

Looking Inside Zone V: Testing Social Disorganization Theory in Suburban Areas*

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Abstract. *Rapid suburbanization since the 1970s diversified the socioeconomic picture in suburbs, leading to an increase in crime and other social problems. In this study, social disorganization theory, developed mostly from studies conducted in large cities, was tested in a suburban setting. Negative binominal regression models were used to analyze calls for service data gathered from four suburban cities in Texas. The findings partially supported social disorganization theory. While poverty and racial/ethnic heterogeneity were found to be positively related with crime, residential mobility was negatively related with crime. This study also found that social disorganization indicators could account for variance in disturbance and social service calls. Finally, implications of these findings are discussed.*

Keywords: social disorganization theory; suburbs; ecological criminology; calls for service

Introduction

The primary concern of ecological criminology research has centered on urban areas, especially big cities. Only a few studies have pursued regional variations. Emphasis on urban areas appeared reasonable given the tradition of ecological theories growing out of the Chicago School's urban studies (Park, 1952; Shaw and McKay, 1942). Furthermore, crime has been regarded as a city problem, mainly because of higher crime rates in cities than in suburbs or rural areas. However, the changes occurring in suburban areas over the last several decades demanded more attention to these areas. Early ecologists described suburbs as a "zone of commuters" predominately composed of the white middle-class (Burgess, 1925).

Suburban areas have grown quickly since the 1950s as poor immigrant workers moved to the inner city, and the old residents—mostly whites—moved to suburbs seeking better residential environments. In this early stage of suburbanization, a stark racial and economic segregation made it possible to maintain a domination of the white middle-class in suburbs, while inner cities were economically and racially diverse (Baldassare, 1992). However, since the 1970s, when central cities and suburbs were combined into metropolitan areas, the social characteristics of suburbs greatly changed. Manufacturers moved to

the suburbs, hence, a number of non-white, low-income workers also moved to these areas seeking employment. The suburbs also witnessed a diversified family structure (e.g., female-headed households) and an increase in the proportion of home renters. In brief, the homogeneous structure of the suburbs, represented by white, middle-class, family-oriented nuclear, and home-owner families, became diverse in socioeconomic terms (Baldassare, 1986).

As the structural features changed, the suburbs, which were viewed as regions without various social problems such as crime, disorder, unemployment, and economic inequality, no longer remained immune from these problems. Some studies reported that suburbs—especially rapidly growing ones—suffered a decline in the quality of life and resident satisfaction due to structural changes since the 1970s (Baldassare, 1986; Cervero, 1986).

The purpose of the current study is to test social disorganization theory in a suburban setting. This study suspects that suburbs may be experiencing a similar ecological process to what occurred in the early 19th century city of Chicago. Consistent with the propositions of the social disorganization theory, it is hypothesized that social disorganization indicators, including poverty, racial/ethnic heterogeneity, residential mobility, and family disruption are positively related with crime rates.

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Overview of Ecological Perspectives in Crime

Ernest Burgess (1925) displayed “problem areas” in Chicago using the “concentric zone model.” He noticed that cities tended to expand from the center and to make five concentric zones, each with differing characteristics. It was in the transition zone (Zone II) that social change mostly occurred, caused by the invasion of the central business district. As the central business district constantly expanded, the transition zone suffered from continuous invasion and conflict, resulting in a breakdown of the social control structure. According to the ecological perspective, any conflict derived from invasion should settle as a new order becomes dominant. However, given the continuous changes in community members and the rapidly-growing central business district, the transition zone failed to move from disruption to reorganization. Thus, communities in the transition zone were characterized by a lack of normative structure and higher rates of social problems.

Shaw and McKay (1942) applied the concentric zone model to the study of juvenile delinquency in Chicago. They showed that juvenile delinquency rates were not evenly distributed over the entire city; instead, crime rates were highest in the transition zone. They concluded that areas with a high delinquency rate were characterized by three structural factors: poverty, ethnic/racial heterogeneity, and population mobility viewed as indicators of social disorganization (Kornhauser, 1978). In the transition zone, residential communities were altering into commercial or industrial areas. While high-income residents could move to the outer zones for a better residential environment, low-income people who could not afford to move had no choice but to stay in the transition zone. As a result, only low-income households characterized by low percentage of home ownership, high percentage of families on relief, and low median income dominated the communities. This zone was also preferred by low-income non-whites or foreign immigrants, as a result of limited economic ability. Thus, successive waves of new immigrants turned the communities more heterogeneous. The high rates of mobility in and out of communities resulted from push- and pull-factors. The deteriorated environments pushed residents who could afford to escape out of the communities. The low property value and close proximity to workplaces encouraged an influx of low-income earning immigrants. Ultimately, the three indicators of social disorganization represented dynamics that were based on the economic statuses of both residents and locations (Taylor, 2001).

Since the 1970s, scholars began to view social

disorganization through a social control model (Bursik, 1988; Kornhauser, 1978; Sampson and Groves, 1989). According to this perspective, community contexts in socially disorganized areas weaken community controls over residents and lead to increased crime rates. In other words, the community control variable (endogenous variable) intervened between indicators of social disorganization (exogenous variables) and crime rates. Bursik (1988) noted that Shaw and McKay did not suggest that urban ecological factors were the cause of crime. Instead, Shaw and McKay attempted to postulate how social disorganization destructed informal social control within communities and consequently increased crime rates. In a similar vein, Simcha-Fagan and Schwartz (1986) argued that the effect of community structural variables on juvenile delinquency rates was mediated by the community’s ability to maintain social participation and its vulnerability to deviant subcultures. For example, in an area with high rates of residential mobility, the level of involvement in local organizations is low, and the community therefore cannot effectively cope with problems such as social disorder or criminal subcultures. Sampson and Groves (1989) tested the mediating effects of informal and formal community control factors between structural characteristics (i.e., urbanization, residential mobility, ethnic heterogeneity, and family disruption) and crime rates. They found a significant negative relationship between structural variables and community control variables, such as the local friendship network and the supervision of teenage peer groups. Additionally, most structural characteristics had significant and direct effects on crime rates. These direct effects were sometimes stronger than those of the control variables on crime rates. Veysey and Messner (1999) replicated Sampson and Groves’ study, with consistent findings, showing that community control variables effectively mediate the relationship between crime and most of the structural variables, including residential stability, socioeconomic status, and racial and ethnic heterogeneity.

The assumption of ecological stability was questioned by longitudinal studies. Shaw and McKay’s social disorganization model was based on the assumption that a stable dynamic of ecology characterized the city of Chicago. The features of local communities in Chicago were determined by the “natural” process of invasion, conflict, and succession. According to this approach, a socially-disorganized community will experience a stable ecological process, leading to chronically high rates of crime. This “residential succession” discovered in Shaw and McKay’s (1942) research showed that rates of juvenile delinquency in the transitional zone were high and

stable, regardless of the racial/ethnic change in the community members.

However, Bursik and Webb (1982) noticed that after World War II a massive demographic change occurred in Chicago. Prior to the 1950s, when Shaw and McKay studied, traditionally unstable areas that existed within the transitional zone provided new immigrants with inexpensive housing. Furthermore, black immigrants were forced to settle in the “black belt,” a residential section segregated from whites, and the belt did not expand much between 1920 and 1950 (Bursik and Webb, 1982). After 1950, however, the black population rapidly increased in Chicago, primarily because employers attracted blacks from the South in order to meet labor demands. Furthermore, as a result of the decisions by the U. S. Supreme Court which prohibited racial discrimination in housing (e.g., *Shelley v. Kraemer*, 1948; *Hurd v. Hodge*, 1948), blacks began to move to residential areas that were previously populated by whites. Unlike the gradual change based on stable urban ecological process, the racial turnover in these areas was massive and occurred within a very short period of time. As a result, social disorganization in these areas occurred at a more rapid rate. Bursik and Webb (1982:39-40) argued that “when the existing community changes almost completely within a very short period of time, the social institutions and social networks may disappear altogether or existing institutions may persevere in the changed neighborhood but be very resistant to the inclusion of new residents.” This hypothesis was supported by findings that juvenile delinquency rates were highest between 1950 and 1960, when these rapid changes occurred. Juvenile delinquency rates then declined between 1960 and 1970, when these communities became stabilized by the reestablishment of social control (Bursik and Webb, 1982). Although the basic approach regarding the relationship among racial turnover, social disorganization, and high crime rates did not deviate from Shaw and McKay, Bursik and Webb attempted to show more dynamic aspects of community changes by urban development.

Similarly, Schuerman and Kobrin (1986) also challenged assumptions of community stability made by earlier urban ecologists. Using a developmental model, they examined the twenty-year histories of Los Angeles County’s high crime areas. Their findings showed that changes in community structural characteristics (i.e., shifts from single- to multiple-family dwellings, residential mobility, family disruption, and the proportion of non-white) preceded emerging increases in crime rates. As these neighborhoods then entered into their enduring stage, high rates of crime had preceded further neighbor-

hood changes. These studies based on urban development suggested a new approach to overcome the problem of Shaw and McKay’s model, which could be interpreted as valid only in the stable urban ecological setting before 1950. As Bursik (1986:36) stated:

“Contrary to Shaw and McKay’s assumption of stability, the ecological structure of Chicago has been in a period of reformulation for several decades. Of primary interest, however, is the degree to which these new dynamics are reflected in the delinquency rates of local communities. Shaw and McKay’s concept of social disorganization would predict that neighborhoods characterized by rapid ecological redefinition will also be likely to experience significant increases in their delinquency rates. If this is not the case, then the notion of social disorganization may have been peculiar to a specific historical context and of no current value in theoretical models of crime and delinquency.”

As opposed to Shaw and McKay who saw social disorganization as an outcome of a natural ecological process, Bursik (1986) argued that social disorganization could result from the dynamics of political decision-making processes. For example, he pointed out that the process of suburbanization expanded the suburban areas, which significantly changed the ecological structure of the central city.

Suburbs, Structural Changes, and Crime

The transition zone and its structural factors have been the focal points in the studies of early social ecologists in Chicago and later of scholars in the ecological perspectives of crime. In contrast, suburban areas, which are placed at the outside of the concentric zones (Zone IV or V) according to the Chicago School scholars, have not drawn much attention in studies of crime. A lack of attention is derived from the assumptions that suburbs are dominated by the white middle-class and are crime-free areas.

Popenoe (1988:394) defined a suburb as a “community that lies apart from the city but is adjacent to and dependent upon it.” In other words, though suburbs are physically separate from the city, they economically and culturally rely on it. In his book, *Trouble in Paradise: The Suburban Transformation in America*, Baldassare (1986) provided four characteristics of suburban areas. First, suburbia is located in surrounding areas of a major central city. Second, the primary economic activities are nonagricultural. Third, although the population density is lower than the major city, a suburban area should be highly populated. Finally, it is politically and economi-

cally fragmented. A better understanding of the suburbs, however, requires the knowledge of how the central city has changed the features of suburbs through the history of urban development.

Baldassare (1992) divided the history of suburbs into three eras: the early urban-industrial, the late urban-industrial, and the metropolitan eras. During the early urban-industrial era, suburban areas emerged as the result of rapid population increase in the central city during the early twentieth century. As poor immigrants rushed into cities and living conditions became deteriorated, many residents of the inner city areas moved to the outer zones of the city, searching for a better residential environment. Urban ecologists explained this phenomenon by the process of "invasion and succession" (Park, 1925) and the "concentric model" (Burgess, 1925). Residents abandoning the central business districts formed a new residential area, the "commuter zone," located outside of the concentric zones. The early suburban areas were dominated by expensive houses owned by white, family-oriented, and middle class inhabitants.

In the 1950s and 1960s, as the late urban-industrial era began, suburban areas dramatically expanded. This expansion occurred while urban areas witnessed a substantial increase in social problems, including high crime rates, unemployment, and racial conflicts. The movement of the white middle class to suburban areas accelerated as they attempted to escape the deteriorating conditions of inner cities. In addition to this natural ecological process (invasion, conflict, and succession), suburbanization during this era was precipitated by "non-natural" factors. Bursik (1986) viewed suburbanization as a result of the political decision-making process, which affected changes in the structural features of central cities. The rapid growth of the suburbs was caused in part by the government's efforts to fund the construction of interstate highways, which reduced the time and cost for commuting from the suburbs to the inner city (Palen, 1995; Stanback and Knight, 1976). Furthermore, the increase in private automobile ownership, as a result of advanced technology and price reduction, also facilitated the movement of city workers to suburban areas (Palen, 1995).

The role of the suburbs as residential areas for city workers, however, experienced a change in the 1970s when central cities and their outer zones became combined into metropolitan areas. Manufacturers pursuing lower rents, taxes, and labor costs began to move from the inner city to suburban areas (Baldassare, 1992). As the suburbs provided both job opportunities and residences, more city dwellers moved to suburban areas. Accordingly, suburbs became economically and socially independent from cit-

ies and became "the dominant metropolitan economic and social units" (Palen, 1995:9), as suburban residents could commute to work within the suburbs rather than drive into the central city.

Suburbs have been regarded as homogeneous communities where predominantly white, family-oriented, and middle-class homeowners reside. Baldassare (1986:30) described the image of a typical suburb as the following:

"Suburbia is supposed to be a white middle class settlement. Households are to be filled with two parents and two or more children. Their homes are owned or, more accurately, mortgaged. The inhabitants are surrounded with automobiles, appliances, and luxuries. One adult, the male, is working, and the other adult, the female, is engaged in housekeeping and child rearing."

Since the 1970s, people moving to the suburbs in search of employment opportunities did not have the same socioeconomic characteristics as those during the early twentieth century. As a newly-emerging business area, the suburbs demanded various workforces ranging from low-skilled workers to high-skilled experts, and many nonwhites began to reside in suburbs. As a result, suburbs became both racially/ethnically diverse and economically diverse. At the same time, as Baldassare (1986) pointed out, different land uses within the suburbs diversified the value of land. For example, land value was lower in areas near manufacturing factories. Low-income workers could find affordable residences in these areas. Non-traditional family structures, such as female-headed households and unmarried single households, also became more prevalent. In addition, the growth in the number of working women demanded a fundamental change on the outdated stereotype of working fathers and housekeeping mothers. Finally, the proportion of home ownership was also lowered. Low-income workers or unmarried singles preferred to rent homes, not only because of their economic affordability, but also because they required less residential stability. Consequently, residential stability represented by high rates of home ownership could no longer be a characteristic of the suburbs, at least for some neighborhoods. In sum, industrialization and population increases diversified the structural characteristics in suburban areas. This enhanced racial/ethnic diversity, increased economic diversity, decreased traditional family structures, and diminished residential stability.

Although the suburbs became far more diversified in terms of structural characteristics, it did not mean that immigrants with diverse characteristics were evenly distributed over the entire geography of suburbs. The uneven residential distribution has been explained by two theories (assimilation and place stratification). Assimilation

theory posits that market principles rule the allocation of residential locations (Massey, 1985). Briefly speaking, people of high socioeconomic status live in better residential areas because they can afford to acquire expensive residency in the areas. People with a lack of resources have no choice but to live in less desirable communities. On the contrary, the proponents of place stratification theory do not see the distribution of residency as a simple matter of market principles. They argue that residential areas are not allocated based on natural market competition, but are distributed by some advantaged groups' willingness to preserve the monopoly of particular areas by segregating people who have different characteristics (Logan et al. 1996; Massey and Denton, 1988; South and Crowler, 1997). Place stratification theory views an individual's race as the most significant factor in the decision-making of residency in suburbs. The effect of socioeconomic status on the residency distribution is regarded as contingent upon race. South and Crowler (1997) argued that although socioeconomic status affected the ability to move out of poor areas for both blacks and whites, efforts to escape from poor neighborhoods were easier for whites. By comparison, blacks were more likely to end up moving into another poor community (Logan and Alba, 1995).

Suburbs have been regarded as regions that do not suffer from many urban problems like crime. However, as structural characteristics were altered by industrialization and population growth, suburbs began to witness a decline in the quality of life and an increase in neighborhood problems (Baldassare, 1986; Cervero, 1986). Some studies have paid attention to the associations between structural characteristics and crime rates in suburbs. These studies attempted to explain the growth of suburban crime by the suburbanization of minorities (Alba and Logan, 1991). For example, Stahura and his associates (1980) found that the percentage of low-income population was the strongest determinant of both violent and property crime rates. In addition, the percentage of blacks, population density, and the employment/residence ratio all affected crime rates. Similarly, Stahura and Sloan (1988) found that crime rates were high in suburbs with a high percentage of black population and high unemployment rates.

Other studies laid a greater emphasis on the association between racial composition and crime rates. Logan and Stults (1999) argued that while whites who moved to the suburbs were more likely to live in places with low crime rates, blacks were located in particular areas where crime rates were not much lower than those of the central city. They also revealed that even affluent blacks were

exposed to twice as much violent crime rates as poor whites. Alba and his associates (1994) reached a similar conclusion after examining crime rates in 352 suburbs. They found that three community variables (the percentage of blacks, the percentage of the poor, and population size) were strong determinants of individual and racial group variations in exposure to crime. They concluded that no matter what their individual socioeconomic characteristics were, blacks were exposed to more crime, because they tended to live in high crime communities. Findings of these studies presented contradicting results in terms of causal direction between racial composition and crime rates. While some studies showed that the growth of the minority population resulted in high crime rates, others proved that minorities (blacks) were simply located in areas with high crime rates. In a response, Liska and his associates (1998) examined the reciprocal effects of racial composition and crime rates in suburbs. Their study also showed that the effect of violent crime rates on racial composition was greater than that of racial composition on violent crime rates.

Social Disorganization Theory beyond Urban Areas

Despite the abundant studies testing social disorganization theory, only a few scholars have paid attention to areas outside of metropolitan areas. Osgood and Chambers (2000) tested social disorganization theory in 264 non-metropolitan counties in Florida, Georgia, South Carolina, and Nebraska. They justified their attempts to generalize the urban ecological theory to non-urban areas with two reasons. First, following the interpretation of social disorganization theory by Kornhauser (1978) and other scholars who had emphasized social control mechanisms in communities, Osgood and Chamber stressed the disruption of informal and formal community control networks as the primary condition for high crime rates. They also pointed out the irrelevance of this condition within geographic areas (i.e., urban versus rural areas). In the end, it is the criminogenic condition that matters, not the geographic area. Second, they noted that rapid population growth in rural areas weakens social ties, just as early urban ecologists had witnessed. Furthermore, given the greater reliance upon informal social control through social networks in rural areas, the effect of waning social control as a result of disrupted social relations would be more detrimental in rural areas than in urban areas (Osgood and Chamber, 2000; Wilkinson, 1984). Osgood and Chamber (2000) found that while juvenile violence was significantly associated with residential mobility, ethnic heterogeneity, and family disruption—supporting

the generality of social disorganization theory—poverty was not related to juvenile violence. Regarding the non-effect of poverty, the authors inferred that poorer communities in rural areas were more stable than their affluent counterparts, due to the lack of resources that made it difficult to leave the communities.

Recently, Bouffard and Muftić (2006) attempted a similar approach by testing social disorganization theory within 221 non-metropolitan counties in the upper-Midwest region. Their findings revealed that violent offenses were significantly related with residential mobility and family disruption, but that there was no significant association between violent offenses and heterogeneity. Poverty was negatively related with violent crime. This finding deviates from the proposition made by social disorganization theory, but is consistent with the findings of Osgood and Chamber (2000).

In the current study, we were interested in whether social disorganization theory could be applied to suburban areas. These areas, classified as Zone V or VI by urban ecologists, can sometimes become a part of a metropolitan statistical area as the central city expands. Our approach using the block group as the geographic unit of analysis was more microscopic than in previous tests of social disorganization theory in non-metropolitan areas. Additionally, our measure of crime is the number of calls generated by citizens, unlike previous studies that relied on official crime data. The reason for this innovative measure was that the validity of official crime data has often been questioned, because it may represent “official reactions to crime” rather than an actual measure (Warner and Pierce, 1993:494). In other words, higher crime rates may represent nothing more than a strong willingness for social control exhibited by the police within that area. Police call data are exempt from this problem, as they are originated from direct requests made by citizens. Furthermore, calls for service better reflect what citizens actually view as crimes or problems (Warner and Pierce, 1993). Many events reported to police do not meet the requirements for police officers to file official reports. The decision about whether a reported event will be officially filed or dropped is heavily dependent upon police discretion. In this decision-making process, how the police define the event is more important than how the complainant defines it. However, as Warner and Pierce (1993:497) illustrate, how the complainants view the event may prove of greater importance than how police define the event, as “it is the citizens of the community who must live with crime and decide whether it is worthy of official action.” Warner and Pierce (1993:497) further explain that “without a screening process by the police,

calls for service are more likely to reflect problems in terms of callers’ viewpoints.”

The current study also examines the effects of social disorganization indicators upon other social problems, such as incivilities and social service demands. Although various reasons can motivate a call for service, only crime-related calls have been dealt with in the previous studies. Albert Reiss (1985) made the distinction between “hard crime” (e.g., more serious predatory offenses) and “soft crime” (e.g., incivilities). The importance of incivilities has been widely discussed in the literature, especially by the proponents of community policing. Wilson and Kelling (1982) argued that neighborhood disorders indicate a lack of care from community residents and increase fear of crime. An increased fear of crime accelerates the neighborhood’s deterioration, as people abandon the area or withdraw from social relations within the community. The deteriorated neighborhood begins to attract more motivated offenders. Without proper social control, this will ultimately increase crime rates. Many studies supported this idea by showing that neighborhood disorders were significantly related with rates of crime and fear of crime among residents (Pate et al., 1986; Skogan, 1990). Thus, we can expect that areas with high crime rates may correspond to those with high disorder problems. Indeed, Weisburd and Mazerolle (2000) revealed that drug hot spots experienced disorder problems as well as high crime rates. Similarly, Weisburd et al. (1992) found that the generation of calls for service for crimes including assault and robbery were correlated with disturbance calls.

Hypotheses

In this study, we tested the following four hypotheses:

Hypothesis 1: Crime, disturbance, and demands of civil service are positively related with poverty in suburban areas.

Hypothesis 2: Crime, disturbance, and demands of civil service are positively related with racial/ethnic heterogeneity in suburban areas.

Hypothesis 3: Crime, disturbance, and demands of civil service are positively related with residential mobility in suburban areas.

Hypothesis 4: Crime, disturbance, and demands of civil service are positively related with family disruption in suburban areas.

Data and Sample

This study used calls for service (CFS) as an indicator of crime and social problems, and collected data generated from January 1st to December 25th, 2003 in four suburban Texas cities. Ten police agencies in Texas have gathered and managed CFS using a data management system called *CRIMES* (Criminal Research Information Management Evaluation System) developed by the Police Research Center in the Criminal Justice Center at Sam Houston State University. The fields in the data included call source, call type, call disposition, date/time, address, and police number. The four cities chosen for this study meet the definition and characteristics of a suburb proposed by Popenoe (1988) and Baldassare (1986). All four cities are located near major central cities in Texas, including Dallas, Houston, and San Antonio. The longest distance from a major central city is 25 miles. The major industries in these cities are non-agricultural, and include retail trade, professional/technical service, accommodation, and food service. The population densities, ranging from 1,499 to 2,628, are lower than the major central cities (i.e., 3,469 in Dallas, 3,371 in Houston, 2,808 in San Antonio). Finally, all four cities are separated from the central cities with their own municipal governments (See Appendix A for further information on each city).

Since the CFS data contain numerous cases irrelevant to the purpose of the current study, a careful data-cleaning process was required. First, calls without addresses were screened out, because it was impossible to identify the geographic locations through geocoding. Second, all the “field-generated calls” were excluded, because they were not generated by citizens but made by officers for administrative purposes. Third, calls were eliminated from analysis if a call type was not assigned in the data, since this study attempted to examine differences in geographic distributions by categorizing calls into three types (crime, disturbance, and civil service calls). This study also excluded calls that did not fall under the three types, such as administrative calls (e.g., back-up requests) and unidentified calls (e.g., 911 hang up). Fourth, this study identified and filtered out all the calls made from police departments and local hospitals/medical clinics. These were the most frequent locations where police officers were dispatched to take a report.¹ However, these addresses reflect the address where calls were made rather than the addresses where the problems actually occurred.

The final stage of the clean-up process was geocoding, the process to match street addresses in the CFS with a reference file (e.g., street file). Calls failing to match the street addresses in the reference file couldn't

be viable for analysis because their locations were not geographically identified. The percentage of calls that successfully matched the street addresses in the reference file was referred to as a “hit rate” (Paulsen and Robinson, 2004:258). Although it was desirable to obtain a high hit rate to maintain more representative data, the problem of unmatched calls was inevitable. For example, police officers often used well-known place names rather than the exact addresses. In addition, simple misspelling or omission of a letter could cause unmatched calls because geocoding required accurate and full street addresses for a successful matching. The hit rates were moderate in the first three cities and ranged from 79% to 93%. The fourth city, however, showed relatively low hit rates: 79% for crime calls, 74% for disturbance calls, and 44% for civil service calls. Despite the potential problem of a non-representative sample, the city with lower hit rates was included to keep the minimum number of cases required for an analysis. Furthermore, with only three block groups from the fourth city included in the analysis, the potential harmful effect of the low hit rates was anticipated to be weak. After screening out irrelevant or un-geocoded calls, the total number of calls available for analysis in the four cities was 19,076.

The structural correlates were measured using the 2000 Census Summary File 3, which includes social, economic, and housing characteristics compiled from questions asked of a sample of about 19 million housing units (U.S. Census Bureau, 2004). Summary File 3 provided tables both for block group level and census tract level, and this study used block group level tables. In order to identify geographic locations of calls, Census 2000 TIGER/line shapefiles were utilized as the reference map documents. Given that block groups were the unit of analysis, the block group 2000 data layer was employed as the reference map document.

Although there are eighty-four block groups in the four suburbs, not every block group was appropriate for the analysis. Some block groups did not match the city boundaries because they bordered on the neighboring jurisdictions. In other words, only a certain part of the block group belonged to the city, and the rest of the block group was subject to the adjacent jurisdiction. Therefore, CFS data that were gathered only within the city boundary were not compatible with the demographic characteristics measured in a block group. Block groups were included in the sample if more than 90 percent of the population lived within the city boundary. The block-level demographic data of the 2000 Census Summary File 1 were used to assess block group populations within and out of the city boundary. After excluding twenty-nine block

groups, whose populations living outside of the cities were equal to or greater than 10 percent, fifty-five block groups became available for the study.

Measures

The dependent variable was CFS. All the calls were assigned into three types: crime, disturbance, and civil service. Crime calls were related with an actual occurrence or a threat of crime. Disturbance calls were related with physical or social incivilities such as loud music, loud noise, and abandoned property (Skogan, 1990). Civil service calls covered general assistance activities, including emergency medical service (EMS), traffic, fire, and other non-crime related services.

The structural correlates included three indicators of social disorganization (poverty, residential mobility, and racial/ethnic heterogeneity), as well as one indicator of family disruption. First, the economic level of a community was one of the major indicators of social disorganization (Kornhauser, 1978). Shaw and McKay (1942) concluded that delinquency rates were highest in the most disadvantaged areas, represented by high percentages of families on welfare, low median incomes, and low percentages of home ownership. In poor communities, various social institutions lacked money and resources to maintain their adequate functions, undermining the interrelation among institutions. This ultimately leads to a breakdown of social control. The measure of poverty in this study was the proportion of households in each block group living below the poverty level.

Second, Shaw and McKay (1942) argued that in areas with high residential mobility, common interests could hardly be developed, leading to a breakdown of social control. Furthermore, population turnover made it difficult to establish common interests. Existing common interests, if any, had to be constantly renewed, as new community members were introduced (Kornhauser, 1978). In this study, residential mobility was measured by the proportion of households that had not lived in the same house for the past five years.

Third, a racially or ethnically heterogeneous community was likely to fail in developing effective informal networks of social control. In such a community, diverse norms and cultures coexisted, leading to a lack of cohesion and integration among community members. Without finding common interests, the community would experience a breakdown of social control. With regard to its definition, racial/ethnic heterogeneity should not be understood as the proportion of foreign-borns or non-whites (Smith and Jarjoura, 1988). For example, if 90% of the residents in a community are black, that community

is substantially homogenous. On the contrary, if 50% of the residents in a community are white and 50% are black, that community is as heterogeneous as possible. In this sense, Blau (1977:78) defined racial heterogeneity as “the chance expectation that two randomly chosen persons do not belong to the same group, which takes both number of groups and the distribution of the population among them into account.” Racial/ethnic heterogeneity was calculated by “ $1 - \sum p_i^2$ ” when p_i was the proportion of the population in a given racial group. This study took into account eight racial/ethnic groups, including non-Hispanic white, black, Hispanic, American-Indian (and Alaska native), Asian, Native Hawaiian (and other Pacific Islander), and two or more races.

The last structural correlate was family disruption, measured by the percentage of households headed by a female householder (no husband present) with children under 18 years of age. Sampson (1985, 1987) argued that areas with high levels of family disruption undermined an effective network of social control over juveniles’ behaviors. Sampson (1987:353) contended that family disruption could weaken formal social controls through “a weakening of formal and voluntary organizations, many of which play crucial roles in linking local youths to wider social institutions and in fostering desired principles and values.” Sampson (1985) also argued that family disruption could diminish informal social controls because a lack of acquaintance among families in the neighborhood reduced the chance to watch out for juveniles’ delinquent activities (1985).

Findings

We conducted negative binomial regression, which is a variant of Poisson regression. Both negative binomial regression and Poisson regression are widely used for analyzing event counts, as they can account for observed heterogeneity. However, negative binomial regression is more appropriate than Poisson regression in the common situation where the cases of interest are overdispersed, namely, where the variance is greater than the mean (Long and Freese, 2003). Three types of CFS (crime, disturbance, and civil service) were regressed on structural variables (poverty, residential mobility, racial/ethnic heterogeneity, and family disruption). Given the small sample size ($N=55$), one or two blocks with extreme values may seriously distort the test result. Using Mahalanobis distance, one multivariate outlier (significant at $p < .001$) was detected and eliminated. This left fifty-four block groups for the analysis.

Table 1 displays descriptive statistics for the dependent and independent variables. The average number of

Table 1. Descriptive Statistics for Variables

Variables	Total (N = 54)		City I (N = 29)		City II (N = 10)		City III (N = 12)		City IV (N = 3)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Crime call	72.76	48.87	64.90	33.49	44.30	23.93	108.25	64.20	101.67	92.61
Disturbance call	106.78	83.15	121.83	73.29	13.20	7.93	134.58	83.04	162.00	116.28
Civil service call	132.67	110.05	108.10	65.53	62.20	37.06	227.75	147.72	224.67	184.72
Poverty	.05	.04	.06	.04	.01	.02	.07	.05	.03	.02
Mobility	.51	.16	.55	.19	.47	.09	.51	.07	.28	.07
Heterogeneity	.38	.19	.43	.17	.17	.10	.48	.09	.15	.08
Family disruption	.06	.04	.07	.04	.01	.02	.07	.04	.03	.01
Population	1426.20	785.33	1390.90	758.08	1668.40	799.09	1264.33	869.54	1607.67	864.99

CFS in the fifty-four block groups was approximately 73 for crime, 107 for disturbance, and 133 for civil services. While City II generated the smallest number of CFS in all three call types, City III showed the greatest number of calls for both crime and civil service. More disturbance calls were made in City IV than in any other city. Consistent with social disorganization theory, all social disorganization indicators were above average in City III and below average in City II. Residential mobility was lowest in City IV, but it was similar in the other three cities. Interestingly, despite having the greatest number of disturbance calls, City IV showed a low social disorganization level.

Table 2 displays the zero-order correlation matrix for all variables. Supporting social disorganization theory, poverty and heterogeneity were significantly and positively correlated with all three types of CFS. Consistent with Sampson's (1985, 1987) studies, family disruption showed a significantly positive correlation with all three dependent variables. However, residential mobility was not significantly correlated with any type of CFS. The independent variables including the indicators of social disorganization and family disruption were significantly correlated. The strongest correlation was 0.66 between

heterogeneity and family disruption, followed by 0.61 between poverty and heterogeneity and 0.60 between poverty and family disruption. Other correlations among independent variables did not exceed 0.40. Given the strong correlations among independent variables, a preliminary analysis was conducted to address multicollinearity before the regression analysis was executed. The value for tolerance ranged from 0.45 for heterogeneity to 0.83 for mobility, and the value for the variance inflation factor varied from 1.21 for mobility to 2.24 for heterogeneity. According to these statistics, multicollinearity was not problematic. Finally, the three types of CFS were strongly correlated. Block groups with a higher number of crime calls were more likely to be areas where more disturbance calls and more demands for social services occurred.

Table 3 shows the effects of structural variables on the number of CFS. Regression model 1 included only three indicators of social disorganization (poverty, residential mobility, and racial/ethnic heterogeneity). In Model 2, family disruption was added in order to examine its effect on CFS and on the coefficients for the indicators of social disorganization. The likelihood-ratio tests revealed significant evidence of overdispersion for CFS, indicating

Table 2. Zero-Order Correlation Matrix

(n = 54)

	1	2	3	4	5	6	7	8
1. Crime call	1.00							
2. Disturbance call	.83 **	1.00						
3. Civil service call	.94 **	.80 **	1.00					
4. Poverty	.28 *	.44 **	.29 *	1.00				
5. Mobility	.05	.12	-.01	.18	1.00			
6. Heterogeneity	.34 *	.45 **	.35 **	.61 **	.39 **	1.00		
7. Family disruption	.39 **	.55 **	.30 *	.60 **	.31 *	.66 **	1.00	
8. Population	.40 **	.21	.34 *	-.25	.35 *	-.02	-.03	1.00

* $p < .05$ (two-tailed), ** $p < .01$ (two-tailed)

Table 3. Negative Binomial Regression Results for Calls for Service in 54 Block Groups in Texas Suburbs

Variables	Crime		Disturbance		Civil service	
	Model 1 b (Std. error)	Model 2 b (Std. error)	Model 1 b (Std. error)	Model 2 b (Std. error)	Model 1 b (Std. error)	Model 2 b (Std. error)
Poverty	4.97 * (2.06)	3.49 (2.07)	6.82 * (3.31)	4.49 (3.21)	6.40 ** (2.42)	5.50 * (2.51)
Mobility	-1.25 * (0.51)	-1.40 ** (0.50)	-1.09 (0.75)	-1.57 * (0.70)	-1.98 ** (0.57)	-2.12 ** (0.58)
Heterogeneity	1.12 * (0.50)	.68 (0.51)	1.49 (0.81)	.82 (0.77)	1.72 ** (0.57)	1.45 * (0.59)
Family disruption		5.46 * (2.16)		11.04 ** (3.25)		3.40 (2.52)
Population	.48 ** (0.10)	.47 ** (0.09)	.36 * (0.15)	.37 ** (0.13)	.53 (0.11)	.52 ** (0.10)
Intercept	3.47 ** (0.26)	3.49 ** (0.24)	3.69 ** (0.38)	3.61 ** (0.33)	4.03 ** (0.29)	4.06 ** (0.29)
Log-Likelihood	-259.69	-256.57	-296.35	-290.79	-294.47	-293.56
Likelihood Ratio χ^2	665.49 **	605.29 **	2047.27 **	1780.37 **	1891.77 **	1871.48 **

* $p < .05$ (two-tailed). ** $p < .01$ (two-tailed)

that the negative binomial regression model was more appropriate than the Poisson regression model.

All three indicators of social disorganization had a significant effect on the amount of crime calls. The effect of poverty was relatively stronger than others. However, mobility was negatively related with crime, contradicting our hypothesis. The number of crime calls was greater in areas with low residential mobility. In Model 2, the addition of family disruption changed the effects of the social disorganization indicators found in Model 1. While family disruption showed a positive and significant association with crime, the effects of poverty and heterogeneity on crime became non-significant once family disruption was included. The effect of mobility, however, remained negative and significant, even after the inclusion of family disruption.

In terms of disturbance calls, poverty was the only indicator of social disorganization that showed a significant relationship. A higher poverty level predicted a greater number of disturbance calls. In Model 2, family disruption had a positive and significant relationship with the number of disturbance calls. A noticeable finding was that the addition of family disruption rendered the effect of poverty non-significant but the effect of mobility became significant. Like crime calls, disturbance calls were generated more frequently in areas with lower

residential mobility.

The three indicators of social disorganization were significantly related with civil service calls. More calls for civil services were generated from poorer, racially-diverse, and less mobile areas. Furthermore, the magnitude of the coefficients was greater than in the regression models of crime calls and disturbance calls. These relationships did not lose statistical significance even when the family disruption variable was introduced to the model. The addition of family disruption to the model did not substantially change the coefficients for the social disorganization indicators. This occurred in part because family disruption did not significantly explain the variance in civil service demands.

Discussion and Conclusions

The hypotheses derived from social disorganization theory have been tested mostly in large cities, and the empirical results generally supported the theory. Repeatedly, previous studies found that crime rates were higher in poor, unstable, and racially heterogeneous neighborhoods. Later, Sampson (1985, 1987) improved the explanation power of social disorganization theory by adding another variable to the model—family disruption. In the current study, social disorganization theory was

tested in a different setting—the suburban area. Given the rapid socioeconomic changes primarily precipitated by suburbanization, it was assumed that suburbs had gone or were going through an ecological process similar to the one experienced by large cities. This process could make particular neighborhoods more socially disorganized, and hence more vulnerable to various social problems. Unlike most previous studies, this study employed calls for police service as indicators of crime and other social problems. Finally, this study examined whether social disorganization theory could account for variances in the problem of disturbances and the demand for civil services as well as crime.

Consistent with findings in the previous studies, poverty showed a positive relationship with crime occurrence. Furthermore, disturbances and civil service demands (e.g., EMS) were also higher in areas with a higher poverty level. Once family disturbance was included in the model, the positive relationships between poverty and both crime and disturbance were washed away, whereas the relationship between poverty and civil services remained significant. Racial/ethnic heterogeneity was positively related with crime and civil services, but not with disturbances, partly supporting the hypotheses. The relationship between heterogeneity and crime became insignificant when family disruption was included in the model. Wilson (1987) noted that female-headed families were more vulnerable to poverty than any other type of family. His argument was based on 1982 statistics when the poverty rate for female-headed families was 36.3 percent, while it was only 7.6% for families with married couples. Furthermore, the poverty rate was substantially higher for minority female-headed families (i.e., 56.2% for Hispanic families and 55.4% for black families). Thus, the correlations of family disruption with poverty and heterogeneity may exert intervening effects on the initial social disorganization model.

The most unexpected findings were the negative relationships between residential mobility and CFS. Mobility showed significant relationships with crime and civil services, but in the opposite direction of what was hypothesized. Furthermore, the relationships remained significant even after taking into account family disruption. These results were unexpected, but were not unprecedented. Warner and Pierce (1993), also using CFS, found that mobility was inversely associated with assault rates. A further analysis revealed that the interaction term of poverty and mobility had a significant relationship with crime rates, with the highest crime rates in neighborhoods with high poverty rates and low mobility. They reasoned that poor neighborhoods in most cities today tended to be

the most stable areas because the residents had no choice but to stay there primarily due to a lack of resources.

Ross et al. (2000) also found that the effect of residential stability upon levels of distress among residents was contingent upon poverty level. While a stable neighborhood reduced the level of distress in affluent communities, the same residential stability resulted in higher levels of distress in economically disadvantaged neighborhoods. They concluded that the prevalent physical and social incivilities in poor neighborhoods, coupled with the absence of resources to improve conditions, raised the levels of distress when associated with a sense of inability to escape the undesirable situation.

Wilson (1987) called this social phenomenon “concentration effects” in inner-city neighborhoods during the 1970s and 1980s. As the middle- and working-class escaped from distressed areas in inner cities, the areas became dominated by the most disadvantaged people who could not afford to move out. The loss of middle- and working-class families, which served as “social buffers” against depraved economic conditions, resulted in not only steady economic depression but also a malfunction of basic social institutions and a breakdown of the social control system. It was these areas where the highest rates of crime and other social problems were found. Furthermore, when the place stratification perspective was applied, the probabilities of minorities in distressed neighborhoods to move out diminished even more. South and Crowder (1997) argued that even the most educated blacks were less likely than the least educated whites to move out of poor areas due to the racial segregation of the residency in metropolitan areas.

Indeed, given that the concept “concentration effects” emerged in urban areas to explain economically disadvantaged minority neighborhoods, caution is required when applying the same concept to suburban areas. However, recent trends in the concentration of poverty show that despite the overall great decline in poverty in the United States between 1990 and 2000, the decline in poverty was slowest in suburbs. While the population in high-poverty areas between 1990 and 2000 dropped by 47% in non-metropolitan areas and 21% in central cities, the population in high-poverty areas only declined by 4% in suburbs (Jargowsky, 2005). Furthermore, a greater concentration of poverty was reported “along the outer edge of central cities and in the inner-ring suburbs of many metropolitan areas” (Jargowsky, 2005:157).

Like inner-cities, distressed neighborhoods in suburbs were also more likely to be dominated by disadvantaged minorities, who could not escape to a better place, either due to lack of economic resources or residential segrega-

tion. In contrast, whites living in affluent neighborhoods might enjoy more freedom to change their residences. In conclusion, the inverse relationship between mobility and the rates of crime, disturbance, and social service can be explained by a relatively long stay of disadvantaged people in distressed neighborhoods. As Warner and Pierce (1993) suggested, we need to reconsider the meaning of mobility in social disorganization theory, because urban areas are now somewhat different from when the original model of social disorganization was developed earlier in the century.

However, several methodological limitations require careful interpretation of the outcomes in the current study. First, when spatial units of analysis (e.g., census blocks) are used, one of the most critical issues is spatial autocorrelation. Given that a geographic unit is surrounded by other adjacent units, the value in one area may be dependent on those in the adjacent areas. For example, a high number of CFS in one block group may be a result of its location, whereby it is affected by neighboring block groups which generate many police calls. This association is called "positive spatial autocorrelation" (Paulson and Robinson, 2004). A regression model assumes that the residuals are independent. A positive spatial autocorrelation will lead to underestimated standard errors, thus resulting in an inflation of values of test statistics (t and F). This may generate Type I errors by mistakenly concluding that variables are significantly related when they actually are not (Martin, 2002). In a preliminary analysis, Moran's I tests were conducted to examine the degree of spatial autocorrelation in CFS in each city. A significant spatial autocorrelation was detected only in City III, but not in the other areas.

Second, the current study used block groups as the unit of analysis. However, these geographic units were developed and administered by the Census Bureau in an arbitrary way. Because they were created for administrative or governmental purposes, they may not represent actual neighborhoods. Third, the variability of the dependent variables is limited because of the small number of cases. Limited variability in the dependent variables could hinder the detection of an association with predictors. Fourth, given the specific area where the sample was drawn, the study findings may be limited in generalizability. Fifth, we could not measure key community control variables that may mediate the effects of social disorganization variables on CFS variables. Finally, although it is desirable to analyze multiple years of data to account for annual fluctuations, the current study used only one year of data because of limitations in data availability.

In conclusion, this study found that structural characteristics could explain the variation in crime and other types of social problems in suburbs. Diversification in structural features in these areas, accelerated by rapid suburbanization, not only resulted in the increase in overall crime rates, but their spatial concentration in "socially disorganized" areas, just as inner cities had experienced. In this sense, suburban areas appeared to go through an ecological process that was similar to Chicago's in the 1920s. However, this study revealed differences between Chicago and the suburbs in regard to the influences of social disorganization factors on crime. As previously discussed, residential stability, not residential mobility, was a predictor of high crime rates in suburbs. Membership changes in distressed suburban neighborhoods occurred less frequently than in 1920s Chicago, which was in the middle of social turmoil. In addition, while high crime areas in Chicago in the 1920s were populated by diverse racial/ethnic groups who emigrated from different foreign countries, those in contemporary suburbs were occupied by more homogeneous groups, mostly blacks and Hispanics, who moved from inner cities. This difference was supported by the non-significant or weak effects, if any, of racial/ethnic heterogeneity upon crime and other social problems in this study. However, these findings and their implications are limited because of the methodological drawbacks mentioned above and the limited number of suburbs sampled in a non-random manner. Most importantly, with the small number of cases and the lack of generalizability, the results of this study should be understood as exploratory rather than confirmatory. Future research is recommended to draw more attention to crime in suburban areas and to apply better methodologies to improve generalizability.

Endnotes

1. Other potential problems of police call data include over-reporting when one incident results in multiple calls (e.g., a gunshot), misinterpretation by 911 operators, various errors in the data-input process (e.g., misspelling), and calls made by mistake or with an intention to lie.

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Appendix. Geographic and Socioeconomic Characteristics in Four Suburbs

	City I	City II	City III	City IV
MSA	Dallas-Fort Worth- Arlington	Dallas-Fort Worth- Arlington	San Antonio	Houston-Bay Town- Sugar Land
County	Tarrant	Tarrant	Bexar	Harris
Land area	16.3 square miles	13.1 square miles	5.6 square miles	3.4 square miles
Population	46,005	19,636	14,849	6,880
Race/ethnicity				
White	68.0 %	90.7 %	66.5 %	81.9 %
Black	6.5 %	1.4 %	6.4 %	4.1 %
Hispanic	13.3 %	3.2 %	21.6 %	7.3 %
Others	12.2 %	4.7 %	5.5 %	6.8 %
Median income	\$49,582	\$117,419	\$50,501	\$68,431
Median house value	\$94,900	\$267,100	\$93,200	\$142,900

Source: *U.S. Census 2000*