TRAVEL TO VIOLENCE

FINAL REPORT

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Introduction

The criminological literature has long suggested that perpetrators offend close to home (Lu 2003; Rossmo 2000; Wiles and Costello 2000; McIver 1981). While this may have traditionally been the case, such travel patterns are dependent on the spatial distribution of residential neighborhoods, and the use of public spaces—characteristics that vary both over time and by geographic region. Much of the research that has demonstrated localized offending patterns has been based on analyses of older cities whose patterns of development predated the widespread use of the automobile. Yet, both patterns of residential development and the use of public spaces have changed in many of the fastest growing western cities. Public spaces, such as nightclubs, movie theaters, and shopping districts are often no longer located exclusively within or close to residential neighborhoods. As a result, the spatial distribution of offenders, victims, and incidents may no longer follow this established pattern. Just as individuals and groups in some cities are more likely to travel to socialize, recreate, and shop, they are also more likely to travel to participate in crime. In Albuquerque, for instance, between 1995-2001 the median distance traveled between the residence of homicide offenders and incident location was 3.9 miles. During this same period, homicide victims, on average, traveled 4.3 miles to the incident. For incidents of aggravated assault, the median travel distance for offenders and victims was 3.2 and 2.8 miles respectively. Clearly, many of these crimes took place outside of the neighborhoods of the participants. While there is a paucity of geo-spatial analyses focusing on travel to crime, we believe that these relatively long travel distances are not unique to New

Mexico, but a manifestation of shifting residential and recreational patterns occurring in many cities across the U.S. These patterns have significant implications for law enforcement strategies.

In the current work we use incident-level data from the Albuquerque Police Department along with data from the U.S. Census to explore the characteristics of offenders, incidents, and neighborhoods in Albuquerque, New Mexico to determine what influences travel distances for non-domestic assaults, robberies, and burglaries. Knowledge concerning the geo-spatial distribution of offenders, victims, and incidents is essential to the development of data-driven policing practices. Aspects of community policing, quality-of-life enforcement strategies, and the use of civil injunctions in addressing problematic areas hold implicit assumptions concerning the concentration of criminal participants and incidents. Information concerning the distances that potential offenders travel to crime, as well the characteristics of participants and incidents that influence these distances can inform these strategies and help agencies decide how to best utilize resources.

Empirical Background

Much of the research examining this "travel-to-crime" phenomenon indicates that most crimes are committed in very close proximity to where offenders live (Rossmo 2000; Lu 2003; Wiles and Costello 2000; McIver 1981). Researchers have also found that this pattern holds even among more active offenders. In a study of criminal patterns in Miami, Rhodes and Conly (1981) present evidence that the journey-to-crime operates as a distance-decay function, meaning that the number of crimes committed decreases as a function of distance away from the offender's home.

Prior research also finds that on average, violent offenders travel the shortest distances to crime, relative to criminals who engage in other forms of deviant conduct (Rossmo 2000; Rhodes and Conly 1981). For example, studies have shown that homicides, rapes, and aggravated assaults are the crimes that tend to be committed nearest to offenders' homes (Gabor and Gottheil 1984; Rossmo 2000, p. 105-110). Robberies tend to take place a bit further from criminal residences, but the travel distances to robbery are still shorter than comparative trips for less serious property-based offenses. The majority of robberies are still committed less than a mile from where perpetrators live, suggesting that there is a high probability that such crimes will occur in the home neighborhoods of offenders (Reppetto 1976). In sum, much of the prior research has illustrated that "while criminals are mobile, they don't seem to go very far in committing a crime" (McIver 1981, p. 22).

However, the studies from which this consensus emerged took place in more traditional cities in which patterns of spatial distribution were developed before the widespread use of the automobile. Recent studies from Albuquerque (Steele et al. 2005) suggest that violent crimes involving short travel distances may not always be the norm. As noted above the average distance offenders traveled to homicide and aggravated assault incidents between 1995-2001 was 3.9 miles and 3.2 miles respectively. While these findings call to question the "consensus" of short travel distances to violent crime, what we still know little about is what influences the distance individuals travel to participate in various types of offenses. The little research that has appeared in this area has focused primarily on the characteristics of the offenders and the incidents. Rhodes and Conly (1981) have argued that "criminal commutes" are the result of an interaction between offender motivation and criminal opportunity. Related to the role of opportunity, Wilkstrom (1985) found that older offenders travel further to commit crime than

their younger counterparts. This could be due to the development of social ties outside of the neighborhood, which may increase with age, or access to personal transportation. In contrast to the focus on individual characteristics, Tita and Griffiths (2005) find that incident motivation appears to be more influential in determining travel-to-crime patterns. Offenders involved in gang-motivated, drug-involved, and felony homicides traveled further than those involved in incidents with other motivations. Age and race, on the other hand, played no role in determining travel patterns once motivation was held constant.

In the current work, we extend our understanding of the correlates of travel distances by examining how the contexts in which offenders live and those to which they are traveling to offend influence the length of travel and the nature of the incident. These analyses will help to identify the kinds of crimes that involve significant travel, the types of neighborhoods that participants are traveling to and from, and the characteristics of the incidents and their participants.

Data and Methods

Incident and arrest data were obtained from the Albuquerque Police Department (APD) and Bernalillo County Sheriff's Office (BCSO). These data span the years 1998 through 2002. The dataset contains information about the individuals involved in the incident including offender and victim demographics and home address. Additionally, case characteristics such as type of offense, date, time, season, and location of the incident and type of weapon used are included.

To examine travel distance in relation to both violent and non-violent crime, three crime types are included in these analyses: robbery, burglary and assault. These crime types

correspond to Uniform Crime Report definitions. Thus, robbery includes violations of NM State Statute 30-16-2, robbery. Burglary includes statutes specifically prohibiting burglary, aggravated burglary and breaking and entering. Assault includes the violation of multiple statutes including aggravated battery, aggravated assault, assault with intent to commit a violent felony, assault by a prisoner, assault with intent to commit a violent felony on a peace officer, aggravated assault on a peace officer, battery on a peace officer, aggravated battery on a peace officer, shooting from a motor vehicle, shooting at a dwelling or occupied building; shooting at or from a motor vehicle, assault, battery against school personnel. Given our interest in examining what influences travel distances, assault and battery against a household member was excluded from these analyses. Our respective sample sizes are 2,810 for robbery, 7,948 for assault, and 6,498 for burglary.

Incident and offender address data were geocoded using ArcGIS software. These data were then linked to census tracts. Once completed, these data were exported into SPSS software for additional analyses. Descriptive information about the census tracts was obtained from the Census Decennial Census Sample 2000 Summary File 3 (SF3). The characteristics included measures of racial heterogeneity, percentage of the total population that is male and ages 15 to 29, total population size, and three composite scores[1] representing economic disadvantage, cultural isolation/assimilation, and housing mobility. The economic disadvantage factor score is comprised of median family income (-.917)[2], percent of the population living below the poverty line (.882), percent male unemployment (.712), percentage of single mother households (.788), and percent minority (Hispanic, Black, and Other non-White) population (.867). The economic disadvantage variables loaded on a single component having an eigenvalue of 3.497 with 69.95

[1] Composite scores were derived using principal components analysis.
[2] Numbers in parentheses represent the variable factor loading on the first component.

percent of variance explained. High scores on this variable reflect increased levels of disadvantage. The cultural isolation/assimilation factor score is comprised of the percentage of the population that is foreign born (.903), percentage of the population over age 14 that speaks English poorly or not at all (.895), percentage of foreign born population who have obtained U.S. citizenship (-.834), percentage of foreign born population living in the U.S. 10 years or less (.768), and the percentage of households that are linguistically isolated (.880). The cultural isolation/assimilation variables loaded on a single component having an eigenvalue of 2.918 with 72.96 percent of variance explained. High scores on this variable reflect cultural isolation while lower scores reflect cultural assimilation. The housing mobility factor score is comprised of the percentage of population over 5 years of age that has moved in the past 5 years (.893) and the percentage of rental housing (.893) in the census tract. Both housing mobility variables loaded on a single component having an eigenvalue of 1.595 with 79.74 percent of variance explained, with higher scores reflecting higher mobility. These data were imported into SPSS software and merged with the geocoded addresses and census tracts.

Findings

The first step of our analyis was to examine the individual- and incident-level characteristics that influence travel-to-crime distances. Table 1 displays the coefficients representing the effect of individual characteristics on travel distances for each of the three offenses. The one constant effect across the three crime types is age. Juveniles travel shorter distances to commit assault, buglary, and robbery. This is consistent with previous literature and is not surprising given that, compared to adults, juveniles have more limited access to transportation and less well-developed non-neighborhood social ties. Other significant effects

include gender and race in the case of aggravated assault—males and Blacks travel further than females and whites, and ethncity when considering burglary—Hispanics travel further than whites to commit burglaries.

Table 1. Individual Characteristics on Offender Distance Traveled

	Assault	**Robbery**	**Burglary**
Variables in Equation			
Juvenile	-.852***	-1.444***	-1.705***
	(.132)	(.267)	(.154)
Male	.277*	-.235	-.010
	(.137)	(.275)	(.159)
Black	.422*	-.175	.330
	(.199)	(.280)	(.250)
Hispanic	-.072	-.099	.300*
	(.117)	(.205)	(.129)
Asian	-.460	-.864	-.445
	(.543)	(2.012)	(.821)
Native American	.294	-1.189	-.609
	(.268)	(.621)	(.396)
N	7948	2810	6498
Intercept	4.459	6.730	5.318
R^2	.007	.012	.020

* p < .05
** p < .01
*** p < .001

Table 2 shows what happens when we add incident characteristics to the models. For both of the violent crimes, assault and robbery, offenders travel further distances in the winter time. This may be the result of patterns of outdoor socializing in the summer which leads to more spontaneous crime closer to where offenders live, where as winter crime may be more predatory or premeditated. The use of firearms is also positively related to travel distance for both assaults and robberies. Assaults and robberies that involve firearms may involve more planning and purposive travel, while those without firearms may be more spontaneous and occur closer to home. Time of day is an important predictor of travel distance for offenders involved in assault and burglary. Individuals traveled further to commit these crimes between the hours of 6 p.m. and 6 a.m. It is likely that this reflects crimes committed during nighttime leisure pursuits away

from home. In contrast, time of day did not influence distance traveled to robberies. Again, this may reflect the less spontaneous nature of robbery compared to assault and burglary, with robbery not as likely to be the type of crime that happens spontaneously while individuals are out with friends.

Table 2. Individual and Incident Characteristics on Offender Distance Traveled

	Assault	**Robbery**	**Burglary**
Variables in Equation			
Individual Characteristics			
Juvenile	-.724***	-1.358***	-1.719***
	(.133)	(.266)	(.154)
Male	.139	-.276	-.002
	(.138)	(.274)	(.159)
Black	.395*	-.171	.313
	(.198)	(.279)	(.249)
Hispanic	-.118	-.117	.286*
	(.116)	(.204)	(.129)
Asian	-.512	-.680	-.469
	(.541)	(2.008)	(.820)
Native American	.335	-.908	-.610
	(.267)	(.621)	(.395)
Incident Characteristics			
Winter	.504***	.538*	-.073
	(.154)	(.270)	(.173)
Spring	.248	.696*	.215
	(.148)	(.272)	(.166)
Fall	-.069	.527*	-.261
	(.148)	(.269)	(.170)
Weekend	.170	.281	-.532***
	(.113)	(.197)	(.133)
Night	.512***	-.277	.253*
	(.114)	(.191)	(.126)
Firearm	.687***	.829***	n/a
	(.129)	(.187)	
N	7948	2810	6498
Intercept	3.886	5.930	5.405
R^2	.016	.023	.024

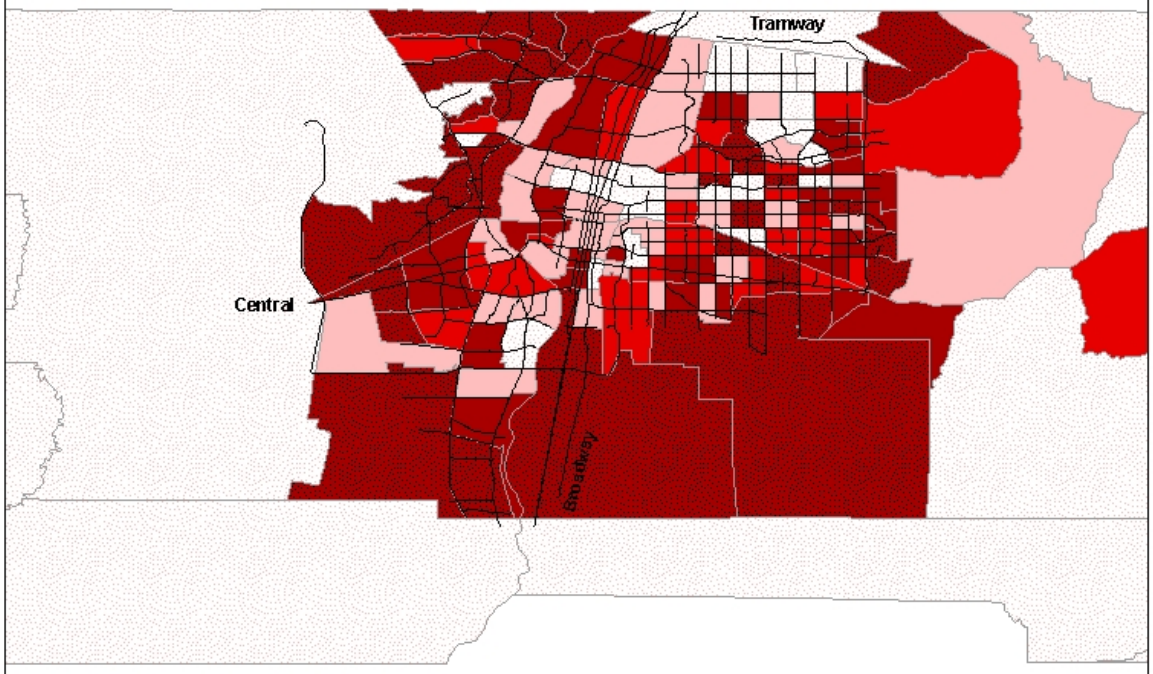
* $p < .05$
** $p < .01$
*** $p < .001$

The second step of our analyses was to examine variation in distance traveled for each offense based on the neighborhood of the offender and the neighborhood of the incident. Maps 1-6 display the mean distances traveled from offenders' homes, and to crime incident locations.

Maps 1, 3, and 5 show the variation by census tract in how far individuals travel away from their homes to offend. Maps 2, 4, and 6 show the variation by census tract in how far offenders are traveling to offend in these tracts. The distance categories were created by splitting the range of mean distances into quintiles, each representing twenty percent of the census tracts. These maps suggest several patterns. First, across all three offense types, some tracts appear to "push" offenders farther away from their residences, while others appear to accommodate offending close to home. While the mean distance traveled from residence to offense location for the city as a whole is 4.49 for assault, 5.07 for burglary, and 6.21 for robbery, there is tremendous variation in how these travel distances are distributed across census tracts. And it is important to note that the maps representing varying offenses are unique. Factors that push offenders away in the case of burglary may not successfully push away those participating in assault or robbery. Second, just as there are factors that "push" offenders further away from their homes, there also appear to be some tracts that act more like magnets, and draw offenders from further away.

Extending the previous multi-variate models to include contextual measures of neighborhood characteristics helps to identify what these characteristics that "push" or "pull" offenders may be. Table 3 displays the various neighborhood characteristics and the effects they have on the distances offenders travel from their homes to commit crime. Turning first to assault, we see that individuals living in large and racially heterogeneous tracts travel further to participate in assaults. In contrast, offenders living in less stable areas, characterized by high levels of residential mobility offend closer to home.

Map 1
Assault
Mean Distance Traveled from Home by Offender*



*Map represents the home census tracts of offenders

N

0 2.5 5 10 Miles

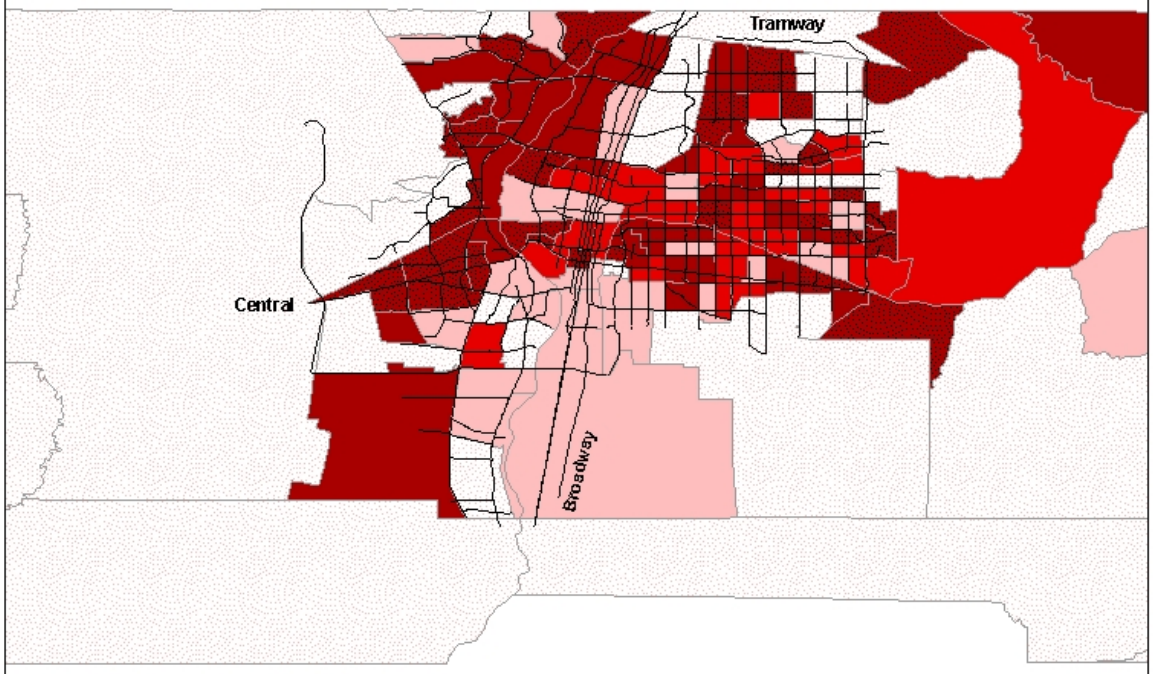
Institute for Social Research, 2006

Legend

Mean Distance Traveled

- 0.00 - 3.60
- 3.61 - 3.99
- 4.00 - 4.53
- 4.54 - 5.61
- 5.62 - 11.19

Map 2
Assault
Mean Distance Traveled to Incident by Offender*



*Map represents the census tracts in which incidents took place

N

0 2.5 5 10 Miles

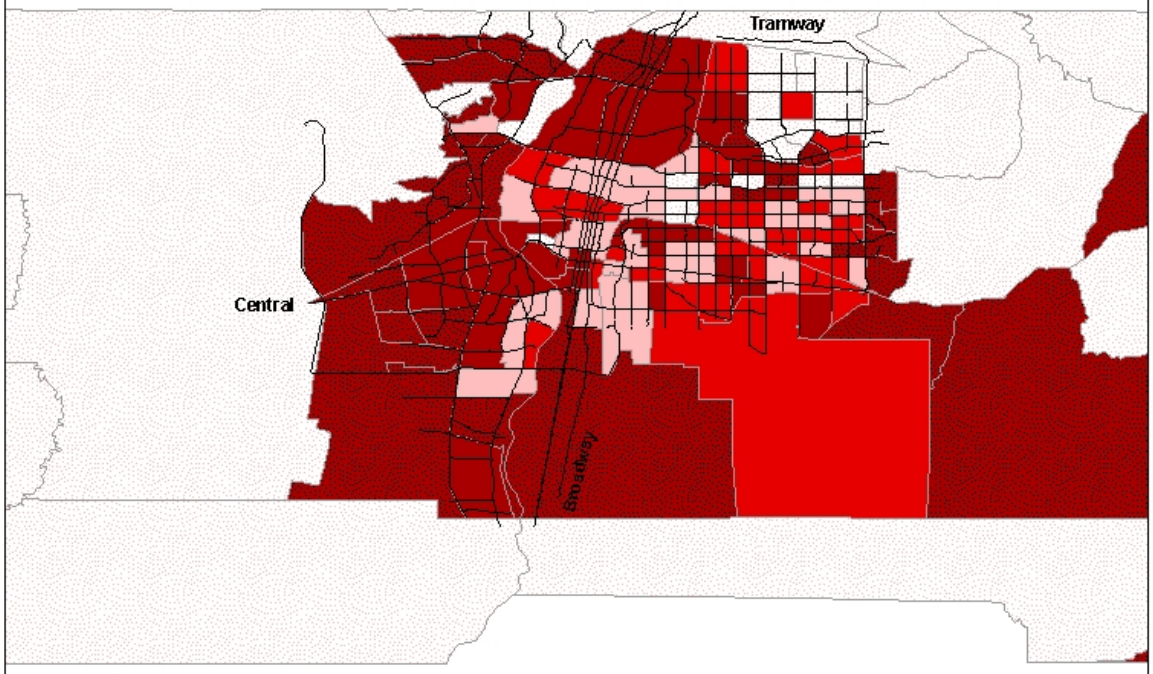
Institute for Social Research, 2006

Legend

Mean Distance Traveled

- 0.00 - 2.93
- 2.94 - 3.75
- 3.76 - 4.75
- 4.76 - 5.47
- 5.48 - 10.48

Map 3
Robbery
Mean Distance Traveled from Home by Offender*



*Map represents the home census tracts of offenders

N

0 2.5 5 10 Miles

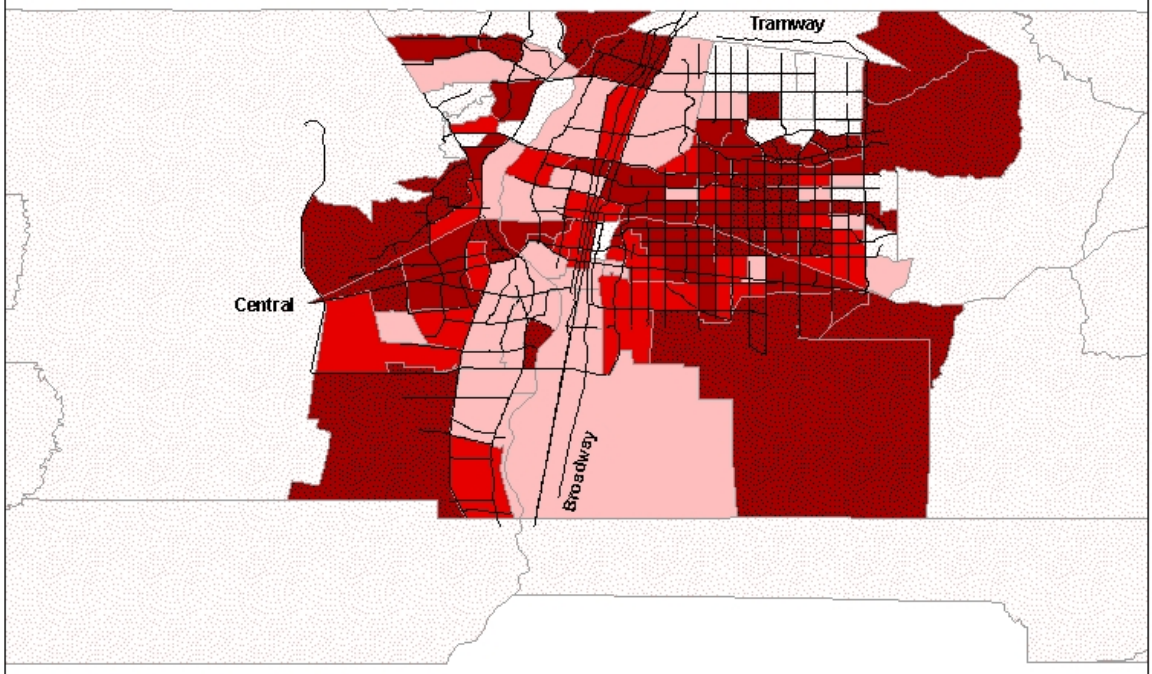
Institute for Social Research, 2006

Legend

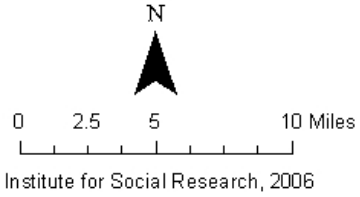
Mean Distance Traveled

- 0.00 - 3.40
- 3.41 - 5.18
- 5.19 - 6.21
- 6.22 - 8.37
- 8.38 - 17.86

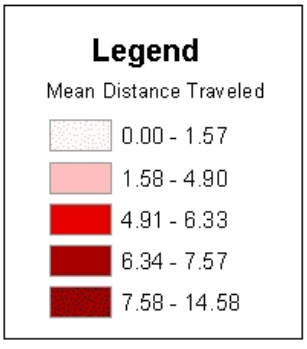
Map 4
Robbery
Mean Distance Traveled to Incident by Offender*



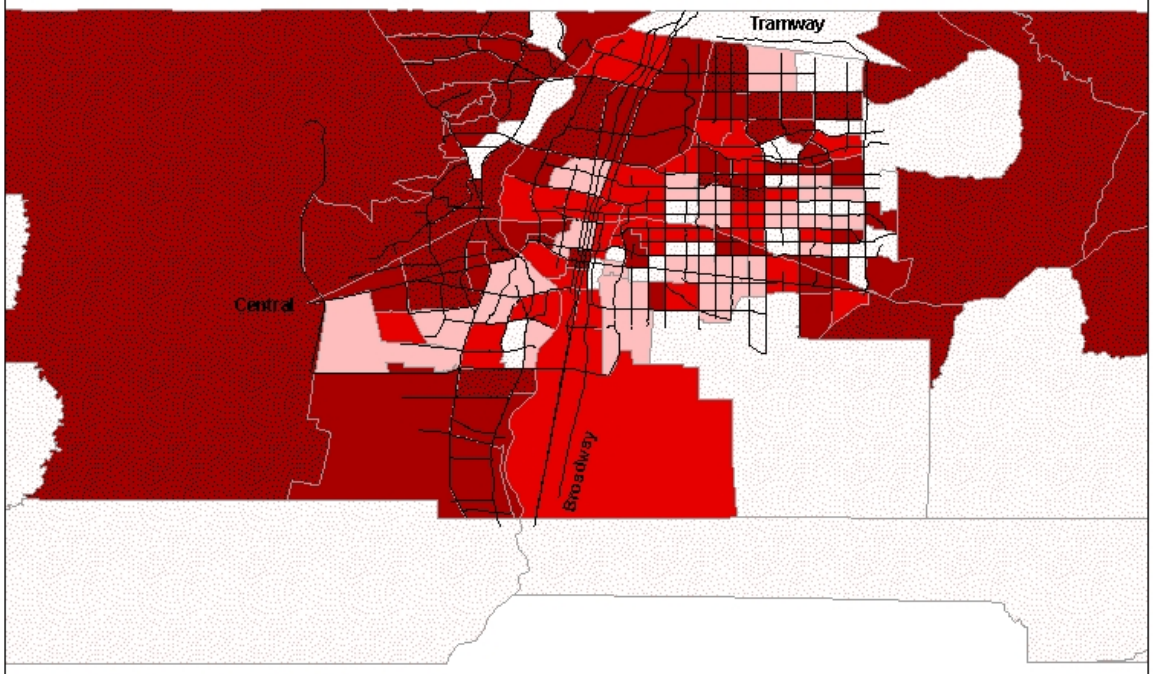
*Map represents the census tracts in which incidents took place



Institute for Social Research, 2006



Map 5
Burglary
Mean Distance Traveled from Home by Offender*



*Map represents the home census tracts of offenders

N

0 2.5 5 10 Miles

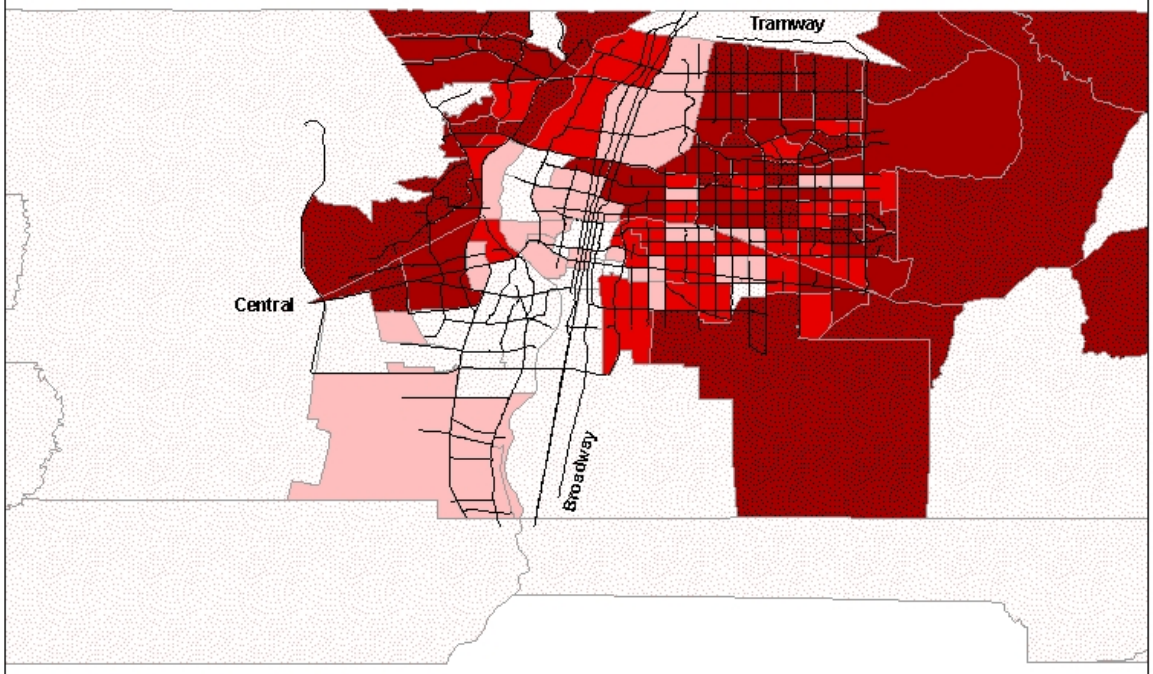
Institute for Social Research, 2006

Legend

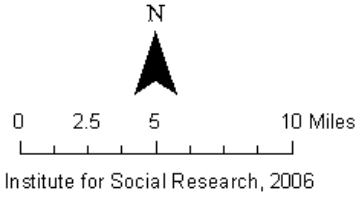
Mean Distance Traveled

- 0.00 - 3.77
- 3.78 - 4.58
- 4.59 - 5.24
- 5.25 - 6.52
- 6.53 - 15.56

Map 6
Burglary
Mean Distance Traveled to Incident by Offender*



*Map represents the census tracts in which incidents took place



Institute for Social Research, 2006

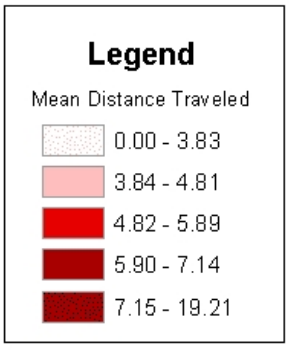


Table 3. Individual, Incident, and Offender Home Census Tract Characteristics on Offender Distance Traveled

	Assault	Robbery	Burglary
Variables in Equation			
Individual Characteristics			
Juvenile	-.750***	-1.371***	-1.778***
	(.133)	(.265)	(.153)
Male	.144	-.373	-.028
	(.137)	(.272)	(.158)
Black	.480*	.226	.520*
	(.199)	(.282)	(.249)
Hispanic	-.050	-.188	.268*
	(.118)	(.208)	(.130)
Asian	-.606	-.207	-.131
	(.541)	(1.988)	(.814)
Native American	.381	-.851	-.463
	(.268)	(.616)	(.395)
Incident Characteristics			
Winter	.503***	.425	-.145
	(.154)	(.268)	(.172)
Spring	.261	.532*	.191
	(.147)	(.271)	(.165)
Fall	-.067	.625*	-.293
	(.148)	(.266)	(.169)
Weekend	.202	.284	-.492***
	(.113)	(.195)	(.132)
Night	.502***	-.226	.221
	(.114)	(.189)	(.125)
Firearm	.688***	.826***	n/a
	(.129)	(.187)	
Home Tract Characteristics			
Disadvantage	-.099	-.176	.245
	(.120)	(.211)	(.135)
Racial Heterogeneity	1.606**	-4.079***	1.300
	(.608)	(1.015)	(.702)
Cultural Assimilation	-.138	-.354*	-.396***
	(.089)	(.149)	(.103)
Housing Mobility	-.226*	-.188	-.711***
	(.105)	(.183)	(.117)
% Young Male	.002	.035	.105***
	(.020)	(.032)	(.022)
Population Size	.000***	.000*	.000***
	(.000)	(.000)	(.000)
$N^{\dagger}$	7946	2809	6496
Intercept	2.668	7.439	3.246
R^2	.023	.046	.040

* $p < .05$
** $p < .01$
*** $p < .001$
† Due to missing data on some variables, sample size for Offender Home Census Tract analysis differs slightly from other models.

In the robbery model, racial heterogeneity is also significant, but in the opposite direction. Individuals living in racially diverse areas are more likely to participate in robbery closer to their homes. The same is true for cultural isolation. Offenders living in census tracts with high levels of isolation commit robbery closer to home than those living in more assimilated neighborhoods. As with assault, the distance offenders travel to commit robbery increases with the population size of their home tract.

The burglary model shares some similarities with the other two. As with assault and robbery, the more populated a given tract, the further individuals are likley to travel to commit burglary. As in the case of robbery, cultural isolation decreases the distance burglars travel from their residence to the incident location. Similar to the model of assault, residential mobility is significantly associated with the distance traveled by burglars. In this case, however, it increases travel distance while in the case of assault, population mobility decreased travel distance. Unlike the other two models, the percentage of young males living in the tract had a significant effect on travel distance. Offenders living in tracts with many young males traveled further to commit burglaries.

In addition to considering environmental characteristics that may influence how far away from their homes individuals offend, it is also important to consider tract characteristics that may draw offenders from further away. Table 4 displays these characteristics and their effects. In the assault model, both residential mobility and the size of the population increase the average distance from which offenders come to commit crime. Cultural isolation, in contrast, decreases the distance offenders travel to the tract. The findings for robbery are very similar—residential mobility and large populations draw offenders from further distances, while isolation decreases

the distances from which robbers travel to offend. In addition, tracts with large populations of young men tend not to draw offenders from very far away.

Table 4. Individual, Incident, and Incident Location Census Tract Characteristics on Offender Distance Traveled

	Assault	**Robbery**	**Burglary**
Variables in Equation			
Individual Characteristics			
Juvenile	-.785***	-1.364***	-1.771***
	(.132)	(.263)	(.151)
Male	.119	-.312	-.068
	(.137)	(.271)	(.155)
Black	.438*	-.247	.363
	(.198)	(.277)	(.245)
Hispanic	-.005	.084	.683***
	(.117)	(.203)	(.127)
Asian	-.572	-.801	-.867
	(.539)	(1.987)	(.799)
Native American	.303	-.774	-.633
	(.267)	(.616)	(.387)
Incident Characteristics			
Winter	.503***	.389	-.065
	(.153)	(.268)	(.169)
Spring	.235	.590*	.157
	(.147)	(.269)	(.162)
Fall	-.093	.454	-.268
	(.147)	(.266)	(.166)
Weekend	.187	.277	-.512***
	(.112)	(.195)	(.130)
Night	.501***	-.258	.253*
	(.113)	(.190)	(.123)
Firearm	.707***	.685***	n/a
	(.128)	(.187)	
Incident Tract Characteristics			
Disadvantage	.018	-.126	-.569***
	(.117)	(.197)	(.130)
Racial Heterogeneity	-.323	.463	1.526*
	(.649)	(1.097)	(.710)
Cultural Assimilation	-.527***	-.655***	-.591***
	(.088)	(.148)	(.101)
Housing Mobility	.267*	.649***	.692***
	(.104)	(.182)	(.117)
% Young Male	-.002	-.113***	-.108***
	(.018)	(.035)	(.023)
Population Size	.000***	.000*	.000
	(.000)	(.000)	(.000)
N	7948	2810	6498
Intercept	3.648	6.796	6.057
R^2	.029	.050	.076

* $p < .05$
** $p < .01$
*** $p < .001$

The characteristics that influence travel distances to burglary locations are more numerous. Similar to the robbery model, cultural isolation and the size of the young male population decrease the the distance from which offenders travel. Census tracts with high levels of racial heterogeneity and residential mobility, on the other hand, draw offenders from further away. Unique to the burglary model is the effect of economic disadvantage. Poor neighborhoods do not draw burglars from very far away. Table 5 summarizes all of the findings discussed in the previous tables.

Table 5. Summary of Findings from Tables 3 and 4

	Assault		**Robbery**		**Burglary**	
Variables in Equation	Home*	Incident	Home	Incident	Home	Incident
Individual Characteristics						
Juvenile	-	-	-	-	-	-
Male						
Black	+	+			+	
Hispanic					+	+
Asian						
Native American						
Incident Characteristics						
Winter	+	+				
Spring			+	+		
Fall			+			
Weekend					-	-
Night	+	+				+
Firearm	+	+	+	+	**n/a**	**n/a**
Census Tract Characteristics						
Disadvantage						-
Racial Heterogeneity	+		-			+
Cultural Assimilation		-	-	-	-	-
Housing Mobility	-	+		+	-	+
% Young Male				-	+	-
Population Size	+	+	+	+	+	
N	7946	7948	2809	2810	6496	6498

* Columns under “Home” include characteristics of tracts in which offenders reside. Columns under “Incident” include characteristics of tracts in which incidents took place.

Discussion and Conclusion

The distances individuals travel to participate in crime are not randomly distributed across offenders, events, and locations. Criminal commutes are patterned by individual, incident, and environmental characteristics. A deeper understanding of these characteristics can inform policies and stratagies for responding to crime. At the individual level, age is the most consistently significant characteristic. Not surprisingly, given youths' more limited access to personal transportation and also perhaps their more geographically determined social networks, younger individuals are much more likey to offend closer to home. This finding holds across all three offenses, and after a variety of other incident and locational factors are considered. It also appears that in the case of burglary, Hispanics travel further, and in the case of assault, blacks travel further. These race/ethnicity patterns likley have more to do with the environmental characteristics in which these offenders live (and the relation of these characteristics to travel patterns) than any true race effect. In other words, independent of the environmental pushes and pulls these offenders are exposed to, we are hard pressed to explain why travel patterns would vary across race/ethnicity.

In addition to individual determinants of distance traveled, some incident level characteristics emerge as significant predictors of travel distance. For the violent crimes, robbery and assault, the most consistently important characteristics were firearms and the time of year. Offenders using firearms in the commission of violent crimes traveled further from their residences to offend. As noted earlier, this is likely a result of the more instrumental and planned nature of firearm violence compared to non-firearm violence. This is based on the assumption that the further the travel, the more purposive and less spontaneous the crime is likely to be. This assumption is consistent with the findings of Tita and Griffiths (2005) who report that homicides

involving significant travel by offenders are those distinguished by a predatory motive and purposive travel with criminal intent. For aggravated assault, offenders traveled further in the winter. This too is consistent with a link between intent and travel distance. Since individuals spend less time involved in spontaneous social interaction during the shorter and colder days of winter, those assaults that do occur are more likely premeditated as opposed to spontaenous. In contrast, robbery offenders traveled further in the spring, a time of year when involvement in violent crime is beginning to rise as the days get longer, but during which events involving purposive travel may still be more common than the more spontaneous robberies that likely occur closer to home. For assault, time of day was also important with offenders traveling further at night. In addition to the likelihood that purposive assaults play out at night, the increased distance traveled to assaults at night may also reflect the general pattern that types of offenders most commonly involved in aggravated assault (young males) are commonly out and away from home for leisure activities at night in places where assaults may also occur spontaneously. This link then likely reflects both purposive travel to asaults at night and assualts occuring spontaneously or more purposively in the course of nighttime leisure activties. The one consistent incident-level effect for burglary is day of the week. Burglaries that took place on weekends were associated with less travel than those taking place during the week. This too may be the result of opportunity vs. motivation. On the weekends, burglaries may take place more in the course of other activities (drinking, cruising, and other types of socializing) if an enticing opportunity arises. As a result they are more likely to take place close to offenders' homes. Weekday burglary may be more premeditated and aimed more specifically at attractive residential or commercial targets.

While offender and incident characteristics have received some attention in the literature, less focus has been given to the characteristics of neighborhoods. Our findings suggest that there are a number of factors that "push" offenders away from their own neighborhoods, and "pull" them towards other neighborhoods. The most consistent findings concern the effects of residential mobility, cultural isolation, and population size. We examine these factors with models that assess the link between the characteristics of offenders home census tracts and the distance offenders travel from those tracts and with models that assess the link between the characteristics of incident tracts and the distance offenders travel to those tracts. Those variables that increase the distance traveled away from one's home tract can be consisdered "push" factors while those that increase the distance offenders travel to incident tracts can be considered "pull" factors. Understanding these factors can help us make sense of the spatial distribution of crime. Though individual and incident characterisitics are clearly implicated in the geographic pattenring of crime, in all cases model fit (R-square) at least doubles when we add tract level characteristics, suggesting that environmental pushes and pulls are particularly important.

Though there are some patterns that cut across models, many of the patterns are either crime specific or depend on whether we are looking at the predictors of distance traveled from home (pushes) or distance traveled to the incident (pulls). The most consistent finding across models examining push and pull factors is population size. Offenders from more populated census tracts travel further than those from less populated tracts to commit both violent and property crime. It may be the case that individuals from large census tracts are more motivated to offend and engage in more instrumental and purposive offending that takes them further from home. Criminological theory suggests that as communities grow, individualism thrives, informal social controls are weakened, and crime rates grow (Braithewaite, 1989, Carr, 2003). Notably

these highly populated communities not only generate a criminogenic "push" but a "pull" as they also draw violent offenders from greater distances.

Population mobility is also a significant predictor in a number of models, however its effects are more variable across crime type. By and large, population turnover appears to be a pull factor. Consistent with the tenets of social disorganization theory, the anonymous nature of these areas may be especially attractive to individuals who travel some distance to offend, or to engage in high risk behavior that can lead to offending. While we have not measured rates of "victimless" crimes such as drug distribution, illicit gambling, and prostitution, it is possible that these neighborhoods represent the " deviance service centers" that Hagan (1994) has written extensively about. For all three crime types, areas with higher rates of population mobility attract offenders from further away. Moreover, for assualt, offenders who come from such neighborhoods travel shorter distances to offend than those from tracts with more stable populations. In other words, certain neighborhoods both attract offenders from afar and provide a conducive environment for crime for individuals who live in the neighborhood. The only exception to this is burglary. Though offenders are drawn to these areas to commit burglary, those who come from these areas travel further than others in the commission of burglary. With respect to property crime, then, population turnover appears to be a pull factor for those from outside the neighborhood, but a push factor for those from within.

The role of cultural isolation/assimilation has received less attention in the criminological literature. The current work suggests that it plays an important role in shaping travel-to-crime patterns. Neighborhoods with low levels of assimilation (english language usage, immigrant citizenship, etc) do not appear to draw offenders from far away, and in the case of burglary and robbery, offenders who live in these tracts offend close to home. It would appear that not only

are these areas linguistically and culturally isolated, but criminally isolated as well. Outsiders do not come to these areas to offend. Perhaps because these tend to be fairly small, tight knit immigrant communities where outsiders would be readily noticed. Interestingly our finings also counter the notion that offenders from immigrant communities are a threat to the broader community. Rather, these offenders tend to stay close to home, suggesting that their offending is more opportunistic than pre-meditated. This finding also implies that it is offenders from the more assimilated communities who are more likely to travel, which is consistent with recent evidence to suggest that second and third generation immigrants are more involved in crime than their first generation counterparts and suggests that assimilation may be more criminogenic than immigration.

While the effects of population size, residential mobility and cultural isolation cut across crime type, other effects are more crime specific. The percentage of young males in an area, for instance, has no effect on distance traveled to assaults, but it does reduce the distance traveled to robbery and burglary incidents and increases the distance offenders travel from their homes to commit burglary. It appears that areas with high rates of young males do not attract offenders looking for money or durable goods, presumably because communities with a lot of young males have little to offer in the way of cash or expensive portable goods. Indeed, these areas push burglars elsewhere and do not attract burglars or robbers from any significant distance. Along these lines, areas with high rates of economic disadvantage also do not attract burglars from any significant distance, again, presumably because there would be no incentive to travel to such areas to commit burglary.

Racial heterogeneity increased how far assault offenders traveled, but decreased the mean distance individuals participating in robbery traveled from their homes. For burglary, racial

diversity increased the distances from which offenders came to the neighborhood to burglarize. In the case of burglary, racial heterogeneity may act as a "pull" due to higher levels of anonymity and racially diverse neighborhoods. In their study of Chicago in the 1920's, early criminologists viewed ethnic heterogeniety as an obstacle to neighborhood organization and the development of informal social control. This may also be the case with burglary in racially mixed neighborhoods in Albuquerque.

The current research was designed to help illuminate the factors that influence how far offenders travel to commit violent and property crime. The findings suggest that there are various ways in which communties and their law enforcement partners may be able to enhance their current crime reduction efforts. To begin, at the individual level, the most consistent finding is that, for all crime types, youthful offenders offend close to home. This means that community based efforts to reduce juvenile crime will likely have the strongest impact. In areas where youth crime is high, communities need to look inward. Efforts to enhance community based monitoring and informal social control of youth and to offer activties and opportunities for youth that keep them out of trouble would probably have the greatest impact in such areas.

At the incident level, the most notable finding is that incidents that involve a firearm exhibit signficantly greater travel distances than those in which no firearm was used. Night and winter are also positively associated with travel distance. These findings can inform policing strategies in several ways. First, it suggests that "stop and frisk" strategies will be more useful during certain hours of the day, and certain times of the year. While the constitutionality of such approaches needs to be carefully examined, to the degree that law enforcement engages in such tactics, the present research suggests they may be more productive in the winter and at night.

Finally, a number of community level push and pull factors were identified that have implications for criminal interdiction. Highly populated areas, for instance, both generate motivated doffenders who seek out criminal opportunities around the city and draw offenders from various parts of the city to offend. This suggests that aggressive policing of the key traffic arteries into and out of the most densely populated communities in the city would likely be a productive crime control strategy. Setting up routine checkpoints, speed traps, and other focused interdiction efforts would, for example, likely yield a high return making these areas less attractive as crime magnets and limiting criminal travel into and out of such areas. The increased travel to and from areas with high rates of population turnover and more assimilated areas suggests a similar strategy. The link between nighborhood rates of assimilation and increased distance traveled to crime may also suggest that as immigrant communities begin to assimilate, more resources, in the form of jobs and other opportunities might help cement the informal social cotnrols that assimilation processes appear to erode.

The current work uses incident-level data to begin to identify characteristics that influence the distances traveled to crimes, or criminal commutes. As the use of GIS continues to become more common in criminology, incident-level data can be used to address important questions about how offenders move through space and time and what factors shape these patterns. Such information can be quite useful to law enforcement as they develop enforcement strategies for addressing criminal behavior.

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