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Fight or Flight? Crime as a driving force in business failure and business mobility

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Fight or Flight? Crime as a driving force in business failure and business mobility

Abstract

A growing body of research has documented the consequences of neighborhood crime for a myriad of individual, household, and community outcomes. Given that neighborhood businesses figure into the link between neighborhood structure and crime as sources of employment or sites for neighbor interaction, the present study examines the extent to which neighborhood crime is associated with the survival, mobility, and destination locations of businesses in the subsequent year. Using business data from Reference USA (Infogroup 2015) and crime data from the Southern California Crime Study (SCCS) we assess this question for neighborhoods across cities in the Southern California region. We find that in general, higher violent and property crime are significantly associated with both business failure and mobility, and that higher crime in a destination neighborhood reduces the likelihood that a business locates there. We also present findings specific to industries, and discuss the implications of our findings for future research.

Keywords: neighborhoods; crime; businesses; spatial.

Bios

John R. Hipp is a Professor in the departments of Criminology, Law and Society, and Sociology, at the University of California Irvine. His research interests focus on how neighborhoods change over time, how that change both affects and is affected by neighborhood crime, and the role networks and institutions play in that change. He approaches these questions using quantitative methods as well as social network analysis. He has published substantive work in such journals as *American Sociological Review*, *Criminology*, *Social Forces*, *Social Problems*, *Mobilization*, *City & Community*, *Urban Studies* and *Journal of Urban Affairs*. He has published methodological work in such journals as *Sociological Methodology*, *Psychological Methods*, and *Structural Equation Modeling*.

Seth A. Williams is a PhD candidate in the Department of Criminology, Law and Society at the University of California, Irvine. His research interests center on urban inequality, the role of housing and mobility in the production of neighborhood change, social and ecological predictors of neighborhood perceptions, and how these factors relate to neighborhood rates of crime over time.

Young-An Kim is an Assistant Professor in the College of Criminology & Criminal Justice at Florida State University. His research interests focus on crime patterns at micro places, neighborhoods and crime, and immigration and crime. Besides criminology, he is interested in sociology of health, urban sociology, and quantitative research methods. His publications appeared in such journals as *Journal of Quantitative Criminology*, *Social Science & Medicine*, *Health & Place*, *Crime & Delinquency*, and *Journal of Public Health*.

Jae Hong Kim is an Associate Professor in the Department of Urban Planning and Public Policy at the University of California Irvine. His research focuses on land use, economic development, and urban system modeling.

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INTRODUCTION

While a body of research is concerned with the structural and ecological antecedents that explain variation in neighborhood crime rates, a smaller set of studies has considered the consequences of crime for a range of neighborhood outcomes. Past research has found that neighborhood crime is associated with lower or declining home values (Boggess, Greenbaum, and Tita 2013; Ihlanfeldt and Mayock 2010; Lynch and Rasmussen 2001; Tita, Petras, and Greenbaum 2006); the out-migration of households or neighborhood population loss/turnover (Boggess and Hipp 2010; Cullen and Levitt 1999; Dugan 1999; Hipp, Tita, and Greenbaum 2009; Morenoff and Sampson 1997; Xie and McDowall 2008); and neighborhood demographic transitions (Hipp 2010a; Hipp 2010b; Hipp 2011; Xie and McDowall 2008), to cite just a few examples. Perhaps reflecting the tendency of researchers to conceive of neighborhoods almost exclusively as residential contexts, less is known about the effect of neighborhood crime on the survival and viability of businesses.

In addition to serving as residential contexts, urban neighborhoods are also characterized by their stock of businesses. Businesses serve an important economic function by providing jobs to local residents, as well as access to retail and various services. In general, residents prefer to work closer to home, and the presence of nearby retail and service businesses is essential for everyday life (Lee, Waddell, Want, and Pendyala 2010; Schirmer, van Eggermond, and Axhausen 2014). Indeed, the New Urbanist perspective argues for the desirability of mixed use development in which residents are near services and amenities (Calthorpe 1993; Talen 2002). However, the presence of crime and disorder can scare off shoppers, making businesses less profitable, and crime may prompt businesses to leave a location (Skogan 1986). The decline of

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business activity due to crime can have deleterious effects to the community, and can reduce the overall desirability of neighborhoods over time (Skogan 1990b). Thus, businesses often constitute the economic base of a neighborhood, and their closure or out-migration may initiate or exacerbate a cycle of decline, which may itself lead to heightened rates of crime.

Another function for certain businesses is that they serve as spaces for social interaction. For example, research finds that businesses characterized as “third places” (i.e. places conducive to sociality that are neither home nor work) are associated with lower rates of neighborhood crime (Papachristos, Smith, Scherer, and Fugiero 2011; Wo 2016) as they are thought to provide the opportunity for interaction between neighbors, which aids in the development of social cohesion (Williams and Hipp 2019). Similar in concept to the notion of third places, prior research finds that residents report higher levels of collective efficacy in neighborhoods with a greater density of “social conduits,” or land use features that “...facilitate interaction between individuals and pedestrian activity, loitering and the co-presence of individuals” (Corcoran, Zahnow, Wickes, and Hipp 2018). Other work finds that the businesses that residents frequent as part of their regular activity spaces contribute to greater neighborhood collective efficacy and intergenerational closure (Browning, Calder, Soller, Jackson, and Dirlam 2017), community attachment (Soller, Goodkind, Greene, Browning, and Shantzek 2018), and lower neighborhood violent and property crime (Browning, Calder, Boettner, and Smith 2017). Similarly, research in the ethnic enclave literature has posited that a clustering of ethnic businesses can help facilitate cohesion in a neighborhood, which would be expected to result in less crime, although one recent study did not confirm this relationship (Kubrin, Kim, and Hipp 2018).

Given the importance of businesses for neighborhoods, developing an understanding of how crime is associated with the failure and mobility of businesses in the urban context is

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important not only from the perspective of business owners and their economic interests, but also because businesses provide both employment and an opportunity structure for social interaction and the development of community assets such as collective efficacy. Therefore, the present study assesses the degree to which both violent and property crime are associated with business failure (i.e. going out of business) or relocation over a 15 period (2000-14) for neighborhoods in the Southern California region.

Our study makes several important contributions. First, whereas existing research typically uses aggregate counts of businesses in geographic units over time—which captures *net* changes in businesses in response to crime—this study uses micro data on specific businesses to obtain a more nuanced understanding of the effect of crime on business decisions. Second, by using business establishment-level data (rather than data aggregated to geographic units) we are able to distinguish between whether crime results in greater business failure or greater business mobility out of the neighborhood, and whether crime impacts where businesses choose to move. Third, the existing literature typically aggregates crime to rather large geographic units such as zip-codes (e.g. Greenbaum and Tita 2004), whereas the present study utilizes buffers around each business location for a more spatially precise assessment of the effect of violent and property crime on businesses, controlling for neighborhood socio-demographics. Further, we examine this relationship across a number of industries, recognizing that crime may have disparate consequences depending on the nature of the business. We discuss our findings not only in light of outcomes for businesses, but in relation to the broader implications for the neighborhood ecology of crime.

BACKGROUND

Crime and Residential Mobility:

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We draw upon the literature on the relationship between neighborhood crime and household mobility to understand the potential impact of crime on business activity and mobility. Crime may result in a move out of a neighborhood as the personal experience of victimization may serve as an inducement to leave (Taub, Taylor, and Dunham 1984). Dugan (1999) finds a positive relationship between property crime victimization near the home and moving, although there is no effect of violent crime on subsequent moves. The author suggests that this may be due to the residents' perception of future property crime risk increased. Other work suggests that perceived levels of crime, fear of crime, and crime-related problems are associated with neighborhood dissatisfaction and a desire to move (Skogan 1990a; Skogan and Maxfield 1981), and that individuals may alter their routine activities or adopt various protective measures in response to a perceived threat of victimization (Keane 1998; Rader, Cossman, and Allison 2009; Rountree and Land 1996). A survey of residents who had recently moved found that an important reason listed for the choice of a new neighborhood was the crime level and relative safety (Percy, Hawkins, and Maier 1995). Using data from 55 large U.S. cities, Morenoff and Sampson (1997) find that crime is the strongest predictor of out-migration. Using a sample of 127 U.S. cities, Cullen and Levitt (1999) find that an additional incident of crime is associated with the out-migration of one resident, with the highly educated and households with children most likely to move in response to crime. Other research finds that both victimization and nearby crime increase the likelihood of residential mobility (Xie and McDowall 2008), and crime results in more vacant units in neighborhoods (Hipp 2010a).

Another body of research has shown that crime can disproportionately affect *who* leaves neighborhoods, which can result in demographic shifts which may indirectly impact businesses. For example, several studies have shown that white households are disproportionately likely to

Crime and business closure/business mobility exit neighborhoods with higher crime rates compared to Black or Latino households (Hipp 2010b; Hipp 2011; Xie and McDowall 2010), and also that white households are disproportionately less likely to enter neighborhoods with higher crime rates compared to Black or Latino households (Hipp 2010b; Hipp 2011). If white households tend to have higher income, this would also imply a socio-economic transition in the neighborhood that can induce a significant change in the business landscape. Indeed, neighborhood level studies have similarly found that higher levels of crime result in changes in the composition of residents based on income level (Hipp and Wickes 2016) or racial composition (Hipp and Steenbeek 2016).

Thus, findings from research on crime and household mobility or neighborhood population loss, and individual responses to crime and the fear of crime, provide insight into the ways in which crime might affect business failure or mobility. First, if patrons of businesses come to fear victimization around the businesses they frequent due to personal victimization experiences there, or simply become aware of nearby crime events, this could be enough incentive to alter their routine activities to avoid the business altogether (Skogan 1990b). If the business itself has experienced some kind of victimization event (e.g. property crime, or employee victimization) and has the resources to move, it may do so to avoid future victimization to itself or its patrons and the financial costs associated with crime incidents. Past work focusing specifically on the viability of businesses located in high crime areas, generally in the inner-city, have outlined impediments to sustaining businesses in such contexts, suggesting other potential links between crime and business failure or mobility (Fisher 1991). A study of one community found that rising crime increased fear of crime among residents, and had negative consequences for local businesses (Cummings 1998). Other studies have found that crime and disorder can lead to a sense that a neighborhood is in decline, which can have a

Crime and business closure/business mobility reinforcing effect on residents' unwillingness to patronize stores (Steenbeek, Völker, Flap, and Oort 2012; Wilcox, Quisenberry, Cabrera, and Jones 2004).

These same consequences of high crime for the mobility patterns of residents also likely impact when and where businesses move. This idea builds on location theory from economic geography and regional science, in which the location and relocation choices of business are based on various economic and social determinants. Whereas early formulations of location theory focused on the role of economic factors such as labor and transportation costs (Isard 1956; Mueller and Morgan 1962), later extensions of this work have considered additional non-economic features such as quality of life in the destination community (Love and Crompton 1999). Indeed, a survey of business owners from firms that had moved in the last five years found that the crime and safety of a neighborhood are important for deciding on a new location, in addition to other measures of quality of life (Love and Crompton 1999). Studies on population-employment interactions also suggest that safety can influence business location and relocation decisions via population redistribution, while the literature is not unequivocal with regard to the question of whether jobs follow people or people follow jobs (Boarnet, Chalermpong, and Geho 2005; Hoogstra, van Dijk, and Florax 2017; Kim and Hewings 2013).

There are various reasons why firms' mobility choices would be impacted by local crime rates. For example, locating a business in a high crime context increases the difficulty of obtaining insurance and raises its cost (Squires 2003). In addition to the higher cost of insurance, Lens and Meltzer (2016) argue that crime could potentially deter customers, reduce demand, and increase operation costs as businesses may be compelled to hire security personnel or take other measures to protect employees, merchandise, and other property. The authors also argue that specific crimes may be more consequential depending on the nature of the business affected. For

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example, while violent crime incidents are rarer, they are often more publicized which may deter consumers. Conversely, property crimes such as theft are often of more concern to retail establishments compared to other types of businesses (Lens and Meltzer 2016).

Cross-sectional studies of crime and businesses

A challenge with understanding the relationship between crime and businesses is the possible reciprocal relationship between them. That is, we would expect that the presence of businesses in a neighborhood provides more opportunities for certain types of crime, such as robberies, implying a positive causal effect of businesses on levels of crime. However, past research also suggests that higher crime in a neighborhood may have a *negative* causal effect on the number of businesses that locate there. The implication is that cross-sectional studies that do not account for this simultaneity are unable to disentangle these effects, and might obtain underestimates of the effects given the countervailing directions of these two effects (Rosenthal and Ross 2010).

Nonetheless, cross-sectional studies have typically found that areas with more retail establishments have higher robbery rates (Bernasco and Block 2011; Kim and Hipp 2017). A study found businesses in general are associated with higher rates of burglaries in a cross-sectional setting (Yu and Maxfield 2014). In general, researchers have interpreted these cross-sectional findings as evidence that such establishments drive an increase in crime rates. However, Rosenthal and Ross (2010) argue that businesses like retail and restaurants are primarily concerned with locating in neighborhoods with low violent crime rates, given that violence might scare off shoppers. A study of offenders, however, found that locations with more retail establishments were more likely to be targeted for robberies (Bernasco and Block 2009), which implies that given the particular context of where retail establishments are located, they

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will result in higher levels of crime. These competing perspectives highlight the need for a longitudinal perspective, which few prior studies have addressed.

Among the neighborhood-level studies that have explored this question longitudinally, results are mixed. A four-year longitudinal study of tracts in Atlanta found the expected relationships in both causal directions: tracts with more retail employment experience higher violent and property crime rates the following year, whereas tracts with more violent crime in one year have less retail employment the following year (although property crime did not show a significant effect) (Bowes 2007). Using homicide data for five large cities aggregated to the zip-code level, Greenbaum and Tita (2004) find that surges in homicide rates in high-crime contexts do not have significant effects on subsequent business growth, employment, or the establishment of new businesses in retail, personal services, and other sectors. Likewise, the authors observe no effect of homicide surges on business closures in zip codes with low and medium homicide rates (Greenbaum and Tita 2004). The authors do find that homicide surges are associated with fewer new businesses and slower growth in employment among existing businesses, particularly for those in the retail/personal service industries with greater effects in low-crime areas. While the finding of rather modest effects may be surprising, scholars have argued that they are sensible given that some businesses might benefit by operating in high-crime contexts where rents are lower, where local residents constitute an accessible pool of labor, and where competitors are less likely to locate (Greenbaum and Tita 2004; Porter 1997; Yoon 1997).

Likewise, Sloan, Caudill, and Mixon Jr (2016) find that the number of burglaries, assaults, rapes, and murders in parcels in Memphis, TN between 2009 and 2013 are predictive of the count of new restaurant openings in 2014, which they attribute to the economic benefit garnered by such businesses despite local crime. In this case, the authors suggest population

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density is a common predictor of both crime and restaurant location. Another longitudinal study found reciprocal effects whereby census tracts with higher rates of violent or property crime had less retail employment ten years later, and tracts with more retail employment at the beginning of the decade experienced increases in crime over the subsequent decade (Hipp 2010a). Thus, there appears to be evidence from these aggregate-level studies that there is a *net* decline in the number of businesses in response to higher levels of crime. Less research has focused on how particular businesses respond to levels of crime. To address this question, the present study assesses the degree to which the relationship between crime and business failure or mobility is consistent across types of businesses.

To summarize, crime surrounding businesses may affect their survival or mobility by increasing the fear of victimization among customers who may in turn alter their routine activities and stop frequenting affected businesses, or by raising operating costs through property loss, increasing insurance rates, and investments to deter future crime. Just as with residential mobility, some businesses are better equipped than others to respond to crime by moving, while others may be forced to stay put, potentially leading to a closure or business failure. Those who do move will make choices as to where they relocate, which itself may be driven by local crime in potential destinations. Thus, we contribute to this body of research by examining the effects of both property and violent crime for the decisions of specific businesses regarding: 1) going out of business; 2) moving out of the neighborhood; 3) what new location they move to. While past research has generally restricted the industries examined due to data limitations or a narrower focus, we extend our analyses to address how this relationship might vary according to the type of business, including retail; education/health; Finance, Insurance, Real Estate (FIRE); professional; services; industrial, and what Kane and colleagues (Kane, Hipp, and Kim 2017)

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categorize as “consumer-facing businesses.” In their definition, consumer-facing businesses are ones in which their clientele are consumers, rather than other businesses. We define the various categories of consumer facing businesses in Table A1 in the Appendix.

Data and methods

Data

Our study area is the Southern California region, and our sample is all businesses that were located in cities for years we had incident crime data. Our sample includes cities in five counties: Los Angeles, Orange, Riverside, San Bernardino, and San Diego. We use data on businesses from Reference USA historical data covering the years 2000-2014 (Infogroup 2015). We use data on crime incidents from the Southern California Crime Study (SCCS). In that study, the researchers made an effort to contact each police agency in the Southern California region¹ and request address-level incident crime data over as many years as possible covering the period 2000-2014. Many of the agencies were willing to share their data for at least some of the years. As a consequence, there is crime data covering about 83.3 percent of the region’s population in the later years, although there is less coverage in the earlier years of the study period. These crime data have been used in several prior studies (Kubrin and Hipp 2016; Kubrin, Hipp, and Kim 2016). Finally, we use data on the socio-demographic characteristics of areas from the U.S. Census in 2000 and the American Community Survey 5-year estimates in 2008-12.

Dependent variables

The proprietary data from Reference USA (Infogroup 2015) provides annual address-level information on all businesses located in the Southern California region over the years of the

¹ The region is defined as including five counties: Los Angeles, Orange, Riverside, San Bernardino, and San Diego.

Crime and business closure/business mobility study. In each year, we determined if a business located at a specific address in the prior year was: 1) still located at the same address (has not failed—gone out of business—or moved); 2) still in business but at a different address (has moved); 3) is no longer in business within the study region (failed).

In one set of analyses we included all businesses, regardless of industry. In additional analyses, we used information on the business' North American Industry Classification System (NAICS) code to determine the type of industry the business is in and estimated models based on specific subcategories. We classified businesses using NAICS 2-digit codes into the following categories: 1) retail; 2) education/health; 3) Finance, Insurance, real estate (FIRE); 4) professional; 5) services; 6) industrial.² In additional analyses, we classified businesses based on even finer grained distinctions: these were based on what Kane, Hipp, and Kim (2017) refer to as consumer facing businesses (see Table A1 in the Appendix for the specific NAICS 6-digit codes).

Independent variables

Our key independent variables capture the violent and property crime density in a ¼ mile buffer surrounding a business. We measure all of our independent variables in ¼ mile buffers, given evidence that these are roughly comparable in size to Census block groups in this region, a unit of analysis often used as a measure of neighborhoods (Hipp and Boessen 2013). We use crime counts rather than rates, given that population size can fluctuate in these smaller buffers and lead to instability in the rates; given the constant area of the buffers, we are implicitly capturing the crime density based on area around a business. We classify aggravated assaults, robberies, and homicides as violent crimes, and burglaries, motor vehicle thefts, and larcenies as

² The 2-digit NAICS codes are: retail (44, 45, 72); education/health (61, 62); FIRE (52, 53); professional (51, 54, 55); services (56, 81); industrial (22, 31, 32, 33, 42, 48, 49).

Crime and business closure/business mobility property crimes. Crime incidents were geocoded for each city separately to latitude–longitude point locations using ArcGIS 10.2, and located to blocks. The average geocoding match rate was 97.2% across the cities, with the lowest value at 91.4%. For the 2.2 percent of events at intersections we proportionately assigned them to one of the contiguous blocks. Although we have crime data for most cities in the area, there are edge effects in cases when a city is bordered by one in which we could not obtain crime data. In these cases, we computed the crime count multiplied by the proportion of the blocks in the buffer that are part of the city with crime data, thus providing us with an accurate measure of the crime density for the blocks with available crime data.

We included several control variables that might help explain which businesses go out of business in the subsequent year, or which choose to relocate. At the establishment level, we control for the number of employees (log transformed), as larger businesses are typically less likely to be shut down. We also included several ecological measures that capture the area surrounding a particular business, constructed as an inverse distance decay of the area surrounding a block, row standardized, and capped at ¼ mile such that more distant segments are weighted zero. Given that the business environment nearby is likely important (Glaeser 2008), we included a count of the number of businesses (log transformed) in the surrounding ¼ mile buffer in that year of our six types defined earlier (retail, education/health, FIRE, professional, services, industrial) to take into account agglomeration economies/diseconomies that may exist within or across sectors.³ We also included quadratic versions of each of these variables to capture possible nonlinearities.

³ Agglomeration effects occur when businesses benefit from location near other firms in the same industry, whether through knowledge transfer, reduced transportation costs, or other mechanisms (Glaeser 2008).

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We also included measures capturing the socio-demographic characteristics of all blocks with centroids in the surrounding ¼ mile buffer (with an inverse distance decay). These variables are measured in 2000 (from the Census) and 2010 (from the Census and 2008-12 5-year ACS estimates), and we interpolate values for the intervening years. To capture the presence of residential population we included a measure of *population (logged)*. We included several measures capturing the socio-demographic characteristics of residents. We measure the SES of the area with variables of *average household income* and *percent with at least a bachelor's degree*.⁴ We control for the racial/ethnic composition with measures of *percent Asian*, *percent Latino*, and *percent black* (with percent white and other as the reference category). We measure *racial/ethnic heterogeneity* with a Herfindahl index of five groups (percent white, black, Asian, Latino, and other races). We constructed a measure of the *percent households with children*.

The summary statistics for the variables used in the analyses are shown in Table 1.

<<<Table 1 about here>>>

Methods

We estimated three sets of models as pooled regression models in which we included fixed effects for year. The first two sets of models use binary logistic regression. In the first set of models, the outcome variable is whether or not a business has failed in the subsequent year (gone out of business). This is a 0/1 measure, and the sample is all businesses present in the current year. In the second set of models, the sample is restricted to businesses that have not

⁴ For the measures that are only available at the block group level, we need to impute block-level values. Rather than assuming a uniform distribution across the blocks within a block group, as is common, we use synthetic estimation for ecological inference as described by Boessen and Hipp (2015) to impute the other variables (Cohen and Zhang 1988; Steinberg 1979). Variables used in the imputation model were: percent owners, racial composition, percent divorced households, percent households with children, percent vacant units, population density, and age structure (percent aged: 0-4, 5-14, 15-19, 20-24, 25-29, 30-44, 45-64, 65 and up, with age 15-19 as the reference category).

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gone out of business, and the outcome variable is whether the business has relocated to a new location in the subsequent year. In these first two sets of analyses, all covariates are measured in the current year, and predict business mobility or failure in the subsequent year. In the third set of models, we are interested in where businesses choose to relocate. The sample in these models is all businesses that relocated during the year, and we use discrete choice models (McFadden 1978). The typical strategy when using discrete choice models is to define a set of geographic locations in a region (i.e., census tracts), and then build a model in which the location the observation moves to (in our case it is the buffer of the business) is given a value of 1, and all other locations in the region are given a value of 0. A logistic regression model is then estimated with appropriate covariates in the destination location in the subsequent year (and the current year for the origination). For the control variables, we included measures capturing the socio-demographic characteristics of the destination, as well as variables capturing the *difference* in the measure between the origin location and the destination location. In settings in which the number of location choices is very large, a strategy shown to yield unbiased results is to draw a sample from the total unchosen location choices (Ioannides and Zabel 2008).

There are two particular challenges we must address for the discrete choice modeling in our study. First, given that we use buffers as units of analysis (which are overlapping), we do not have a set of non-overlapping units for the business to choose from. However, since the buffers are centered on blocks, we do have a choice set based on the blocks in the region (and the surrounding buffer). Second, it is not the case that a business can move to any location in the region (the same challenge arises even with non-overlapping units, as some units may not be zoned for businesses at all or certain types of business activities). Such units are not appropriate to be included in the choice set. Thus, our strategy is to use only buffers with businesses as the

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choice set. We used a random sample of the buffers of 50 businesses in the current year as the choice set. By randomly selecting on businesses, rather than buffers, our approach weights the choice set by the number of businesses in a buffer, which we argue more appropriately captures the mobility options for a business.

Results

We begin with the results predicting the failure of a firm in the following year, and Table 2 displays the results (all control variables are included in all models, but their coefficients are suppressed for clarity reasons, but displayed in Table A2 in the Appendix). Column 1 presents the results for the model predicting the failure of any firm (regardless of industry). In model 1 we see that a one standard deviation increase in the level of violent crime in the surrounding area increases the odds 3% that the business will be closed in the next year. In model 2 of column 1, we see that a one standard deviation increase in the level of property crime in the surrounding area increases the odds 4.3% that the business will stop operating in the next year. In model 3 of column 1 we include both violent and property crime simultaneously, and we find that a one standard deviation increase in each of them results in an odds increase of firm failure of 1.8% for violent crime and 3.4% for property crime.

<<<Table 2 about here>>>

In columns 2 through 7 we show the results for the subsamples of firms in specific industries. In column 2 for retail firms, we see that property crime has a stronger effect than violent crime in models 1 and 2 (3.4% vs. 1.8% odds increase), and in model 3 when including both simultaneously it is property crime that drives retail establishment closure. The story is similar for industrial firms, as in model 3 when including both measures property crime has a

Crime and business closure/business mobility stronger effect on business failure than does violent crime (3.4% vs. 0.6%). The pattern is different for FIRE firms, as nearby violent crime drives their failure, not property crime. For professional, education/health and services firms, it is both property and violent crime that drive their failures.⁵

In Table 3, we show the results for the outcome of the mobility of a firm in the following year (of all firms that did not fail during the year). This table contains the same set of models as Table 2. In model 1 we see that a one standard deviation increase in the level of violent crime in the surrounding area increases the odds 3.7% that the business will move in the next year. In model 2 of column 1, we see that a one standard deviation increase in the level of property crime in the surrounding area increases the odds 2.5% that the business will move in the next year. In model 3 of column 1 we include both violent and property crime simultaneously, and we find that a one standard deviation increase in each of them results in an odds increase of firm mobility of 3.1% for violent crime and 0.8% for property crime.

<<<Table 3 about here>>>

In columns 2 through 7 of Table 3 we show the results for mobility for the subsamples of firms in specific industries. We see that for retail firms, services firms, and industrial firms, it is property crime that has the strongest effect on mobility. In model 3 when including both crime types simultaneously, we observe that a one standard deviation increase in property crime increases the odds of mobility 5.1% for retail firms and services firms, and 3.3% for industrial firms. A similar increase in violent crime only increases mobility 2.1% for services firms, and has no impact on mobility for the other two types of firms. In contrast, it is violent crime that has the strongest impact on the mobility of education/health and professional firms, as one

⁵ We also tested for nonlinearity by including quadratic and cubic functions of property and violent crime, and there was no evidence that the substantive findings were altered.

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standard deviation more violent crime increases the odds of mobility 14.9% and 9.5%, respectively, for these firms. Property crime has a weaker effect on the mobility of professional firms, and no impact on education/health firms. Only FIRE firms do not show evidence of increased mobility in response to crime, as they are even somewhat *less* likely to move when there is higher property crime.

Splitting sample based on 32 consumer facing businesses

In Table 4, we show the results for the outcome of the failure of a firm in the following year when breaking down the sample of retail and service firms (which are more likely to be sensitive to socio-demographic changes in the neighborhood) into more fine grained categories. These models use the 32 categories of consumer facing firms identified by Kane and colleagues (Kane, Hipp, and Kim 2017), and based on the insights of Porter (2003). These again show three models for each sample, containing violent crime, property crime, and both. A general pattern is that failures of most of these types of businesses are impacted by nearby crime density. We find that failures of several of the firm types is primarily driven by property crime: all five retail types (general merchandise; apparel; specialty retailing; personal products; home products), limited service restaurants, other personal services, religious, social service organizations, deposit taking institutions, personal finance, and medical labs. In contrast, failures of only a few firm types are particularly driven by violent crime: beer, wine and liquor stores, repair services, child care, and gas stations. And failures of a few firm types are driven by both violent and property crime: full restaurants, health provider offices, auto services, and hair care.

<<<Table 4 about here>>>

In Table 5, we show the results for the outcome of the mobility of a firm in the following year (of all firms that did not fail during the year), based on the 32 categories of consumer facing

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firms. This table contains the same set of models as Table 4, although there are fewer significant effects here. For a few firm types, mobility is predominantly driven by property crime: general merchandise retail, personal products retail, full and limited service restaurants, specialty foods, and hair care. For a few firm types, mobility is primarily driven by violent crime: home products retail, beer, wine and liquor stores, other learning, religious, and social service organizations. Health provider offices exhibit the peculiar pattern in that although they move more often when there is more violent crime, they are in fact *less* likely to move if there is more property crime.

<<<Table 5 about here>>>

Where do firms move?

We turn next to the results for the discrete choice models predicting *where* firms will move (based on the sample of all firms who moved in a particular year). The results are shown in Table 6, and the models are based on establishments from the Table 3 samples that actually moved (the full results including all control variables are displayed in Table A3 in the Appendix). The first three models for each sample just include characteristics of the destination to predict the destination for firms. For each sample, there are three models (all control variables are included in each model): 1) violent crime in the destination; 2) property crime in the destination; 3) violent and property crime in the destination.

<<<Table 6 about here>>>

The top panel of Table 6 presents the results for location decisions of all firms. In model 1, we see that one standard deviation more violent crime in the destination location reduces the odds of a firm moving there 9.9%. In model 2, we see that property crime has an even stronger effect as one standard deviation more property crime in the destination location reduces the odds of a firm moving there 12.7%. Model 3 includes both violent and property crime in the same

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model, and we see that higher property crime reduces the odds of a firm moving to the location 9.8% whereas simultaneous higher violent crime reduces the odds 5.1%.

The remaining panels of Table 6 show mobility choices for specific types of firms. For retail firms, property crime has the strongest impact on the choice of a destination, consistent with our earlier findings from the binary logistic regression analysis for retail establishment closure and mobility. When including both violent and property crime in the model in model 3, a one standard deviation higher level of property crime in the destination location reduces the odds that a retail firm will move there 20%, whereas violent crime does not have an additional effect once taking into account the level of property crime in the destination. Likewise for services firms, property crime has a stronger impact on move location: higher property crime reduces the odds of choosing a location 9.1%, whereas higher violent crime only reduces it 2.8%. In contrast, violent crime has a stronger impact on the destination choice of education/health, FIRE, and professional firms. In model 1, higher violent crime in the destination reduces the odds of moving there 8.5% for professional firms, 8.7% for FIRE firms, and 6.3% for education/health firms. Industrial firms appear particularly sensitive to crime levels, as their odds of moving to a location in model 3 are reduced about 9% for a standard deviation increase in violent crime and another 10% for a standard deviation increase in property crime.

We briefly consider the results of the control variables (Tables A2 and A3 in the Appendix). More nearby racial/ethnic heterogeneity increases the chances of business failure or business mobility. Greater nearby population density has a particularly strong negative effect on business mobility. The presence of more retail or service establishments nearby is negatively associated with business failure or mobility, implying agglomeration effects for these types of businesses. While higher nearby socioeconomic status (particularly measured based on the

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education level of nearby residents) increases the chances of business failure, it reduces the chances of business mobility. On the other hand, when explaining *where* businesses relocate, there is strong evidence that businesses are more likely to move to locations surrounded by more highly educated residents than their prior location, indicating that such residents may be desirable as potential customers for firms. Firms also are more likely to move to locations with fewer children and denser population. There is a strong distance decay effect in where businesses move, as the odds ratio of moving to a location that is five miles away are 88.7% reduced than moving to a location one mile away; the odds ratios are 97% reduced for moving 10 miles away, and 99.7% reduced for moving 25 miles away. This very strong distance decay effect also explains why our models predicting where businesses are likely to relocate explain much more of the variance (based on pseudo r-square) than those predicting business failure or mobility.

Conclusion

This study has sought to understand the relationship between neighborhood crime and business failure and mobility across a number of industries in the Southern California region. The findings demonstrate that the ecology of crime near businesses has important consequences both for business survival, as well as for business mobility and destination choice. By using spatially precise crime data, and annual business and crime data allowing for proper temporal ordering, we were able to demonstrate how crime impacts these business decisions.

One key finding was that property crime was most important for impacting failures and mobility of retail and service firms. These firms that directly serve customers were typically more likely to go out of business in, or move from, neighborhoods with higher property crime,

Crime and business closure/business mobility and less likely to relocate to neighborhoods with higher property crime. Thus, these types of businesses appear to be more directly impacted by property crime than they are violent crime in most instances. This was particularly the case for retail firms, as we saw that mobility of all five types of retail firms were particularly impacted by property crime in the models estimated for the 32 types of consumer facing businesses. It may be that property crime is particularly problematic for retail firms as there is a concern with theft of their own inventory in such neighborhoods. We also found that industrial firms were similarly most strongly impacted by property crime. Although these are not consumer facing firms, and therefore quite different from retail and services firms, their distinct production recipe (i.e., a higher percentage of non-labor inputs in their production), may in part explain how these businesses consider location decisions.

A second key finding is that the three broad categories of white collar firms were most strongly impacted by violent crime. Professional firms, FIRE firms, and education/health firms were all more likely to go out of business or move out of neighborhoods with higher violent crime, and less likely to move into neighborhoods with more violent crime. The negative impact of violent crime on these firms may reflect the fact that higher income areas are likely to have lower violent crime rates than lower income neighborhoods (Chamberlain and Hipp 2015), and thus increasing incidents of violent crime are more impactful. One possible explanation is that workers in these firms are particularly sensitive to violent crime, which would be consistent with arguments that violent crime is particularly important for persons' fear of crime (Zimring and Hawkins 1997), as well as their perceptions of crime more generally (Hipp 2013). An alternative explanation is that these firms are more likely to focus on the concerns of their employees and clients in their location decision making, and therefore seek out contexts with a lower risk of violent victimization.

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A third key finding was that the relative odds ratios of the effects for crime appeared much stronger on where businesses move compared to their decision to move or go out of business. We caution that this is an impressionistic comparison, as these are not directly comparable coefficients. Nonetheless, this is not particularly surprising as businesses in a neighborhood may be more reluctant to move despite higher crime rates due to the sunk costs of investing in the particular business location and the presence of a long-term lease. In contrast, when deciding which neighborhood to move to, businesses have considerably more latitude and therefore crime levels may be a particularly important consideration. These results are analogous to earlier research on business owner behavior in neighborhoods undergoing racial transition, as white owners were particularly likely to avoid locating in such neighborhoods, but no more likely to move out of them (Aldrich and Reiss 1976). The implication is that existing studies of the net change in businesses in a neighborhood due to higher crime rates are likely capturing the lower willingness of businesses to relocate to those neighborhoods, and less likely capturing movement out of the neighborhood or business failure. A further issue is new business establishments, and although we did not study them here, it is likely that they are also sensitive to the crime rates in neighborhoods, analogous to our findings for relocations. Future research will need to test this.

We acknowledge some limitations to this study. First, we had limited information on business owner characteristics, which may help in understanding such business decisions. Relatedly, we do not know the reason that certain businesses close, as this could be due to a variety of factors beyond reduced profits, including concern with the direction of changes in a neighborhood (Headd 2003). Second, there may be temporal lags between crime levels and business dynamics, or even cumulative effects. Such possibilities were outside the scope of the

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current study. Third, there is always a concern that official crime records from police departments do not reflect all crime activity in a neighborhood; although this is certainly the case, there is no evidence of bias in the underreporting based on neighborhood characteristics for the types of more serious crimes we studied here (Baumer 2002).

This study has provided key insights by focusing explicitly on business activity in response to crime levels in neighborhoods. A challenge for cross-sectional studies is the reciprocal relationship between crime and businesses. And existing longitudinal research typically has focused on how crime levels can change the *net* number of businesses or employment in a neighborhood. Our study was able to explicitly focus on business activity in response to crime levels, providing a particularly clear picture of this process. Furthermore, we were able to utilize a more spatially explicit measure of crime in the nearby ecology, allowing us to obtain more valid results. Our results highlight that violent and property crime have important consequences for business survival in neighborhoods, and are particularly important for explaining where businesses choose to relocate. Given the role of businesses as the economic base of neighborhoods, as sources of local employment, and as locations which may facilitate neighborhood interaction and the development of collective efficacy, we argue that these findings are important not only to our understanding of urban business viability, but to a more comprehensive understanding of the reciprocal relationship between crime and neighborhood change more broadly.

References

- Aldrich, Howard and Albert J. Jr Reiss. 1976. "Continuities in the Study of Ecological Succession: Changes in the Race Composition of Neighborhoods and Their Businesses." *American Journal of Sociology* 81:846-866.
- Baumer, Eric P. 2002. "Neighborhood Disadvantage and Police Notification by Victims of Violence." *Criminology* 40:579-616.
- Bernasco, Wim and Richard L. Block. 2009. "Where Offenders Choose to Attack: A Discrete Choice Model of Robberies in Chicago." *Criminology* 47:93-130.
- . 2011. "Robberies in Chicago: A Block-Level Analysis of the Influence of Crime Generators, Crime Attractors, and Offender Anchor Points." *Journal of Research in Crime and Delinquency* 48:33-57.
- Boarnet, Marlon, Saksith Chalermpong, and Elizabeth Geho. 2005. "Specification issues in models of population and employment growth." *Papers in Regional Science* 84:21-46.
- Boessen, Adam and John R Hipp. 2015. "Close-ups and the scale of ecology: Land uses and the geography of social context and crime." *Criminology* 53:399-426.
- Bogges, Lyndsay N, Robert T Greenbaum, and George E Tita. 2013. "Does crime drive housing sales? Evidence from Los Angeles." *Journal of Crime and Justice* 36:299-318.
- Bogges, Lyndsay N and John R Hipp. 2010. "Violent crime, residential instability and mobility: Does the relationship differ in minority neighborhoods?" *Journal of Quantitative Criminology* 26:351-370.
- Bowes, David R. 2007. "A Two-Stage Model of the Simultaneous Relationship Between Retail Development and Crime." *Economic Development Quarterly* 21:79-90.
- Browning, Christopher R, Catherine A Calder, Bethany Boettner, and Anna Smith. 2017. "Ecological networks and urban crime: The structure of shared routine activity locations and neighborhood-level informal control capacity." *Criminology* 55:754-778.
- Browning, Christopher R., Catherine A. Calder, Brian Soller, Aubrey L. Jackson, and Jonathan Dirlam. 2017. "Ecological Networks and Neighborhood Social Organization." *American Journal of Sociology* 122:1939-1988.
- Calthorpe, Peter. 1993. *The Next American Metropolis: Ecology, Community, and the American Dream*. New York: Princeton Architectural Press.
- Chamberlain, Alyssa W. and John R. Hipp. 2015. "It's All Relative: Concentrated disadvantage within and across neighborhoods and communities, and the consequences for neighborhood crime." *Journal of Criminal Justice* 43:431-443.
- Cohen, Michael Lee and Xiao Di Zhang. 1988. "The Difficulty of Improving Statistical Synthetic Estimation." Bureau of the Census, Washington, D.C.
- Corcoran, Jonathan, Renee Zahnow, Rebecca Wickes, and John R. Hipp. 2018. "Neighbourhood land use features, collective efficacy and local civic actions." *Urban Studies* 55:2372–2390.
- Cullen, Julie Berry and Steven D. Levitt. 1999. "Crime, Urban Flight, and the Consequences for Cities." *The Review of Economics and Statistics* 91:159-169.
- Cummings, Scott. 1998. *Left Behind in Rosedale: Race Relations and the Collapse of Community Institutions*. Boulder, CO: Westview.
- Dugan, Laura. 1999. "The Effect of Criminal Victimization on a Household's Moving Decision." *Criminology* 37:903-930.

Crime and business closure/business mobility

- Fisher, Bonnie. 1991. "A Neighborhood Business Area is Hurting: Crime, Fear of Crime, and Disorders Take their Toll." *Crime & Delinquency* 37:363-373.
- Glaeser, Edward L. 2008. *Cities, Agglomeration and Spatial Equilibrium*. New York: Oxford.
- Greenbaum, Robert T and George E Tita. 2004. "The impact of violence surges on neighbourhood business activity." *Urban Studies* 41:2495-2514.
- Headd, Brian. 2003. "Redefining business success: Distinguishing between closure and failure." *Small Business Economics* 21:51-61.
- Hipp, John R, George E Tita, and Robert T Greenbaum. 2009. "Drive-bys and trade-ups: examining the directionality of the crime and residential instability relationship." *Social Forces* 87:1778-1812.
- Hipp, John R. 2010a. "A dynamic view of neighborhoods: The reciprocal relationship between crime and neighborhood structural characteristics." *Social Problems* 57:205-230.
- . 2010b. "The Role of Crime in Housing Unit Racial/ethnic Transition." *Criminology* 48:683-723.
- . 2011. "Violent crime, mobility decisions, and neighborhood racial/ethnic transition." *Social Problems* 58:410-432.
- . 2013. "Assessing Crime as a Problem: The Relationship between Residents' Perception of Crime and Official Crime Rates over 25 Years." *Crime & Delinquency* 59:616-648.
- Hipp, John R. and Adam Boessen. 2013. "Egohoods as waves washing across the city: A new measure of "neighborhoods"." *Criminology* 51:287-327.
- Hipp, John R. and Wouter Steenbeek. 2016. "Types of crime and types of mechanisms: What are the consequences for neighborhoods over time?" *Crime & Delinquency* 62:1203-1234.
- Hipp, John R. and Rebecca Wickes. 2016. "Violence in Urban Neighborhoods: A Longitudinal Study of Collective Efficacy and Violent Crime." *Journal of Quantitative Criminology* 33:783-808.
- Hoogstra, Gerke J., Jouke van Dijk, and Raymond J. G. M. Florax. 2017. "Do jobs follow people or people follow jobs? A meta-analysis of Carlino–Mills studies." *Spatial Economic Analysis* 12:357-378.
- Ihlanfeldt, Keith and Tom Mayock. 2010. "Panel data estimates of the effects of different types of crime on housing prices." *Regional Science and Urban Economics* 40:161-172.
- Infogroup. 2015. "Reference USA Historical Business Data." edited by Infogroup. Papillion, NE: Reference USA.
- Ioannides, Yannis M. and Jeffrey E. Zabel. 2008. "Interactions, Neighborhood Selection and Housing Demand." *Journal of Urban Economics* 63:229-252.
- Isard, Walter. 1956. *Location and Space–Economy: A General Theory Relating to Industrial Location, Market Areas, Land Use, Trade, and Urban Structure*. Cambridge, MA: MIT.
- Kane, Kevin, John R. Hipp, and Jae Hong Kim. 2017. "Analyzing Accessibility using Parcel Data: Is there Still an Access-Space Tradeoff in Long Beach, California?" *The Professional Geographer* 69:486-503.
- Keane, Carl. 1998. "Evaluating the influence of fear of crime as an environmental mobility restrictor on women's routine activities." *Environment and Behavior* 30:60-74.
- Kim, Jae Hong and Geoffrey J.D. Hewings. 2013. "Land use regulation and intraregional population–employment interaction." *The Annals of Regional Science* 51:671-693.
- Kim, Young-an and John R. Hipp. 2017. "Physical boundaries and City boundaries: Consequences for Crime Patterns on Street Segments?" *Crime & Delinquency* 64:227-254.

Crime and business closure/business mobility

- Kubrin, Charis E. and John R. Hipp. 2016. "Do Fringe Banks Create Fringe Neighborhoods? Examining the Spatial Relationship between Fringe Banking and Neighborhood Crime Rates." *Justice Quarterly* 33:755-784.
- Kubrin, Charis E., John R. Hipp, and Young-an Kim. 2016. "Different than the Sum of its Parts: Examining the Unique Impacts of Immigrant Groups on Neighborhood Crime Rates." *Journal of Quantitative Criminology* 34:1-36.
- Kubrin, Charis E., Young-an Kim, and John R. Hipp. 2018. "Institutional Completeness and Crime Rates in Immigrant Neighborhoods." *Journal of Research in Crime and Delinquency* Forthcoming.
- Lee, Brian H Y, Paul Waddell, Liming Want, and Ram M Pendyala. 2010. "Reexamining the Influence of Work and Nonwork Accessibility on Residential Location Choices with a Microanalytic Framework." *Environment and Planning A* 42:913-930.
- Lens, Michael C and Rachel Meltzer. 2016. "Is crime bad for business? Crime and commercial property values in New York City." *Journal of Regional Science* 56:442-470.
- Love, Lisa L. and John L. Crompton. 1999. "The Role of Quality of Life in Business (Re)Location Decisions." *Journal of Business Research* 44:211-222.
- Lynch, Allen K and David W Rasmussen. 2001. "Measuring the impact of crime on house prices." *Applied Economics* 33:1981-1989.
- McFadden, Daniel. 1978. "Modelling the Choice of Residential Location." Pp. 75-96 in *Spatial Interaction Theory and Planning Models*, vol. 3, *Studies in Regional Science and Urban Economics*, edited by A. Karlqvist, L. Lundqvist, F. Snickars, and J. W. Weibull. New York: North-Holland.
- Morenoff, Jeffrey D and Robert J Sampson. 1997. "Violent crime and the spatial dynamics of neighborhood transition: Chicago, 1970–1990." *Social forces* 76:31-64.
- Mueller, Eva and James N. Morgan. 1962. "Location Decisions of Manufacturers." *The American Economic Review* 52:204-217.
- Papachristos, Andrew V, Chris M Smith, Mary L Scherer, and Melissa A Fugiero. 2011. "More coffee, less crime? The relationship between gentrification and neighborhood crime rates in Chicago, 1991 to 2005." *City & Community* 10:215-240.
- Percy, Stephen L., Brett W. Hawkins, and Peter E. Maier. 1995. "Revisiting Tiebout: Moving Rationales and Interjurisdictional Relocation." *Publius: The Journal of Federalism* 25:1-17.
- Porter, Michael. 2003. "The Economic Performance of Regions." *Regional Studies* 37:545-546.
- Porter, Michael E. 1997. "New strategies for inner-city economic development." *Economic development quarterly* 11:11-27.
- Rader, Nicole E, Jeralynn S Cossman, and Marisa Allison. 2009. "Considering the gendered nature of constrained behavior practices among male and female college students." *Journal of Contemporary Criminal Justice* 25:282-299.
- Rosenthal, Stuart S. and Amanda Ross. 2010. "Violent crime, entrepreneurship, and cities." *Journal of Urban Economics* 67:135-149.
- Rountree, Pamela Wilcox and Kenneth C. Land. 1996. "Perceived risk versus fear of crime: Empirical evidence of conceptually distinct reactions in survey data." *Social Forces* 74:1353-1376.
- Schirmer, Patrick M., Michael A.B. van Eggermond, and Kay Axhausen. 2014. "The role of location in residential location choice models: a review of literature." *Journal of Transport and Land Use* 7:3-21.

Crime and business closure/business mobility

Skogan, Wesley G. 1990a. "Disorder and decline: Crime and the spiral of decay in American cities."

Skogan, Wesley G and Michael G Maxfield. 1981. *Coping with crime: Individual and neighborhood reactions*: Sage Publications Beverly Hills, CA.

Skogan, Wesley G. 1986. "Fear of Crime and Neighborhood Change." Pp. 203-229 in *Communities and Crime*, vol. 8, edited by A. J. Reiss and M. Tonry. Chicago: University of Chicago Press.

—. 1990b. *Disorder and Decline: Crime and the Spiral of Decay in American Neighborhoods*. New York: Free Press.

Sloan, CarlyWill, Steven B Caudill, and Franklin G Mixon Jr. 2016. "Entrepreneurship and crime: The case of new restaurant location decisions." *Journal of Business Venturing Insights* 5:19-26.

Soller, Brian, Jessica R Goodkind, R Neil Greene, Christopher R Browning, and Cece Shantzek. 2018. "Ecological Networks and Community Attachment and Support Among Recently Resettled Refugees." *American journal of community psychology*.

Squires, Gregory D. 2003. "Racial profiling, insurance style: Insurance redlining and the uneven development of metropolitan areas." *Journal of Urban Affairs* 25:391-410.

Steenbeek, Wouter, Beate Völker, Henk Flap, and Frank van Oort. 2012. "Local Businesses as Attractors or Preventers of Neighborhood Disorder." *Journal of Research in Crime and Delinquency* 49:213-248.

Steinberg, Joseph. 1979. "Synthetic Estimates for Small Areas: Statistical Workshop Papers and Discussion." Pp. 282 in *National Institute on Drug Abuse Research Monograph Series*, vol. 24. Washington, D.C.: National Institute on Drug Abuse.

Talen, Emily. 2002. "The social goals of new urbanism." *Housing Policy Debate* 13:165-188.

Taub, Richard P, D Garth Taylor, and Jan D Dunham. 1984. *Paths of neighborhood change: Race and crime in urban America*: University of Chicago Press Chicago.

Tita, George E, Tricia L Petras, and Robert T Greenbaum. 2006. "Crime and residential choice: a neighborhood level analysis of the impact of crime on housing prices." *Journal of quantitative criminology* 22:299.

Wilcox, Pamela, Neil Quisenberry, D. Cabrera, and S. Jones. 2004. "Busy places and broken windows? Towards defining the role of physical structure and process in community crime models." *The Sociological Quarterly* 45:185-220.

Williams, Seth and John R. Hipp. 2019. "How Great and How Good?: Third places, neighbor interaction, and cohesion in the neighborhood context." *Social Science Research* 77:68-78.

Wo, James C. 2016. "Community context of crime: A longitudinal examination of the effects of local institutions on neighborhood crime." *Crime & Delinquency* 62:1286-1312.

Xie, Min and David McDowall. 2008. "Escaping Crime: The Effects of Direct and Indirect Victimization on Moving." *Criminology* 46:809-840.

—. 2010. "The Reproduction of Racial Inequality: How Crime Affects Housing Turnover." *Criminology* 48:865-896.

Yoon, In-Jin. 1997. *On my own: Korean businesses and race relations in America*: University of Chicago Press.

Yu, Sung-suk Violet and Michael G. Maxfield. 2014. "Ordinary Business: Impacts on Commercial and Residential Burglary." *British Journal of Criminology* 54:298-320.

Zimring, Franklin E. and Gordon Hawkins. 1997. *Crime is not the Problem*. New York: Oxford.

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Tables and Figures

	Models for business failure		Models for business mobility		Models for where businesses move	
	Sample of all firms		Sample of firms that did not fail		Sample of firms that moved	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Percent of firms that failed	13.58					
Percent of firms that moved			4.00			
<i>Independent variables</i>						
Violent crimes	16.08	29.97	15.81	29.36	13.06	26.10
Property crimes	72.19	83.86	71.76	83.36	63.10	79.65
<i>Demographic measures</i>						
Percent Asian	12.32	14.25	12.30	14.24	11.77	13.99
Percent Latino	35.16	27.22	35.11	27.21	32.98	26.49
Percent black	6.26	10.45	6.19	10.34	5.82	9.87
Racial/ethnic heterogeneity	1.11	5.13	1.11	5.15	1.34	6.03
Average household income	71.28	44.80	71.30	44.70	73.95	49.87
Percent with a bachelor's degree	31.74	20.92	31.74	20.93	32.14	20.99
Population	10.49	11.12	10.44	11.06	8.31	10.17
Percent with children	32.54	17.11	32.51	17.10	32.89	17.43
<i>Business measures</i>						
Logged total businesses	4.34	1.73	4.34	1.73		
Logged retail businesses	2.83	1.56	2.83	1.55	42.08	105.32
Logged education/health businesses	2.33	1.59	2.34	1.59	24.34	41.90
Logged FIRE businesses	2.21	1.43	2.21	1.43	32.43	93.33
Logged professional businesses	2.44	1.72	2.44	1.72	22.17	43.93
Logged services businesses	2.56	1.36	2.56	1.36	66.64	266.16
Logged industrial businesses	2.09	1.46	2.08	1.45	30.00	132.17
N	7,340,457		6,056,768		319,075	

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Table 2. Logit models showing effect of violent or property crime on closure of firm for six major categories of establishments

	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
	All firms		Retail		Services		Education/ health		FIRE		Professional		Industrial	
Model 1	Coef (T)	OR	Coef (T)	OR	Coef (T)	OR	Coef (T)	OR	Coef (T)	OR	Coef (T)	OR	Coef (T)	OR
Violent crime rate	0.0010 ** (19.63)	1.030	0.0006 ** (6.01)	1.018	0.0014 ** (9.08)	1.043	0.0013 ** (7.57)	1.040	0.0006 ** (3.22)	1.018	0.0011 ** (7.42)	1.034	0.0006 ** (5.80)	1.018
Model 2														
Property crime rate	0.0005 ** (25.73)	1.043	0.0004 ** (13.25)	1.034	0.0006 ** (10.57)	1.052	0.0004 ** (6.72)	1.034	0.0000 (0.65)	1.000	0.0003 ** (6.61)	1.025	0.0005 ** (8.64)	1.043
Model 3														
Violent crime rate	0.0006 ** (10.11)	1.018	0.0001 (1.25)	1.003	0.0009 ** (5.31)	1.027	0.0010 ** (5.43)	1.030	0.0007 ** (3.22)	1.021	0.0008 ** (4.85)	1.024	0.0002 * (2.04)	1.006
Property crime rate	0.0004 ** (19.43)	1.034	0.0004 ** (11.86)	1.034	0.0005 ** (7.59)	1.043	0.0003 ** (4.18)	1.025	0.0000 (-0.64)	1.000	0.0002 ** (3.51)	1.017	0.0004 ** (6.69)	1.034

Note: ** $p < .01$; * $p < .05$. T-values in parentheses. $N = 7,340,457$ businesses. Pooled models with fixed effects for years. All models include control variables as listed in Table 1. OR list odds ratio for a one standard deviation change in the independent variable

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Table 3. Logit models showing effect of violent or property crime on mobility of firm for six major categories of establishments

	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
	All firms		Retail		Services		Education/ health		FIRE		Professional		Industrial	
Model 1	Coef (T)	OR	Coef (T)	OR	Coef (T)	OR	Coef (T)	OR	Coef (T)	OR	Coef (T)	OR	Coef (T)	OR
Violent crime rate	0.0012 ** (10.83)	1.037	-0.0002 (-0.76)	0.994	0.0013 ** (4.51)	1.040	0.0035 ** (10.94)	1.111	0.0002 (0.38)	1.006	0.0035 ** (14.52)	1.111	0.0001 (0.40)	1.003
Model 2														
Property crime rate	0.0003 ** (7.68)	1.025	0.0005 ** (7.43)	1.042	0.0006 ** (6.44)	1.051	-0.0003 ** (-2.77)	0.976	-0.0003 * (-2.15)	0.976	0.0008 ** (10.45)	1.068	0.0003 ** (3.64)	1.025
Model 3														
Violent crime rate	0.0010 ** (8.45)	1.031	-0.0010 ** (-3.48)	0.970	0.0007 * (2.14)	1.021	0.0046 ** (13.13)	1.149	0.0006 (1.37)	1.018	0.0030 ** (10.73)	1.095	-0.0003 (-1.16)	0.991
Property crime rate	0.0001 ** (3.84)	1.008	0.0006 ** (8.27)	1.051	0.0006 ** (5.09)	1.051	-0.0009 ** (-7.22)	0.929	-0.0003 * (-2.50)	0.976	0.0004 ** (4.16)	1.033	0.0004 ** (3.82)	1.033

Note: ** $p < .01$; * $p < .05$. T-values in parentheses. $N = 6,056,768$ businesses. Pooled models with fixed effects for years. All models include control variables as listed in Table 1. OR list odds ratio for a one standard deviation change in the independent variable

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Table 4. Logit models showing effect of violent or property crime on closure of firm for 32 categories of consumer facing businesses

		Model 1		Model 2		Model 3			
General category		Violent Crime		Property Crime		Violent Crime		Property Crime	
		Coef (T)	OR	Coef (T)	OR	Coef (T)	OR	Coef (T)	OR
Retail	General merchandise retail	-0.0001 (-0.28)	0.997	0.0003 (1.69)	1.025	-0.0005 (-0.95)	0.985	0.0004 (1.93)	1.034
Retail	Apparel/retail	0.0001 (0.24)	1.003	0.0002 * (2.26)	1.017	-0.0001 (-0.60)	0.997	0.0002 * (2.33)	1.017
Retail	Specialty retailing	0.0000 (0.24)	1.000	0.0003 ** (4.07)	1.025	-0.0003 (-1.42)	0.991	0.0003 ** (4.32)	1.025
Retail	Personal products retail	0.0007 (1.57)	1.022	0.0007 ** (4.76)	1.060	0.0000 (-0.06)	1.000	0.0007 ** (4.50)	1.060
Retail	Home products retail	0.0008 (1.87)	1.025	0.0007 ** (4.88)	1.060	0.0001 (0.23)	1.003	0.0007 ** (4.51)	1.060
Food and entertainment	Full restaurants	0.0018 ** (6.00)	1.056	0.0006 ** (7.29)	1.051	0.0011 ** (3.51)	1.034	0.0005 ** (5.48)	1.042
Food and entertainment	Grocery	0.0010 (1.78)	1.031	0.0004 (1.25)	1.034	0.0009 (1.37)	1.028	0.0002 (0.54)	1.017
Food and entertainment	Specialty foods	0.0005 (0.87)	1.015	0.0004 * (2.11)	1.034	0.0001 (0.16)	1.003	0.0003 (1.93)	1.025
Food and entertainment	Limited service restaurants	-0.0005 (-0.68)	0.985	0.0003 (1.65)	1.025	-0.0011 (-1.36)	0.967	0.0004 * (2.06)	1.034
Food and entertainment	Movie theatres	0.0016 (0.79)	1.050	0.0006 (1.12)	1.051	0.0007 (0.29)	1.022	0.0005 (0.84)	1.042
Food and entertainment	Recreational	0.0009 (0.82)	1.028	0.0004 (1.39)	1.034	0.0003 (0.22)	1.009	0.0004 (1.15)	1.034
Alcohol	Drinking	0.0008 (0.69)	1.025	0.0004 (0.97)	1.034	0.0003 (0.26)	1.009	0.0003 (0.73)	1.025
Alcohol	Beer, Wine, and Liquor Stores	0.0021 * (2.04)	1.066	0.0001 (0.11)	1.008	0.0022 * (2.10)	1.069	-0.0003 (-0.40)	0.976
Alcohol	Convenience store	0.0016 (0.90)	1.050	0.0010 (1.51)	1.086	0.0007 (0.33)	1.022	0.0009 (1.25)	1.077
Personal services	Laundry	0.0005 (0.63)	1.015	-0.0002 (-0.48)	0.984	0.0007 (0.86)	1.022	-0.0003 (-0.73)	0.976
Personal services	Hair care	0.0024 ** (5.96)	1.076	0.0005 ** (4.33)	1.042	0.0021 ** (4.68)	1.066	0.0003 * (2.29)	1.025
Personal services	Repair services	0.0014 ** (3.72)	1.044	0.0004 * (2.35)	1.034	0.0012 ** (3.02)	1.037	0.0002 (0.97)	1.017
Personal services	Other personal services	0.0009 (1.94)	1.028	0.0004 ** (2.60)	1.034	0.0005 (1.04)	1.015	0.0003 * (2.02)	1.025

Crime and business closure/business mobility

Education and social services	Schools (elementary and secondary)	0.0003 (0.24)	1.009	0.0001 (0.27)	1.008	0.0002 (0.13)	1.006	0.0001 (0.18)	1.008
Education and social services	Child care	0.0045 ** (4.79)	1.147	0.0011 * (2.36)	1.095	0.0043 ** (4.19)	1.140	0.0003 (0.57)	1.025
Education and social services	Other learning	0.0016 (1.67)	1.050	0.0001 (0.37)	1.008	0.0017 (1.66)	1.053	-0.0002 (-0.37)	0.984
Education and social services	Religious	0.0000 (-0.06)	1.000	0.0006 ** (2.64)	1.051	-0.0007 (-1.20)	0.979	0.0007 ** (2.92)	1.060
Education and social services	Social service organization	0.0004 (0.95)	1.012	0.0005 ** (2.75)	1.042	-0.0001 (-0.12)	0.997	0.0005 ** (2.59)	1.042
Financial services	Deposit taking institution	-0.0026 * (-2.36)	0.924	0.0002 (0.91)	1.017	-0.0036 ** (-2.95)	0.896	0.0005 * (2.07)	1.042
Financial services	Personal finance	0.0015 ** (3.19)	1.047	0.0008 ** (5.36)	1.068	0.0007 (1.41)	1.022	0.0007 ** (4.53)	1.060
Healthcare	Drug stores	-0.0007 (-0.61)	0.979	0.0000 (0.07)	1.000	-0.0009 (-0.68)	0.973	0.0001 (0.32)	1.008
Healthcare	Health provider offices	0.0012 ** (5.72)	1.037	0.0003 ** (4.84)	1.025	0.0010 ** (4.20)	1.031	0.0002 ** (2.92)	1.017
Healthcare	Hospital	0.0009 (0.59)	1.028	0.0001 (0.18)	1.008	0.0009 (0.56)	1.028	0.0000 (0.02)	1.000
Healthcare	Medical labs	0.0017 (1.73)	1.053	0.0011 ** (2.79)	1.095	0.0009 (0.83)	1.028	0.0010 * (2.33)	1.086
Automobiles	Auto services	0.0024 ** (5.54)	1.076	0.0009 ** (5.68)	1.077	0.0017 ** (3.59)	1.053	0.0006 ** (3.78)	1.051
Automobiles	Gas stations	0.0029 (1.86)	1.092	0.0000 (-0.05)	1.000	0.0034 * (2.01)	1.109	-0.0004 (-0.76)	0.967
Transit	Transit	0.0047 (0.64)	1.154	0.0033 (1.30)	1.313	0.0004 (0.05)	1.012	0.0032 (1.14)	1.303

Note: ** $p < .01$; * $p < .05$. T-values in parentheses. $N = 7,340,457$ businesses. Pooled models with fixed effects for years. All models include control variables as listed in Table 1. Odds list odds ratio for a one standard deviation change in the independent variable. Separate models estimated for each business type.

Crime and business closure/business mobility

Table 5. Logit models showing effect of violent or property crime on mobility of firm for 32 categories of consumer facing businesses

General category		Model 1		Model 2		Model 3			
		Violent Crime		Property Crime		Violent Crime		Property Crime	
		Coef (T)	OR	Coef (T)	OR	Coef (T)	OR	Coef (T)	OR
Retail	General merchandise retail	0.0021 (1.86)	1.065	0.0013 ** (4.52)	1.113	0.0006 (0.45)	1.018	0.0012 ** (4.13)	1.104
Retail	Appare/retail	-0.0003 (-0.43)	0.991	0.0002 (1.45)	1.017	-0.0006 (-0.97)	0.982	0.0002 (1.71)	1.017
Retail	Specialty retailing	-0.0010 * (-1.97)	0.970	-0.0002 (-1.42)	0.984	-0.0008 (-1.56)	0.976	-0.0001 (-0.75)	0.992
Retail	Personal products retail	-0.0004 (-0.37)	0.988	0.0005 (1.75)	1.042	-0.0012 (-0.99)	0.964	0.0006 * (2.01)	1.051
Retail	Home products retail	0.0031 ** (4.33)	1.098	0.0003 (1.07)	1.025	0.0032 ** (4.18)	1.101	-0.0001 (-0.37)	0.992
Food and entertainment	Full restaurants	-0.0014 (-1.32)	0.959	0.0007 ** (3.25)	1.059	-0.0029 * (-2.57)	0.916	0.0009 ** (4.08)	1.077
Food and entertainment	Grocery	-0.0038 (-1.52)	0.892	-0.0013 (-1.42)	0.899	-0.0028 (-1.03)	0.919	-0.0008 (-0.83)	0.936
Food and entertainment	Specialty foods	0.0026 * (2.09)	1.081	0.0009 ** (3.22)	1.077	0.0015 (1.13)	1.046	0.0008 ** (2.66)	1.068
Food and entertainment	Limited service restaurants	0.0035 (1.75)	1.111	0.0012 ** (3.12)	1.104	0.0017 (0.74)	1.053	0.0011 ** (2.69)	1.095
Food and entertainment	Movie theatres	0.0018 (0.42)	1.056	-0.0015 (-1.27)	0.884	0.6900 (0.00)	####	0.0337 (0.67)	15.924
Food and entertainment	Recreational	-0.0040 (-1.55)	0.886	-0.0003 (-0.44)	0.976	-0.0044 (-1.52)	0.876	0.0002 (0.28)	1.017
Alcohol	Drinking	-0.0081 (-1.85)	0.783	-0.0015 (-1.07)	0.884	-0.0077 (-1.56)	0.793	-0.0002 (-0.15)	0.984
Alcohol	Beer, Wine, and Liquor Stores	0.0042 ** (3.29)	1.135	-0.0006 (-0.40)	0.952	0.0043 ** (3.35)	1.138	-0.0013 (-0.75)	0.899
Alcohol	Convenience store	-0.0041 (-0.47)	0.884	-0.0014 (-0.52)	0.891	-0.0028 (-0.30)	0.919	-0.0010 (-0.37)	0.921
Personal services	Laundry	0.0025 * (2.12)	1.078	0.0011 (1.05)	1.095	0.0023 (1.88)	1.072	0.0007 (0.67)	1.059
Personal services	Hair care	0.0002 (0.23)	1.006	0.0013 ** (6.44)	1.113	-0.0021 * (-2.07)	0.939	0.0015 ** (6.85)	1.131
Personal services	Repair services	-0.0006 (-0.64)	0.982	0.0002 (0.73)	1.017	-0.0010 (-0.97)	0.970	0.0004 (1.06)	1.033
Personal services	Other personal services	-0.0007 (-0.64)	0.979	0.0003 (0.94)	1.025	-0.0013 (-1.08)	0.962	0.0004 (1.31)	1.033

Crime and business closure/business mobility

Education and social services	Schools (elementary and secondary)	0.0023 (1.11)	1.072	0.0012 (1.79)	1.104	0.0009 (0.38)	1.027	0.0011 (1.45)	1.095
Education and social services	Child care	0.0006 (0.22)	1.018	-0.0002 (-0.20)	0.984	0.0009 (0.32)	1.027	-0.0004 (-0.31)	0.968
Education and social services	Other learning	0.0049 ** (3.21)	1.159	0.0009 (1.53)	1.077	0.0047 ** (2.75)	1.152	0.0002 (0.26)	1.017
Education and social services	Religious	0.0030 ** (3.42)	1.095	0.0008 * (2.39)	1.068	0.0026 ** (2.67)	1.081	0.0004 (1.11)	1.033
Education and social services	Social service organization	0.0021 ** (2.72)	1.065	0.0000 (-0.12)	1.000	0.0025 ** (3.04)	1.078	-0.0004 (-1.30)	0.968
Financial services	Deposit taking institution	-0.0014 (-0.64)	0.959	0.0003 (0.81)	1.025	-0.0025 (-1.06)	0.927	0.0005 (1.21)	1.042
Financial services	Personal finance	-0.0002 (-0.24)	0.994	0.0001 (0.48)	1.008	-0.0004 (-0.45)	0.988	0.0002 (0.61)	1.017
Healthcare	Drug stores	0.0033 (1.53)	1.105	0.0008 (1.08)	1.068	0.0028 (1.19)	1.088	0.0004 (0.54)	1.033
Healthcare	Health provider offices	0.0035 ** (8.78)	1.111	-0.0009 ** (-5.95)	0.929	0.0052 ** (12.25)	1.170	-0.0016 ** (-9.72)	0.877
Healthcare	Hospital	0.0012 (0.40)	1.037	0.0006 (0.63)	1.051	0.0007 (0.23)	1.021	0.0005 (0.54)	1.042
Healthcare	Medical labs	-0.0001 (-0.03)	0.997	0.0011 (1.47)	1.095	-0.0011 (-0.50)	0.967	0.0012 (1.57)	1.104
Automobiles	Auto services	-0.0004 (-0.46)	0.988	0.0001 (0.40)	1.008	-0.0007 (-0.67)	0.979	0.0002 (0.63)	1.017
Automobiles	Gas stations	0.0011 (0.21)	1.034	-0.0006 (-0.43)	0.952	0.0023 (0.40)	1.072	-0.0008 (-0.54)	0.936
Transit	Transit	0.0005 (0.04)	1.015	-0.0029 (-0.52)	0.788	0.0000 (0.00)	1.000	-0.0128 (-0.11)	0.349

Note: ** $p < .01$; * $p < .05$. T-values in parentheses. $N = 6,056,768$ businesses. Pooled models with fixed effects for years. All models include control variables as listed in Table 1. OR list odds ratio for a one standard deviation change in the independent variable. Separate models estimated for each business type.

Crime and business closure/business mobility

Table 6. Discrete choice models showing the effect of violent and property crime in the destination neighborhood on the location destination for establishments

	(1)			(2)			(3)		
<i>Total firms</i>	Coef (T)	**	OR	Coef (T)	**	OR	Coef (T)	**	OR
Violent crime	-0.0040	**	0.901				-0.0020	**	0.949
	-(24.90)						-(11.11)		
Property crime				-0.0017	**	0.873	-0.0013	**	0.902
				-(31.11)			-(21.59)		
<i>Retail firms</i>									
Violent crime	-0.0045	**	0.889				-0.0006		0.984
	-(11.38)						-(1.36)		
Property crime				-0.0028	**	0.800	-0.0028	**	0.800
				-(22.91)			-(20.08)		
<i>Services firms</i>									
Violent crime	-0.0027	**	0.932				-0.0011	*	0.972
	-(6.18)						-(2.18)		
Property crime				-0.0014	**	0.894	-0.0012	**	0.909
				-(8.61)			-(6.39)		
<i>Education/health firms</i>									
Violent crime	-0.0025	**	0.937				-0.0022	**	0.944
	-(5.27)						-(4.20)		
Property crime				-0.0006	**	0.953	-0.0002		0.984
				-(3.39)			-(0.99)		
<i>FIRE firms</i>									
Violent crime	-0.0035	**	0.913				-0.0027	**	0.932
	-(5.89)						-(3.98)		
Property crime				-0.0008	**	0.938	-0.0004	*	0.969
				-(4.99)			-(2.37)		
<i>Professional firms</i>									
Violent crime	-0.0034	**	0.915				-0.0031	**	0.922
	-(9.83)						-(7.38)		
Property crime				-0.0008	**	0.938	-0.0002		0.984
				-(6.83)			-(1.55)		

Crime and business closure/business mobility

Industrial firms											
Violent crime	-0.0056	**	0.864						-0.0038	**	0.906
	-(14.93)								-(8.69)		
Property crime				-0.0023	**	0.833			-0.0014	**	0.894
				-(14.62)					-(7.84)		

*Note: ** p < .01; * p < .05. T-values in parentheses. N= 319,075 businesses. Pooled models with fixed effects for years. All models include control variables as listed in Table 1. OR list odds ratio for a one standard deviation change in the independent variable*

Crime and business closure/business mobility

Appendix

APPENDIX

Table A1: NAICS CODES WHICH COMPRISE EACH NEIGHBORHOOD BUSINESS TYPE

Num.	Business Category Name	6-digit NAICS Codes (2012 Series)
1	Apparel Retailing	448110, 448120, 448130, 448140, 448150, 448190, 448210
2	Auto Services	532111, 441310, 441320, 811111, 811112, 811113, 811118, 811121, 811122, 488410, 811191, 811192, 811198
3	Beer, Wine, and Liquor Stores	445310
4	Child Care Services	624410
5	Convenience Stores	445120
6	Deposit-taking Institutions	522110, 522130
7	Drinking Places (Alcoholic Beverages)	722410
8	Drug Stores	446110
9	Elementary and Secondary Schools	611110
10	Full-Service Restaurants	722511, 722513, 722514
11	Gas Stations	447110, 447190
12	General Merchandise Retailing	452111, 452112, 452910, 452990, 453310
13	Groceries	445110
14	Hair Care Services	611511, 812111, 812112, 812113, 621111, 621112, 621210, 621310, 621320, 621330, 621340, 621391, 621399, 621410, 621420, 621491, 621492, 621493, 621498, 621991, 621999
15	Healthcare Provider Offices	453210, 443141, 442110, 442210, 442291, 442299, 444210, 444220, 444130, 444110, 444120, 444190
16	Home Products Retailing	622110, 622210, 622310
17	Hospitals	812320, 812310
18	Laundry	722515
19	Limited-Service Food and Beverage	339116, 621511, 621512
20	Medical Laboratories	512131
21	Movie Theaters	611519, 624310, 611610, 611692
22	Other Learning	532220, 532299, 541940, 812191, 812199, 812910, 812990, 541921, 812921, 812922
23	Other Personal Services	524210, 541213
24	Personal Financial	453991, 446120, 446199, 453910, 453998
25	Personal Products Retailing	611620, 713910, 713940, 713950
26	Recreational Facilities and Instruction	813110
27	Religious Organizations	561622, 811212, 811310, 811411, 811412, 811211, 811213, 811420, 811430, 811490
28	Repair Services	624110, 624120, 624190, 624210, 624221, 624229, 624230, 813212, 813219, 813311, 813312, 813319, 813410, 813990
29	Social Service Organizations	311811, 445210, 445220, 445230, 445291, 445292, 445299, 446191
30	Specialty Food	451211, 451212, 443142, 451140, 451110, 451120, 532230, 446130, 453220, 453110, 448310, 448320, 451130
31	Specialty Retailing	485111, 485112, 485113, 485119, 485410, 485991
32	Transit	

Crime and business closure/business mobility

Table A2. Logit models predicting death of firm, or mobility of firm, for all types of businesses

	Business failure		Business mobility	
Number of employees	-0.4522	**	0.0907	**
	-(331.65)		(46.88)	
<i>Characteristics of buffer</i>				
Violent crime rate	0.0006	**	0.0010	**
	(10.11)		(8.45)	
Property crime rate	0.0004	**	0.0001	**
	(19.43)		(3.84)	
Percent Asian	0.0012	**	-0.0024	**
	(13.59)		-(14.69)	
Percent Latino	0.0017	**	-0.0022	**
	(22.53)		-(16.06)	
Percent black	0.0038	**	-0.0044	**
	(32.62)		-(18.43)	
Racial/ethnic heterogeneity	0.0005	*	0.0010	**
	(2.33)		(2.60)	
Average household income	0.0001	*	-0.0004	**
	(2.32)		-(5.68)	
Percent with a bachelor's degree	0.0013	**	-0.0011	**
	(13.85)		-(6.18)	
Population	-0.0007	**	-0.0116	**
	-(5.31)		-(41.58)	
Percent with children	-0.0005	**	-0.0007	**
	-(4.73)		-(3.85)	
Logged retail businesses	-0.0035		0.0216	**
	-(0.82)		(2.82)	
Logged retail businesses squared	-0.0050	**	-0.0145	**
	-(6.63)		-(10.32)	
Logged education/health businesses	-0.0249	**	-0.0393	**
	-(8.28)		-(7.27)	
Logged education/health businesses squared	0.0036	**	0.0139	**
	(7.42)		(16.28)	
Logged FIRE businesses	-0.0389	**	-0.0098	
	-(9.54)		-(1.30)	
Logged FIRE businesses squared	0.0093	**	0.0133	**
	(10.01)		(7.78)	

Crime and business closure/business mobility

Logged professional businesses	0.0472 **		0.1374 **
	(15.04)		(23.30)
Logged professional businesses squared	-0.0039 **		-0.0168 **
	-(8.08)		-(18.38)
Logged services businesses	-0.0138 **		-0.1592 **
	-(2.93)		-(18.69)
Logged services businesses squared	-0.0091 **		0.0072 **
	-(9.57)		(4.07)
Logged industrial businesses	0.0333 **		0.0138 *
	(10.70)		(2.39)
Logged industrial businesses squared	0.0015 **		0.0081 **
	(2.76)		(7.69)
Intercept	-2.7862 **		-3.7081 **
	-(219.04)		-(190.70)
N	7,059,073		6,100,327
BIC	5,402,056		2,019,604
Pseudo r-square	0.037		0.015
<p>Note: ** $p < .01$; * $p < .05$. T-values in parentheses. Pooled models with fixed effects for years.</p>			

Crime and business closure/business mobility

Table A3. Logit models predicting relocation choice of firm, for all types of businesses

	Characteristics of destination buffer		Difference (a)	
Violent crime	-0.0020 **			
	-(11.11)			
Property crime	-0.0013 **			
	-(21.59)			
Percent Asian	-0.0142 **		0.0084 **	
	-(51.92)		(31.47)	
Percent Latino	-0.0154 **		0.0091 **	
	-(66.80)		(42.55)	
Percent black	-0.0170 **		0.0105 **	
	-(46.15)		(28.72)	
Racial/ethnic heterogeneity	-0.0097 **		0.0035 **	
	-(10.51)		(4.78)	
Average household income	0.0007 **		-0.0003 **	
	(5.69)		-(3.02)	
Percent with a bachelor's degree	-0.0117 **		0.0074 **	
	-(36.46)		(28.34)	
Population	-0.0057 **		0.0107 **	
	-(12.87)		(29.23)	
Percent with children	0.0118 **		-0.0081 **	
	(37.82)		-(32.35)	
Number of retail firms	-0.0006 **		0.0885 **	
	-(5.09)		(9.81)	
Number of education/health firms	-0.0016 **		0.0843 **	
	-(35.76)		(25.25)	
Number of FIRE firms	-0.0010 **		0.0263	
	-(4.99)		(1.65)	
Number of professional firms	-0.0001 **		0.0287 **	
	-(4.02)		(13.06)	
Number of services firms	-0.0001		-0.1232 **	
	-(0.59)		-(6.47)	
Number of industrial firms	-0.0002 *		0.0102	
	-(2.07)	40	(1.70)	

Crime and business closure/business mobility

Logged distance	-1.6124 **				
	-(307.71)				
Logged distance squared	-0.1479 **				
	-(40.04)				
Logged distance cubed	0.0039 **				
	(4.12)				
Crossed city boundary	-0.7042 **				
	-(99.72)				
Intercept	1.4650 **				
	(51.28)				
BIC	878,674				
Pseudo R-square	0.607				
<p><i>Note: ** p < .01; * p < .05. T-values in parentheses. N= 16,272,808 businesses. Pooled models with fixed effects for years.</i></p> <p><i>(a): difference between origination and destination buffer</i></p>					