education are all characteristics of an area that significantly affect residents' perceived risk of criminal victimization. Thus, several census tract characteristics are found to predict safety perceptions, yet these characteristics were not tested by Rountree and Land. Finally, it is noteworthy that the Cox and Snell pseudo r-square measure indicates that the census tract level models fit the data better than both the neighborhood and individual level models.⁹

Residents who live in census tracts with higher percentages of people living in poverty are more likely to report feeling unsafe in their neighborhood. This could be because the poverty level of a census tract is indicative of both the physical and social environment. The physical environments in areas that are plagued with poverty are more likely to exhibit signs of disorder. Consider that poverty stricken areas are more likely to have dilapidated or abandoned buildings and vandalism. This could arguably be attributed to the fact that residents in these areas are likely to have concerns of greater priority than the mere physical appearance of their neighborhood. In addition, the social environments in these areas are less likely to be characterized as socially integrated. Lack of social integration, in turn, results in residents being less motivated and willing to act collectively in order to uphold community

standards. Negligible community standards unquestionably influence the social environment of an area. Clearly, poverty levels affect both the physical and social environment of neighborhoods, and subsequently, the perceived risk of residents.

Another noteworthy finding regarding census tract poverty levels is that including poverty as a census tract measure seems to suppress the effect of other important tract-level predictors. Once poverty is excluded as a possible predictor of perceived risk, the percentage of housing units owned and the percentage of the population without a diploma become significant predictors of high perceived risk. Perhaps poverty, which is a widely used and accepted measure of socioeconomic status, is actually too “overarching” or general as a variable. Housing units owned and the percentage of the population without a diploma are more specific measures and are identified as significant predictors of high perceived risk after exclusion of the more general poverty measure. The explanatory power of more specific socioeconomic measures should be further considered. Socioeconomic measures, after all, are exceptionally important in assessing the social and physical contexts of an area (Land, McCall and Cohen, 1990).

Specifically consider the implications of the significant, positive relationship between percent housing units owned and perceived risk.¹⁰ The positive relationship is unexpected because areas that have more owners, as opposed to renters, are typically characterized with more neighborhood attachment and higher socioeconomic status. Considering both neighborhood attachment and socioeconomic status negatively affect perceived risk, it seems that areas with higher owner percentages would have fewer reports of high perceived risk. Again, this analysis indicates otherwise.

One possible explanation for this seemingly contradictory finding is that these areas are being targeted for burglaries. This may be a target attractiveness effect considering the model controls for education, which is another measure of class. Consider that when looking at the burglary counts for different tracts, it is those tracts that have higher percentages of ownership that have the highest averages of burglaries.¹¹ If areas with high ownership percentages are being burglarized more frequently than areas with lower percentages of ownership, then this finding would seem to indicate that these reports of high perceived risk among residents of high ownership tracts are actually the result of high objective risk. In short, the risk of victimization in high ownership areas may be real. It is, therefore, understandable for individuals who live in areas with high ownership percentages to report high perceived risk. It should be noted, however, that since the actual burglary rate is controlled for in the model, a more proper interpretation of the ownership effect seems to be one based on perceptions – they see their properties as being more vulnerable than perhaps they objectively are.

The percentage of the census tract population that is between the ages of 12 and 19 years old is another significant predictor of high perceived risk. Individuals who live in areas where there are higher percentages of teenagers in the population are more likely to report perceiving high risk of victimization. Perhaps this is because many people associate groups of unsupervised youth with criminal behavior. Hence, an increased presence of groups of teenagers is going to affect how residents perceive the social environment, and consequently, how they perceive their risk of criminal victimization.

Clearly, the effect of the social and physical environment on high perceived risk is of significant importance. Finding that the environment at the census tract level significantly affects perceived risk is one of the most noteworthy conclusions of this analysis; however, findings at the neighborhood level also warrant further discussion. In short, support is found for both social disorder theory and social disorganization theory. Again, both the social and physical contexts of neighborhoods are important in risk perception.

Exceptionally strong support is found for social disorder theory in that neighborhood incivility is found to be the strongest neighborhood-level predictor of high perceived risk. Social disorder theory contends that signs of disorder serve as symbols of crime, and in fact, may cue individuals to perceive high risk of victimization. Abandoned buildings, vandalism and poor street lighting are physical signs of disorder and are grouped together to comprise the incivility index for this analysis. Individuals who reside in neighborhoods that exhibit the above characteristics are significantly more likely to report high perceived risk of victimization. Utilizing the arguments presented in social disorder theory, these signs of disorder may actually be serving as triggers or cues for individuals to perceive high risk.

Considering the significance of incivility as a proximate cause of high perceived risk, it should be noted that the incivility index used in this analysis is more restricted than the one used by Rountree and Land (1996).¹² Rountree and Land (1996) include teenagers on the street, litter on the street, abandoned buildings, poor street lighting, and signs of vandalism in their incivility measure.¹³ One concern is that having this many crime variables included in the measure of incivility is confounding the interpretation of the index. As stated above, this analysis restricts incivility to include only abandoned buildings, poor street lighting, and

signs of vandalism. First, the decision to omit “litter on the streets” was made because littering is a crime and thus may be confounded with the crime rate as measured by the burglary rate. Second, the decision to omit “teenagers on the street” was made because it was thought that this measure was too similar in content to crime itself, considering teenagers on the street has been a strong correlate of delinquency rates dating back to the research of Shaw and McKay (1942). Finally, recognizing vandalism is also a crime, the decision to keep it as part of the index was made because of the arguments presented in broken windows theory.¹⁴ It can be argued that vandalism can be perceived as an integral part of the broken windows argument. Considering both analyses find incivility to be a strong predictor of high perceived risk, the difference in the two indices should be of particular interest and explored further.

The incivility index used in this analysis does not account for teenagers in the street or litter in the street, and yet this measure is the strongest neighborhood-level predictor of high perceived risk. Recalling the significance of the teenage population at the census tract level, it is interesting that despite omitting “teenagers on the street” from the incivility index, it remains a significant predictor of high perceived risk. It is also interesting that the index is still a significant predictor after the omission of litter on the street. In sum, future research on incivilities should consider what comprises neighborhood “incivility” and how each individual measure may affect residents’ perceived risk of criminal victimization.

Regardless of the index components, neighborhood incivility is a strong predictor of high perceived risk, thus, lending support to social disorder theory. This also supports the argument that the physical environment within a neighborhood should be considered when

assessing high perceived risk. Returning to the argument that it is critical to recognize the significance of both the physical and social environment of neighborhoods, it is noteworthy that the social environment of the neighborhood is also found to be significant.

Ethnic heterogeneity and neighborhood integration undoubtedly affect the social environment of a neighborhood, and more importantly, they both significantly affect perceived risk of victimization. Residents who live in more heterogeneous and less integrated neighborhoods are significantly more likely to perceive high risk of victimization. Considering both heterogeneity and integration are measures of social disorganization, this finding lends support to social disorganization theory.

One important premise of social disorganization theory is that certain neighborhood characteristics, such as heterogeneity, prevent or hinder residents from bonding with one another and exemplifying any sort of neighborhood attachment. As a result, residents fail to act collectively in order to uphold community standards (Kobrin 1971). In sum, the significant effect of heterogeneity and integration on high perceived risk supports social disorganization theory, but these significant effects could also arguably identify neighborhood attachment among residents as a key predictor of high perceived risk.

Social disorganization theory has traditionally been applied at the neighborhood level; however, the arguments it offers about neighborhood attachment could arguably be applied at an individual level. Including both the social interaction index and the renter status measure is an attempt to determine if in fact neighborhood attachment affects perceived risk similarly at both the aggregate and individual levels.

Social interaction does significantly affect how individuals perceive risk of victimization in their neighborhood. Individuals who report engaging in more social interaction with their neighbors are also more likely to report perceiving less risk of victimization. It could be argued, then, that those individuals who develop social ties with their neighbors also develop neighborhood attachment. As neighbors interact with one another, they may foster an environment conducive to establishing and upholding community standards. Following that logic, this social interaction may actually encourage and promote neighborhood attachment. In sum, those individuals who interact with their neighbors are also more likely to be attached to their neighborhood, and consequently, are significantly less likely to report feeling unsafe in their neighborhood. It could also be argued that the more neighbors that one knows, the more people one perceives as “being there for you” in case of an emergency, or as “keeping an eye on your home” or on the neighborhood in general. As a result, individuals who perceive their neighbors are “there” for them may also be less likely to perceive their neighborhood as unsafe.

Renting one’s residence also significantly affects the likelihood of perceiving high risk. Individuals who rent their residence are significantly more likely to report high perceived risk. Because renters are typically more transient, they arguably are less likely to develop neighborhood attachment; therefore, this finding also may lend support for measuring neighborhood attachment at the individual level. Considering the significance of renter status and social interaction, it seems that analyzing the effect of neighborhood attachment on perceived risk should be measured at both the neighborhood and individual levels.

Continuing with the individual level findings, the current analysis finds that individual target suitability is not a significant predictor of high perceived risk. This is worth mentioning because Rountree and Land (1996) also find their individual target suitability measure to be insignificant. Recall that routine activity theory is comprised of three primary components: target suitability (both individual and residential), motivated offenders, and guardianship. Individual target suitability is comprised of exposure to risk measures—how much time is spent outside or inside the home. One possible explanation for individual target suitability failing to significantly affect high perceived risk is that individuals may not be cognizant of their personal exposure to risk. In other words, they may not be aware that increased time spent outside the home is likely to increase exposure to motivated offenders. Furthermore, individuals may be aware that personal crimes occur far less frequently than property crimes, and therefore, fail to associate increased personal exposure to risk with increased risk of victimization.

The two other routine activity measures, residential target suitability and lack of capable guardians, however, do have significant effects on individuals' perceived risk. Individuals who have more access routes to their home, have more guardianship barriers to their home or live on a corner are significantly more likely to report feeling unsafe in their neighborhood. Individuals who take more safety precautions are also more likely to report high perceived risk of victimization. In sum, the analysis in general lends general support to routine activities theory.

The analysis in general also finds support for the argument that prior victimization positively and significantly affects perceived risk. Individuals who have been victims of

crime in the past are significantly more likely to report feeling unsafe in their neighborhood. In this analysis personal and property victimization are measured separately, and therefore, it is also important to note that prior personal victimization is a stronger predictor of high perceived risk than is prior property victimization. This seems to add credence to the argument found within the perceived risk literature that personal and property victimization affect risk perceptions differently (Smith *et al.* 2001).

One final individual-level finding that warrants further discussion is that gender is the only sociodemographic variable found to significantly affect high perceived risk. The literature consistently reports that age, race, and sex have significant effects on individuals' perceived risk, and therefore, this finding is a bit perplexing. Rountree and Land (1996), although finding age, race, and sex significantly affect high perceived risk, offer a possible explanation for this seemingly inconsistent result. They suggest that fear of crime and perceived risk of victimization may have different sociodemographic predictors. Utilizing this argument and drawing upon Smith *et al.* (2001), perhaps gender is the strongest (in this case the only) predictor of high perceived risk of victimization because high perceived risk is actually the result of high perceived vulnerability. After all, females have a unique sense of ecological vulnerability (Smith *et al.* 2001; Smith and Torstensson 1997). It should also be mentioned that age, race (as well as sex) are correlated with other variables in the equation. (See correlation matrix.)

Conclusion

In attempting to expand upon the work of Rountree and Land (1996), the current analysis identified several issues that should be considered in future research. Understand

that the work of Rountree and Land is widely recognized as contributing significantly to the collective effort to better understand individuals' risk perceptions; however, some arguments and findings that Rountree and Land present actually raise questions that warrant additional analysis. It is these questions that guided the decision-making process for the current analysis, and subsequently, resulted in the most noteworthy findings of this analysis.

First, consider that Rountree and Land (1996) argue that measuring at the census tract level is valuable because the census tract can be conceptualized as a more expansive neighborhood than the block-pair, which is typically defined as a neighborhood. Furthermore, they find that the burglary count, which is a tract-level measure, is a significant predictor of high perceived risk. If, in fact, individuals' risk perceptions may be affected by contextual factors measured at the census tract level, could not other contextual, tract-level characteristics be affecting perceived risk?

The current analysis includes several socioeconomic tract-level measures in addition to the burglary count, and finds that the social and physical contexts of the census tract significantly affect individuals' risk perceptions—beyond the effects of other variables at the individual and neighborhood levels. The percentage of individuals who are in poverty, teenagers, homeowners, and high school drop-outs are all census tract population characteristics that the current analysis finds significantly affect high perceived risk of residents. Hence, it seems that it is more than the crime count of the census tract that affects risk perceptions. More importantly, this finding may indicate that the social and physical contexts that significantly affect individuals' perceived safety in their neighborhood may not be limited to the physical area typically defined as a “neighborhood”—such as the 64 square

block radius around the person's residence, as in Rountree and Land (1996). An environment as expansive as the census tract, may in fact, be contributing to individuals risk perceptions. In sum, continuing to explore how the social and physical contexts of the census tract environments affect risk perceptions seems to promise valuable findings.

Another topic deemed worthy of additional consideration that was identified in the work of Rountree and Land (1996) concerns the incivility index used in their analysis. They find that neighborhood incivility is a significant predictor of high perceived risk. Considering this finding arguably has theoretical implications, it is important to think about what measures comprise their incivility index. Rountree and Land use an index that is comprised of five measures, all of which have been identified in the literature as possible signs of disorder or incivility. The current analysis, however, limits the incivility index to only three measures (for reasons that are discussed in-depth above), and yet, finds that incivility is not only a significant, but also the strongest neighborhood-level predictor of high perceived risk. The difference between the two indices is important because both are found to be significant indicators of individuals' risk perceptions, yet each index conceptualizes incivility differently. The question then becomes, "what constitutes incivility?" The results here indicate that the smaller set of items used to measure incivility is quite adequate in that it is still the best predictor of risk perceptions. Thus, the choice of items from the five items used by Rountree and Land may not be that crucial to their findings, nor the findings here.

A final noteworthy finding by Rountree and Land (1996) that influenced the current analysis was the significant, negative relationship between neighborhood cohesion and perceived risk. Rountree and Land contend that the negative relationship is "plausible"

because individuals who reside in close-knit communities are more likely to perceive greater informal control and more support from their neighbors, and therefore, are less likely to perceive their neighborhood as unsafe. If the significant relationship between neighborhood cohesion and perceived risk is a function of individuals interacting with their neighbors, then perhaps, a measure of social interaction among neighbors at the individual level should also be considered. Rountree and Land, however, only consider social interaction or “social integration” at the neighborhood level.

The current analysis includes an individual level measure of social interaction of neighbors, and finds that social interaction also has a significant and negative relationship on perceived risk. Considering interaction or cohesion among neighbors seems to be important in diminishing residents’ perceived risk at the aggregate and individual level, the conceptualization and operationalization of an individual level social interaction measure should be further explored. More specifically, the current analysis does not address the type or extent of interactions among neighbors, both of which could arguably alter the findings, and therefore, should be considered in future research.

Admittedly, the current analysis cannot be considered an exact replication of the work of Rountree and Land (1996), as two different methods are employed. Nevertheless, the similarities and differences among the findings of these two works is noteworthy and warrants further consideration. At the individual level, there are both similarities and differences of interest. It is interesting to note that both analyses find overall support for routine activity theory. Both find safety precautions and access routes are significant predictors of high perceived risk, yet both also find a lack of support for the individual target

suitability measures. A notable difference between the two analyses is which sociodemographic measures are predicted to significantly affect risk perceptions. Consistent with the extant literature, Rountree and Land find that age, gender, and race all significantly affect individuals' risk perceptions. The current analysis, however, finds that the only sociodemographic measure that significantly affects perceived risk is gender.

Now consider the neighborhood level findings. Both analyses find that neighborhood integration and neighborhood incivility are significant predictors of high perceived risk. A noteworthy difference, however, is that Rountree and Land find that heterogeneity interacts with incivility to significantly affect risk perceptions, whereas, the current analysis finds that heterogeneity alone significantly affects high perceived risk.

Finally, consider the tract level findings. Rountree and Land find that burglary counts, their only tract-level measure, significantly affects risk perceptions. The current analysis, however, finds that numerous tract-level measures affect high perceived risk. The percentage of individuals who are in poverty, teenagers, homeowners, and high school drop-outs are all significant tract-level predictors of high perceived risk.

In closing, the current analysis successfully extends the work of Rountree and Land (1996) and finds that in general the findings of the current research are similar to those that they replicate. Yet, the different methodological device (multinomial logistic regression), as well as the inclusion of additional variables at the census tract level, adds to the explanation of perceived risk and to our knowledge of how context affects the processes.

Table 1
Descriptive Statistics

Variables	Metrics	Range	Mean	Std. Deviation	Interquartile Range
Dependent Variable					
Perceived Risk	(1 = Very safe . . .	1 – 3	2.059	0.653	
Individual Level					
Sex	(0 = Female, 1 = Male)	0 – 1	0.508	0.500	
White	(0 = White, 1 = Non-white)	0 – 1	0.847	0.360	
Black	(0 = Black, 1 = Non-black)	0 – 1	0.061	0.240	
Marital Status	(0 = Single, 1 = Married)	0 – 1	0.547	0.498	
Home Oriented	(0 = Yes, 1 = No)	0 – 1	0.338	0.473	
Own Residence	(0 = Rent, 1 = Own)	0 – 1	0.646	0.478	
Property Victimization	(0 = No, 1 = Yes)	0 – 1	0.189	0.392	
Personal Victimization	(0 = No, 1 = Yes)	0 – 1	0.048	0.213	
High School Graduate	(0 = Yes, 1 = No)	0 – 1	0.058	0.234	
Under 60 years	(0 = No, 1 = Yes)	0 – 1	0.298	0.457	
Live alone	(0 = No, 1 = Yes)	0 – 1	0.252	0.434	
On Corner	(0 = No, 1 = Yes)	0 – 1	0.214	0.410	
Social Interaction	(number of indicators)	0 – 3	1.030	0.985	2.000
Years	(number of years)	1 – 10	7.008	2.985	5.000
Evenings Out	(number of evenings)	0 – 7	2.463	1.986	3.000
Home Unoccupied	(number of nights)	0 – 7	1.806	1.965	3.000
Safety Precautions	(number of precautions)	0 – 9	3.850	1.504	2.000
Guardianship Barriers	(number of barriers)	0 – 2	0.455	0.574	1.000
Access Routes	(number of routes)	0 – 2	1.228	0.606	1.000
Expensive Goods	(number of goods)	0 – 5	2.537	1.404	3.000
Neighborhood Level					
Busy Places	(number of places)	.82 - 7.24	3.445	1.339	1.912
Neighborhood Integration	(number of indicators)	1.44 - 5.30	3.513	0.790	1.178
Ethnic Heterogeneity		0.00 - .25	0.038	0.064	5.250
Neighborhood Incivility	(number of indicators)	0 – 2	0.709	0.394	0.506
Census Tract Level					
% Housing Units Owned		6.73 - 100	49.087	22.925	36.884
% Population teenagers		.59 - 18.38	4.924	2.378	2.463
% Single Parent Households		0 - 60.06	10.968	10.316	8.103
% Population Below Poverty		.03 - 3.62	0.358	0.425	0.291
% Population No Diploma		1.47 - 42.92	12.641	8.624	9.982
Residential Burglary Counts		7.50 - 182	69.875	37.104	48.000

Note: n=5,025

Table 2
Multinomial Logistic Regression - Individual Level Measures

Variable	B	Sig	Exp(B)	Interquartile Range/ Dummy Effect
Female	0.401	0.000	1.493	1.493
Rent residence	0.684	0.000	1.983	1.983
Social interaction	-0.310	0.000	0.733	0.538
Access routes	0.267	0.000	1.306	1.306
Not on corner residence	-0.378	0.001	0.686	0.686
Safety precautions	0.147	0.000	1.158	1.342
Guardianship barriers	0.238	0.002	1.269	1.269
No personal victimization	-1.413	0.000	0.243	0.243
No property victimization	-0.612	0.000	0.542	0.542

Note: n=5,025.

Table 3
Multinomial Logistic Regression - Neighborhood Level

Variable	B	Sig	Exp(B)	Interquartile Range/ Dummy Effect
Individual Level				
Female	0.469	0.000	1.598	1.598
Social interaction	-0.200	0.000	0.819	0.67
Access routes	0.266	0.001	1.304	1.304
Safety precautions	0.201	0.000	1.222	1.495
Guardianship barriers	0.190	0.023	1.210	1.21
No personal victimization	-1.413	0.000	0.243	0.243
No property victimization	-0.559	0.000	0.572	0.572
Neighborhood Level				
Busy places	0.130	0.002	1.139	1.283
Neighborhood integration	-0.517	0.000	0.596	0.544
Ethnic heterogeneity	0.075	0.000	1.078	1.483
Neighborhood incivility	2.230	0.000	9.299	3.089

Note: n=5,025.

Table 4
Multinomial Logistic Regression - Census Tract Level

Variable	B	Sig	Exp(B)	Interquartile Range/ Dummy Effect
Individual Level				
White (white eq 0)	0.385	0.040	1.470	1.47
Black (black eq 0)	-1.117	0.000	0.327	0.327
Female	0.398	0.000	1.489	1.489
Single (includes divorced, widowed)	-0.256	0.016	0.774	0.774
Rent residence	0.681	0.000	1.976	1.976
Social interaction	-0.205	0.000	0.814	0.664
Access routes	0.169	0.043	1.184	1.184
Not on corner residence	-0.378	0.001	0.685	0.685
Safety precautions	0.191	0.000	1.211	1.465
Guardianship barriers	0.173	0.042	1.189	1.189
No personal victimization	-1.413	0.000	0.243	0.243
No property victimization	-0.611	0.000	0.543	0.543
Neighborhood Level				
Busy places	0.070	0.148	1.072	1.143
Neighborhood integration	-0.428	0.000	0.652	0.604
Ethnic heterogeneity	0.035	0.004	1.035	1.202
Neighborhood incivility	1.795	0.000	6.022	2.479
Census Tract Level				
% Teenage population (12-19yrs.)	0.089	0.012	1.093	1.245
% Population below poverty	0.864	0.001	2.373	1.285
Residential Burglary	0.011	0.000	1.011	1.696

Note: n=5,025.

Table 5
Multinomial Logistic Regression - Census Tract Level

Variable	B	Sig	Exp(B)	Interquartile Range/ Dummy Effect
Individual Level				
White (white eq 0)	0.368	0.048	1.445	1.445
Black (black eq 0)	-1.093	0.000	0.335	0.335
Female	0.504	0.000	1.656	1.656
Single (includes divorced, widowed)	-0.247	0.020	0.781	0.781
Social interaction	-0.202	0.000	0.817	0.668
Access routes	0.171	0.040	1.186	1.186
Safety precautions	0.185	0.000	1.203	1.448
Guardianship barriers	0.172	0.042	1.188	1.188
No personal victimization	-0.814	0.002	0.443	0.443
No property victimization	-0.537	0.000	0.584	0.584
Neighborhood Level				
Busy places	0.091	0.055*	1.096	1.190
Neighborhood integration	-0.378	0.000	0.685	1.560
Ethnic heterogeneity	0.036	0.002	1.037	1.208
Neighborhood incivility	1.883	0.000	6.570	2.593
Census Tract Level				
% Housing units owned	0.016	0.000	1.016	1.804
% Teenage population (12-19yrs.)	0.109	0.002	1.115	1.307
% No highschool diploma	0.028	0.003	1.029	1.322
Residential Burglary	0.006	0.001	1.006	1.334

Note: n=5,025.

* Not statistically significant

Notes

1. Indices with four and two items, however, are also tested and reported on below. See note #11.
2. I would like to thank Pamela Rountree for sending us the data on Seattle burglary counts. Her timely response is most appreciated. The current analysis would not have been possible without her cooperation.
3. Because we do not know what area respondents are actually considering when asked the question about their perceived safety, it is arguable that respondents may consider an area more expansive than the 4 square block area; therefore, it is arguable that in order to assess the contexts that affect high perceived risk, both neighborhood and census tract level measures should be included.
4. Census tracts are determined based upon the population density of an area, not geographic size of an area. It is, therefore, possible that in some instances the “neighborhood,” as defined in the current analysis, is geographically more expansive than the census tract.
5. I did not delete all missing cases on the following variables: *live alone*, *years*, *evenings out*, *safety precautions*, *expensive goods*, and *neighborhood incivility*. For the above listed variables, the group mean was determined and it was substituted for all missing cases.
6. The current analysis could arguably be more “conservative” because more variables—potentially in competition with the variables presented in the table—are being controlled for statistically than would be the case if only statistically significant variables were tested in the model.
7. The tables presented for each of the models only include the variables that this analysis finds are statistically significant ($p < .05$). While the tables may appear to represent trimmed models, it is important to recognize that each table represents the significant findings of the full models, as specified in the text on page 23. Furthermore, trimmed models were run in order to compare the coefficients to those of the full models. The coefficients in the trimmed models did not differ exceptionally from those in the full models.
8. This model originally included census tract *robbery counts*, as well. It was important to include in the model considering the significant effect of *personal prior victimization*. The robbery count was computed in the same way as the burglary count. The official counts for 1989 and 1990 were averaged. *Robbery* did not significantly affect perceived risk. This could be because robbery occurs far less

- frequently than burglary; therefore, far fewer residents' risk perceptions are going to be affected by robbery.
9. The reported pseudo r-squares for Models 1, 2, 3 & 4 are .170, .179, .200, and .197, respectively.
 10. Considering the positive relationship between *percent housing units owned* and perceived risk is unexpected, I decided to run multinomial logistic regression on Model 4 again, but this time I excluded the burglary count variable. I wanted to determine whether or not controlling for the burglary count was affecting the nature of the relationship between ownership and risk. Despite the fact that Model 4 was no longer controlling for burglary counts, the analysis indicated a significant, positive relationship between *percent housing units owned* and perceived risk.
 11. In order to verify that the relationship between *percent housing units owned* and perceived risk is linear in nature, I categorized *percent housing units owned*. Low ownership was specified as 0 through 33% ownership. Medium ownership was specified as 34 through 66% ownership. High ownership was specified as 67 through 100% ownership. I then looked at the mean *residential burglary* counts for each ownership category. The average burglary count did increase across the ownership categories with high ownership having the highest average burglary count.
 12. After deciding on a three-item incivility index, two additional incivility indices were tested in Model 2 in an attempt to identify the possible importance of the robustness of the incivility index. The four-item index included *abandoned buildings, poor street lighting, vandalism, and litter*. When tested in Model 2, the four item index had $B=1.836$, $\text{Exp}(B)=6.271$, and was statistically significant ($p < .000$). The two-item index consisted of *abandoned buildings* and *poor street lighting*. This index had $B=2.363$, $\text{Exp}(B)=10.626$ and was also statistically significant ($p < .000$).
 13. The Cronbach's Alpha score for the five-item scale used by Rountree & Land is .597, while the score for the three-item scale used in the current analysis is .414. These scores seem to indicate low reliability for both incivility scales. It should, however, be considered that scales with fewer items typically have lower reliability scores.
 14. The current analysis uses a less robust incivility index than that used by Rountree and Land (1996); nevertheless, it could still be argued that the incivility index used in this analysis is too robust in that it contains *signs of vandalism*, which is admittedly a measure of crime. Consequently, an additional incivility index that included only *abandoned buildings* and *poor street lighting* was created. This incivility index was substituted in Model 2 and the analysis was run again. The results were only minimally different than those of Model 2 presented in this analysis.

REFERENCES

- Berry, Brian and John Kasarda. 1977. *Contemporary Urban Ecology*. New York: Macmillan.
- Bursik, Robert J. and Harold G. Grasmick. 1993. *Neighborhoods and Crime: The Dimensions of Effective Community Control*. New York: Lexington Books.
- Chiricos, Ted, Rane McEntire and Marc Gertz. 2001. "Perceived Racial and Ethnic Composition of Neighborhoods and Perceived Risk of Crime." *Social Problems* 48: 322-40.
- Cohen, Lawrence and Marcus Felson. 1979. "Social Change and Crime Rate Trends: A Routine Activities Approach." *American Sociological Review* 44: 588- 608.
- Ferraro, Kenneth. 1995. *Fear of Crime: Interpreting Victimization Risk*. New York: SUNY.
- Ferraro, Kenneth and Randy LaGrange. 1987. "The Measurement of Fear of Crime." *Sociological Inquiry* 57: 70-101.
- Garafalo, James. 1979. "Victimization and the Fear of Crime." *Journal of Research in Crime and Delinquency* 16: 80-97.
- Garafalo, James and John Laub. 1979. "The Fear of Crime: Broadening Our Perspectives." *Victimology* 3: 242-53.
- Greene, W. H. 1997. *Econometric Analysis*. 3rd ed. Upper Saddle River, NJ: Prentice-Hall.
- Hale, C. 1996. "Fear of Crime: A Review of the Literature." *International Review of Victimology* 4: 79-150.
- Land, Kenneth, Patricia McCall and Lawrence Cohen. 1990. "Structural Covariates of Homicide Rates: Are There Any Invariances Across Time and Social Space?" *American Journal of Sociology* 95: 922-63.
- Lewis, Dan and Michael Maxfield. 1980. "Fear in the Neighborhoods: An Investigation of the Impact of Crime." *Journal of Research in Crime and Delinquency* 17: 160-89.
- Lewis, Dan and Greta Salem. 1986. *Fear of Crime: Incivility and the Production of a Social Problem*. New Brunswick: Transaction Books.
- Liska, Allen E. and Mark D. Reed. 1988. "Fear of Crime and Constrained Behavior: Specifying and Estimating a Reciprocal Effects Model." *Social Forces* 66: 827-37.

- Markowitz, Fred, Paul Bellair, Allen Liska, and Jianhong Liu. 2001. "Extending Social Disorganization Theory: Modeling the Relationships Between Cohesion, Disorder, and Fear." *Criminology* 39: 293-319.
- Menard, Scott. 2002. *Applied Logistic Regression Analysis*. 2nd ed. Thousand Oaks: Sage Publications.
- Miethe, Terance and David McDowall. 1993. "Contextual Effects in Models of Criminal Victimization." *Social Forces* 71: 741-59.
- Rohe, William and Michael Stegman. 1994. "Impact of Home Ownership on the Social and Political Involvement of Low-Income People." *Urban Affairs Quarterly* 30: 152-72.
- Rountree, Pamela Wilcox, Kenneth Land and Terance Miethe. 1994. "Macro-Micro Integration in the Study of Victimization: A Hierarchical Logistic Model Analysis Across Seattle Neighborhoods." *Criminology* 32: 387-414.
- Rountree, Pamela Wilcox and Kenneth Land. 1996. "Perceived Risk versus Fear of Crime: Empirical Evidence of Conceptually Distinct Reactions in Survey Data." *Social Forces* 74: 1353-1376.
- Shaw, Clifford and Henry McKay. 1969. *Juvenile Delinquency and Urban Areas*. Revised Edition. Chicago: University of Chicago Press.
- Skogan, Wesley and Michael Maxfield. 1981. *Coping With Crime: Individual and Neighborhood Reactions*. Beverly Hills: Sage Library of Social Research.
- Skogan, Wesley. 1990. *Disorder and Decline: Crime and the Spiral Decay in American Neighborhoods*. New York: Free Press.
- Smith, Lynn N. and Gary D. Hill. 1991. "Victimology and Fear of Crime." *Criminal Justice and Behavior* 18: 217-39.
- Smith, William, Marie Torstensson and Kerstin Johansson. 2001. "Perceived Risk and Fear of Crime: Gender Differences in Contextual Sensitivity." *International Review of Victimology* 8: 159-81.
- Smith, William R. and Marie Torstensson. 1997. "Gender Differences in Risk Perception and Neutralized Fear of Crime: Toward Resolving the Paradoxes." *British Journal of Criminology* 37: 608-34.
- Snell, Clete. 2001. *Neighborhood Structure, Crime, and Fear of Crime: Testing Bursik and Grasmick's Neighborhood Control Theory*. New York: Scholarly Publishing.

- Stafford, Mark and Omer Galle. 1984. "Victimization Rates, Exposure to Risk, and Fear of Crime." *Criminology* 22: 173-85.
- Stanko, Elizabeth A. 1992. "The Case of Fearful Women: Gender, Personal Safety, and Fear of Crime." *Women and Criminal Justice* 4 (1):117-35.
- Stinchcombe, Arthur, Carol Heimer, R. Illiff, Kimberly Scheppele, Thomas Smith, and D. Taylor. 1978. *Crime and Punishment in Public Opinion: 1948-1974*. Chicago: National Opinion Research Center.
- Taylor, Ralph, Stephen Gottfredson and Sidney Brower. 1984. "Block Crime and Fear: Defensible Space, Local Social Ties, and Territorial Functionality." *Journal of Research in Crime and Delinquency* 21: 303-31.
- Warner, Barbara and Pamela Wilcox Rountree. 1997. "Local Social Ties in a Community and Crime Model: Questioning the Systemic Nature of Informal Social Control." *Social Problems* 44: 520-37.
- Warr, Mark and Mark Stafford. 1983. "Fear of Victimization: A Look at the Proximate Causes." *Social Forces* 61: 1033-43.
- Wilcox, Pamela, Neil Quisenberry and Shayne Jones. 2003. "The Built Environment and Community Crime Risk Interpretation." *Journal of Research in Crime and Delinquency* 40: 322-345.

Appendix

Appendix A

Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31				
Sex	1																																		
White	.032*	1																																	
Black	-.004	-.623*	1																																
Marital Status	.103*	-.053*	.081*	1																															
Home Oriented	-.196*	-.040*	-.042*	-.004	1																														
Own Residence	-.011	-.067*	.041*	.299*	.204*	1																													
Property Vict.	-.043*	-.020	-.020	.036*	.122*	.224*	1																												
Personal Vict.	-.013	.020	-.013	-.079*	.010	-.109*	-.008	1																											
High School Grad.	.001	.126*	-.160*	-.046*	.175*	-.012	.014	.040*	1																										
Under 60 Yrs.	-.075*	-.032*	-.055*	-.068*	.639*	.248*	.160*	.001	.207*	1																									
Live Alone	-.055*	-.035*	-.012	-.624*	.092*	-.199*	-.018	.081*	.029*	.171*	1																								
On Corner	.020	.071*	-.053*	-.071*	-.016	-.156*	-.023	.083*	.018	-.004	.103*	1																							
Social Interaction	-.031*	.029*	-.071*	.215*	.134*	.356*	.128*	-.009	-.016	.102*	-.149*	-.068*	1																						
Years	-.092*	-.018	-.055*	.051*	.373*	.401*	.331*	.002	.097*	.473*	.011	-.049*	.252*	1																					
Evenings Out	.113*	.009	.019	-.103*	-.343*	-.219*	-.095*	.028*	-.116*	-.334*	.022	.057*	-.097*	-.247*	1																				
Home Unocc.	.082*	-.070*	.061*	-.160*	-.257*	-.191*	-.052*	.041*	-.106*	-.221*	.198*	.059*	-.135*	-.208*	.606*	1																			
Safety Precautions	.026	.001	-.045*	.214*	.120*	.353*	.174*	-.030*	-.003*	.110*	-.173*	-.100*	.350*	.257*	-.114*	-.142*	1																		
Guardianship	.013	.047*	-.024	.034*	-.043*	.011	.027	.031*	-.001	-.048*	-.041*	.001	-.004	-.019	.017	.014	.038*	1																	
Access Routes	.054*	-.023	.014	.066*	-.009	.144*	.099*	.005	.012	-.027	-.071*	-.105*	.082*	.043*	.008	-.016	.100*	.018	1																
Expensive Goods	.110*	-.021	.064*	.259*	-.256*	.128*	.007	-.040*	-.157*	-.343*	-.262*	-.045*	.069*	-.111*	.143*	.093*	.093*	.046*	.064*	1															
Bury Places	.001	.036*	-.022	-.205*	-.082*	-.348*	-.084*	.114*	.029*	-.064*	.181*	.159*	-.203*	-.174*	.100*	.109*	-.222*	-.027	.001	-.090*	1														
Neighborhood Int.	-.016	.050*	.005	.258*	.123*	.484*	.146*	-.091*	-.028*	.099*	-.226*	-.161*	.441*	.237*	-.141*	-.135*	.312*	-.018	.139*	.133*	-.428*	1													
Heterogeneity	-.003	.392*	-.475*	-.078*	.018	-.047*	.066*	.097*	.112*	.003	.020	-.075*	.054*	-.003	.010	-.015	.049*	.069*	.058*	-.044*	.052*	-.040*	1												
Incivility	.030*	.173*	-.205*	-.181*	-.080*	-.300*	-.056*	.166*	.072*	-.084*	.131*	.140*	-.151*	-.152*	.115*	.088*	-.149*	.030*	.025*	-.119*	.431*	-.369*	.404*	1											
% Owned	.020	.082*	-.060*	-.247*	-.098*	-.463*	-.103*	.166*	.051*	-.081*	.233*	.231*	-.258*	-.202*	.144*	.141*	-.267*	-.024	-.083*	-.135*	.589*	-.588*	.144*	.480*	1										
% Teenagers	.013	.178*	-.189*	.031*	.042*	.143*	.079*	-.017	.067*	.016	-.096*	-.114*	.078*	.039*	-.025	-.052*	.137*	.079*	.104*	.013	-.205*	.133*	.426*	.168*	-.203*	1									
% Single Parents	-.003	.285*	-.258*	.000	.057*	.089*	.096*	.042*	.131*	.046*	-.064*	-.050*	.070*	.046*	-.042*	-.080*	.114*	.077*	.051*	-.019	-.112*	.059*	.533*	.260*	.041*	.602*	1								
% Below Pov.	.012	.188*	-.144*	-.149*	-.017	-.257*	-.037*	.179*	.110*	-.019	.129*	.170*	-.046*	-.079*	.043*	.041*	-.132*	.025	.022	-.104*	.347*	-.243*	.297*	.439*	.553*	.148*	.309*	1							
% No Diploma	-.003	.323*	-.253*	-.085*	.057*	-.069*	.030*	.132*	.172*	.052*	.044*	.078*	.002	.009	-.025	-.060*	.035*	.076*	.048*	-.092*	.071*	-.100*	.509*	.392*	.280*	.406*	.705*	.568*	1						
Rm. Burglary	.021	.171*	-.196*	-.098*	-.023	-.110*	.038*	.043*	.072*	-.028*	.057*	-.009	-.067*	-.060*	.057*	.023	-.002	.030*	.050*	-.049*	.150*	-.184*	.394*	.344*	.348*	.264*	.500*	-.001	.345*	1					
Robbery	.019	.252*	-.263*	-.184*	-.012	-.251*	-.020	.180*	.109*	.001	.173*	.195*	-.087*	-.095*	.072*	.057*	-.117*	.031*	-.058*	-.127*	.390*	-.202*	.524*	.597*	.591*	.149*	.386*	.458*	.532*	.575*	1				

* Correlation is significant at the .05 level