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Spatial analysis of the effects of revitalization on crime in the Jeffrey-Lynne community in Anaheim, California

Jamie Erin Conley

SPATIAL ANALYSIS OF THE EFFECTS OF REVITALIZATION ON CRIME IN THE JEFFREY-LYNNE COMMUNITY IN ANAHEIM, CALIFORNIA

A Project

Presented to the

Faculty of

California State University,

San Bernardino

In Partial Fulfillment

Of the Requirements for the Degree

Master of Arts

in

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by

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ABSTRACT

Over the last few years the city of Anaheim, California had undertaken several significant redevelopment projects designed to revitalize some of the older, more run down areas of the city. One of these projects was the redevelopment of the Jeffrey-Lynne neighborhood, an older residential neighborhood, just west of Disneyland, that was plagued by crime. The redevelopment of this troubled neighborhood involved the complete remodeling of the existing housing structure into lower density housing within a gated community.

This study examines the impact of the redevelopment on the crime in the Jeffrey-Lynne neighborhood. Location quotients were used to analyze the change in calls for service to the Anaheim police department between 1998 and 2002, for nine selected crime types. Location quotient analyses were performed at six different levels of geography. While the actual number of calls for service decreased for the Jeffrey-Lynne neighborhood, the results of the location quotient analyses revealed that the effects were mixed.

ACKNOWLEDGEMENTS

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To Mom and Dad

for your love and support

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CHAPTER ONE

INTRODUCTION

In 2000, the city of Anaheim, California began the most significant redevelopment project in the city's history. The project involved the revitalization of the Jeffrey-Lynne neighborhood, which had become one of the city's most run down, crime-plagued neighborhoods. In this study, location quotients are used to analyze what effect the revitalization had on calls for service to the police.

History of Anaheim

Anaheim began as a small German colony in 1857 that consisted of 200 acres. It was a farming colony whose original staple crop was grapes for the production of wine; however, after a plague in the 1870's wiped out the vineyards, the orange groves that Orange County is named for were planted (Turney, 1999). The colony grew steadily, and by the time the area was incorporated in 1876 it had a population of 881. The citrus growers in Anaheim finally became connected to the East when the Santa Fe railroad was constructed. Yet, it was not until the 1950's, when a mouse named Mickey came to the city of Anaheim and

transformed it into a mecca of tourism, that Anaheim experienced a significant population boom.

The development of Disneyland had a dramatic impact on the city. The construction and operation of the amusement park created thousands of jobs, which encouraged people to move to the city. In addition, the park served as a stimulus for other industries to relocate to or build within the city. During the 1950's tourism and construction alternated as the dominant industries in the city. In order to accommodate all of the new development, the city annexed over 4,000 acres between 1953 and 1954 (Colson & Black, n.d.). As a result, the city quadrupled in size between 1953 and 1955. During this decade, the city's size and population doubled every three years making it the fastest growing city in the United States. The growth of the city could best be seen in the growth of the population (figure 1). In 1950 the population of Anaheim was 14,556, and by 1955 - the year Disneyland opened - the population was 30,059 (Findlay, 1992). According to the United States Bureau of the Census, by 1960 the population had skyrocketed to 104,184, increasing by over 74,000 people in only five years. This was the largest jump in population in the history of Anaheim and clearly showed

that Disneyland served as a major catalyst of growth for the city. After the initial development years of Disneyland, the population boom slowed but it did continue to grow steadily. By 2000 the city's population reached 328,014, an increase of 21 percent from 1990, making it the second largest city in Orange County and the tenth largest city in California (United States Bureau of the Census, 1990).

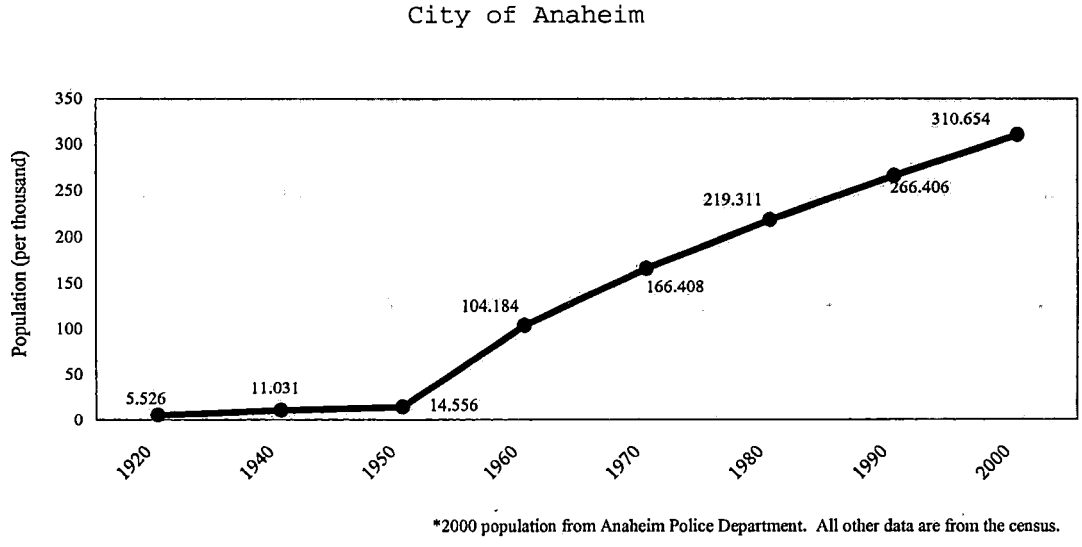


Figure 1. Population Growth

Disneyland's impact on the city did not end once it was built. The park became an indispensable part of both

the city's and the county's economy. According to Amusement Business, a trade publication, each year an average of 14 million visitors come to Anaheim to go to Disneyland, spending approximately $3 billion in the city (Herubin & Milbourn, 2001). The Disneyland Resort is the largest employer in the county. Even before the redevelopment of the resort area, over 21,000 people worked at the resort in some capacity (Herubin & Milbourn, 2001). For these reasons, Anaheim has focused many of its resources on improvements to keep Disneyland from leaving the city.

In 1984, when Michael Eisner joined the Walt Disney Company, he began looking into moving Disneyland from Anaheim to south Orange County or San Diego (Herubin & Milbourn, 2001). One of the main reasons for wanting to move was the condition of the areas surrounding the park. Walt Disney's original plan was to create a family-friendly environment in both the amusement park and the surrounding areas. He wanted to build places for families to stay in and around the park. However, after the construction of the original park was completed, no money remained to buy the surrounding land. Consequently, shortly after the park opened "motel operators, fast food franchises and tacky

souvenir shops rushed in to surround it" (Sloan, 2001, p.1a). The city was eager to attract more businesses so officials did little to regulate the appearance of the small enterprises around the park, therefore "the streets surrounding the park became a visual kaleidoscope of bright colored exteriors, blinking lights and flashing neon signs", creating the carnival-like, family-hostile environment that Disney had always wanted to avoid (Colson & Black, n.d., p.8). Over time, this area declined and became a slum-like urban blight encircling one of the most popular and profitable amusement parks. To keep the Walt Disney Company from taking Disneyland out of Anaheim, city officials promised to improve the "seedy-looking" area (Herubin & Milbourn, 2001, p.3). The company decided to stay and began to work in conjunction with the city on plans to renovate the resort area.

In the early 1990's, both Anaheim and Disney began working on plans to revitalize the area to protect the tourist trade. After several years and several drafts, a plan called the Anaheim Resort Area was approved. The resort area consisted of 1,100 acres that included Disneyland, the Anaheim Convention Center, and Edison Field (Turney, 1999). The goal of the resort area plan was to

encourage visitors to stay longer instead of just visiting for a day or two of their vacations. However, to accomplish this many changes and improvements were necessary. Disney's main contribution to the project was to add new attractions to lure people to the city. The attractions were a new theme park (Disneyland's California Adventure) and Downtown Disney, a retail and entertainment mall.

The city made three major contributions to the Anaheim Resort Area project. The first was infrastructure improvements. These included placing telephone and electrical wires underground, upgrading storm drains, and improving the roads. The city, with help from the state, spent $1.1 billion to widen the Santa Ana Freeway - the main north-south artery through Anaheim (Villelabeitia, 1998). The second contribution was to revitalize the appearance of the area. One of the first things the city did was address the issue of the "visual kaleidoscope" surrounding Disneyland. City officials ordered all of the surrounding shops, restaurants, and motels to take down their signs and replace them with uniform ones provided by the city (Sloan, 2001). At the same time, numerous ageing motels were demolished and those that remained were

renovated. The ultimate goal of the revitalization of the resort area's appearance was to create a uniform look for the entire area. The result of the new Disney construction and the city's infrastructure improvements was a small scale, Orlando-like resort area that had little resemblance to the aging and decaying urban area that once surrounded Disneyland.

The final major contribution the city made to the project was to focus on improving the run-down residential areas that fell within the Anaheim Resort Area. One neighborhood, the Jeffrey-Lynne community, had always been a challenge for the city. To address this problem area the city developed the Jeffrey-Lynne Revitalization Project.

The Jeffrey Lynne Revitalization Project

The Jeffrey-Lynne neighborhood is located immediately west of Disneyland and the Anaheim Resort Area. Over the years, this low income, predominately Hispanic (including many undocumented immigrants) neighborhood had become a blight-ridden area plagued with overcrowding. The core area consisted of 54 apartment buildings with six to eight single bedroom units each, located on two one hundredths (.02) of a square mile of land. Many of the apartments had

multiple families occupying them, and even some of the enclosed garages had people living in them (C. Reiff, personal communication, March 1, 2004). These 'unofficial' residents and the undocumented status of many of the immigrants made an exact population count very difficult to determine; however, estimates range from 3,800 to 5,000 residents in the neighborhood ("Anaheim Redevelopment", 1999; Fisher & Park, 1999; Jolly, 2001, 2003; Schou, 1999).

Most of the buildings in the neighborhood were built between the late 1950's and the early 1960's (Jolly, 2001). Over time, these buildings deteriorated until they had become almost uninhabitable. According to Christie Reiff, special project manager for the Anaheim Redevelopment Agency, most of the buildings were unsafe and infested with rats, since the individual owners of the apartment buildings did little, if anything, to maintain the buildings (personal communication, March 1, 2003). Along with the overcrowded conditions and decaying buildings, the Jeffrey-Lynne neighborhood had been plagued with crime for decades and was home to the well-established Jeffrey Street Gang (Orange County District Attorney's Office, Orange County Territorial Gang Map, 2001).

The primary goal of the Jeffrey-Lynne Revitalization Project was to create a safe and sanitary environment for the residents of the neighborhood (C. Reiff, personal communication, March 1, 2004). The first phase of the project, which focused on the core of the Jeffrey-Lynne area, cost $54 million in private, city, state, and federal funds. To initiate the process, the city purchased the buildings within the core of the neighborhood from the numerous individual and often absentee owners. The city retained ownership of the land but sold the buildings to a single developer, so that all of the buildings within the core of the neighborhood (containing approximately 300 units) would be owned and managed by one entity (C. Reiff, personal communication, March 1, 2004).

Once the city had control of the properties, a massive renovation project was undertaken. With the cooperation of the management company, all of the buildings underwent repairs and remodeling with many of the single bedroom units converted into larger, multiple bedroom apartments (see appendix A, photos 5 through 7). All of the enclosed garages were torn down and replaced with carports (see appendix A, photo 8), and residents were given assigned parking. Two of the buildings were demolished altogether

and replaced with a community center consisting of a lounge area, a pool, a computer room, and a community policing office (see appendix A, photos 11 and 12). The community center also offers various programs, including job training and after school activities. The entire area was gated to control access into the community. The streets surrounding and inside the neighborhood were converted to one-way streets to help control the flow of traffic. The streets within the gated area were divided, creating cul-de-sac like streets. Play areas, clearly visible from the surrounding buildings, were built for the children (see appendix A, photo 10). Clearly defined and landscaped walkways were placed between the buildings and along the parking areas (see appendix A, photo 9). Patios or balconies were used to create personal outdoor spaces for each apartment.

The result of the renovation was an affordable gated community that looked nothing like the old, rundown Jeffrey-Lynne neighborhood. To emphasize this change, a tenant committee comprised of residents of the Jeffrey-Lynne neighborhood voted to rename the gated community Hermosa Village. They also voted to change the names of

the surrounding Jeffrey, Michelle, and Audrey streets to Calle del Sol, Calle de las Estrallas, and Calle del Mar.

CHAPTER TWO

REVIEW OF LITERATURE

Over the past few decades environmental criminology has developed into a major branch within the field of criminology. Environmental criminology focuses on the relationship between geographical space and crime. More specifically, Bottoms and Wiles (1997) recently defined environmental criminology as:

> ... the study of crime, criminality, and victimisation as they relate first, to particular places, and secondly, to the way that individuals and organisations shape their activities by placed-based or spatial-factors. (as cited in Cozens, 2002, p. 132)

One of the main relationships focused on is the association between urban design and crime. This focus has led to the development of a substantial sub-division in the field, known as CPTED or crime prevention through environmental design (Cozens, 2002).

CPTED grew out of the works of Jane Jacobs, Dr. C. Ray Jeffery, and Oscar Newman (Cozens, 2002; Crowe, 2000; Davidson, 1981; Hunter & Jeffery, 1991; Kennedy, 1992;

National Crime Prevention Council [NCPC], 1997). Interest in CPTED began in the 1960's with Jacob's book, The Death and Life of Great American Cities, which discussed her observations regarding crime and urban design (Crowe, 2000). The actual term "crime prevention through environmental design" was originally introduced in 1971 by Jeffery, who suggested that changing the surrounding environment could change an offender's behavior (NCPC, 1997). However, it was Newman's idea of defensible space that led to the foundations of CPTED and popularized the concept that design can influence criminal behavior (Cozens, 2002; Kennedy, 1992). Newman's theory of defensible space introduced the ideas of territoriality and natural surveillance that would become core elements in CPTED.

The basic idea underlying CPTED is that using the proper design when building urban environments can discourage a potential offender from committing a criminal act. The definition of CPTED provided by the National Crime Prevention Institute (NCPI) is:

> ... the proper design and effective use of the built environment can lead to a reduction in the fear and incidence of crime, and the improvement

in the quality of life. (as cited in Crowe, 2000, p.46)

The underlying assumption is that an offender "enters into a rational decision-making process before under taking a criminal act" (Cozens, 2002, p. 131). This assumption is supported by Brantingham and Brantingham's (1978, 1984) model for target selection, which proposes that offenders recognize cues in the environment, which influences the targets they choose.

There are four main strategies associated with CPTED: territoriality, natural surveillance, activity support, and access control. While each of these strategies is distinct, they are not mutually exclusive (Crowe, 2000). The idea behind territoriality is that when people claim ownership of an area, they are more likely to protect it (Cozens, 2002; Kennedy, 1992). In CPTED, territoriality is encouraged through physical design elements that create well-defined spaces, such as fences, gardens, and individual balconies and patios. Natural surveillance refers to the ability to observe what is going on within a space. By maximizing opportunities for surveillance, there is an increased risk that an offender will be seen committing a crime and therefore may be deterred. Solid

walls, bushes, hedges, and alcoves are physical features that may obstruct surveillance, whereas window placement, lighting, and proper landscaping can maximize surveillance opportunities. Activity support refers to any activities designed to encourage the legitimate use of a public space (Casteel & Peek-Asa, 2000; Cozens, 2002). Designing areas that invite community participation can increase activity thereby increasing natural surveillance and territoriality (Cozens, 2002). Finally, access control is aimed at decreasing crime opportunities by restricting the access of potential offenders (Crowe, 2000). This can include locks on doors and windows, controlling traffic through street design, or gating a community. These strategies of CPTED can be applied to any type of physical environment, including schools, retail centers, downtown areas, and residential communities.

Many multi-unit residential complexes that are faced with the problems of an unsafe environment and high crime have the added problem of seemingly indifferent management. This seemingly indifferent management may be an absentee landlord, an unconcerned corporate management company, or simply an overwhelmed individual. In any case, they often do little to address the problems of the complex. Several

police departments have succeeded in reducing calls for service and crime reports by developing programs that work with the management and incorporate selected aspects of CPTED.

The West Covina Police Department in California developed the Crime Free Multi-Housing Program designed specifically to help apartment managers and residents and reduce repetitive calls for service. The program involved a five-phase process for managers and residents. One of these phases was a CPTED inspection of the property. The property had to pass the inspection in order to complete the program. The program was a major success with the police department reporting dramatic decreases in calls for service for all of the participating apartment complexes (Schimanski, 1997).

In Rolling Meadows, Illinois, the police department initiated a police-community partnership program to address the rising crime problem in one of the city's decaying neighborhoods. There were numerous elements involved in the program, including the creation of a police sub-station within the apartment complex. The program also included the integration of CPTED aspects to reduce the opportunity for crime, including improved landscaping and, lighting,

and the creation of gathering areas. While the calls for service initially rose, the number of actual crime reports decreased. Twelve years after the program began crime had dropped by over fifty percent (Spanos, 2003).

The Burnsville Police Department in Minnesota saw a decrease in calls for service to the Chancellor Manor apartment complex after initiating a partnership between all interested parties. The partnership focused on improving the quality of life for the residents by providing social services and improving the physical environment by adhering to many aspects of CPTED (Hawkins, 2002).

Finally, in Charlotte, North Carolina, police saw a significant reduction in robberies of Hispanic residents in the Parks Apartments after the creation of the International Relations Unit. The unit focused on building community relations, especially with Hispanic residents who had a high level of victimization. In addition to building a strong rapport with residents, the unit completed a CPTED study of the complex. The apartment management addressed several problems uncovered by the study, and made many improvements to reduce the risk of victimization, primarily by improving access control and natural surveillance.

Robberies within the complex decreased dramatically, while citywide robberies increased (Anselmo, 2002).

Various aspects of the Jeffrey-Lynne Revitalization Project adhere to the CPTED strategies (see table 1).

Table 1. CPTED in the Revitalization Project

CPTED Strategy	Changes to Jeffrey-Lynne
Territoriality	* Creation of individual patios and balconies * Renaming of community and streets by residents
Natural Surveillance	* Replacing enclosed garages with open carports * Opening walkways between buildings
Activity Support	* Addition of community center * Addition of multiple play areas
Access Control	* Gating the community * Creating one-way streets and cul-de-sacs

The concept of territoriality can be seen in the creation of individual patios and balconies for each apartment and in the renaming of the community and streets by the tenant committee. Natural surveillance was

increased by replacing the enclosed garages with open carports and opening walkways between the buildings.

In regards to activity support, the addition of the community center and multiple play areas increased the community's interaction in the public spaces within the neighborhood. This increased community activity also worked to increased natural surveillance.

Finally, access was controlled by gating the community and controlling traffic with one-way streets and cul-de-sacs.

CHAPTER THREE

RESEARCH QUESTIONS

While the primary goal of the Jeffrey-Lynne Revitalization Project was to create a safe and sanitary environment, reducing the crime in the neighborhood was also an important concern. There are several ways that crime in the neighborhood may be impacted by the revitalization project.

Conceptually, the simplest measure of crime is a count of the number of crimes committed, and perhaps an analysis of their type. In fact, those data are virtually impossible to obtain, primarily because many crimes go unreported, and many others are called in but do not result in a formal police report due to police discretion (discussed in more detail later).

Another approach that remains conceptually simple but can be analyzed is to examine the number of calls for service received by the police department. Not only do the calls for service reflect the public's perception of crime, but they also indicate the demand on police resources.

An issue in working with either actual crime counts or calls for service data is the need to standardize the data

by the number of units at risk, which is usually addressed by reporting a rate of crimes per hundred thousand people. When standardization is not possible, an alternative method of analysis is to use location quotients to examine a region's share of, or contribution to, the overall crime of a larger region. Although conceptually much more complex, location quotients are a very effective alternative or supplement to traditional methods of analysis.

This study examines the Jeffrey-Lynne Revitalization Project's impact on crime in two ways:

1. by analyzing the change in the number of calls for service, and
2. by analyzing the change in the neighborhood's contribution to the larger area.

The basic tenet of CPTED is that properly constructed environments can discourage potential offenders from committing criminal acts. Accordingly, applying the strategies of CPTED to the Jeffrey-Lynne community should result in a decrease in both of these measures.

CHAPTER FOUR

METHODOLOGY

Before the effects of the revitalization project could be examined, several steps needed to be taken. First, comparison groups needed to be identified to ensure that any changes in crime in the Jeffrey-Lynne area were not simply reflective of changes in the wider area. Although the total number of calls for service for the entire city of Anaheim changed very little between 1998 and 2002 (from 171,030 to 170,232), there was considerable variation at the police reporting district level; for the districts considered in this study alone, one district experienced a twenty-eight percent decline while another experienced an eighty-one percent increase. The comparison groups were identified by producing a series of bivariate choropleth maps. Once comparison areas were identified, the calls for service data were requested. These data were converted into digital form using optical character recognition (OCR) software, cleaned and geocoded. Finally, location quotients were computed and used to analyze the changes because a simple comparison of traditional crime rates was inappropriate.

Identifying Comparison Groups

To determine if any changes in crime in the Jeffrey-Lynne neighborhood were a result of the revitalization, and not simply reflective of changes in the wider area, comparison groups were needed. To identify these comparison groups, a set of ten bivariate choropleth maps was created and analyzed. Five variables were selected from the social and demographic data of the 1990 census and examined at the census block group level: population density, percent of population age 5 to 29, percent of Hispanic population, percent of multi-unit housing, and median rent. The 1990 census was used to reflect the characteristics of the neighborhood before any redevelopment began. These variables were selected because they were distinctive characteristics of the Jeffrey-Lynne neighborhood and/or because of their correlation with crime. Each variable was intended to help identify other areas within the city of Anaheim that were similar in demographic, economic, cultural, and structural composition.

The Jeffrey-Lynne area is divided into two census block groups that are located well within the city boundaries in the older, lower elevation, core area of

Anaheim. These block groups contain the core of the area where the revitalization took place and the perimeter surrounding it. The city of Anaheim can be divided into two distinct geographic areas. There is the lower elevation core area of Anaheim, which contains the original downtown and there is Anaheim Hills, a newer, more affluent, hilly, primarily residential environment. In order to ensure that the areas surrounding the selected block groups were not drastically different than those surrounding the Jeffrey-Lynne community, the block groups that fell within the area of Anaheim Hills were excluded. Also, to ensure that police data would be available for the block groups selected, only block groups whose centers fell within Anaheim's city boundaries were used.

The first variable selected was population density. Although the causal relationship between population density and crime has been a subject of debate (Davidson, 1981; Harries, 1980; Gillis & Hagan, 1982; Kvalseth, 1977; Shichor, Decker, & O'Brien, 1979), high population density is a very distinct characteristic of the Jeffrey-Lynne neighborhood. According to census data, the population densities for the two Jeffrey-Lynne block groups were 68,396 and 70,638 people per square mile, in the core and

the perimeter, respectively. It is important to keep in mind that the numbers reported reflect the number of people per square mile and not the actual population. The land area of the two Jeffrey-Lynne block groups is only five one-hundredths (.05) of a square mile and the estimated census population of the area is 3,526, therefore the population density of the two block groups combined would be 70,520 people per square mile.

The second variable selected was age. Numerous studies indicate that age is highly correlated with crime. Adolescents and young adults are the most crime-prone age cohort, with more crimes committed by them than by any other age cohort (Beirne & Messerschmidt, 2000; Brantingham & Brantingham, 1984; Hurwitz & Christiansen, 1983). This is also reflected in the Federal Bureau of Investigation's 2001 Uniform Crime Report, which states that 47.4 percent of all those arrested in 2001 were under the age of 25. Since census age data are reported in a relatively small number of age categories that cover a wide span of ages, it was necessary to combine the number of 5 to 17 year-olds and 18 to 29 year-olds to capture the adolescent and young adult cohort. This number was used to calculate the number of 5 to 29 year-olds as a percent of the total population.

Of the total population in the Jeffrey-Lynne census block groups, 61 percent of the core and 60 percent of the perimeter were between the ages of 5 and 29.

The third variable examined was the percent of the total population that self-identified themselves as Hispanic. In 1990, the Jeffrey-Lynne core block group was 92.6 percent Hispanic and the perimeter was 94.7 percent. The combined Jeffrey-Lynne area was 93.9 percent Hispanic, versus 31.4 percent for the city of Anaheim as a whole. While race and ethnicity are not specifically correlated with crime, cultural background can play a role in how crime is reported and how effective crime prevention measures may be in an area. Therefore, it was necessary to identify other areas in Anaheim that had similar cultural backgrounds.

The fourth variable was the percent of the total housing in the block group that was multi-unit housing. This variable was included because, like population density, it is one of the distinct characteristics of the neighborhood. Multi-unit housing is defined by the Census Bureau as any structure that contains two or more units within the structure. The two block groups that comprise the Jeffrey-Lynne community are comprised almost entirely -

98 percent for the core and 96 percent for the perimeter - of multi-unit housing, with an average of six to eight units per structure.

The final variable chosen was median rent. This variable was selected to identify areas that were economically similar to the Jeffrey-Lynne neighborhood, which consists primarily of low-income housing. The average monthly median rent for the Jeffrey-Lynne core block group was $555; for the perimeter it was $682.

Once the variables were selected, they were classified into three categories (high, medium, and low) using Jenk's natural breaks classification method (see appendix B for class breaks). The natural breaks method divides data into different classes where there are gaps or breaks in the frequency distribution (National Institute of Justice [NIJ], 1999). Placing the class divisions where there are natural breaks in the data maximizes the variation between classes while minimizing the variation within classes (NIJ, 1999).

The two block groups that comprise the Jeffrey-Lynne area were in the highest class for population density, percent aged 5 to 29, percent Hispanic, and percent of multi-unit housing. They ranked the very highest of all

the block groups examined in population density, percent aged 5 to 29, and percent Hispanic. Median rent was the only variable on which the Jeffrey-Lynne block groups did not rank in the highest classification; instead, they fell in the medium class.

After the variables for each block group were ranked as high, medium, or low, they were combined for the bivariate analysis. Each variable was examined in relationship to each other variable. A series of ten bivariate maps was created to identify other areas in the city that had similar characteristics (figure 2). Bivariate choropleth maps were used because they are valuable for identifying correlations and anomalies between variables. An examination of the maps revealed that among the 173 block groups in the selected area of Anaheim, only three fell in the same class as the Jeffrey-Lynne blocks groups for every variable (figure 3 and appendix C). Like the Jeffrey-Lynne block groups, each of the three comparison block groups fell within the highest class for population density, percent aged 5 to 29, percent Hispanic, and percent multi-unit housing. The population density for the three block groups ranged from 37,325 to 56,346 people per square mile. Percent aged 5 to 29 ranged from 53 to 59

percent and percent Hispanic ranged from 72 to 86 percent. All of the housing in the three block groups was multi-unit housing. For the median rent variable, the block groups were in the medium class with median rents from $606 to $711.

A drive through the selected block groups provided subjective confirmation of the bivariate analysis. In each area observations revealed the areas were comprised of multi-unit housing, all with four or more units per building. And according to the Orange County Territorial Gang Map (2001), each area, including Jeffrey-Lynne, was the territory of a separate gang.

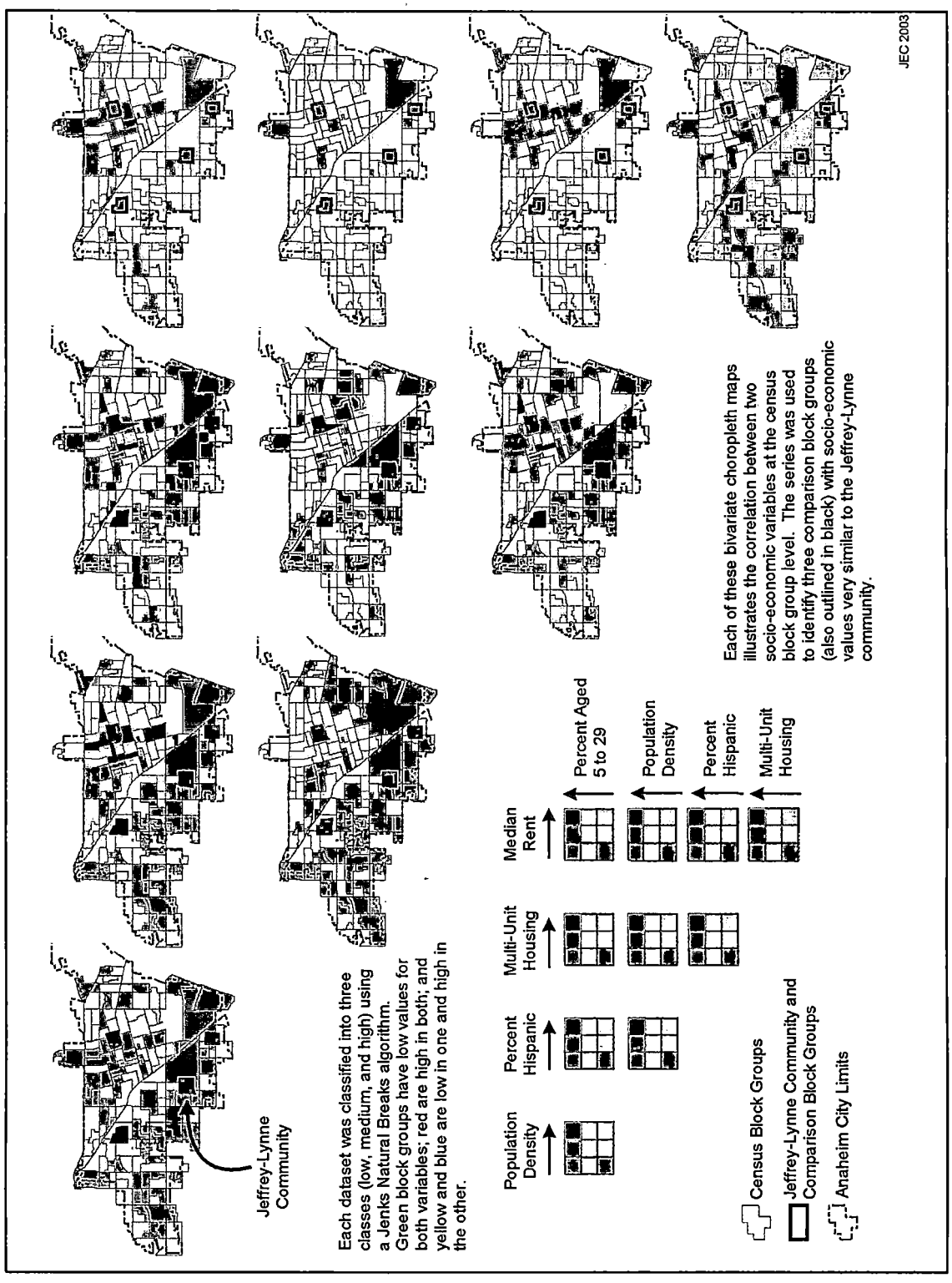


Figure 2. Bivariate Choropleth Comparison

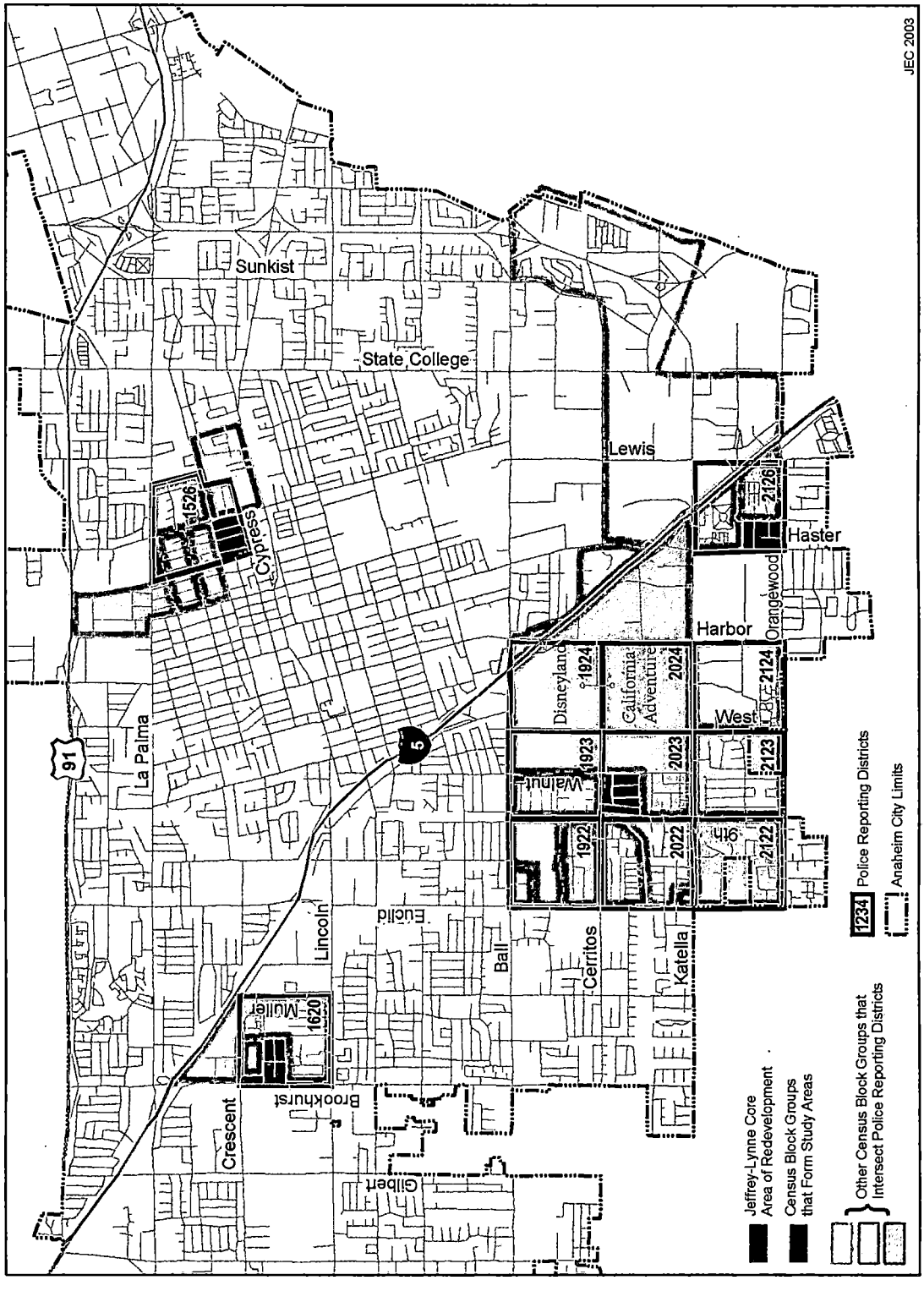


Figure 3. Comparison Block Groups

Data Collection and Preparation

Levels of Geography

The next step, once the comparison areas were identified, was to determine which data should be requested from the Anaheim Police Department. The Anaheim Police Department is responsible for patrolling an area totaling 50.4 square miles (www.anaheim.net, retrieved April 2004). However, the shape of the city is irregular and elongated, stretching approximately 25 miles across (www.anaheim.net/police/index.html, retrieved 2002). To serve the city effectively, the police department compiles data at three levels of geography: reporting districts, beats, and sectors (figure 4).

The finest level is the reporting district. Each reporting district is approximately one-fourth of a square mile. The boundaries for the reporting districts were originally developed by the Anaheim Fire Department; they were then adopted by the police department for tracking crime. There are 246 reporting districts in the city, some of which extend beyond the city boundaries; however, police services do not extend past the city boundary unless it is to assist another department.

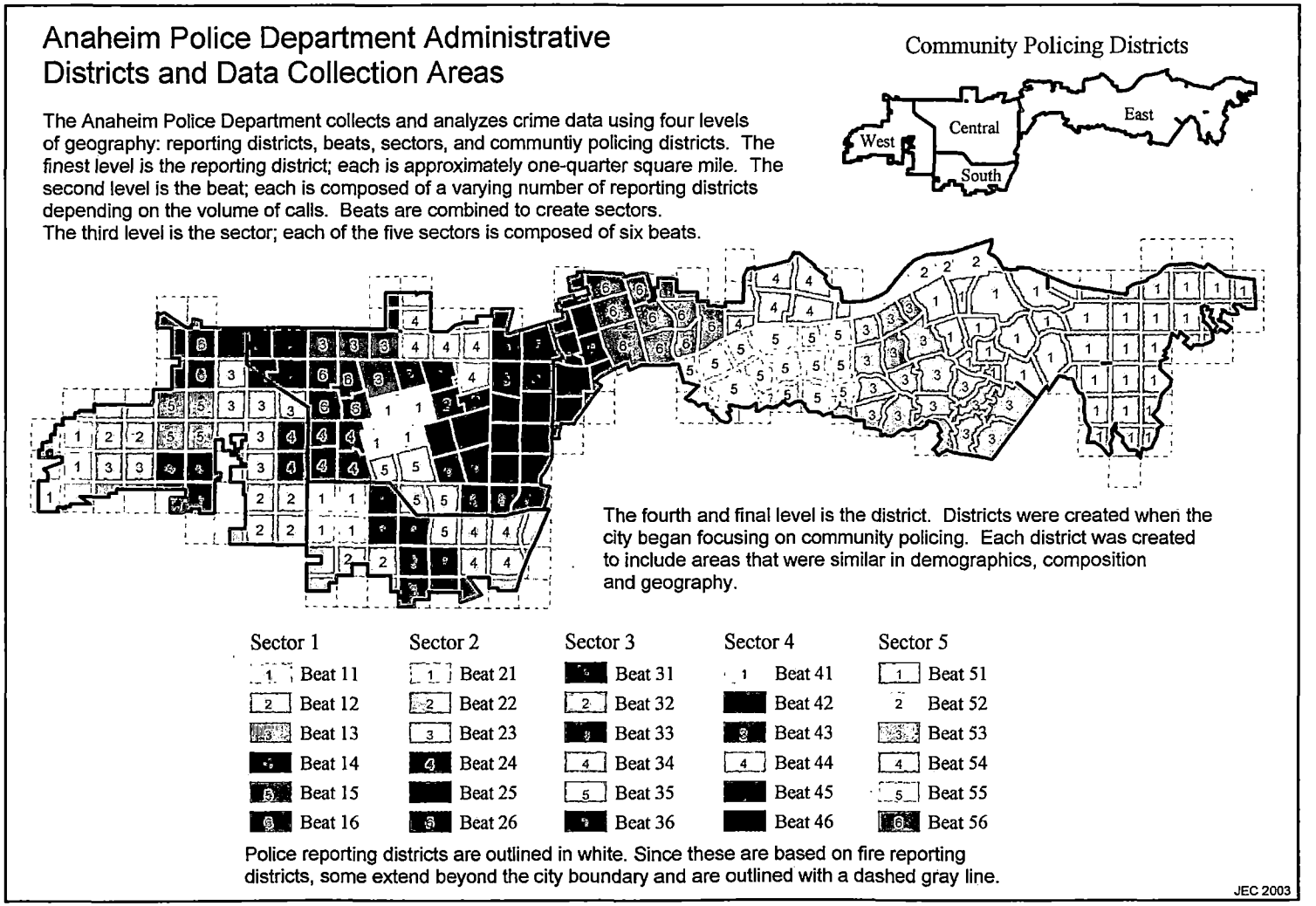


Figure 4: Police Levels of Geography

The next level of geography is the police beat. A beat is an area that patrol officers are assigned to cover. Originally, beats were determined by the calls for service the police department received; however, the number of patrol units available also affects the number of beats. The number of reporting districts within each beat varies with the volume of calls for service, ranging between four and forty-two reporting districts. Reporting districts are always wholly contained within a beat (unless they happen to cross the city boundary). There are thirty beats within the city.

The third level of geography in the hierarchy is the sector. The city is divided into five sectors. The boundaries of the sectors are based on the number of beats, as well as natural or man-made breaks in the environment, such as the I-5 freeway. Each sector contains exactly six beats. These three levels - reporting districts, beats, and sectors - are the divisions that the police department uses to analyze crime patterns and determine the best way to allocate resources.

In 2000, when the police department began focusing on community policing, a fourth division level referred to as community policing districts was created. The city was

divided into four districts, each with its own district commander. The goal when establishing the boundaries for the districts was to create districts similar in demographics, composition, and geography. The result was four distinct districts; however, this now meant that reporting districts, beats, and sectors could cross district boundaries. The West End District consists primarily of the bedroom communities of Anaheim and small areas of industry. The Central District has a predominately Hispanic population and is a mix of residential and commercial areas. The South District, known as the Resort Area District, has a few small residential areas and contains the entire Anaheim Resort area. The East End District is dominated by the higher income Anaheim Hills area with a few pockets of low-income residential and industrial areas. Each district varies in size as well as in the number of reporting districts they contain, ranging from 28 to 115 reporting districts.

Since the police department uses these divisions to track crime, it was decided that the data collected should be at the finest level available - the reporting district.

Data Collected

In order to determine whether the redevelopment project had an effect on crime in the Jeffrey-Lynne community, calls for service data were requested from the Anaheim Police Department for the period spanning from January 1st, 1998 to December 12th, 2002 (the data were generated on December 13th, 2002). Since data were not collected for the entire month of December in 2002, calls for service from December 13th through December 31st for the other years was excluded. Construction on the project began in the middle of 2000 with rolling relocations of the residents and all residents returning to the neighborhood by the end of 2001 (Silber, 2000; C. Reiff, personal communication, March 1st 2004; Jolly, 2001); this period covers two years before and one year after the project. Data were also requested for the reporting district that contained the Jeffrey-Lynne neighborhood, the eight adjacent reporting districts, and the three reporting districts containing the comparison block groups (figure 3).

Scanning Data

The police department approved the request for the data, however the department's computer aided dispatch

(CAD) system is not compatible with any other software program. As a result, the calls for service were provided in hard-copy paper format totaling over 1500 pages of data.

The hard-copy printouts received from the police department where composed of twelve uniform columns of data (See sample page in Appendix D). The data provided included the date of the call, the time it was received and cleared, what type of call it was, the patrol unit that responded, how the call was cleared by the officer, and if the call was gang related. The location of where the call originated was also provided. This included the reporting district, beat, and sector, as well as the street address.

To geocode the call addresses for analysis it was necessary to have the calls for service data in digital format. There were two options for transforming the data into digital files. The first was to manually type in all of the information. This would have been extremely time-consuming, probably taking a minimum of 880 hours (assuming 53 lines per page and 80 characters per line, keyed in at 2 characters per second - 1500 pages x 53 lines x 40 characters/ 3600 seconds per hour). The second option was to use an optical character recognition (OCR) software program to reproduce the spreadsheets digitally. Optical

character recognition programs interpret patterns of dots and translate them into text characters or images. Since the hard-copy printouts were high quality originals, and used a fixed-width easy-to-interpret font, this option was pursued. Because of the high number of pages to be scanned, a scanner with an automatic document feeder was used, in conjunction with the Omni Page Pro OCR software.

The process of turning the hard-copy printouts into digital files was not as quick and simple as expected. Two main problems were encountered. The first problem was getting the program to create an output file in a spreadsheet format with the correct column breaks that looked as close to the original input document as possible. At first, the output data created did not have any columns or line breaks and a page of data was interpreted as one continuous line. The second problem was that multiple sheets of data were not being scanned, resulting in only a small percentage of the data being recorded. After numerous tests, it was discovered that these problems were related. During the first several attempts at scanning the data, numerous sheets (usually fifty or more) were scanned at one time using the OCR wizard that went through each step automatically. Processing that many sheets at once

was the major cause of the problems. Through trial and error, it was discovered that no more than thirty pages could be scanned and interpreted at one time, and that the OCR wizard should not be used. If more pages were attempted, the program would skip pages and/or the output would not be formatted correctly.

Cleaning Data

Once the data were in digital format, they were verified or 'cleaned'. Two types of cleaning were necessary. The first type addressed any errors that resulted from the optical character recognition process. This involved removing empty columns and rows that were added during the interpretation. It was also necessary to combine columns that were separated and, occasionally, separate columns that were combined during the interpretation. For example, an address might have been divided into four columns - house number, street direction, street name, and street type - instead of being interpreted as one column. It was also necessary to identify and correct character recognition errors. For instance, the OCR would occasionally interpret an "S" (a street direction of south) in an address as a "5". Once the first cleaning process was completed, all of the individual pages of data

for a specific reporting district were combined to create one document that contained all of the calls for service in the reporting district during the study period. The second cleaning process took place during geocoding.

Geocoding

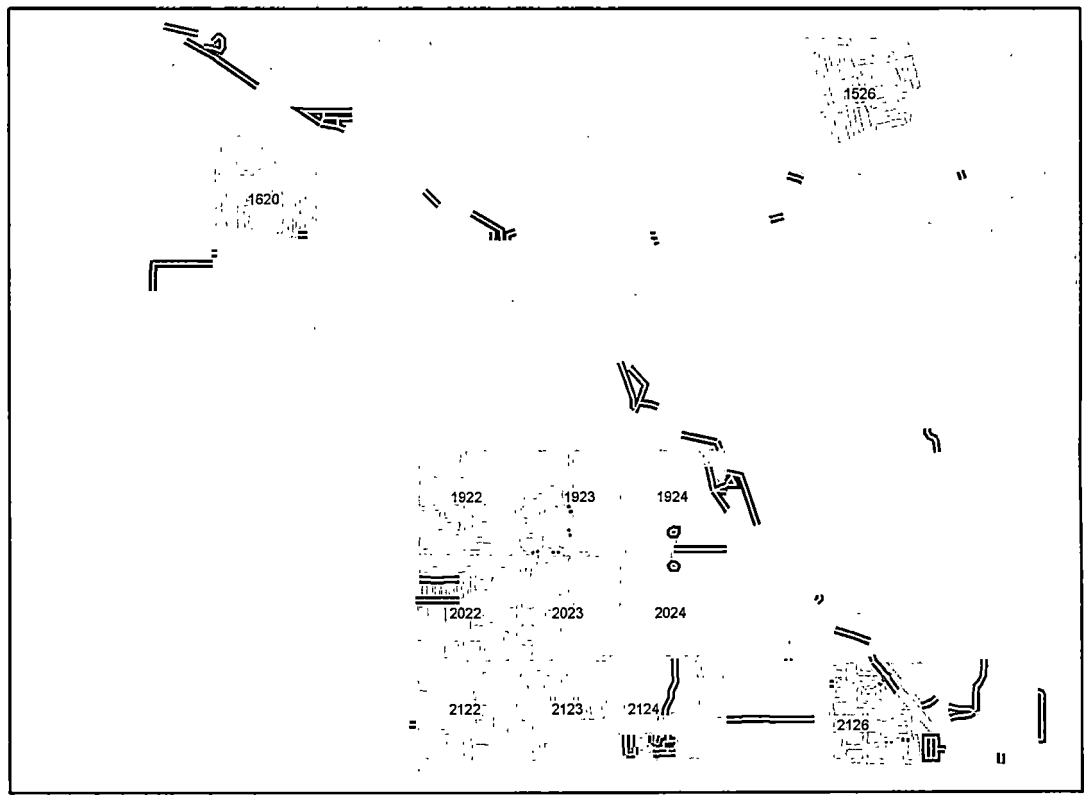
To analyze the calls for service data the addresses of where the calls originated were spatially referenced using a geocoding process known as address matching. By its simplest definition, geocoding is the process of converting spatial data into a computer-readable form (Clarke, 1997). More specifically, geocoding assigns data locational coordinates based on a specific coordinate system (e.g., latitude and longitude, State Plane Coordinates, Universal Transverse Mercator)(Campbell, 1991). In the address matching geocoding process, the software uses an algorithm that linearly interpolates where an address falls along the block face of a street. The accuracy of the address matching depends on the precision and uniformity of the addresses, as well as the accuracy of the street file used for the matching process.

The calls for service received by the Anaheim police department are processed through a computer aided dispatch record management system (CAD RMS). According to James

Conley, supervisor of forensics for the Anaheim police department, when a non-emergency call is received, the caller is asked to give the address of where they are calling from and that address must be verified before the dispatcher can proceed to the next screen (J. Conley, personal communication, October 10, 2003). The system compares each address against its database and verifies that the given address exists. As a result, all addresses within the system are complete and correct with regard to both prefix and suffix (e.g. N Main St, E Elm Ln). It also means that all addresses with a house number have already been verified, and should geocode correctly, assuming there are no problems with the reference street file.

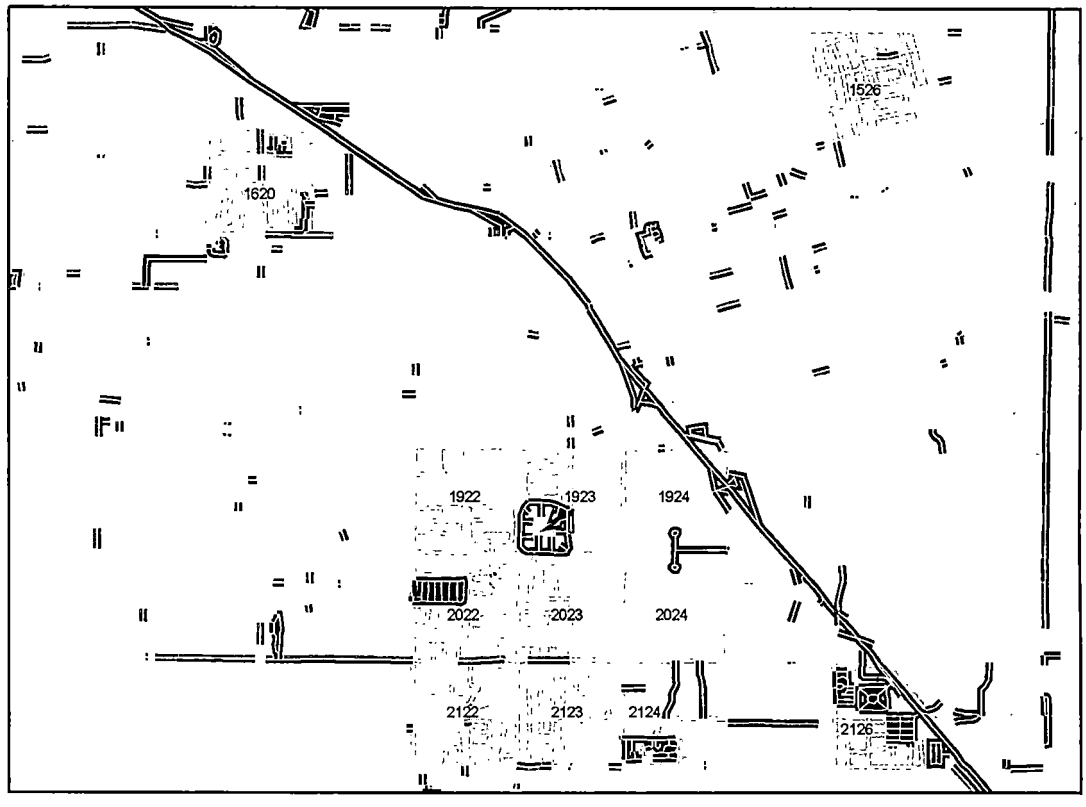
One of the main problems that can complicate the geocoding process is an incomplete reference street file. If any part of an address (house number range, street name, street direction, or street type) is missing in either the address being matched, or in the reference file, the match rate will be affected. The 2000 U.S. Census Bureau TIGER street file was the reference street file used for geocoding these calls for service. This street file was fairly inaccurate, with a significant amount of missing data. For the entire city of Anaheim, 6.4 percent of the

street segments (668 out of 10,376) were unnamed, and 25.6 percent of all segments (2,655 out of 10,376) were missing at least some of the address ranges. Of those segments missing address range data, the majority (2,033 out of 2,655) were missing address ranges for both sides of the street. When examining only the street segments that fell within the study area, 7.9 percent of the segments (59 out of 748) were unnamed and 31.7 percent (237 out of 748) were missing at least some of the address ranges. Again, the majority (201 out of 237) were missing the ranges for both sides of the street (figures 5 and 6). Many of the segments missing names or address ranges are freeway and ramp segments, or access roads for Disneyland and the Anaheim Convention Center. Six neighborhoods appeared to be missing all of the address ranges for their area. However, after checking the Thomas Guide map for the area, it was discovered that these areas were either mobile home parks or condominium complexes. In these areas, the calls were recorded as being from the street addresses for the major entrances to the parks/complexes, rather than the specific (and often private) smaller streets.



For the city of Anaheim, 6% of the street segments had no name.
Within the study area report districts, 7% of the street segments had no name.

Figure 5. Street Name Accuracy



The streets highlighted in black have no address ranges, whereas the streets highlighted in gray have address ranges on one side of the street only.

For the entire city of Anaheim, 26% of the street segments (2655 out of 10,376) were missing at least some address range data. The vast majority of these (2033 out of 2655) were missing address ranges for both sides of the street.

Within the study area reporting districts, 32% of the segments (237 out of 748) had a problem with the address ranges. Again, the vast majority (201 out of 237) were missing address ranges for both sides of the street.

Figure 6. Street Address Accuracy

During the geocoding process, all addresses that would not match were investigated. In most cases the problem was something that was missed during the cleaning of the OCR interpreted data. If it was not a problem with the cleaning of the address itself, the street file was examined to see if the street was within the reporting district and, if so, that the address ranges were present. If address ranges were missing, they were added based on Thomas Guide map information, first hand observations, or by inference from adjoining segments. Adding data for a small percentage of street segments corrected a high percentage of addresses that were not matching during the initial geocoding process.

The most significant issue encountered during the geocoding process was that some street names changed during the five-year period. Most of these changes were within the Anaheim Resort Area and were a result of the new resort development of Disney's California Adventure and Downtown Disney; the 2000 U.S. Census Bureau TIGER street file did not have the new street names. Because of these changes, a call placed in 1998 from one address could be geocoded, but a call from the same address in 2002 could not. To resolve this issue an alias table was created that contained the

old and new street names for each address that would not match. In addition to changing certain street names, a few streets were eliminated altogether because of the redevelopment in the resort area. To address this problem, addresses that should match along streets that were no longer in the 2000 street file were matched separately to an older street file.

Because of the preciseness and uniformity of the addresses from the CAD RMF system, and the relative accuracy of the reference street file, it was possible to achieve a phenomenally high match rate with the geocoding process. With some cleaning of the addresses and the street file, and the creation of an alias table, it was possible to match over 99 percent of the addresses for each police reporting district (Appendix E). Out of the 81,372 calls for service geocoded, only thirteen could not be matched.

It should be noted that while all but thirteen addresses were successfully "matched" by ArcMap, the GIS software, not all of the addresses appear graphically. While double-checking the accuracy of the geocoding process, it was discovered that while the attribute table for the shapefile (which was created during the geocoding

process) showed that all of the addresses had been matched, some of the addresses within the file had no spatial reference information. That is, some of the addresses were not assigned a longitude and latitude during the geocoding process, and as a result, do not appear on the visual products. The reason for why the spatial information was not recorded during the geocoding process remains unknown. It is most likely a problem within the software, possibly related to geocoding a very large number of addresses at one time. For the majority of the reporting districts, this had little affect on the actual percentage of addresses matched. Even when excluding the addresses that did not have spatial information, ten of the reporting districts still had a match rate of greater than 99 percent. Of the remaining two reporting districts, one had a match rate of 93 percent and the other had a match rate of 73 percent. Since the crime count calculations were based on the attribute tables and not the graphic representations of the data, the fact that some of the geocoded calls would not display in ArcMap did not influence the analysis.

Crime Types

One of the biggest advantage that calls for service data has over other types of crime data, such as official law enforcement statistics and victimization data, is that it is unfiltered data (Sherman, Gartin, & Buerger, 1989; Warner & Pierce, 1993). When a call comes in it is coded by the dispatcher based on what the caller reports. Because of this, calls for service avoid "any discretionary bias due to police decisions whether to file a report" (Warner & Pierce, 1993, p.496). Since police have the discretion to clear a call by filing a report, issuing a warning, referring other services, etc., crimes that are not cleared under a specific code will not be included in the official crime statistics. To avoid this bias, the call type coded by the dispatcher was used for the analysis.

For the five years requested, there were 81,375 calls for service in the study area. To focus on what effect the revitalization project had on both crimes against persons and crimes against property, nine crime variables were selected for analysis. These variables included four crime categories and five specific crime types. The crime categories were property crimes, violent crimes, disorder

crimes, and drug crimes (see Appendix F for included crimes). The specific crime types examined were disturbances, robberies, burglaries, assaults, and auto thefts.

Selecting an Analysis Method

There are many different methods available for analyzing crime data. Traditionally, criminologists use summary measures which "look at crime as an aggregate measure for some summary unit" to examine crime as an event (Brantingham & Brantingham, 1997, p.265). These summary measures can be performed on data from a variety of sources including, but not limited to, victimization surveys, conviction reports, and police calls for service. Of these measures, crime frequencies and crime rates are the most commonly used. Crime frequencies are the actual number of crimes that occur. A crime rate is a ratio, with the number of events (which may be actual crimes or calls for service) as the numerator and "the units at risk" as the denominator (Brantingham & Brantingham, 1997, p. 266). While the most frequently used crime rate is the number of crimes per 100,000 people, the denominator can be any measure of risk or opportunity including the number of

housing units, commercial units, or automobile registrations (Harries, 1981).

As with all crime measures, there are problems involved with using crime frequencies and crime rates. Crime frequencies are limited by the fact that they are based on official data; therefore, they are usually undercounted because not all crimes are reported to the authorities (Brantingham and Brantingham, 1997). Another concern with using crime frequencies is that they have not been standardized, so comparing the crime frequencies across a geographic space can be very misleading because they do not take into count other factors such as target availability or opportunity. The need for standardization when comparing geographic areas is one of the main reasons crime rates are the most commonly used measure of crime. However, the key to crime rates is using the proper denominator. Using the wrong denominator can result in crime rates that are misleading and useless.

The lack of availability of an appropriate denominator was a serious concern when deciding how to analyze Anaheim's call for service data. There were numerous problems involved with trying to obtain the population data for the reporting districts and comparison block groups

within the study area. Since the data collected were from 1998 to 2002, it was not possible to use U.S. census population data, which is only available in ten-year intervals. Several attempts were made to locate population data from the city of Anaheim, however data were not available at the level of geography necessary for analysis. Another problem with using population counts was the nature of the areas included in the study area. The Jeffrey-Lynne neighborhood had suffered from severe overcrowding for years. Many of the apartments were shared by multiple families and several of the garages were used as residences. In addition, many of the residents are immigrants and some are undocumented. The additional people living in the apartments and garages and the undocumented immigrants would not be included in most official population counts. Furthermore, the Jeffrey-Lynne neighborhood falls within the Anaheim resort area. The city of Anaheim has numerous tourist attractions, including Disneyland, Disney's California Adventure, Edison Field, and the Arrowhead Pond. According to the Orange County Visitor and Convention Bureau, an average of 100,000 people visit the resort area each day (J. Conley, personal communication, February 5, 2004). Because of this large

influx of people, the population of areas within the resort area can vary dramatically depending on the season or even the time of day. Alternative denominators, like housing units, were also considered. However, like population data, housing unit counts were not available at the right spatial resolution for analysis, and they would not take into account the influx of people into the resort area.

Since an appropriate denominator was not available, it was necessary to choose another measure to examine how crime changed during the study period. The location quotient technique has been used in the field of economics for decades (Miller, Gibson, & Wright, 1991) as a way to examine "the relative specialization of an economic region or sub-region within the context of activities that surround the area of study" (Brantingham & Brantingham, 1997, p. 267). However, the use of the technique is relatively new to crime analysis (Brantingham & Brantingham, 1997).

A location quotient is a ratio that allows the characteristics of a smaller region to be compared to those of the larger region by examining the contribution the smaller region makes to the larger region (Moineddin, Beyene, & Boyle, 2003). Location quotients are useful

because they highlight areas that vary from the norm of the larger region and can be used to assess a smaller region's contribution to the larger region. Location quotients (LQs) are measured on a numeric scale. If the region being examined has a LQ of 1.0, the characteristic being examined is very similar to the larger region. If the LQ is less than 1.0, then that region's characteristic is less than the norm and contributes less to the larger region than expected. If the LQ is greater than 1.0, then the region is greater than the norm for that characteristic and contributes more to the larger region than expected. For example, if a region has a LQ=2.5 when looking at property crimes, its share of property crimes is greater than expected and it makes a larger contribution to the overall property crimes of the larger region.

The formula for calculating location quotients can be written two ways (Miller et al., 1991; Moineddin et al, 2003). The first formula, used by Brantingham and Brantingham (1993, 1997) is:

$$LQ = \frac{C_{xt} \ / \ C_x}{C_{yt} \ / \ C_y}$$

This formula is a ratio of the count of a specific type of crime in the small region (C_{xt}) divided by the total count

of crime in the small region (C_x) and the count of a specific type of crime in the larger region (C_{yt}) divided by the total count of crime in the larger region (C_y). The second formula, used by Bryant and Miller (1997) is:

$$LQ = \frac{C_{xt} \ / \ C_{yt}}{C_x \ / \ C_y}$$

This formula is a ratio of the count of a specific type of crime in the small region (C_{xt}) divided by the count of a specific type of crime for the larger region (C_{yt}) and the total count of crime in the small region (C_x) divided by the total count of crime in the larger region (C_y).

CHAPTER FIVE

ANALYSIS

The calls for service counts were analyzed at two resolutions - the police reporting districts (RDs) and the census block groups (BGs). At the reporting district resolution, location quotients were calculated using individual reporting district counts in the numerators, and three different sets of reporting districts (or geographic levels) in the denominators - all twelve RDs, the nine surrounding RDs, and the four RDs containing the comparison block groups. These are illustrated in the top row of figure 7 as levels A, B, and C; respectively.

At the census block group resolution, location quotients were calculated using each of the selected block groups in the numerators. For the denominators, there were two sets of reporting districts - all twelve RDs and the four RDs containing the comparison block groups - as well as the set of five block groups containing Jeffrey-Lynne and the four comparison areas. These are illustrated in the bottom row of figure 7 as levels D, E, and F; respectively.

At all six levels, location quotients and their changes between 1998 and 2002 were calculated for the nine selected crime variables. A location quotient (LQ) greater than 1.00 indicated that the reporting district or block group contributed more than expected to the crime of the larger region. Conversely, a LQ less than 1.00 indicated that the reporting district or block group contributed less than expected. If the change in LQs revealed an increase, then the area was contributing more to the larger region in 2002 then it was in 1998. The opposite can be said if the change in LQs revealed a decrease.

For example, at level A, the property crime LQ for RD 1922 (which is located to the northwest of Jeffrey-Lynne) was 0.87 in 1998. This indicates that the RD contributed less than expect to the study area that year. In 2002, the property crime LQ was 0.93. The change in LQs between 1998 and 2002 revealed that the RD's contribution to the property crime of the study area remained relatively stable, increasing by only 0.06.

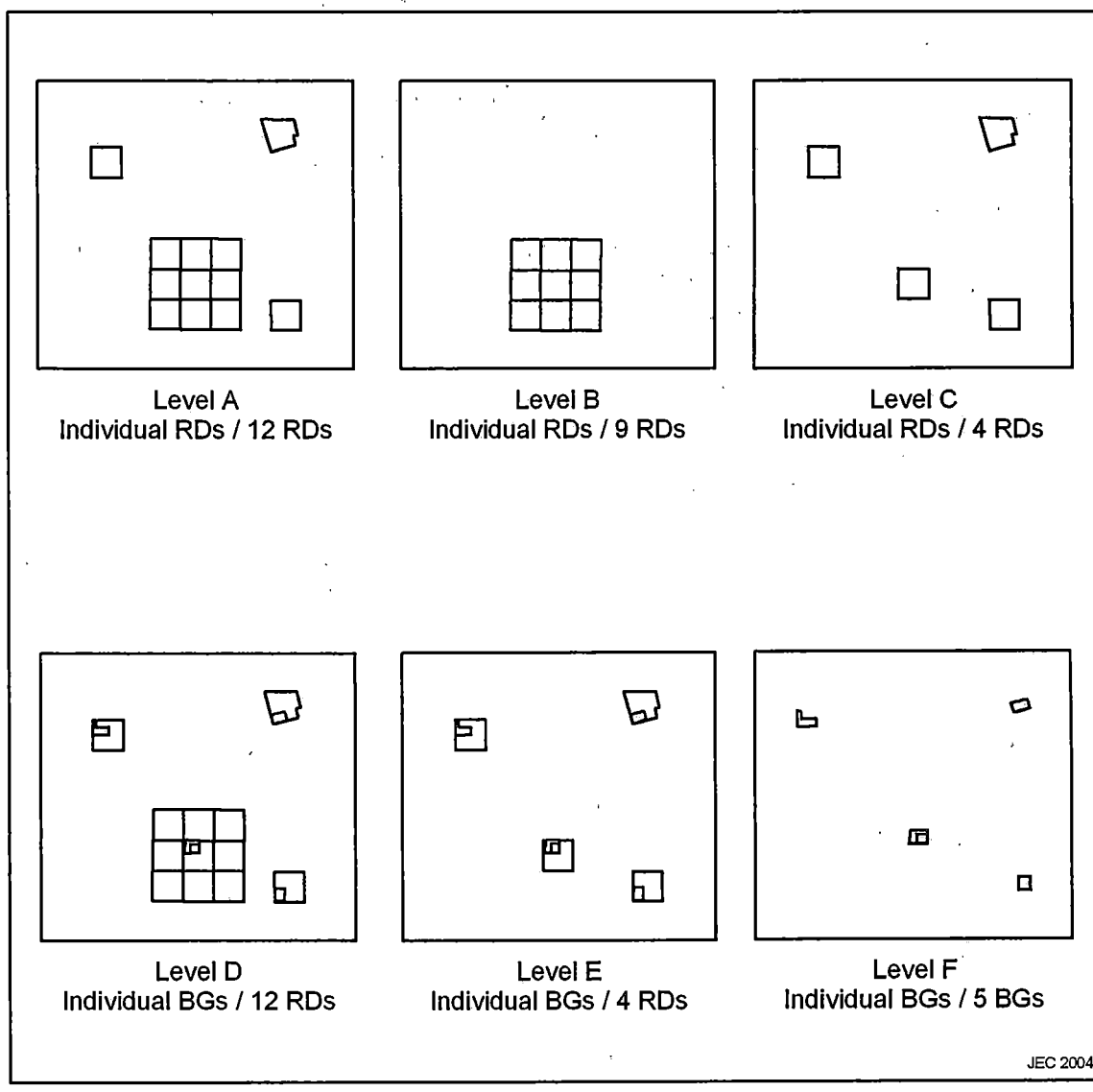


Figure 7. The Six Levels of Geographic Analysis

First Resolution: Reporting District

The Jeffrey-Lynne RD (RD 2023) had 2086 calls for service in 1998. By 2002, it had decreased by five percent to 1992 calls (table 1 and figure 8).

Table 2. Change in Calls By Reporting District

Reporting District	Counts		
	1998	2002	Change
1922	1282	1932	51%
1923	806	1455	81%
1924	1179	2083	77%
2022	672	745	11%
2023	2086	1992	-5%
2024	227	181	-20%
2122	819	813	-1%
2123	704	542	-23%
2124	1693	1220	-28%
1526	1454	1543	6%
1620	1785	1867	5%
2126	2367	2411	2%

Of the four crime categories examined, disorder crimes accounted for the highest percentage of the calls for the RD, with 31 percent of all calls for the RD in 1998 and 29 percent in 2002. Property crimes accounted for seven

percent, violent crimes accounted for less than one percent, and drug crimes accounted for about one percent of the total calls in both 1998 and 2002. For the specific crime types examined, disturbances were the highest, accounting for twenty-one percent of the all calls in 1998 and nineteen percent in 2002. Assault was the only other crime type which percentage changed between the two years, dropping from four percent to three percent. For the remaining types of crimes robberies accounted for less than one percent, burglaries accounted for three percent, and auto thefts accounted for one percent of all the calls for service in the RD (see Appendix G).

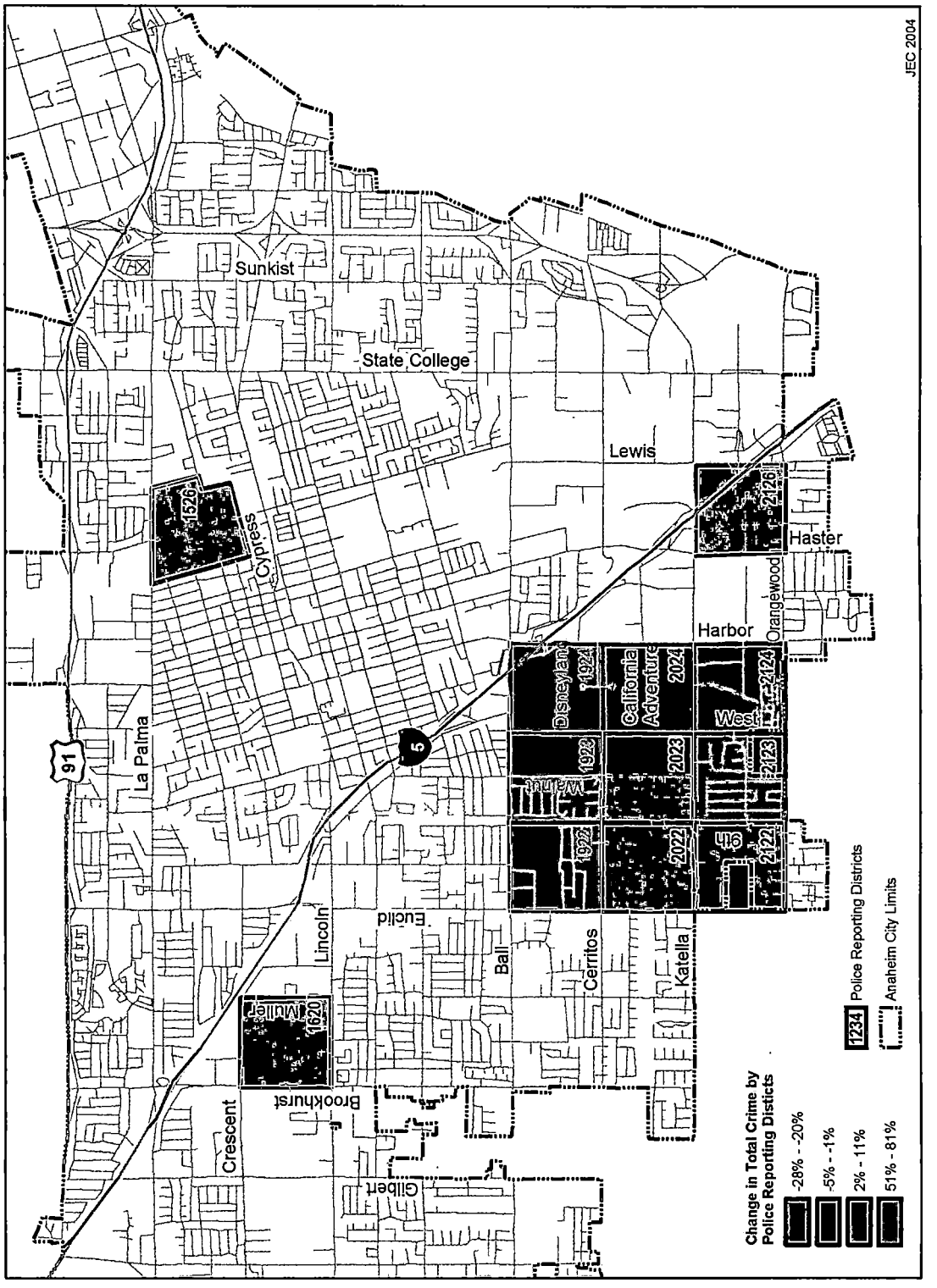


Figure 8. Change in Calls by Reporting District

Level A: Individual RDs / all 12 study area RDs

For the first level of analysis for this resolution, the individual RDs were compared to the larger region consisting of all twelve RDs in the study area (tables 2 through 5, figures 9 and 10).

There was little change in the location quotients for most of the crime variables when comparing the Jeffrey-Lynne RD to all twelve RDs in the study area. Only three of the nine variables examined had a LQ that decreased. The LQ for auto thefts decreased slightly by 0.15; that is, the Jeffrey-Lynne RD's contribution to the study area decreased slightly between 1998 and 2002. The LQs for violent crimes and robberies revealed decreases that are more notable, 0.36 and 0.51 respectively; however, these are most likely influenced by the small number of actual calls (see appendix H for crime counts). The actual number of calls for violent crimes, which includes robberies, decreased from sixteen in 1998 to five in 2002. The number of calls reporting robberies decreased from eight to one.

Drug crimes were the only type of call where the LQ increased significantly, by 0.44. Again, this is affected by the relatively small number of drug calls, which increased from eighteen calls in 1998 to twenty calls in 2002.

Table 3. Crime Categories (Level A)

RD		Counts			Location Quotients		
		1998	2002	Change	1998	2002	Change
1922	Property	177	302	125	0.87	0.93	0.06
	Violence	12	10	-2	0.88	0.74	-0.14
	Disorder	382	419	37	0.97	0.87	-0.11
	Drug	4	8	4	0.57	0.83	0.26
1923	Property	215	278	63	1.68	1.14	-0.54
	Violence	4	8	4	0.47	0.79	0.32
	Disorder	227	326	99	0.92	0.90	-0.02
	Drug	0	5	5	0.00	0.69	0.69
1924	Property	210	489	279	1.12	1.40	0.28
	Violence	8	9	1	0.64	0.62	-0.02
	Disorder	108	144	36	0.30	0.28	-0.02
	Drug	11	22	11	1.69	2.11	0.42
2022	Property	154	152	-2	1.44	1.22	-0.22
	Violence	13	6	-7	1.82	1.16	-0.67
	Disorder	209	206	-3	1.02	1.11	0.09
	Drug	2	0	-2	0.54	0.00	-0.54
2023	Property	150	150	0	0.45	0.45	0.00
	Violence	16	5	-11	0.72	0.36	-0.36
	Disorder	650	569	-81	1.02	1.14	0.12
	Drug	18	20	2	1.57	2.01	0.44
2024	Property	31	27	-4	0.86	0.89	0.03
	Violence	0	1	1	0.00	0.79	0.79
	Disorder	53	44	-9	0.76	0.97	0.21
	Drug	0	0	0	0.00	0.00	0.00

Table 4. Crime Categories (Level A)

RD		Counts			Location Quotients		
		1998	2002	Change	1998	2002	Change
2122	Property	245	193	-52	1.88	1.42	-0.46
	Violence	22	14	-8	2.53	2.47	-0.06
	Disorder	186	199	13	0.74	0.98	0.24
	Drug	4	0	-4	0.89	0.00	-0.89
2123	Property	150	126	-24	1.34	1.39	0.05
	Violence	7	5	-2	0.94	1.32	0.39
	Disorder	274	186	-88	1.27	1.37	0.10
	Drug	2	2	0	0.52	0.74	0.22
2124	Property	353	285	-68	1.31	1.39	0.08
	Violence	13	11	-2	0.72	1.29	0.57
	Disorder	400	232	-168	0.77	0.76	-0.01
	Drug	1	3	2	0.11	0.49	0.38
1526	Property	163	166	3	0.70	0.64	-0.06
	Violence	20	8	-12	1.30	0.74	-0.55
	Disorder	576	544	-32	1.30	1.41	0.12
	Drug	10	4	-6	1.25	0.52	-0.73
1620	Property	341	436	95	1.20	1.39	0.19
	Violence	25	25	0	1.32	1.92	0.60
	Disorder	622	529	-93	1.14	1.13	-0.01
	Drug	11	8	-3	1.12	0.86	-0.26
2126	Property	211	211	0	0.56	0.52	-0.04
	Violence	20	15	-5	0.80	0.89	0.10
	Disorder	924	796	-128	1.28	1.32	0.05
	Drug	20	12	-8	1.53	0.99	-0.54

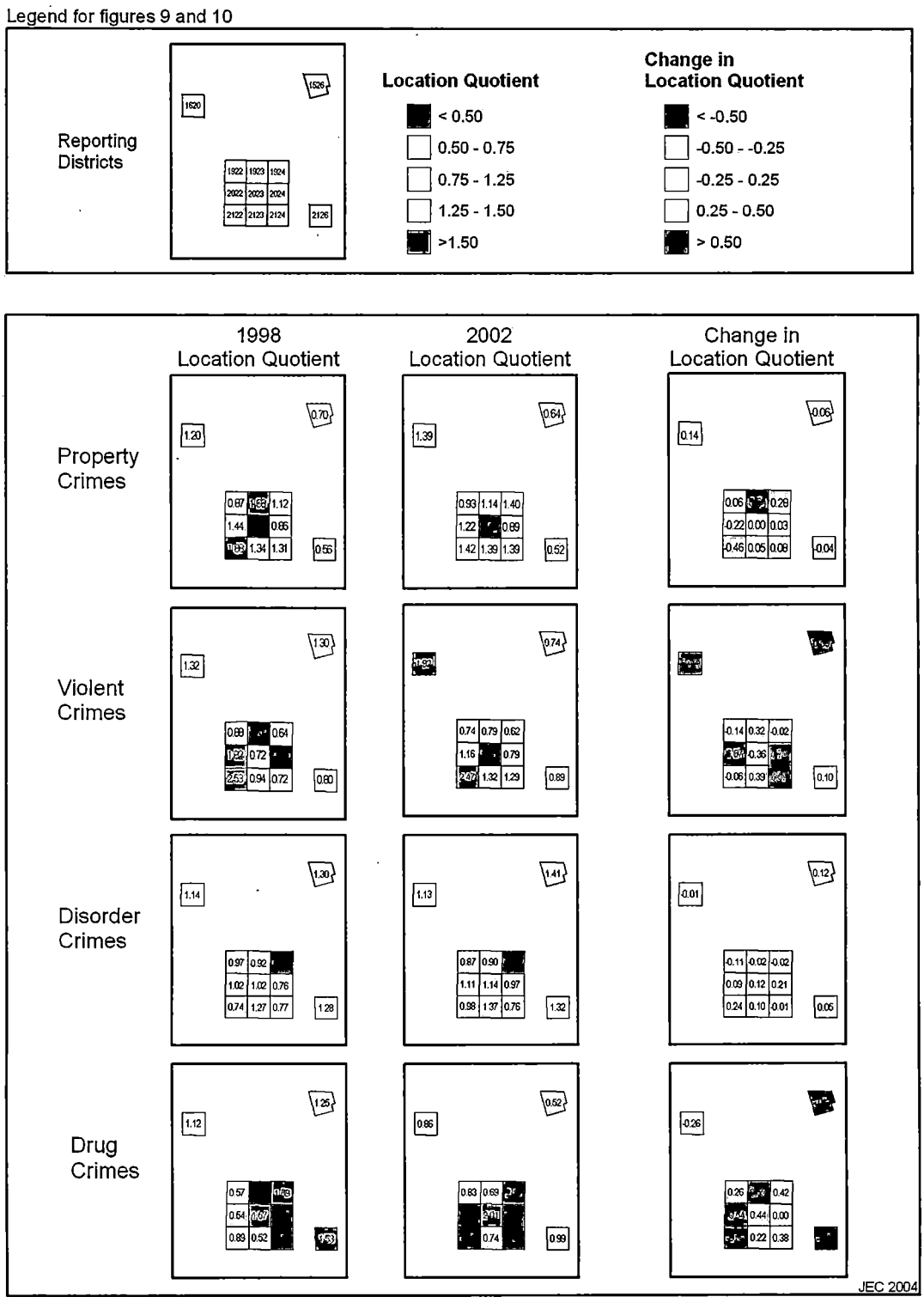


Figure 9. Crime Category Location Quotients (Level A)

Table 5. Specific Crimes (Level A)

RD		Counts			Location Quotients		
		1998	2002	Change	1998	2002	Change
1922	Disturbance	245	269	24	0.96	0.95	-0.01
	Robbery	11	5	-6	1.42	0.62	-0.80
	Burglary	87	154	67	0.91	1.17	0.27
	Assault	33	40	7	0.69	0.80	0.11
	Auto Theft	23	54	31	1.13	1.47	0.34
1923	Disturbance	123	186	63	0.77	0.87	0.10
	Robbery	3	5	2	0.62	0.82	0.21
	Burglary	121	129	8	2.00	1.30	-0.70
	Assault	18	38	20	0.60	1.01	0.41
	Auto Theft	13	28	15	1.01	1.01	0.00
1924	Disturbance	50	38	-12	0.21	0.12	-0.09
	Robbery	3	7	4	0.42	0.81	0.38
	Burglary	32	31	-1	0.36	0.22	-0.14
	Assault	33	20	-13	0.75	0.37	-0.38
	Auto Theft	22	16	-6	1.17	0.40	-0.77
2022	Disturbance	100	116	16	0.75	1.06	0.31
	Robbery	7	4	-3	1.73	1.29	-0.44
	Burglary	83	108	25	1.65	2.13	0.48
	Assault	20	14	-6	0.80	0.73	-0.07
	Auto Theft	9	7	-2	0.84	0.49	-0.35
2023	Disturbance	438	379	-59	1.05	1.29	0.24
	Robbery	8	1	-7	0.64	0.12	-0.51
	Burglary	62	58	-4	0.40	0.43	0.03
	Assault	82	62	-20	1.05	1.20	0.15
	Auto Theft	25	23	-2	0.75	0.61	-0.15
2024	Disturbance	29	21	-8	0.64	0.79	0.15
	Robbery	0	1	1	0.00	1.32	1.32
	Burglary	18	11	-7	1.06	0.89	-0.17
	Assault	9	6	-3	1.06	1.28	0.22
	Auto Theft	0	2	2	0.00	0.58	0.58

Table 6. Specific Crimes (Level A)

RD		Counts			Location Quotients		
		1998	2002	Change	1998	2002	Change
2122	Disturbance	93	89	-4	0.57	0.74	0.17
	Robbery	17	10	-7	3.44	2.95	-0.49
	Burglary	145	102	-43	2.36	1.84	-0.52
	Assault	24	13	-11	0.79	0.62	-0.17
	Auto Theft	9	19	10	0.69	1.23	0.54
2123	Disturbance	174	98	-76	1.24	1.23	-0.01
	Robbery	2	2	0	0.47	0.88	0.41
	Burglary	80	71	-9	1.52	1.93	0.41
	Assault	26	14	-12	0.99	1.00	0.01
	Auto Theft	19	9	-10	1.70	0.87	-0.82
2124	Disturbance	231	123	-108	0.69	0.69	0.00
	Robbery	7	7	0	0.68	1.38	0.69
	Burglary	132	95	-37	1.04	1.14	0.10
	Assault	66	25	-41	1.05	0.79	-0.25
	Auto Theft	32	26	-6	1.19	1.12	-0.07
1526	Disturbance	420	317	-103	1.45	1.40	-0.05
	Robbery	13	5	-8	1.48	0.78	-0.70
	Burglary	68	80	12	0.62	0.76	0.14
	Assault	64	51	-13	1.18	1.28	0.10
	Auto Theft	15	29	14	0.65	0.99	0.34
1620	Disturbance	417	346	-71	1.17	1.26	0.09
	Robbery	13	18	5	1.21	2.31	1.11
	Burglary	189	223	34	1.41	1.76	0.34
	Assault	70	50	-20	1.05	1.04	-0.02
	Auto Theft	45	69	24	1.58	1.94	0.36
2126	Disturbance	682	488	-194	1.45	1.38	-0.07
	Robbery	7	5	-2	0.49	0.50	0.01
	Burglary	112	80	-32	0.63	0.49	-0.14
	Assault	117	101	-16	1.33	1.62	0.29
	Auto Theft	28	38	10	0.74	0.83	0.08

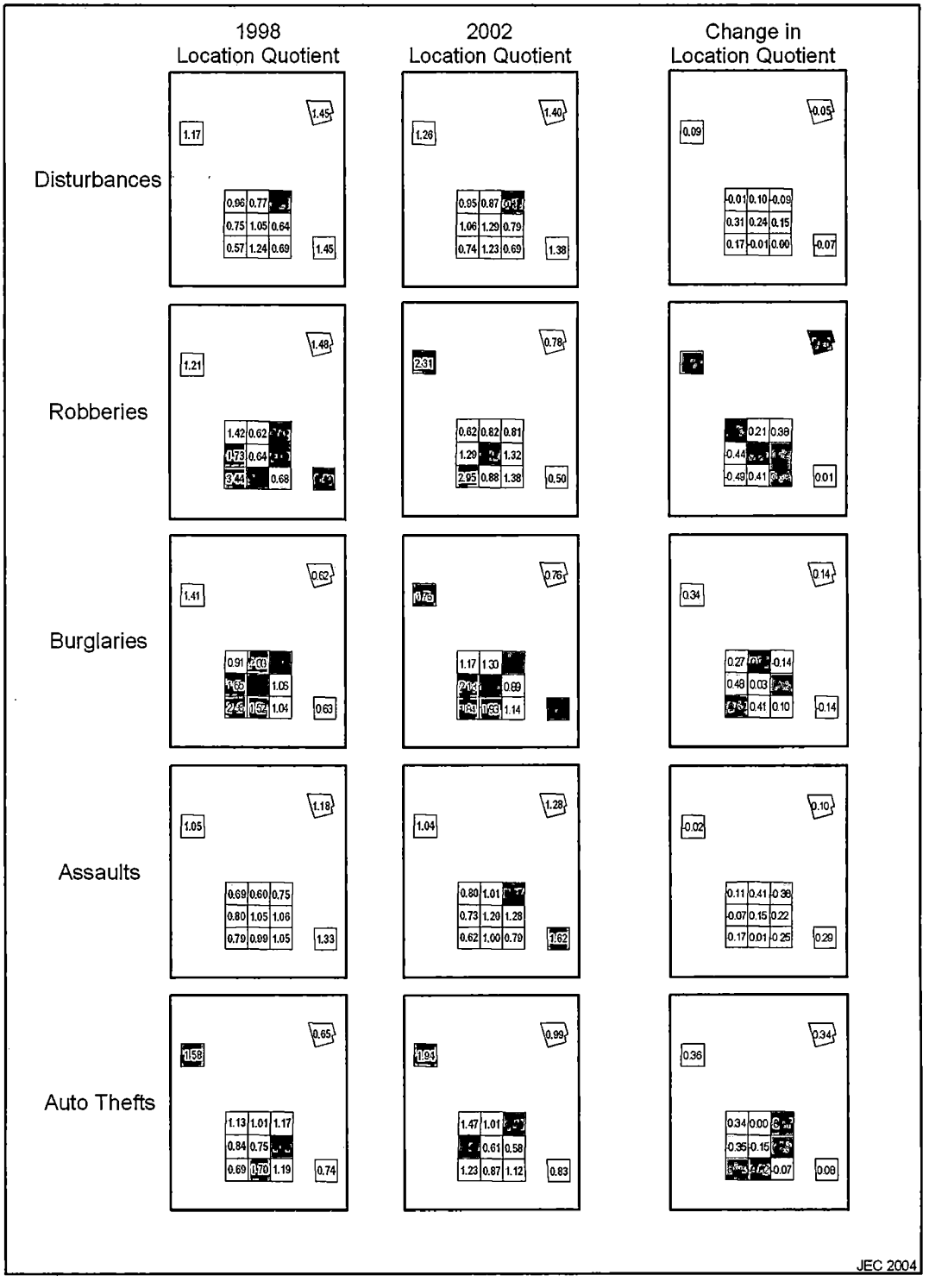


Figure 10. Specific Crime Location Quotients (Level A)

Level B: Individual RDs / 9 surrounding RDs

The larger region for this level of analysis included the Jeffrey-Lynne RD and the eight RDs surrounding it. Once again, each individual RD was used as the smaller region (tables 6 and 7, figures 11 and 12). The Jeffrey-Lynne RD had minor increases in the location quotient for property crimes (0.01), disorder crimes (0.16), disturbances (0.24), and burglaries (0.05). Minor decreases were seen in the LQs for drug crimes (-0.11) and auto theft (-0.06). The only notable increase was with assaults, with the LQ changing from 1.20 in 1998 to 1.47 in 2002, for an increase of 0.27. Decreases in LQs were seen in violent crimes and robberies. Violent crimes dropped by 0.37 and robberies dropped by 0.50. However, there were few actual calls for these crime types. Actual calls for violent crimes decreased from sixteen to five between 1998 and 2002, while robberies decreased from eight to one.

Table 7. Crime Categories (Level B)

RD		Counts			Location Quotients		
		1998	2002	Change	1998	2002	Change
1922	Property	177	302	125	0.78	0.86	0.08
	Violence	12	10	-2	0.93	0.82	-0.11
	Disorder	382	419	37	1.13	1.02	-0.11
	Drug	4	8	4	0.70	0.76	0.05
1923	Property	215	278	63	1.50	1.05	-0.45
	Violence	4	8	4	0.49	0.87	0.38
	Disorder	227	326	99	1.07	1.06	-0.01
	Drug	0	5	5	0.00	0.63	0.63
1924	Property	210	489	279	1.00	1.29	0.28
	Violence	8	9	1	0.68	0.69	0.01
	Disorder	108	144	36	0.35	0.33	-0.02
	Drug	11	22	11	2.10	1.93	-0.17
2022	Property	154	152	-2	1.29	1.12	-0.17
	Violence	13	6	-7	1.93	1.28	-0.65
	Disorder	209	206	-3	1.18	1.30	0.12
	Drug	2	0	-2	0.67	0.00	-0.67
2023	Property	150	150	0	0.40	0.41	0.01
	Violence	16	5	-11	0.76	0.40	-0.37
	Disorder	650	569	-81	1.19	1.35	0.16
	Drug	18	20	2	1.95	1.83	-0.11
2024	Property	31	27	-4	0.77	0.82	0.05
	Violence	0	1	1	0.00	0.88	0.88
	Disorder	53	44	-9	0.89	1.15	0.26
	Drug	0	0	0	0.00	0.00	0.00
2122	Property	245	193	-52	1.68	1.30	-0.38
	Violence	22	14	-8	2.68	2.74	0.06
	Disorder	186	199	13	0.86	1.15	0.29
	Drug	4	0	-4	1.10	0.00	-1.10
2123	Property	150	126	-24	1.20	1.27	0.08
	Violence	7	5	-2	0.99	1.47	0.47
	Disorder	274	186	-88	1.48	1.62	0.14
	Drug	2	2	0	0.64	0.67	0.03
2124	Property	353	285	-68	1.17	1.28	0.11
	Violence	13	11	-2	0.77	1.43	0.67
	Disorder	400	232	-168	0.90	0.90	0.00
	Drug	1	3	2	0.13	0.45	0.32

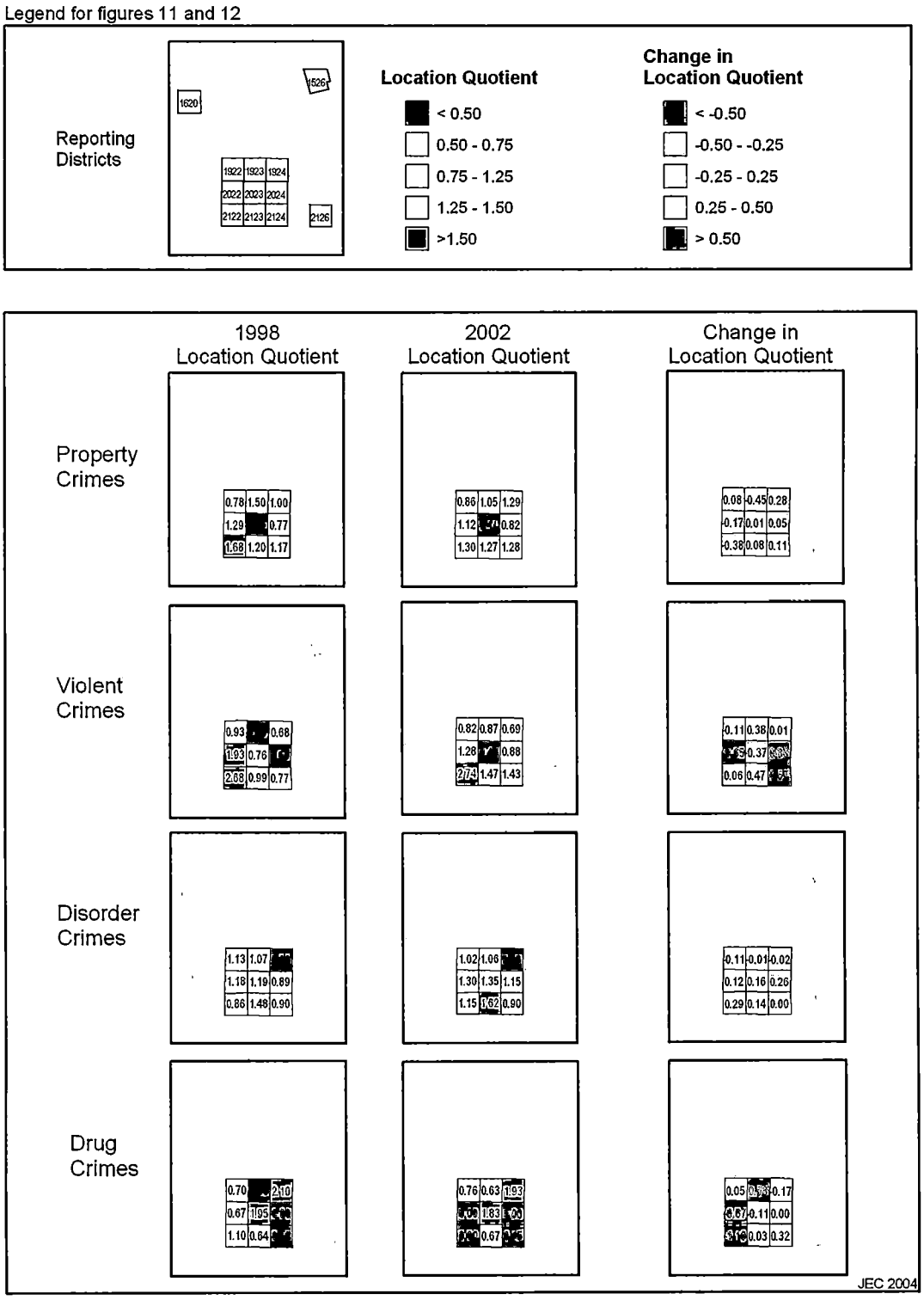


Figure 11. Crime Category Location Quotients (Level B)

Table 8. Specific Crimes (Level B)

RD		Counts			Location Quotients		
		1998	2002	Change	1998	2002	Change
1922	Disturbance	245	269	24	1.22	1.16	-0.06
	Robbery	11	5	-6	1.40	0.68	-0.73
	Burglary	87	154	67	0.85	1.15	0.31
	Assault	33	40	7	0.78	0.98	0.19
	Auto Theft	23	54	31	1.12	1.67	0.55
1923	Disturbance	123	186	63	0.97	1.06	0.09
	Robbery	3	5	2	0.61	0.90	0.29
	Burglary	121	129	8	1.87	1.28	-0.59
	Assault	18	38	20	0.68	1.23	0.55
	Auto Theft	13	28	15	1.00	1.15	0.14
1924	Disturbance	50	38	-12	0.27	0.15	-0.12
	Robbery	3	7	4	0.42	0.88	0.46
	Burglary	32	31	-1	0.34	0.21	-0.12
	Assault	33	20	-13	0.85	0.45	-0.40
	Auto Theft	22	16	-6	1.16	0.46	-0.70
2022	Disturbance	100	116	16	0.95	1.29	0.34
	Robbery	7	4	-3	1.70	1.40	-0.30
	Burglary	83	108	25	1.54	2.09	0.56
	Assault	20	14	-6	0.91	0.89	-0.02
	Auto Theft	9	7	-2	0.83	0.56	-0.27
2023	Disturbance	438	379	-59	1.34	1.58	0.24
	Robbery	8	1	-7	0.63	0.13	-0.50
	Burglary	62	58	-4	0.37	0.42	0.05
	Assault	82	62	-20	1.20	1.47	0.27
	Auto Theft	25	23	-2	0.75	0.69	-0.06
2024	Disturbance	29	21	-8	0.82	0.96	0.15
	Robbery	0	1	1	0.00	1.44	1.44
	Burglary	18	11	-7	0.99	0.88	-0.11
	Assault	9	6	-3	1.21	1.57	0.36
	Auto Theft	0	2	2	0.00	0.66	0.66
2122	Disturbance	93	89	-4	0.72	0.91	0.18
	Robbery	17	10	-7	3.39	3.21	-0.18
	Burglary	145	102	-43	2.21	1.81	-0.39
	Assault	24	13	-11	0.89	0.76	-0.14
	Auto Theft	9	19	10	0.68	1.39	0.71
2123	Disturbance	174	98	-76	1.58	1.50	-0.08
	Robbery	2	2	0	0.46	0.96	0.50
	Burglary	80	71	-9	1.42	1.89	0.48
	Assault	26	14	-12	1.12	1.22	0.10
	Auto Theft	19	9	-10	1.68	0.99	-0.69
2124	Disturbance	231	123	-108	0.87	0.84	-0.03
	Robbery	7	7	0	0.67	1.50	0.82
	Burglary	132	95	-37	0.97	1.12	0.15
	Assault	66	25	-41	1.19	0.97	-0.22
	Auto Theft	32	26	-6	1.18	1.27	0.09

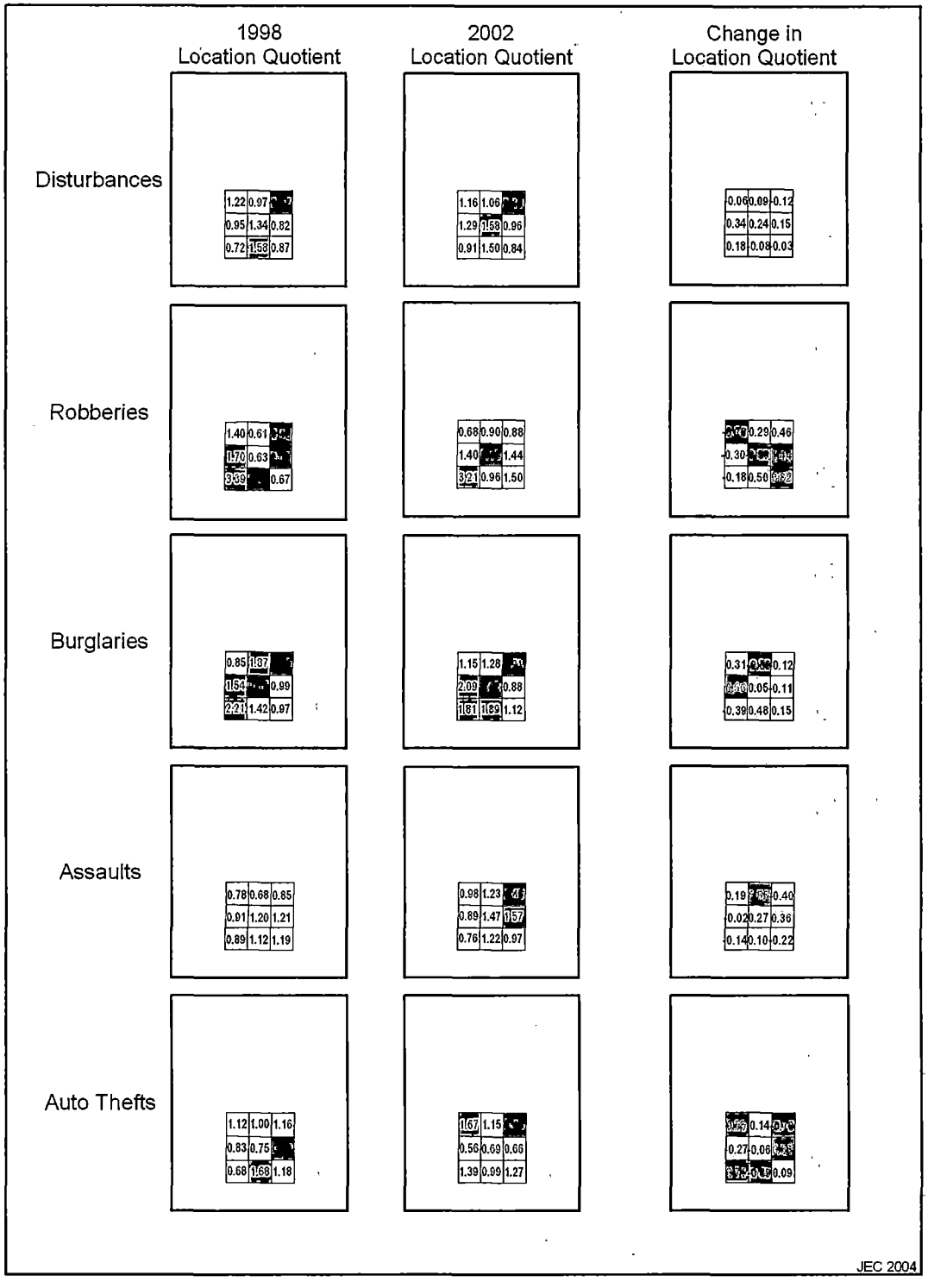


Figure 12. Specific Crime Location Quotients (Level B)

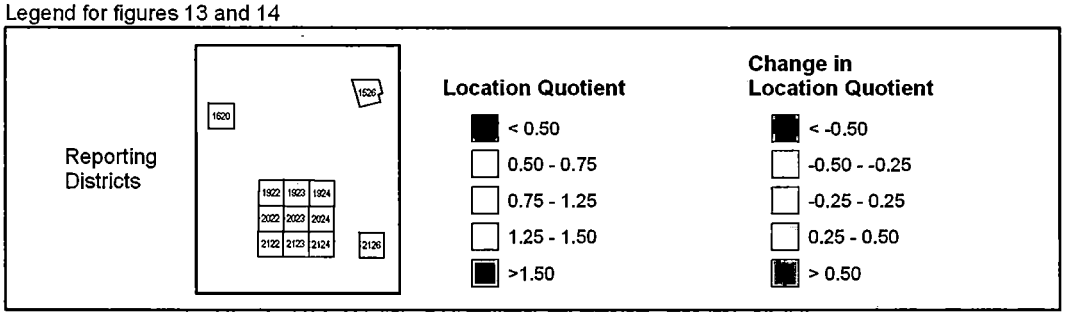
Level C: Individual RDs / 4 comparison RDs

The final analysis for the reporting district resolution compared each individual RD to the four RDs that contained the five selected block groups (tables 8 and 9, figures 13 and 14). Minimal increases were seen for disorder crimes (0.05), disturbances (0.15), and assaults (0.01), while nominal decreases where seen for property crimes (-0.03) and burglaries (-0.01). The only LQ to increase significantly was drug crimes, which went up by 0.66. The Jeffrey-Lynne RD was the only RD out of the four to have an increase in the drug crime LQ. Three crime variables show significant decreases. The LQ for auto thefts dropped from 0.82 in 1998 to 0.57 in 2002, for a decrease of 0.25. As seen with the other two levels of analysis at this resolution, violent crime and robberies had notable decreases, 0.36 and 0.58 respectively. All four crime variables with notable changes had a small number of actual calls.

Table 9. Crime Categories (Level C)

Reporting Districts		1998	2002	Change	1998	2002	Change
1526	Property	163	166	3	1.00	0.87	-0.12
	Violence	20	8	-12	1.31	0.76	-0.54
	Disorder	576	544	-32	1.10	1.13	0.03
	Drug	10	4	-6	0.90	0.46	-0.44
1620	Property	341	436	95	1.70	1.89	0.20
	Violence	25	25	0	1.33	1.97	0.64
	Disorder	622	529	-93	0.97	0.91	-0.06
	Drug	11	8	-3	0.80	0.76	-0.04
2023	Property	150	150	0	0.64	0.61	-0.03
	Violence	16	5	-11	0.73	0.37	-0.36
	Disorder	650	569	-81	0.86	0.92	0.05
	Drug	18	20	2	1.12	1.78	0.66
2126	Property	211	211	0	0.79	0.71	-0.08
	Violence	20	15	-5	0.80	0.92	0.11
	Disorder	924	796	-128	1.08	1.06	-0.03
	Drug	20	12	-8	1.10	0.88	-0.22

Legend for figures 13 and 14



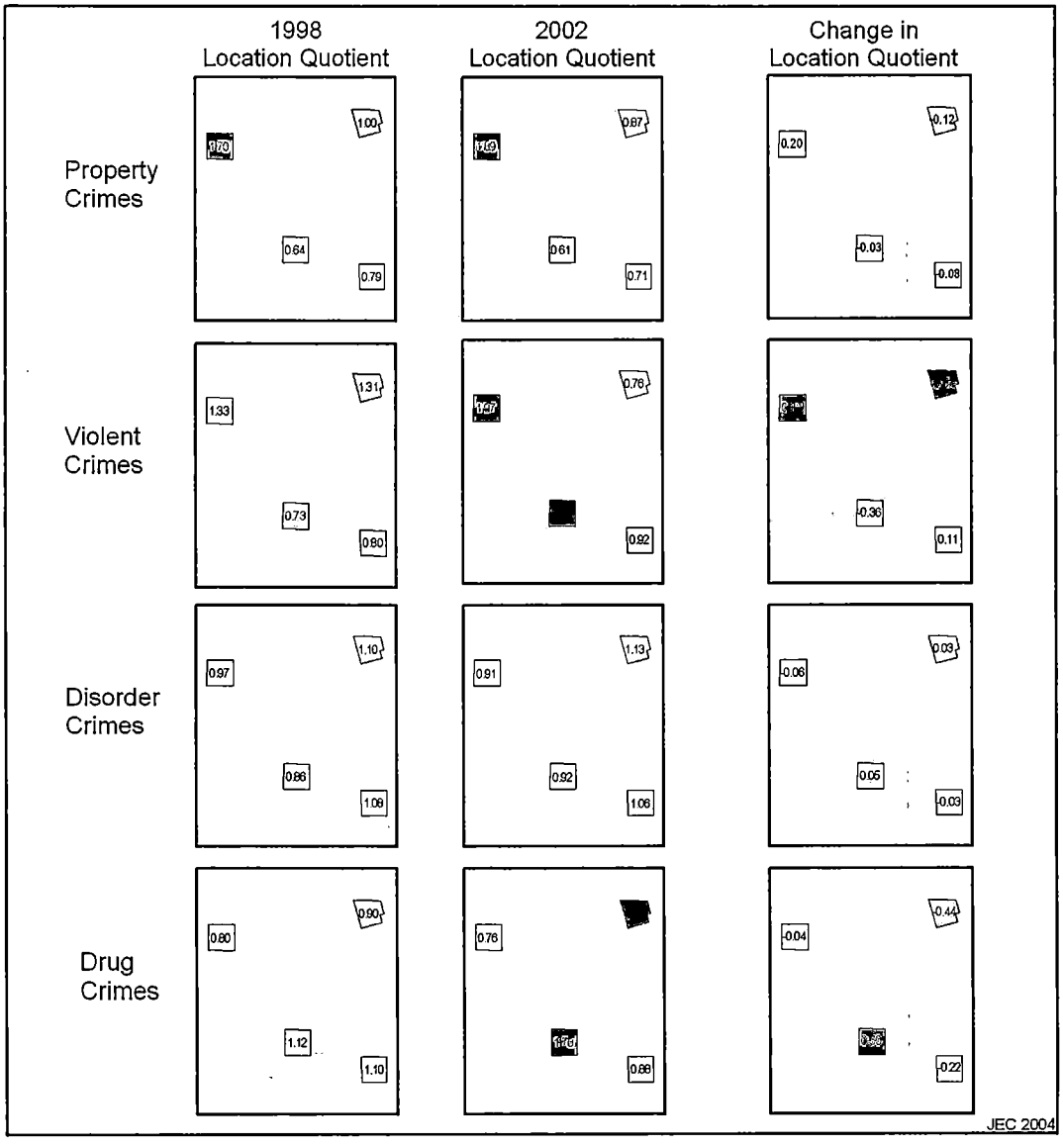


Figure 13. Crime Category Location Quotients (Level C)

Table 10. Specific Crimes (Level C)

RD		Counts			Location Quotients		
		1998	2002	Change	1998	2002	Change
1526	Disturbance	420	317	-103	1.14	1.05	-0.09
	Robbery	13	5	-8	1.68	0.87	-0.80
	Burglary	68	80	12	0.83	0.92	0.08
	Assault	64	51	-13	1.02	0.98	-0.04
	Auto Theft	15	29	14	0.70	0.92	0.22
1620	Disturbance	417	346	-71	0.92	0.95	0.03
	Robbery	13	18	5	1.37	2.60	1.23
	Burglary	189	223	34	1.89	2.12	0.23
	Assault	70	50	-20	0.91	0.79	-0.11
	Auto Theft	45	69	24	1.72	1.82	0.10
2023	Disturbance	438	379	-59	0.83	0.97	0.15
	Robbery	8	1	-7	0.72	0.14	-0.58
	Burglary	62	58	-4	0.53	0.52	-0.01
	Assault	82	62	-20	0.91	0.92	0.01
	Auto Theft	25	23	-2	0.82	0.57	-0.25
2126	Disturbance	682	488	-194	1.13	1.03	-0.10
	Robbery	7	5	-2	0.55	0.56	0.00
	Burglary	112	80	-32	0.84	0.59	-0.26
	Assault	117	101	-16	1.14	1.24	0.10
	Auto Theft	28	38	10	0.81	0.77	-0.03

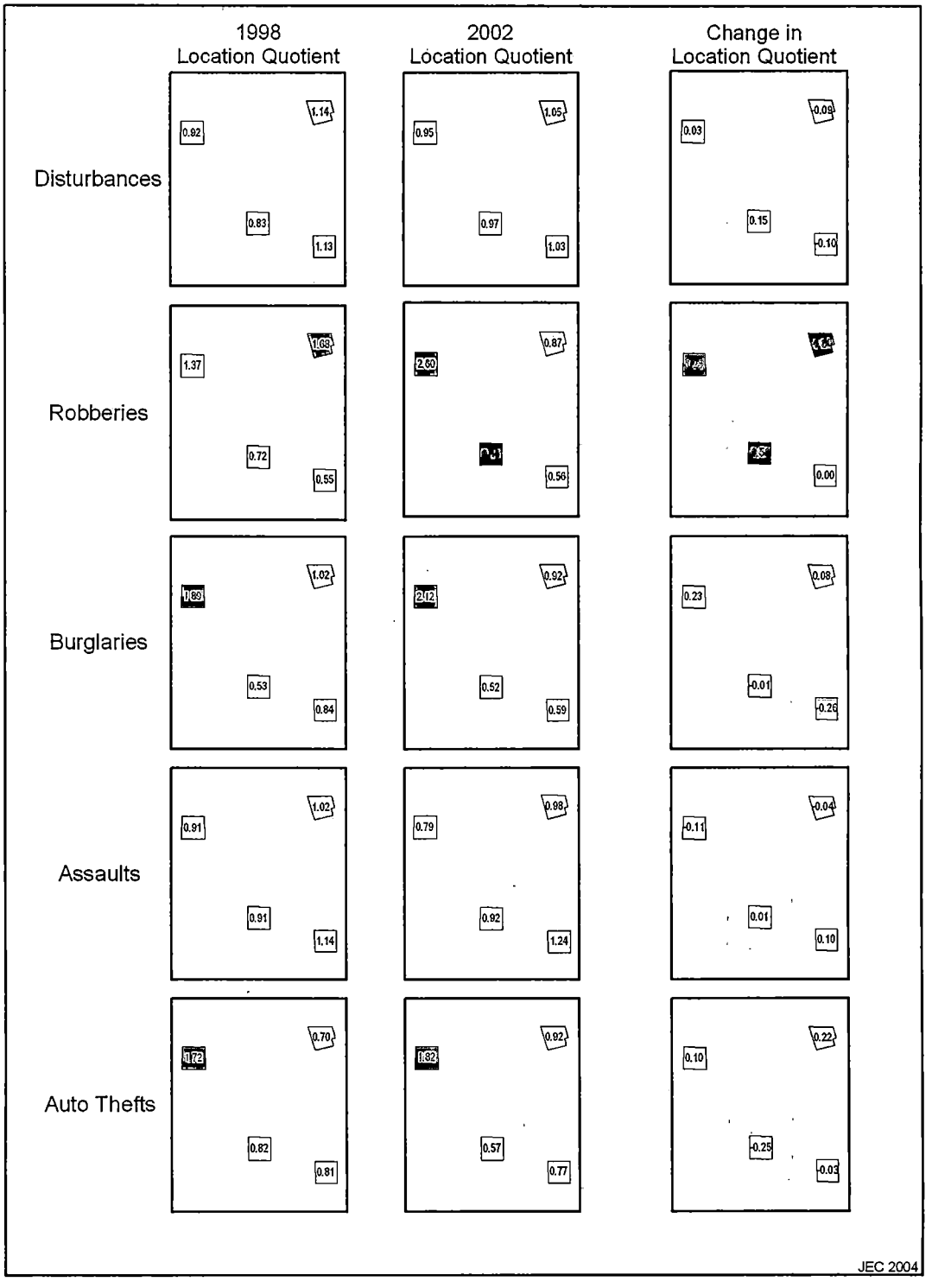


Figure 14. Specific Crime Location Quotients (Level C)

Second Resolution: Block Group

The Jeffrey-Lynne core block group had 688 calls for service in 1998 and 524 calls in 2002, for a twenty-four percent decrease in calls. While all of the selected block groups showed a decrease in calls, the core had the greatest decrease (table 10, figure 15).

Table 11. Change in Calls by Block Group

Block Group	Counts		
	1998	2002	Change
JL Core	688	524	-24%
JL Perimeter	629	578	-8%
Area 1	721	683	-5%
Area 2	726	602	-17%
Area 3	792	685	-14%

Of the crime categories examined, disorder crimes represented the highest percentage of calls for the Jeffrey-Lynne core block group, with thirty-eight percent in 1998 and thirty-four percent in 2002. Property crimes accounted for four percent in 1998 and eight percent in 2002. Violent crimes represented one percent of the calls in 1998 and less than one percent in 2002. Drug crimes accounted for one percent of all calls in 1998 and less

than one percent in 2002. Of the specific crime types examined, disturbances were the highest, accounting for twenty-nine percent of all calls in both 1998 and 2002. There were no robbery calls in 1998 or 2002. Burglaries represented two percent in 1998 and increased to six percent in 2002. Assaults dropped from six percent in 1998 to four percent in 2002. Auto thefts accounted for approximately one percent in 1998 and two percent of the calls in 2002 (Appendix G).

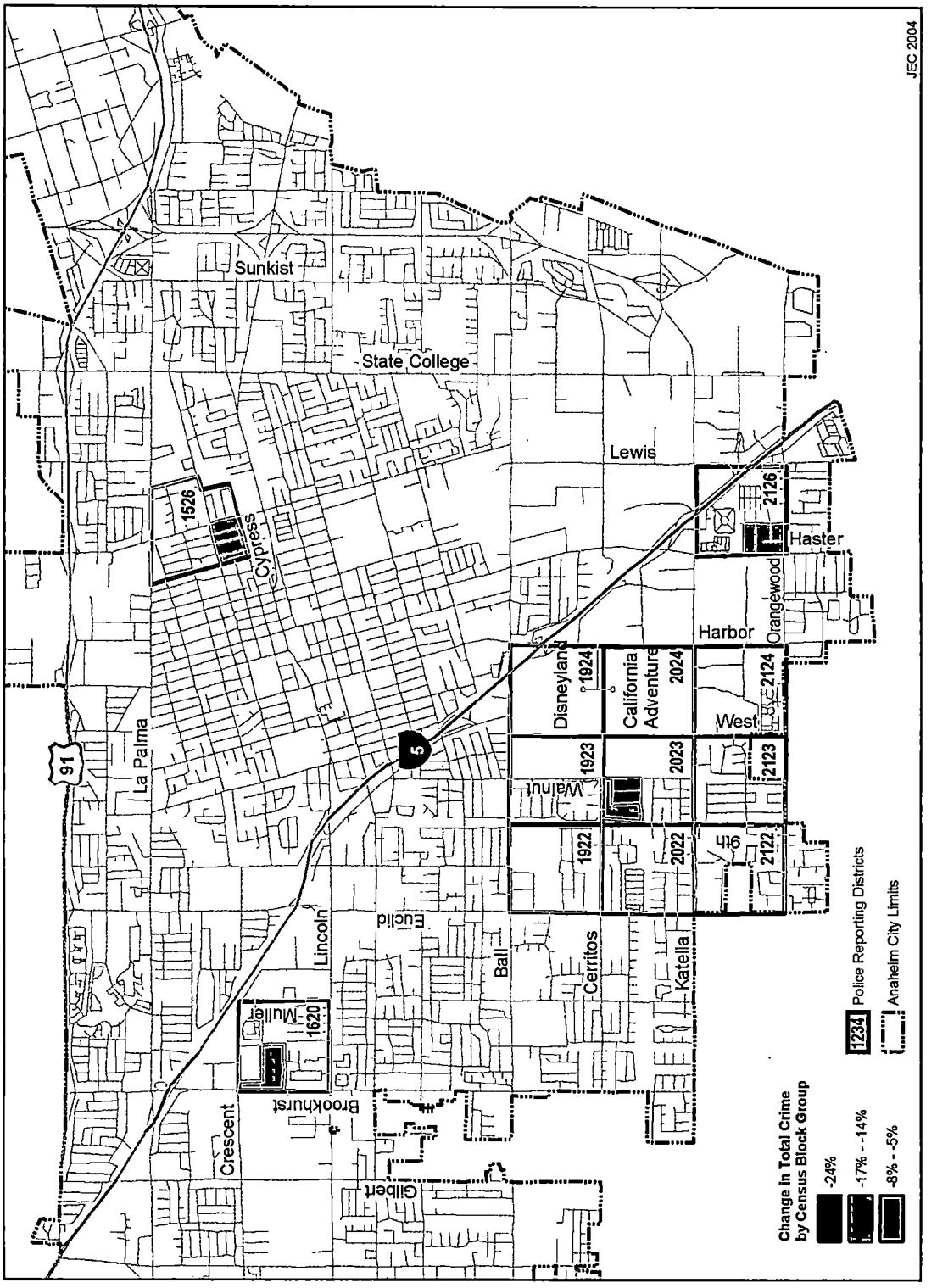


Figure 15. Change in Calls by Block Group

Level D: Individual BGs / all 12 study area RDs

For the first level of analysis for this resolution, the individual, selected block groups were the smaller regions, which were compared to the larger region of the study area comprised of all twelve RDs (tables 11 and 12, figures 16 and 17). For six of the nine crime variables there was minimal change in the location quotient from 1998 to 2002 in the Jeffrey-Lynne core block group. The core showed an increase for disturbances (0.51) and burglaries (0.55).

For disturbances, all of the block groups contributed more than expected to the study area in 1998, with LQs ranging from 1.46 in the core to 1.67 in Area 3. In 2002, the block groups still contributed more than expected, with LQs ranging from 1.26 in Area 1 to 2.16 in the perimeter. The LQs for both the core and the perimeter increased, by 0.51 and 0.61 respectively. For all of the block groups the counts for disturbances decreased, but paradoxically some of the location quotients increased. For example, the number of disturbances in the core decreased by 48 calls, from 200 to 152, and those disturbances accounted for 29% of all calls in both 1998 and 2002, but the location quotient for disturbances actually increased by 0.51. Even

though the count decreased and the proportion of calls that were disturbances remained steady, the contribution the core made to the study area increased. This is an excellent illustration of why location quotients are useful for identifying areas that warrant further investigation.

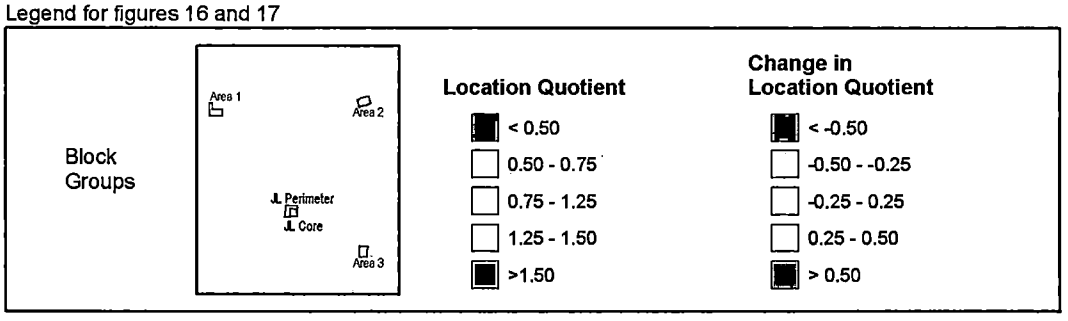
For burglaries, all of the block groups contributed less than expected to the study area in 1998, with LQs ranging from 0.17 in Area 3 to 0.74 in Area 2. In 2002, three of the block groups still contributed less than expected, with LQs ranging from 0.19 in Area 3 to 0.39 in Area 1. The LQs for the core and Area 2 increased by 0.55 and 0.36, respectively. However, it is important to note that although the core's LQ increased from 0.29 to 0.84, it still remained below 1.00.

Only one crime variable had a significant decrease in the Jeffrey-Lynne core block group. The LQ for drug crimes decreased from 1.85 in 1998 to 0.38 in 2002. While this decrease of 1.47 is notable, it is most likely influenced by the small number of drug calls, which decreased from seven in 1998 to one in 2002.

Table 12. Crime Categories (Level D)

Block Groups		Counts			Location Quotients		
		1998	2002	Change	1998	2002	Change
Jeffrey-Lynne Core	Property	26	41	15	0.24	0.47	0.23
	Violence	5	2	-3	0.68	0.55	-0.14
	Disorder	263	178	-85	1.25	1.36	0.11
	Drug	7	1	-6	1.85	0.38	-1.47
Jeffrey-Lynne Perimeter	Property	16	28	12	0.16	0.29	0.13
	Violence	6	1	-5	0.90	0.25	-0.65
	Disorder	267	262	-5	1.39	1.81	0.43
	Drug	9	4	-5	2.60	1.38	-1.22
Area 1 Block Group	Property	54	56	2	0.47	0.49	0.02
	Violence	7	5	-2	0.91	1.05	0.14
	Disorder	300	236	-64	1.36	1.38	0.02
	Drug	9	2	-7	2.27	0.59	-1.68
Area 2 Block Group	Property	87	113	26	0.75	1.12	0.37
	Violence	12	6	-6	1.56	1.43	-0.13
	Disorder	312	206	-106	1.40	1.37	-0.04
	Drug	7	1	-6	1.75	0.33	-1.42
Area 3 Block Group	Property	24	29	5	0.19	0.25	0.06
	Violence	10	6	-4	1.19	1.26	0.07
	Disorder	344	250	-94	1.42	1.46	0.04
	Drug	5	3	-2	1.15	0.88	-0.27

Legend for figures 16 and 17



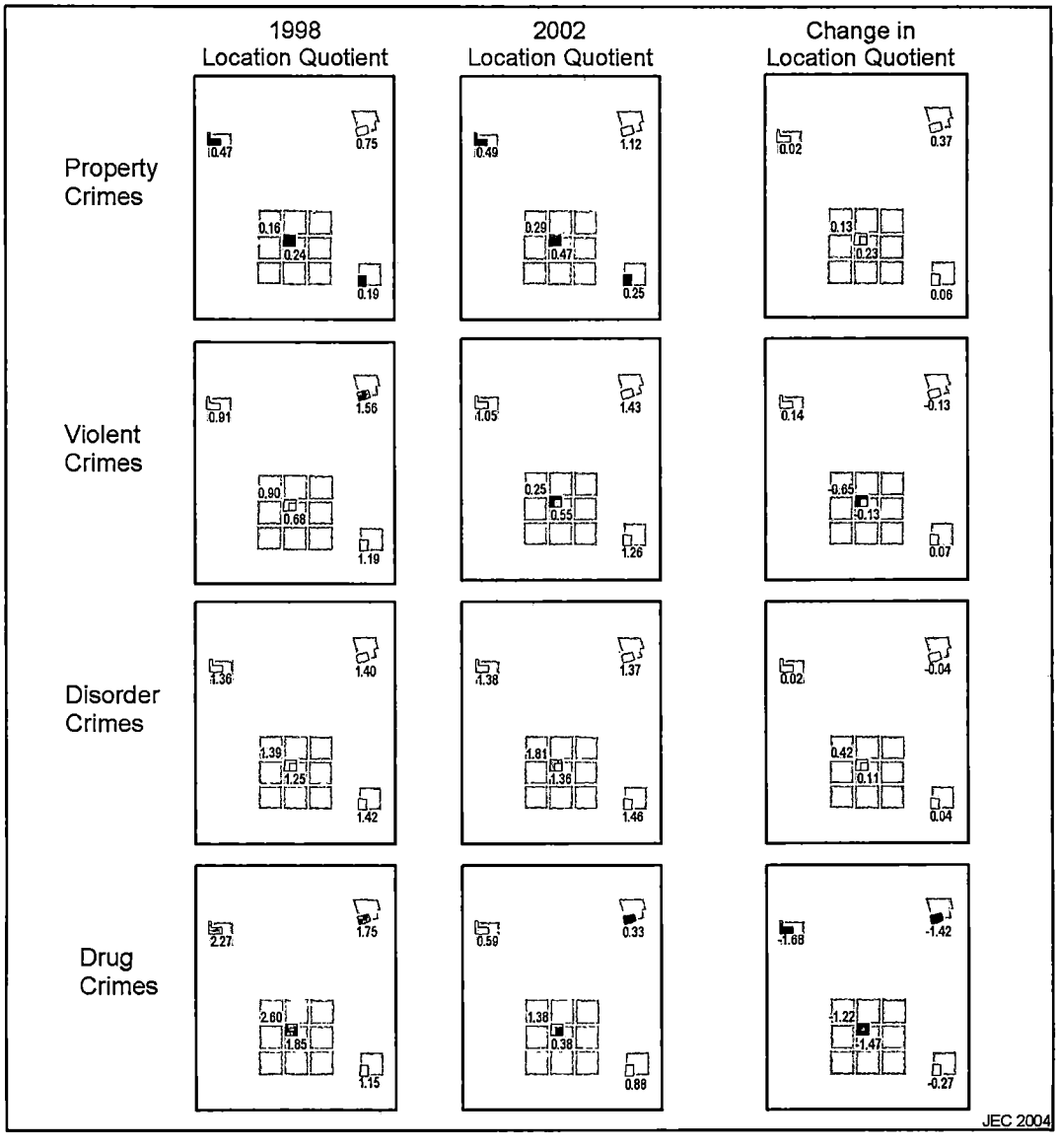


Figure 16. Crime Category Location Quotients (Level D)

Table 13. Specific Crimes (Level D)

Block Groups		Counts			Location Quotients		
		1998	2002	Change	1998	2002	Change
Jeffrey-Lynne Core	Disturbance	200	152	-48	1.46	1.97	0.51
	Robbery	0	0	0	0.00	0.00	0.00
	Burglary	15	30	15	0.29	0.84	0.55
	Assault	41	23	-18	1.60	1.70	0.10
	Auto Theft	8	9	1	0.73	0.90	0.17
Jeffrey-Lynne Perimeter	Disturbance	194	184	-10	1.55	2.16	0.61
	Robbery	3	0	-3	0.79	0.00	-0.79
	Burglary	9	12	3	0.19	0.31	0.11
	Assault	30	24	-6	1.28	1.61	0.33
	Auto Theft	5	9	4	0.50	0.82	0.32
Area 1 Block Group	Disturbance	232	127	-105	1.62	1.26	-0.35
	Robbery	2	3	1	0.46	1.05	0.59
	Burglary	12	18	6	0.22	0.39	0.17
	Assault	36	27	-9	1.34	1.53	0.19
	Auto Theft	6	14	8	0.52	1.08	0.55
Area 2 Block Group	Disturbance	221	143	-78	1.53	1.61	0.09
	Robbery	5	5	0	1.14	1.99	0.85
	Burglary	40	45	5	0.74	1.10	0.36
	Assault	40	17	-23	1.48	1.09	-0.39
	Auto Theft	17	22	5	1.47	1.92	0.45
Area 3 Block Group	Disturbance	263	162	-101	1.67	1.61	-0.06
	Robbery	5	2	-3	1.05	0.70	-0.35
	Burglary	10	9	-1	0.17	0.19	0.02
	Assault	39	32	-7	1.32	1.81	0.49
	Auto Theft	6	7	1	0.48	0.54	0.06

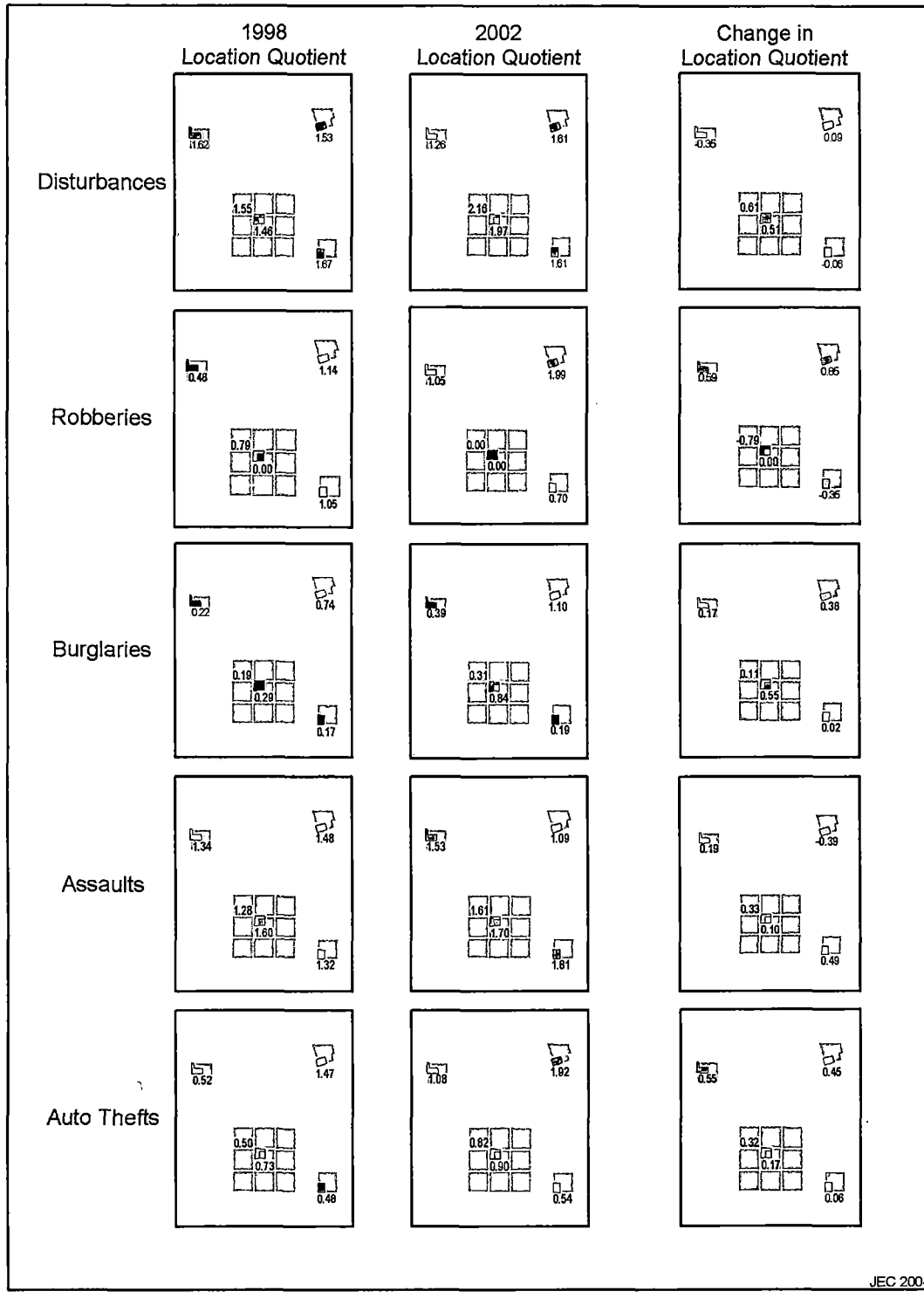


Figure 17. Specific Crime Location Quotients (Level D)

Level E: Individual BGs / 4 comparison RDs

For this analysis, the larger region that the individual block groups were compared to consisted of the four RDs that contained the five selected block groups (tables 13 and 14, figures 18 and 19). The LQs for the Jeffrey-Lynne core block group had notable changes for four crime variables. Burglaries, property crimes, and disturbances increased, while drug crimes decreased.

The most significant increase in the core was the burglary LQ, which increased by 0.63, from 0.39 in 1998 to 1.01 in 2002. Even with this increase, the core still does not contribute significantly more than expected to the larger region.

As expected, since the burglary LQ increased so did the property crime LQ (which includes burglaries). All of the block groups had an increase in their property crime location quotient, however only the core (0.30) and Area 2 (0.46) had noteworthy changes. Again, even with the increase from 0.34 to 0.63, the core's contribution remains less than expected.

Both the core and the perimeter had significant increases for disturbances. The core increased by 0.34, from a LQ of 1.14 in 1998 to 1.48 in 2002. The perimeter

experienced a greater increase of 0.42, from a LQ of 1.21 in 1998 to 1.63 in 2002.

The only significant decrease for the Jeffrey-Lynne core was in the drug crimes location quotient. The core made a greater contribution (LQ=1.33) than expected in 1998 but that contribution dropped to below expected (LQ=0.34) in 2002. As mentioned earlier, this decrease is influenced by the small number of drug calls, which decreased from seven in 1998 to one in 2002.

Table 14. Crime Categories (Level E)

Block Groups		Counts			Location Quotients		
		1998	2002	Change	1998	2002	Change
Jeffrey-Lynne Core	Property	26	41	15	0.34	0.63	0.30
	Violence	5	2	-3	0.69	0.56	-0.13
	Disorder	263	178	-85	1.06	1.09	0.03
	Drug	7	1	-6	1.33	0.34	-0.99
Jeffrey-Lynne Perimeter	Property	16	28	12	0.23	0.39	0.17
	Violence	6	1	-5	0.91	0.26	-0.65
	Disorder	267	262	-5	1.18	1.45	0.27
	Drug	9	4	-5	1.87	1.23	-0.64
Area 1 Block Group	Property	54	56	2	0.67	0.67	0.00
	Violence	7	5	-2	0.92	1.08	0.16
	Disorder	300	236	-64	1.15	1.11	-0.05
	Drug	9	2	-7	1.63	0.52	-1.11
Area 2 Block Group	Property	87	113	26	1.07	1.52	0.46
	Violence	12	6	-6	1.57	1.47	-0.10
	Disorder	312	206	-106	1.19	1.10	-0.10
	Drug	7	1	-6	1.26	0.29	-0.96
Area 3 Block Group	Property	24	29	5	0.27	0.34	0.07
	Violence	10	6	-4	1.20	1.29	0.09
	Disorder	344	250	-94	1.21	1.17	-0.04
	Drug	5	3	-2	0.82	0.78	-0.05

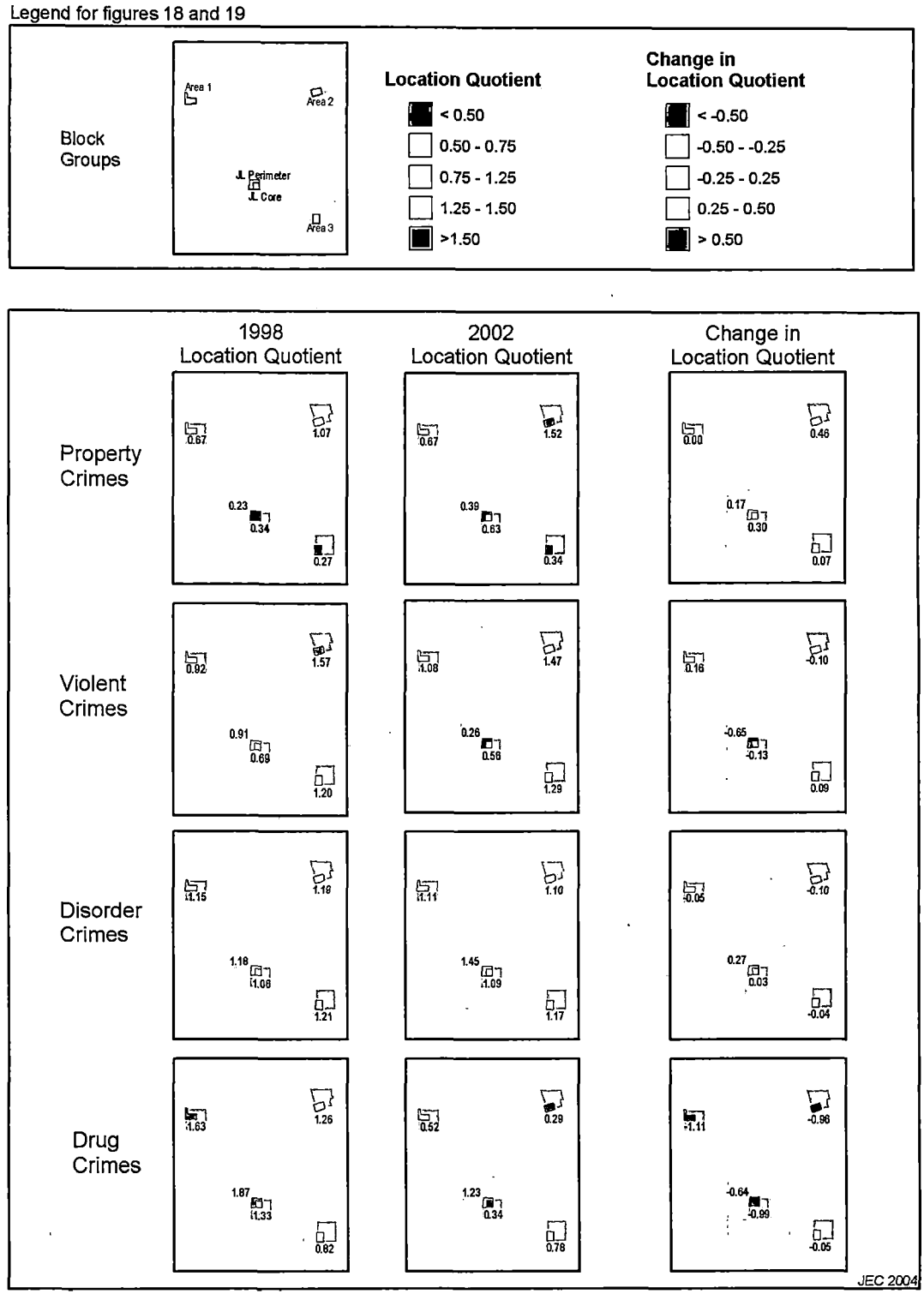


Figure 18. Crime Category Location Quotients (Level E)

Table 15. Specific Crimes (Level E)

Block Groups		Counts			Location Quotients		
		1998	2002	Change	1998	2002	Change
Jeffrey-Lynne Core	Disturbance	200	152	-48	1.14	1.48	0.34
	Robbery	0	0	0	0.00	0.00	0.00
	Burglary	15	30	15	0.39	1.01	0.63
	Assault	41	23	-18	1.38	1.30	-0.08
	Auto Theft	8	9	1	0.79	0.84	0.05
Jeffrey-Lynne Perimeter	Disturbance	194	184	-10	1.21	1.63	0.41
	Robbery	3	0	-3	0.89	0.00	-0.89
	Burglary	9	12	3	0.26	0.37	0.11
	Assault	30	24	-6	1.10	1.23	0.13
	Auto Theft	5	9	4	0.54	0.77	0.22
Area 1 Block Group	Disturbance	232	127	-105	1.26	0.95	-0.32
	Robbery	2	3	1	0.52	1.18	0.66
	Burglary	12	18	6	0.30	0.47	0.17
	Assault	36	27	-9	1.15	1.17	0.02
	Auto Theft	6	14	8	0.57	1.01	0.44
Area 2 Block Group	Disturbance	221	143	-78	1.20	1.21	0.02
	Robbery	5	5	0	1.29	2.24	0.95
	Burglary	40	45	5	0.98	1.32	0.34
	Assault	40	17	-23	1.27	0.84	-0.44
	Auto Theft	17	22	5	1.59	1.80	0.20
Area 3 Block Group	Disturbance	263	162	-101	1.31	1.21	-0.10
	Robbery	5	2	-3	1.18	0.79	-0.40
	Burglary	10	9	-1	0.23	0.23	0.01
	Assault	39	32	-7	1.14	1.38	0.25
	Auto Theft	6	7	1	0.52	0.50	-0.01

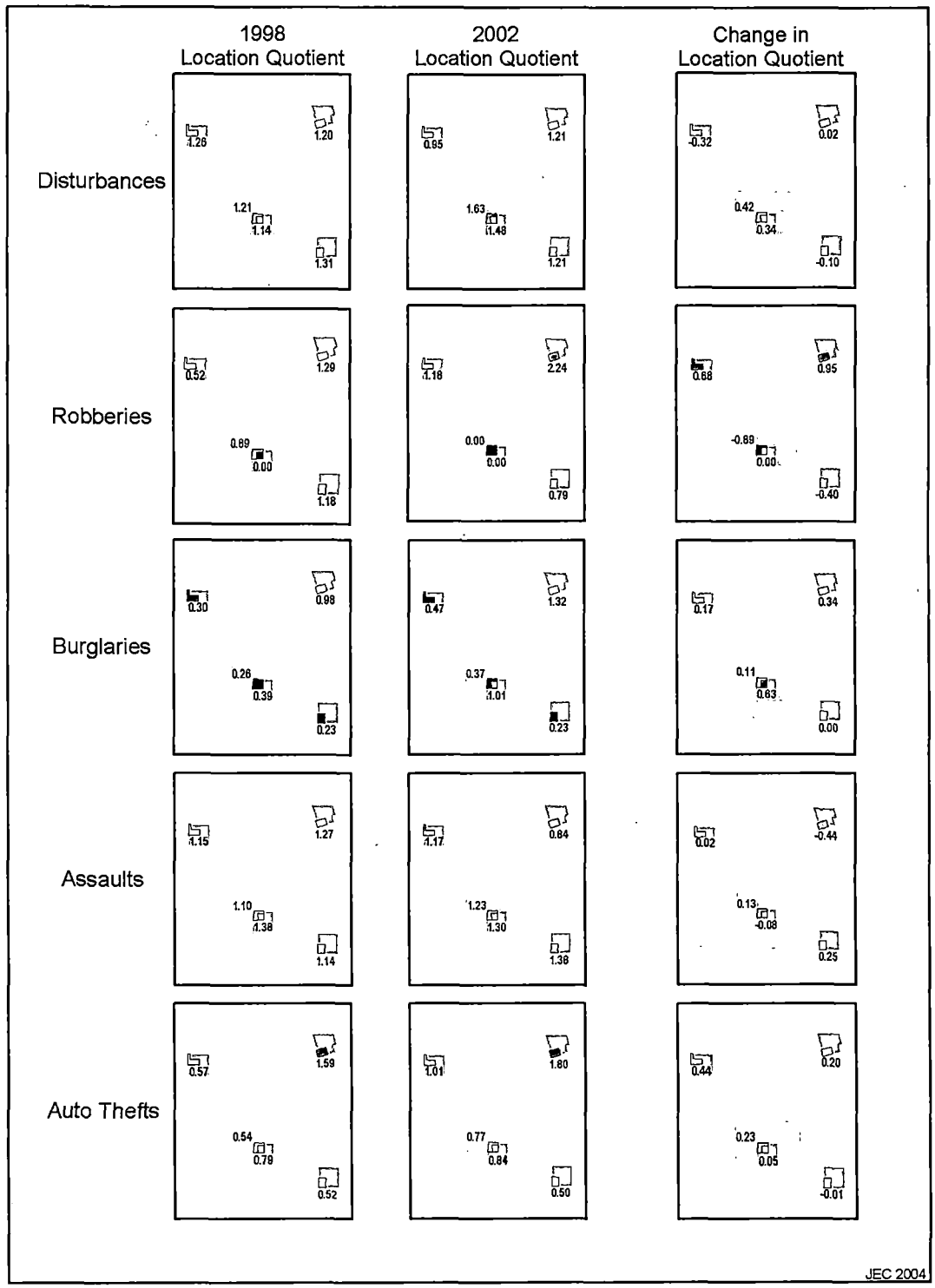


Figure 19. Specific Crime Location Quotients (Level E)

Level F: Individual BGs/ 5 comparison BGs

The final analysis for this resolution compared each individual block group to the larger region comprised of all five block groups (tables 15 and 16, figures 20 and 21). At this level, the Jeffrey-Lynne core block group had minor decreases for violent crimes, assaults, and auto thefts, and minor increases for property crimes, disorder crimes, and disturbances. The core had no robbery calls, so the LQ of zero remained unchanged. The only significant increase was burglaries, which changed from 0.90 in 1998 to 1.54 in 2002, for an increase of 0.64. While smaller than the decreases at the other block group levels discussed above, drug crimes, which dropped by 0.45, was once again the variable with a significant decrease.

Table 16. Crime Categories (Level F)

Block Groups		Counts			Location Quotients		
		1998	2002	Change	1998	2002	Change
Jeffrey-Lynne Core	Property	26	41	15	0.60	0.85	0.25
	Violence	5	2	-3	0.65	0.59	-0.06
	Disorder	263	178	-85	0.91	0.92	0.01
	Drug	7	1	-6	0.98	0.53	-0.44
Jeffrey-Lynne Perimeter	Property	16	28	12	0.40	0.52	0.12
	Violence	6	1	-5	0.85	0.27	-0.58
	Disorder	267	262	-5	1.02	1.23	0.21
	Drug	9	4	-5	1.38	1.93	0.56
Area 1 Block Group	Property	54	56	2	1.18	0.89	-0.30
	Violence	7	5	-2	0.86	1.12	0.26
	Disorder	300	236	-64	1.00	0.94	-0.06
	Drug	9	2	-7	1.20	0.82	-0.38
Area 2 Block Group	Property	87	113	26	1.89	2.03	0.14
	Violence	12	6	-6	1.47	1.53	0.06
	Disorder	312	206	-106	1.03	0.93	-0.10
	Drug	7	1	-6	0.93	0.46	-0.46
Area 3 Block Group	Property	24	29	5	0.48	0.46	-0.02
	Violence	10	6	-4	1.12	1.35	0.22
	Disorder	344	250	-94	1.04	0.99	-0.05
	Drug	5	3	-2	0.61	1.22	0.62

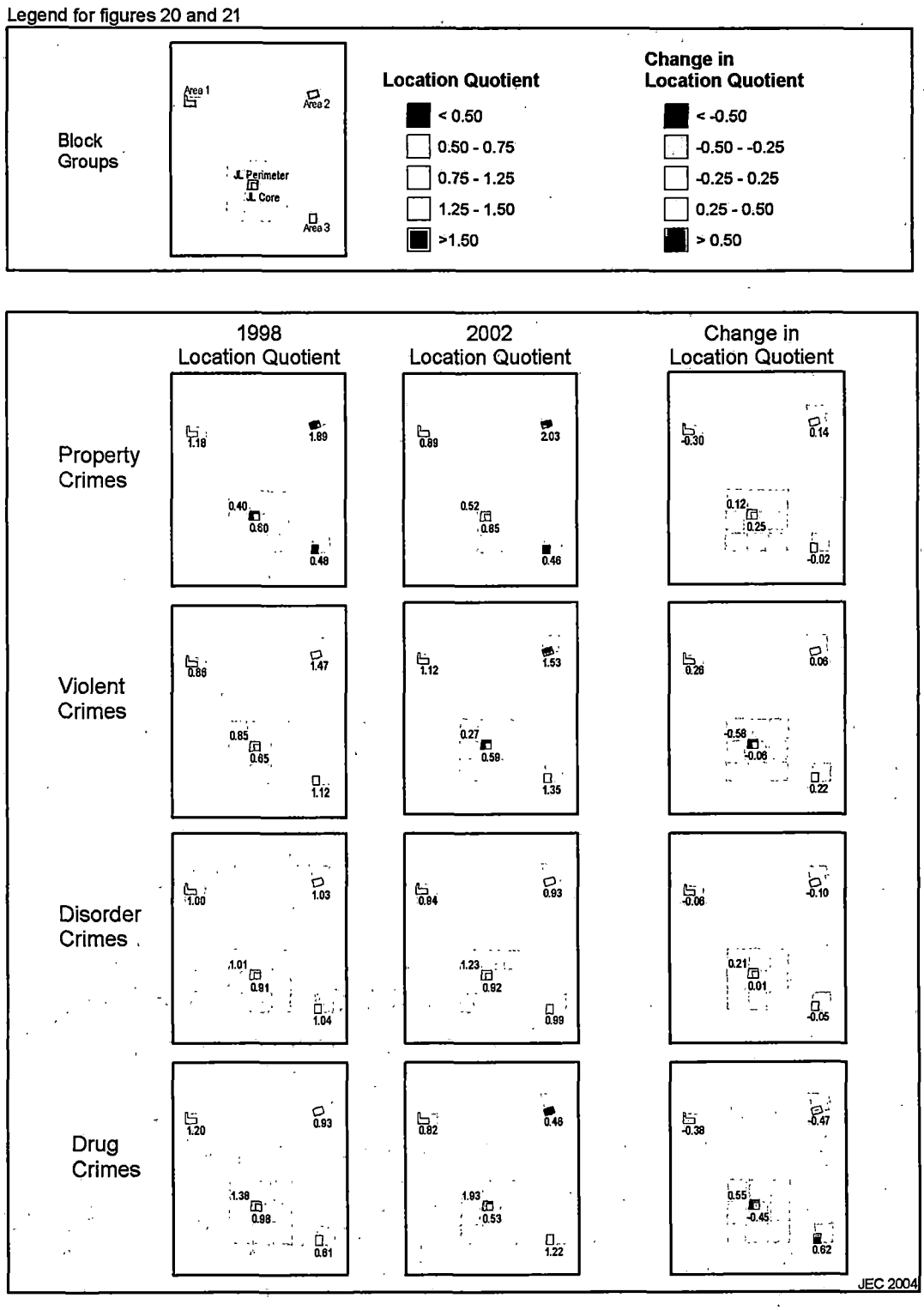


Figure 20. Crime Category Location Quotients (Level F)

Table 17. Specific Crimes (Level F)

Block Groups		Counts			Location Quotients		
		1998	2002	Change	1998	2002	Change
Jeffrey-Lynne Core	Disturbance	200	152	-48	0.93	1.16	0.23
	Robbery	0	0	0	0.00	0.00	0.00
	Burglary	15	30	15	0.90	1.54	0.64
	Assault	41	23	-18	1.14	1.10	-0.04
	Auto Theft	8	9	1	0.98	0.86	-0.12
Jeffrey-Lynne Perimeter	Disturbance	194	184	-10	0.99	1.27	0.29
	Robbery	3	0	-3	1.13	0.00	-1.13
	Burglary	9	12	3	0.59	0.56	-0.03
	Assault	30	24	-6	0.91	1.04	0.13
	Auto Theft	5	9	4	0.67	0.78	0.11
Area 1 Block Group	Disturbance	232	127	-105	1.03	0.74	-0.29
	Robbery	2	3	1	0.66	1.35	0.69
	Burglary	12	18	6	0.69	0.71	0.02
	Assault	36	27	-9	0.95	0.99	0.03
	Auto Theft	6	14	8	0.70	1.03	0.33
Area 2 Block Group	Disturbance	221	143	-78	0.98	0.95	-0.03
	Robbery	5	5	0	1.63	2.55	0.92
	Burglary	40	45	5	2.28	2.01	-0.26
	Assault	40	17	-23	1.05	0.71	-0.35
	Auto Theft	17	22	5	1.98	1.84	-0.14
Area 3 Block Group	Disturbance	263	162	-101	1.06	0.95	-0.12
	Robbery	5	2	-3	1.50	0.90	-0.60
	Burglary	10	9	-1	0.52	0.35	-0.17
	Assault	39	32	-7	0.94	1.17	0.23
	Auto Theft	6	7	1	0.64	0.51	-0.13

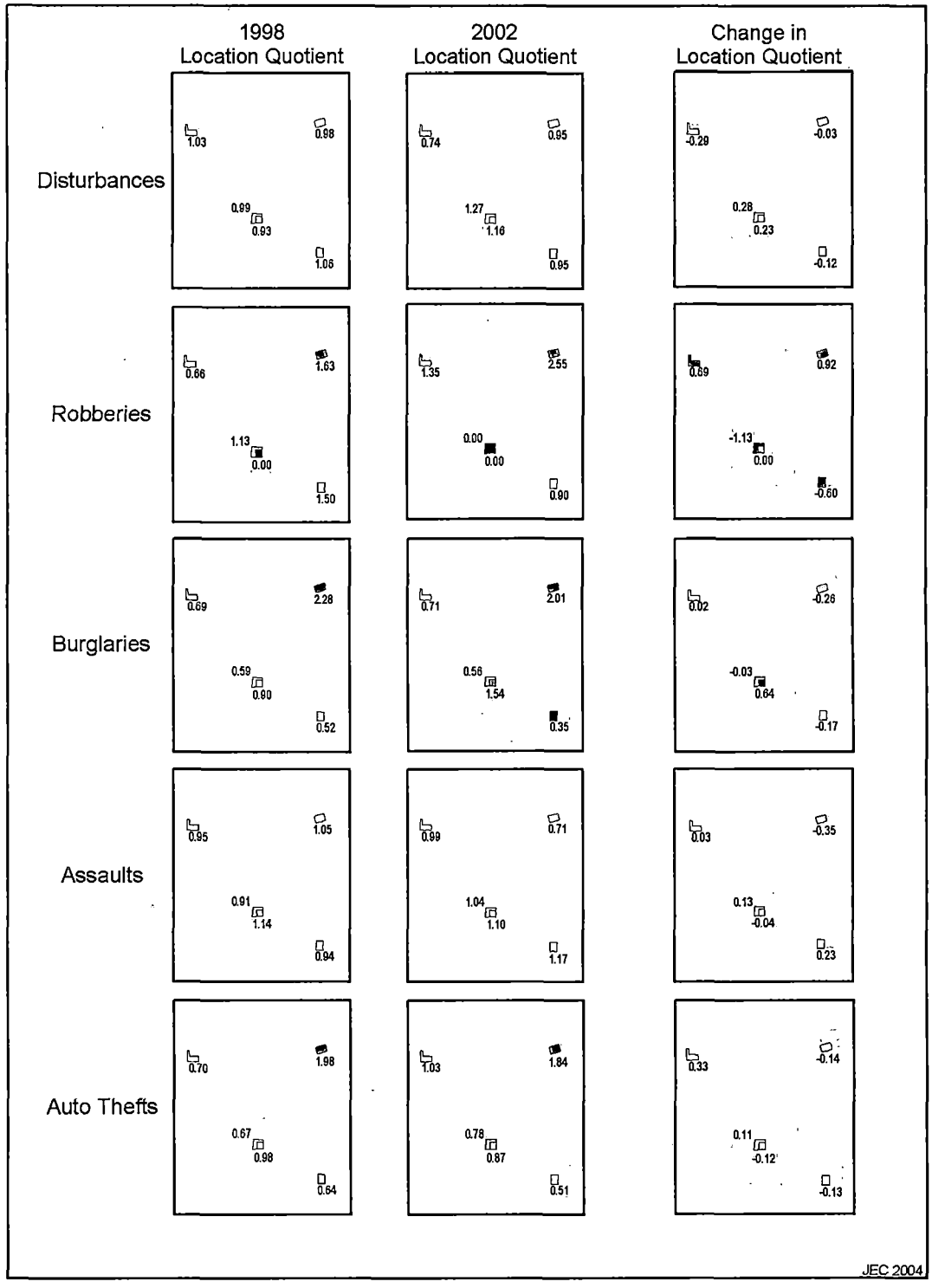


Figure 21. Specific Crime Location Quotients (Level F)

CHAPTER SIX

SUMMARY

As expected, the calls for service to the Jeffrey-Lynne community did decrease. The Jeffrey-Lynne core block group, which is entirely comprised of the revitalization area, experienced a twenty-four percent decrease in calls for service between 1998 and 2002. The fact that the actual numbers of calls for service dropped five percent for the Jeffrey-Lynne RD and twenty-four percent for the core block group, while other areas increased, suggests that the revitalization project did have a positive impact on crime in the neighborhood. This dramatic decrease by itself is considered a success by the Anaheim Police Department, because the neighborhood is demanding fewer resources, which in turn allows the police to focus on other calls that require law enforcement attention (J. Conley, personal communication, May 20, 2004)

The results regarding the change in the community's contribution to the crime of the larger area are mixed. At the reporting district resolution the LQs for property crimes, disorder crimes, and burglaries showed little change in the Jeffrey-Lynne RDs contribution to the total

calls for service. Assaults and disturbances showed minor increases in their LQs. The LQs for drug crimes were mixed, with increases at level A (0.44) and level C (0.66) and a decrease at level B (-0.11). The LQs for auto theft, violent crimes, and robberies showed a decrease in contribution. The highest decreases were for violent crimes, ranging from -0.36 and -0.37, and robberies, ranging from -.050 and -0.58.

At the block group resolution the LQs for disorder crimes, violent crime, assaults and auto thefts showed only minor changes in the neighborhood's contribution to the total calls for service. Drug crime LQs showed significant decreases at all levels of the block group resolution, with changes ranging from -0.45 to -1.47, however the LQs increased at the RD resolution when compared to the study area as a whole and the four comparison RDs. The fact that drug crime LQs decreased at the block groups resolution while increasing at the RD resolution may indicate a displacement of drug activity from the Jeffrey-Lynne block group into the surrounding areas, but this possibility is not examined in this study. It should also be noted that the drug crime results are highly influenced by the fact

that there were very few drug calls for both the RD and the block group.

On the other hand, burglaries increased at all levels of the block group resolution, with changes ranging from 0.55 to 0.64. Of the specific crime types examined, burglary was the only one that had a notable increase in the actual number of calls between 1998 and 2002, with an increase from fifteen to thirty calls. An examination of the data revealed that of the thirty burglary calls in 2002, twelve were false alarms triggered automatically by the alarm at the new community center. This revelation illustrates that how a call is reported does not always reflect the true nature of the call. Of the fifteen burglary calls in 1998, eleven (seventy-three percent) resulted in an actual burglary crime report. But of the thirty calls in 2002, only ten (thirty-three percent) resulted in a burglary report. Even though the calls for burglaries and the location quotients indicated an increase, the actual percentage of burglary calls that were confirmed burglaries decreased by forty percent.

At the block group resolution, the LQs for disturbance showed an unexpected increase in the contribution of the core. Although the actual number of disturbances decreased

from 200 to 152 and the proportion of the calls that were disturbances remained the same, the LQ at each level of analysis increased. This indicated that the contribution made by the core had increased. An increase in territoriality and natural surveillance is one possible explanation for the increased contribution. As the residents take ownership of their community, they are more likely to report suspicious activity, disturbances, graffiti, vandalism, etc. because they now care more about their property and their community. Similarly, an increase natural surveillance opportunities may well increase the likelihood of residents observing and reporting criminal acts.

While the increase in the LQs for disturbances may indicate success in the creation of a sense of territoriality, the decrease in the LQs for drug crimes and the overall decrease in the calls for service from the neighborhood suggests a successful reduction of crime opportunities through natural surveillance and access control.

The success of the project in creating a safe and sanitary environment is apparent to anyone who visits the area. A recent visit revealed that the physical appearance

of the neighborhood was completely changed. The new Hermosa Village now resembles a middle-class apartment complex, instead of a run-down, low-income housing project. Buildings that were once dilapidated and covered in graffiti are now structurally sound and well maintained. Streets and walkways are no longer covered with trash. The neighborhood has been beautifully landscaped, creating a lush and welcoming environment. The transformation of the outdoor environment encourages residents to spend more time outside mingling with their neighbors. Residents acknowledge everyone in the complex with a smile or greeting, both neighbors and visitors alike. The community center resembles a high-end homeowner association center with an inviting, well-decorated lobby and competition sized pool. In addition to offering residents a place to gather and socialize, the community center offers numerous programs and classes designed to improve the quality of life of the residents.

The overall change in the neighborhood is important to note. While the answers to the original research questions are not nearly as obvious as expected -- the number of calls for service did decrease by twenty-four percent, but the location quotient analysis revealed mixed results --

the Jeffrey-Lynne Revitalization Project has clearly had a major impact on the residents, by improving their sense of community and the overall quality of life.

CHAPTER SEVEN

FUTURE DIRECTIONS

There are several facets of the Jeffrey-Lynne revitalization project that could warrant further examination.

This study examined the type of calls for service reported by the public. One might examine the calls for service using the disposition codes instead of the type codes; type codes indicate the crimes the public reports, whereas disposition codes indicate how a call was cleared by the police. As seen with the examination of the burglary calls for the Jeffrey-Lynne core block group, the way a calls is reported often varies from how it is disposed of by the police officers. While examining disposition codes can introduce discretionary bias from the police, they are useful for filtering out false alarms and fake reports. An examination of disposition codes may also reveal a change in the nature of the calls for service.

Another direction for further study is to determine the confidence intervals for the location quotients. Moineddin, Beyene, and Boyle have suggested this as a possible test for statistical significance of individual

location quotients (Moineddin et al., 2003). In their own review of literature, they found no studies that determined the statistical significance of individual location quotients. They proposed using "the delta method to derive an analytical closed-form expression for calculating the standard deviation of the individual location quotients" (2003, p. 250). They argue that this expression can be used to construct confidence intervals; if the interval does not include a value of 1.0 then it is statistically significant at the corresponding confidence interval. Additional investigation is necessary to determine if the suggested method would be appropriate to use when analyzing the change in location quotients for the Jeffrey-Lynne area.

This study did not explore the possibility of displacement. An examination of the change in location quotients for all of the block groups surrounding the Jeffrey-Lynne block groups may indicate whether displacement occurred. Similarly, density clusters for each crime type could be examined to see if there was a shift in locations of crime concentrations between 1998 and 2002.

Finally, construction of a second phase of the revitalization project has begun. During this phase, the apartment buildings surrounding Hermosa Village will be revitalized. Before construction began, this area - the Jeffrey-Lynne perimeter - resembled the old Jeffrey-Lynne core. An examination of the calls for service data for the neighborhood once the entire area has been revitalized, may reveal a more obvious change in crime. In addition, calls for service data from Hermosa Village could be used to examine the long-term results of the revitalization.

APPENDIX A

PHOTOGRAPHS

Jeffrey-Lynne before redevelopment

Photo 1

Photo 2

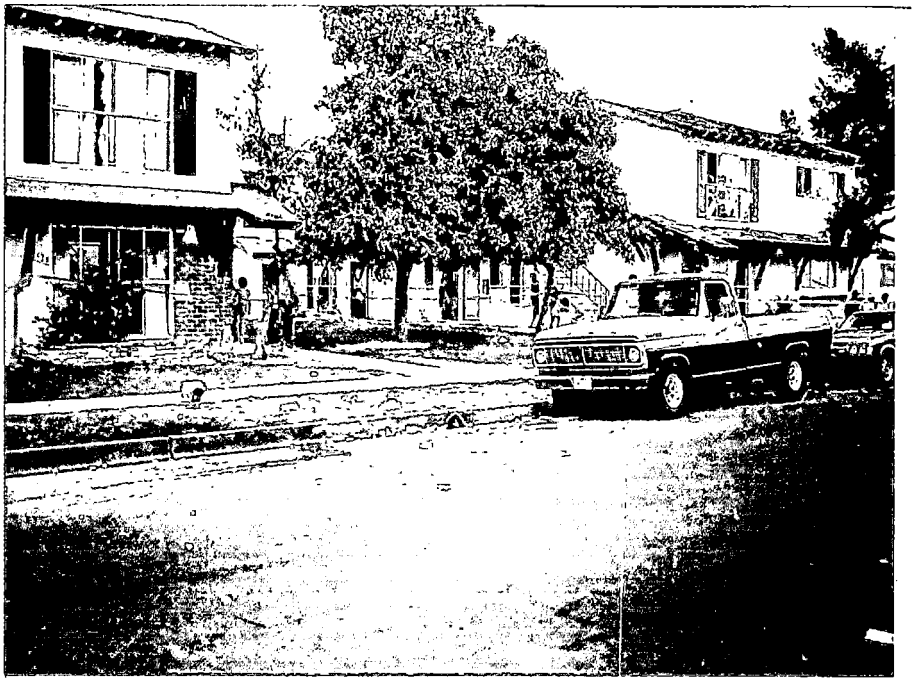


Photo 3

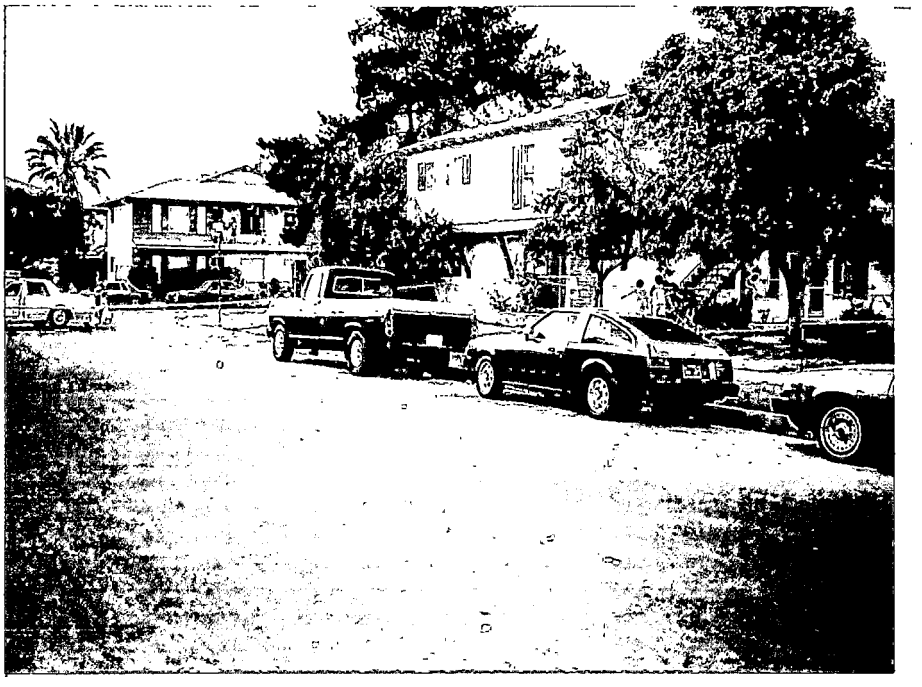


Photo 4

Jeffrey-Lynne (Hermosa Village) after redevelopment

Photo 5

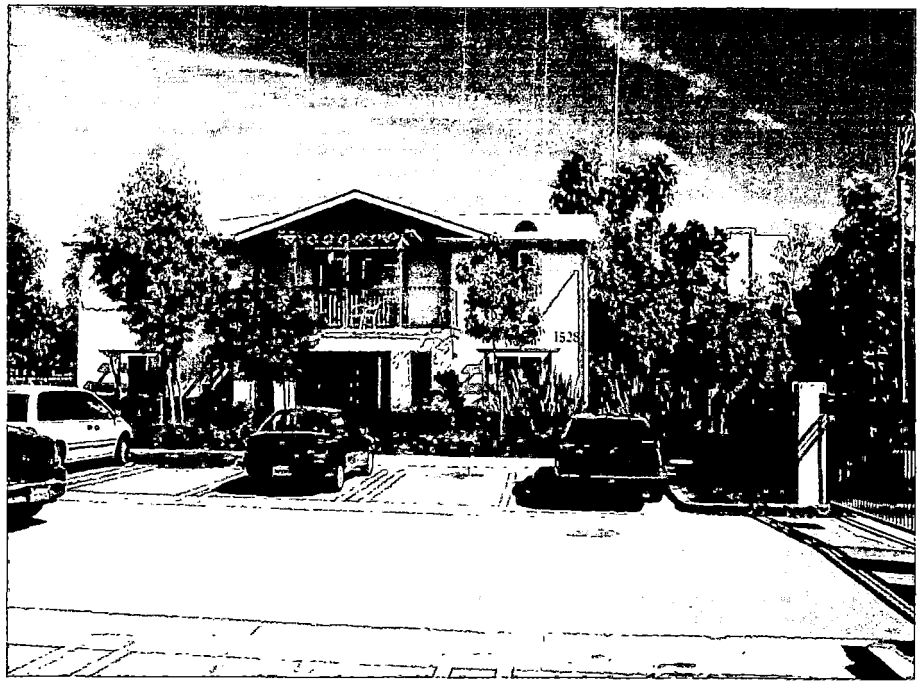
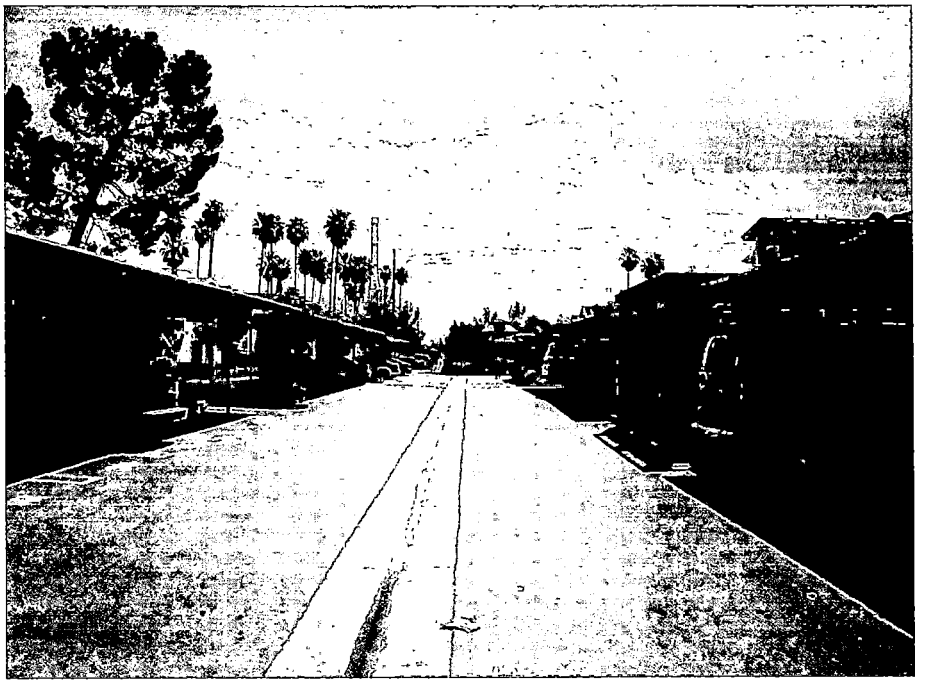


Photo 6

Photo 7



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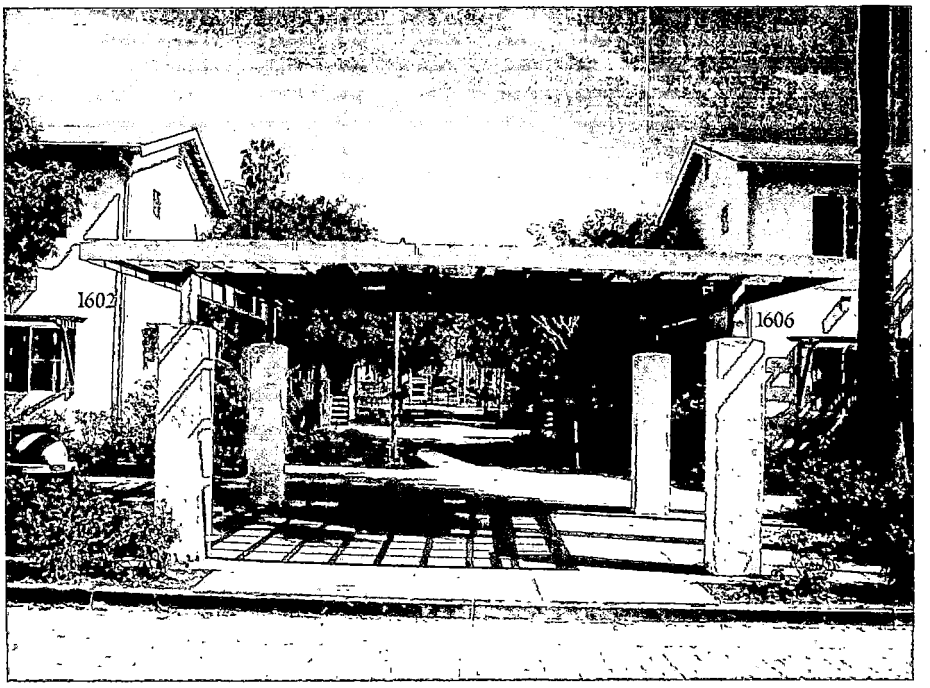


Photo 9

Photo 10

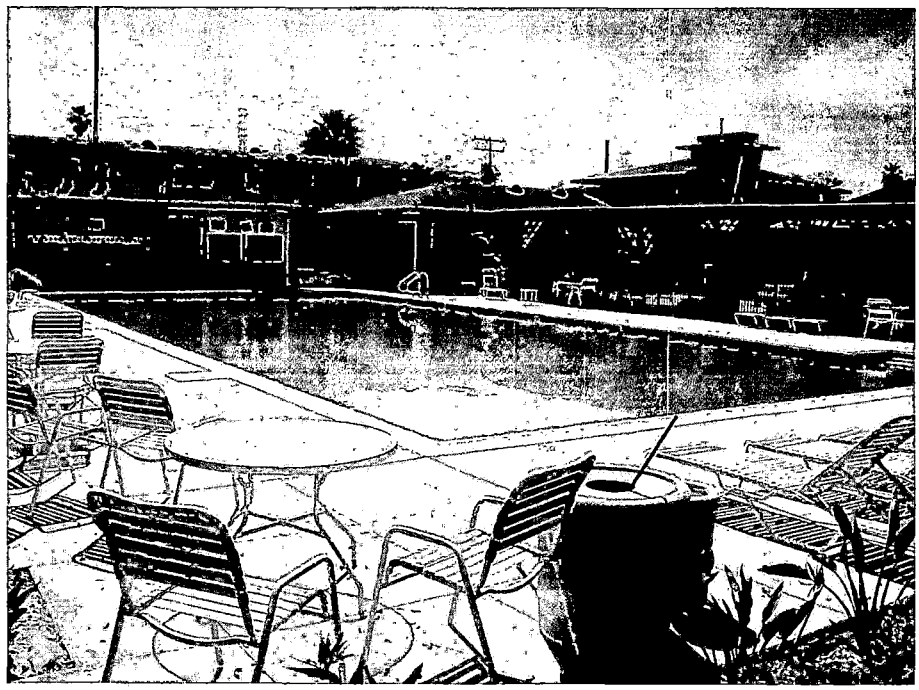


Photo 11

Photo 12

APPENDIX B

BIVARIATE CLASS BOUNDRIES

Class Boundaries for Bivariate Choropleth Maps

	Low		Medium		High	
	minimum	maximum	minimum	maximum	minimum	maximum
Population Density	37.5	12542.9	12772.5	31921.2	37325.2	70631.7
% 5 to 29 year-olds	18	36	37	49	50	69
% Hispanic	0	26.09	26.92	53	57.1	94.72
% Multi-unit Housing	0	24	25	64	66	100
Median Rent	0	370	541	815	817	1001

APPENDIX C

BIVARIATE VARIABLES

Block Group ID	% 5 to 29	Class	Population Density	Class	% Hispanic	Class	% Multi-Unit	Class	Median Rent	Class
Jeffrey-Lynne Perimeter	60	High	70632	High	94.72	High	96	High	682	Med
Jeffrey-Lynne Core	61	High	68396	High	92.63	High	98	High	555	Med
Area 3	59	High	56346	High	86.39	High	100	High	711	Med
Area 2	53	High	43448	High	87.18	High	100	High	606	Med
Area 1	58	High	37325	High	72.07	High	100	High	750	Med
060590875035	57	High	31921	Med	59.00	High	94	High	862	High
060590875042	53	High	30449	Med	62.03	High	82	High	720	Med
060590866011	54	High	29370	Med	69.91	High	92	High	632	Med
060590874032	62	High	29318	Med	84.63	High	100	High	700	Med
060590865024	53	High	26142	Med	84.91	High	70	High	594	Med
060590874021	64	High	22598	Med	89.91	High	70	High	693	Med
060590117201	59	High	16712	Med	63.28	High	91	High	716	Med
060590864052	53	High	15155	Med	72.01	High	87	High	654	Med
060590871021	46	Med	46219	High	0.00	Low	100	High	875	High
060590876011	41	Med	45173	High	43.68	Med	94	High	732	Med
060590866015	52	High	25783	Med	82.81	High	59	Med	699	Med
060590865022	54	High	22028	Med	89.96	High	34	Med	619	Med
060590869014	57	High	21067	Med	44.12	Med	83	High	728	Med
060590870011	52	High	19884	Med	46.26	Med	78	High	712	Med
060590873002	50	High	15817	Med	82.43	High	60	Med	659	Med
060590117203	57	High	15516	Med	57.57	High	64	Med	815	Med
060590866022	55	High	14726	Med	35.83	Med	100	High	706	Med
060590873004	69	High	2509	Low	61.03	High	81	High	706	Med
060590874023	46	Med	16285	Med	68.08	High	34	Med	685	Med
060590871043	43	Med	16277	Med	44.75	Med	81	High	568	Med
060590874024	47	Med	16179	Med	60.64	High	61	Med	672	Med
060591102023	43	Med	15022	Med	28.01	Med	73	High	773	Med

Block Group ID	% 5 to 29	Class	Population Density	Class	% Hispanic	Class	% Multi-Unit	Class	Median Rent	Class
060590869011	49	High	14592	Med	22.92	Low	77	High	650	Med
060590869032	47	Med	13700	Med	36.11	Med	83	High	653	Med
060590874033	45	Med	13695	Med	65.59	High	33	Med	632	Med
060590871033	43	Med	13470	Med	33.03	Med	71	High	644	Med
060590866013	50	High	12924	Med	49.65	Med	54	Med	609	Med
060590865012	51	High	12888	Med	61.85	High	21	Low	671	Med
060590866014	50	High	12293	Low	53.00	Med	69	High	737	Med
060590869031	53	High	10770	Low	27.33	Med	84	High	729	Med
060590873006	53	High	10539	Low	76.00	High	44	Med	687	Med
060590876013	57	High	8861	Low	34.07	Med	84	High	665	Med
060590865021	50	High	7339	Low	79.25	High	60	Med	673	Med
060590874022	51	High	5328	Low	68.89	High	57	Med	670	Med
060590871012	42	Med	22829	Med	23.68	Low	99	High	702	Med
060590867025	48	Med	21800	Med	14.87	Low	95	High	770	Med
060590877041	53	High	16030	Med	22.88	Low	59	Med	750	Med
060590863061	44	Med	14561	Med	25.11	Low	93	High	707	Med
060590869013	46	Med	14560	Med	23.73	Low	95	High	638	Med
060590871045	38	Med	14374	Med	41.29	Med	56	Med	584	Med
060590867023	43	Med	14134	Med	34.11	Med	0	Low	904	High
060590868035	38	Med	14028	Med	17.63	Low	70	High	714	Med
060590878054	42	Med	13031	Med	21.88	Low	71	High	740	Med
060590875034	48	Med	12773	Med	19.79	Low	100	High	730	Med
060590872002	37	Med	12051	Low	37.01	Med	73	High	637	Med
060590867022	50	High	11950	Low	9.60	Low	93	High	809	Med
060590866012	55	High	11576	Low	42.19	Med	55	Med	714	Med
060590864051	44	Med	11534	Low	41.78	Med	29	Med	888	High
060590875031	46	Med	10850	Low	49.55	Med	66	High	641	Med
060590874025	40	Med	9148	Low	50.29	Med	77	High	638	Med

Block Group ID	% 5 to 29	Class	Population Density	Class	% Hispanic	Class	% Multi-Unit	Class	Median Rent	Class
060590868022	46	Med	8695	Low	28.08	Med	75	High	747	Med
060590865013	41	Med	3949	Low	67.16	High	26	Med	713	Med
060590874011	47	Med	3361	Low	73.60	High	0	Low	825	High
060590871024	38	Med	2637	Low	36.64	Med	80	High	742	Med
060590864064	43	Med	13294	Med	11.97	Low	57	Med	671	Med
060590868025	44	Med	13161	Med	23.13	Low	44	Med	728	Med
060590875011	38	Med	13006	Med	14.94	Low	3	Low	909	High
060591102031	42	Med	12543	Low	16.42	Low	46	Med	849	High
060590864072	40	Med	12273	Low	30.39	Med	37	Med	658	Med
060590876023	39	Med	11743	Low	27.01	Med	49	Med	608	Med
060590868023	50	High	11590	Low	2.73	Low	0	Low	977	High
060590873005	37	Med	11359	Low	52.85	Med	57	Med	584	Med
060590875044	44	Med	11233	Low	30.63	Med	53	Med	769	Med
060590864021	44	Med	11030	Low	40.61	Med	41	Med	737	Med
060590864041	45	Med	10660	Low	41.01	Med	35	Med	684	Med
060590863011	44	Med	10642	Low	47.05	Med	33	Med	727	Med
060590864043	47	Med	10560	Low	39.32	Med	52	Med	726	Med
060590866023	30	Low	10130	Low	51.83	Med	33	Med	935	High
060590864054	45	Med	10044	Low	50.39	Med	39	Med	770	Med
060590864053	44	Med	9911	Low	47.64	Med	44	Med	726	Med
060590867014	47	Med	9631	Low	41.95	Med	0	Low	1001	High
060590874013	40	Med	9412	Low	30.67	Med	0	Low	1001	High
060590867011	37	Med	9380	Low	30.91	Med	31	Med	729	Med
060590878061	41	Med	8872	Low	24.70	Low	78	High	629	Med
060590864024	42	Med	8406	Low	30.68	Med	0	Low	1001	High
060590863041	44	Med	8123	Low	13.07	Low	64	Med	833	High
060590865023	40	Med	8023	Low	48.09	Med	30	Med	716	Med
060590872003	47	Med	7517	Low	50.63	Med	61	Med	626	Med

Block Group ID	% 5 to 29	Class	Population Density	Class	% Hispanic	Class	% Multi-Unit	Class	Median Rent	Class
060590868033	47	Med	7325	Low	14.76	Low	97	High	757	Med
060590874012	45	Med	7140	Low	49.93	Med	33	Med	726	Med
060590865011	36	Low	6762	Low	57.10	High	39	Med	621	Med
060590871042	41	Med	6749	Low	44.35	Med	0	Low	1001	High
060590871022	39	Med	6628	Low	32.13	Med	51	Med	711	Med
060590863031	40	Med	6107	Low	26.99	Med	0	Low	1001	High
060590872005	41	Med	5623	Low	27.15	Med	58	Med	713	Med
060590864062	39	Med	5584	Low	28.32	Med	57	Med	746	Med
060590871011	45	Med	5121	Low	34.36	Med	64	Med	702	Med
060590870013	43	Med	5088	Low	41.29	Med	5	Low	990	High
060590871041	38	Med	3324	Low	40.50	Med	45	Med	617	Med
060590863034	46	Med	2008	Low	22.12	Low	81	High	717	Med
060590868021	42	Med	1904	Low	26.92	Med	0	Low	817	High
060590875033	64	High	301	Low	0.00	Low	70	High	0	Low
060590871034	35	Low	13288	Med	18.29	Low	53	Med	630	Med
060590870023	40	Med	11764	Low	16.71	Low	63	Med	696	Med
060590863033	42	Med	11645	Low	10.86	Low	0	Low	1001	High
060590884031	43	Med	11147	Low	22.47	Low	36	Med	730	Med
060590870021	42	Med	11131	Low	12.45	Low	39	Med	723	Med
060590866024	39	Med	10473	Low	25.54	Low	52	Med	773	Med
060590869021	45	Med	10328	Low	17.91	Low	50	Med	682	Med
060590867026	48	Med	9551	Low	7.97	Low	49	Med	734	Med
060590875041	38	Med	9037	Low	41.98	Med	15	Low	698	Med
060590867013	46	Med	8925	Low	45.75	Med	23	Low	687	Med
060590864042	40	Med	8812	Low	27.10	Med	17	Low	712	Med
060590877014	37	Med	8687	Low	17.05	Low	35	Med	624	Med
060590864023	34	Low	8245	Low	31.42	Med	0	Low	1001	High
060590863012	41	Med	8217	Low	15.89	Low	0	Low	1001	High

Block Group ID	% 5 to 29	Class	Population Density	Class	% Hispanic	Class	% Multi-Unit	Class	Median Rent	Class
060590875032	38	Med	8184	Low	18.89	Low	26	Med	628	Med
060590864063	42	Med	8145	Low	12.17	Low	64	Med	702	Med
060590878011	39	Med	7902	Low	22.42	Low	20	Low	854	High
060590868032	39	Med	7619	Low	7.18	Low	29	Med	732	Med
060590863042	40	Med	7607	Low	16.03	Low	41	Med	659	Med
060590877033	45	Med	7564	Low	12.70	Low	0	Low	957	High
060590867012	44	Med	7241	Low	18.31	Low	0	Low	1001	High
060590863013	38	Med	6996	Low	51.50	Med	20	Low	541	Med
060590868013	40	Med	6939	Low	21.63	Low	0	Low	958	High
060590863052	41	Med	6752	Low	12.31	Low	0	Low	1001	High
060590877011	38	Med	6276	Low	7.59	Low	28	Med	735	Med
060590871031	42	Med	6182	Low	18.32	Low	9	Low	1001	High
060590876022	29	Low	5805	Low	3.13	Low	25	Med	878	High
060590863062	39	Med	5766	Low	8.40	Low	0	Low	1001	High
060590873003	36	Low	5566	Low	48.16	Med	79	High	242	Low
060590863032	51	High	38	Low	9.76	Low	50	Med	325	Low
060590868024	32	Low	13587	Med	37.52	Med	0	Low	325	Low
060590871044	32	Low	10297	Low	8.88	Low	42	Med	735	Med
060590869033	32	Low	9926	Low	12.99	Low	0	Low	1001	High
060590870022	34	Low	9661	Low	16.24	Low	54	Med	644	Med
060590869022	30	Low	9512	Low	13.97	Low	29	Med	717	Med
060590878021	34	Low	9377	Low	14.52	Low	33	Med	655	Med
060590869012	28	Low	9325	Low	10.10	Low	29	Med	709	Med
060590864022	40	Med	8683	Low	17.69	Low	12	Low	681	Med
060590867021	26	Low	8370	Low	12.65	Low	45	Med	574	Med
060590869034	32	Low	8264	Low	11.56	Low	39	Med	723	Med
060590871035	30	Low	8216	Low	0.00	Low	0	Low	1001	High
060590877013	35	Low	8129	Low	19.21	Low	42	Med	622	Med

Block Group ID	% 5 to 29	Class	Population Density	Class	% Hispanic	Class	% Multi-Unit	Class	Median Rent	Class
060590871037	22	Low	8004	Low	9.13	Low	0	Low	923	High
060590864061	32	Low	7913	Low	19.92	Low	44	Med	644	Med
060590877043	33	Low	7878	Low	10.58	Low	3	Low	981	High
060590868012	35	Low	7661	Low	16.18	Low	14	Low	919	High
060590871032	30	Low	7620	Low	4.44	Low	0	Low	875	High
060590864071	33	Low	7424	Low	11.51	Low	4	Low	903	High
060590877012	27	Low	7376	Low	1.41	Low	0	Low	1001	High
060590868034	38	Med	7290	Low	23.95	Low	17	Low	744	Med
060590877042	35	Low	7227	Low	26.09	Low	0	Low	925	High
060590878055	26	Low	6973	Low	11.27	Low	0	Low	1001	High
060590876021	34	Low	6773	Low	4.08	Low	0	Low	1001	High
060590876014	23	Low	6743	Low	1.66	Low	0	Low	1001	High
060590863043	29	Low	6708	Low	15.21	Low	51	Med	623	Med
060590874031	27	Low	6619	Low	33.42	Med	0	Low	580	Med
060590869023	26	Low	6404	Low	7.25	Low	28	Med	732	Med
060590876024	35	Low	6280	Low	24.35	Low	0	Low	1001	High
060590866021	32	Low	6225	Low	9.99	Low	26	Med	629	Med
060590871036	27	Low	4811	Low	21.29	Low	0	Low	1001	High
060590863036	23	Low	3969	Low	5.13	Low	0	Low	896	High
060590871013	32	Low	3648	Low	11.39	Low	17	Low	875	High
060590870014	29	Low	3554	Low	4.02	Low	0	Low	1001	High
060590868011	30	Low	2827	Low	7.83	Low	4	Low	918	High
060590761016	18	Low	709	Low	4.61	Low	0	Low	875	High
060590875014	28	Low	679	Low	15.94	Low	5	Low	1001	High
060590870012	32	Low	8896	Low	23.88	Low	0	Low	669	Med
060590874014	36	Low	7110	Low	19.06	Low	2	Low	707	Med
060590877044	31	Low	6613	Low	9.00	Low	24	Low	690	Med
060590872001	32	Low	6298	Low	7.00	Low	4	Low	777	Med

Block Group ID	% 5 to 29	Class	Population Density	Class	% Hispanic	Class	% Multi-Unit	Class	Median Rent	Class
060590863053	30	Low	5619	Low	13.60	Low	0	Low	625	Med
060590868031	18	Low	5087	Low	6.49	Low	0	Low	700	Med
060590116022	26	Low	3749	Low	48.62	Med	0	Low	370	Low
060590876012	31	Low	3721	Low	13.73	Low	22	Low	590	Med
060590875036	33	Low	2701	Low	15.32	Low	5	Low	675	Med
060590872004	26	Low	4899	Low	7.86	Low	0	Low	0	Low

APPENDIX D

DATA PRINT OUT SAMPLE

Sample of hard copy data received from Anaheim Police Department.

CADCH ANAHEIM POLICE DEPARTMENT 10/03/02 PA

COMPLAINT HISTORY SUMMARY

COMP NO	DATE	TIMES	P	TYPE	UNIT/DISP		BEAT	RD	SECTOR	LOCATION	GANG RELATE
P02213897	10/02/02	0142/0205	1	OD	325	047	25	1419	2	[redacted]	N
P02213915	10/02/02	0244/0309	1	459J	353	807	53	1340	5	[redacted]	N
P02213930	10/02/02	0320/0327	1	242J	345	808	42	1627	4	[redacted]	N
P02213967	10/02/02	0545/0605	1	PANIC	333	410	32	2122	3	[redacted]	N
P02214018	10/02/02	0720/0756	1	902T	715	901R	45	1629	4	[redacted]	N
P02214022	10/02/02	0731/0833	1	242J	155	24R	56	1234	5	[redacted]	N
P02214023	10/02/02	0731/0744	1	925S	141	804	45	1328	4	[redacted]	N
P02214029	10/02/02	0750/0904	1	242J	115	500	16	1517	1	[redacted]	N
P02214057	10/02/02	0841/0848	1	901	782	901R	24	1822	2	[redacted]	N
P02214100	10/02/02	0942/0955	1	901	181	042				[redacted]	N
P02214105	10/02/02	0950/9999	1	901T			25	1521	2	[redacted]	
P02214104	10/02/02	0951/1028	1	901	782	901R	25	1521	2	[redacted]	N
P02214144	10/02/02	1101/1132	1	242	143	801	43	1524	4	[redacted]	N
P02214161	10/02/02	1126/1147	1	927	142	804	46	1628	4	[redacted]	N
P02214171	10/02/02	1146/1158	1	415HG	111	801	13	1815	1	[redacted]	N
P02214184	10/02/02	1201/1227	1	901T	762	902R	23	1519	2	[redacted]	N
P02214203	10/02/02	1209/1244	1	242J	144	410	42	1525	4	[redacted]	N
P02214361	10/02/02	1459/1505	1	901		042				[redacted]	N
P02214375	10/02/02	1506/1525	1	211S	125	801	24	1723	2	[redacted]	N
P02214434	10/02/02	1605/1623	1	914A	123	804	23	1819	2	[redacted]	N
P02214439	10/02/02	1612/1705	1	242J	121	24AR	22	2121	2	[redacted]	N
P02214448	10/02/02	1625/1738	1	AOD	4L2	042	35	1926	3	[redacted]	N
P02214492	10/02/02	1735/1812	1	927	111	805	13	1915	1	[redacted]	N
P02214500	10/02/02	1744/1808	1	HANGUP	244A	801	42	1626	4	[redacted]	N
P02214519	10/02/02	1749/1854	1	901T	712	901R	51	1345	5	[redacted]	N
P02214524	10/02/02	1800/1803	1	10851J	256	808	42	1627	4	[redacted]	N
P02214548	10/02/02	1819/1827	1	211S	244A	801	45	1528	4	[redacted]	N
P02214553	10/02/02	1828/1852	1	927	321	801	21	2022	2	[redacted]	N
P02214578	10/02/02	1854/9999	1	902M		830	31	1924	3	[redacted]	N
P02214585	10/02/02	1901/9999	1	901		CAN	25	1421	2	[redacted]	
P02214588	10/02/02	1904/2011	1	901	783	902R	23	1621	2	[redacted]	N
P02214599	10/02/02	1915/1932	1	925	315	801	14	1918	1	[redacted]	N
P02214619	10/02/02	2001/2055	1	415F	341	803	24	1823	2	[redacted]	N
P02214624	10/02/02	2007/2203	1	273.5	323	24KA	23	1619	2	[redacted]	N
P02214650	10/02/02	2051/2112	1	211S	242	410	45	1528	4	[redacted]	N
P02214712	10/02/02	2254/2308	1	960	345	507				[redacted]	N

36 RECORDS MATCHED

*** END OF REPORT ***

APPENDIX E

GEOCODING RESULTS

Geocoding Match Rate

RD	Total Records	Matched	Partial Match	No Match
1526	7,863	7863 (100%)	0 (0%)	0 (0%)
1620	9,515	9515 (100%)	0 (0%)	0 (0%)
1922	8,075	8075 (100%)	0 (0%)	0 (0%)
1923	5,642	5639 (99.95%)	0 (0%)	3 (0%)
1924	9,265	9264 (99.99%)	0 (0%)	1 (0%)
2022	3,434	3433 (99.97%)	0 (0%)	1 (0%)
2023	10,269	10169 (100%)	0 (0%)	0 (0%)
2024	1,111	1111 (100%)	0 (0%)	0 (0%)
2122	4,335	4331 (99.91%)	1 (0%)	3 (0%)
2123	3,030	3030 (100%)	0 (0%)	0 (0%)
2124	6,620	6619 (99.98%)	0 (0%)	1 (0%)
2126	12,213	12204 (99.93%)	5 (0%)	4 (0%)
Totals	81,372	81,353	6	13

APPENDIX F

CRIME TYPE DEFINITIONS

Crimes included in crime variables.

Property Crimes:

Burglary, theft (Grand and Petty), motor Vehicle Theft

Violent Crimes:

Robbery, car jacking, felony assault, assault with intent to commit murder or to commit rape, rape, murder

Disorder Crimes:

Pimping and pandering, contributing to the delinquency of a minor, littering, drunkenness, disturbance, illegal parking, vandalism, trespassing, lewd conduct, prostitution, panhandling, prowler, suspicious circumstances/person/vehicle, indecent exposure

Drug Crimes:

Glue sniffing/paint fumes, overdose, possession of dangerous drug, possession of narcotics for sale, sale of narcotics, sale in lieu of narcotic, possession of marijuana, cultivating marijuana, sales of marijuana, possession of drug paraphernalia, possession of a dangerous drug for sale, sale of a dangerous drug, under the influence of a dangerous drug, possession of a look alike drug

Distrubance:

Distrubance

Robbery:

Robbery, car jacking

Burglary:

Burglary

Assault:

Assault with intent to murder or to commit rape, assault (felony and misdemeanor), battery, fight

Auto Theft:

Motor vehicle theft, car stripping

APPENDIX G

CALL TYPE PERCENTAGES

Percentage of call types by RD

RD 1526	1998	2002
Property	11.21	10.76
Violent	1.38	0.52
Disorder	39.61	35.26
Drug	0.69	0.26
All Other	47.11	53.21
Disturbance	28.89	20.54
Robbery	0.89	0.32
Burglary	4.68	5.18
Assault	4.40	3.31
Auto Theft	1.03	1.88
All Other	60.11	68.76

RD 1620	1998	2002
Property	19.10	23.35
Violent	1.40	1.34
Disorder	34.85	28.33
Drug	0.62	0.43
All Other	44.03	46.55
Disturbance	23.36	18.53
Robbery	0.73	0.96
Burglary	10.59	11.94
Assault	3.92	2.68
Auto Theft	2.52	3.70
All Other	58.88	62.19

RD 1922	1998	2002
Property	13.81	15.63
Violent	0.94	0.52
Disorder	29.80	21.69
Drug	0.31	0.41
All Other	55.15	61.75
Disturbance	19.11	13.92
Robbery	0.86	0.26
Burglary	6.79	7.97
Assault	2.57	2.07
Auto Theft	1.79	2.80
All Other	68.88	72.98

RD 1923	1998	2002
Property	26.67	19.11
Violent	0.50	0.55
Disorder	28.16	22.41
Drug	0.00	0.34
All Other	44.67	57.59
Disturbance	15.26	12.78
Robbery	0.37	0.34
Burglary	15.01	8.87
Assault	2.23	2.61
Auto Theft	1.61	1.92
All Other	65.51	73.47

RD 1924	1998	2002
Property	17.81	23.48
Violent	0.68	0.43
Disorder	9.16	6.91
Drug	0.93	1.06
All Other	71.42	68.12
Disturbance	4.24	1.82
Robbery	0.25	0.34
Burglary	2.71	1.49
Assault	2.80	0.96
Auto Theft	1.87	0.77
All Other	88.13	94.62

RD 2022	1998	2002
Property	22.92	20.40
Violent	1.93	0.81
Disorder	31.10	27.65
Drug	0.30	0.00
All Other	43.75	51.14
Disturbance	14.88	15.57
Robbery	1.04	0.54
Burglary	12.35	14.50
Assault	2.98	1.88
Auto Theft	1.34	0.94
All Other	67.41	66.58

RD 2023	1998	2002
Property	7.19	7.53
Violent	0.77	0.25
Disorder	31.16	28.56
Drug	0.86	1.00
All Other	60.02	62.65
Total		
Disturbance	21.00	19.03
Robbery	0.38	0.05
Burglary	2.97	2.91
Assault	3.93	3.11
Auto Theft	1.20	1.15
All Other	70.52	73.74

RD 2024	1998	2002
Property	13.66	14.92
Violent	0.00	0.55
Disorder	23.35	24.31
Drug	0.00	0.00
All Other	63.00	60.22
Total		
Disturbance	12.78	11.60
Robbery	0.00	0.55
Burglary	7.93	6.08
Assault	3.96	3.31
Auto Theft	0.00	1.10
All Other	75.33	77.35

RD 2122	1998	2002
Property	29.91	23.74
Violent	2.69	1.72
Disorder	22.71	24.48
Drug	0.49	0.00
All Other	44.20	50.06
Disturbance	11.36	10.95
Robbery	2.08	1.23
Burglary	17.70	12.55
Assault	2.93	1.60
Auto Theft	1.10	2.34
All Other	64.84	71.34

RD 2123	1998	2002
Property	21.31	23.25
Violent	0.99	0.92
Disorder	38.92	34.32
Drug	0.28	0.37
All Other	38.49	41.14
Disturbance	24.72	18.08
Robbery	0.28	0.37
Burglary	11.36	13.10
Assault	3.69	2.58
Auto Theft	2.70	1.66
All Other	57.24	64.21

RD 2124	1998	2002
Property	20.85	23.36
Violent	0.77	0.90
Disorder	23.63	19.02
Drug	0.06	0.25
All Other	54.70	56.48
Disturbance	13.64	10.08
Robbery	0.41	0.57
Burglary	7.80	7.79
Assault	3.90	2.05
Auto Theft	1.89	2.13
All Other	72.36	77.38

RD 2126	1998	2002
Property	8.91	8.75
Violent	0.84	0.62
Disorder	39.04	33.02
Drug	0.84	0.50
All Other	50.36	57.11
Disturbance	28.81	20.24
Robbery	0.30	0.21
Burglary	4.73	3.32
Assault	4.94	4.19
Auto Theft	1.18	1.58
All Other	60.03	70.47

Percentage of call types by block group

core	1998	2002
Property	3.78	7.82
Violent	0.73	0.38
Disorder	38.23	33.97
Drug	1.02	0.19
All Other	56.25	57.63
Disturbance	29.07	29.01
Robbery	0.00	0.00
Burglary	2.18	5.73
Assault	5.96	4.39
Auto Theft	1.16	1.72
All Other	61.63	59.16

perimeter	1998	2002
Property	2.54	4.84
Violent	0.95	0.17
Disorder	42.45	45.33
Drug	1.43	0.69
All Other	52.62	48.96
Disturbance	30.84	31.83
Robbery	0.48	0.00
Burglary	1.43	2.08
Assault	4.77	4.15
Auto Theft	0.79	1.56
All Other	61.69	60.38

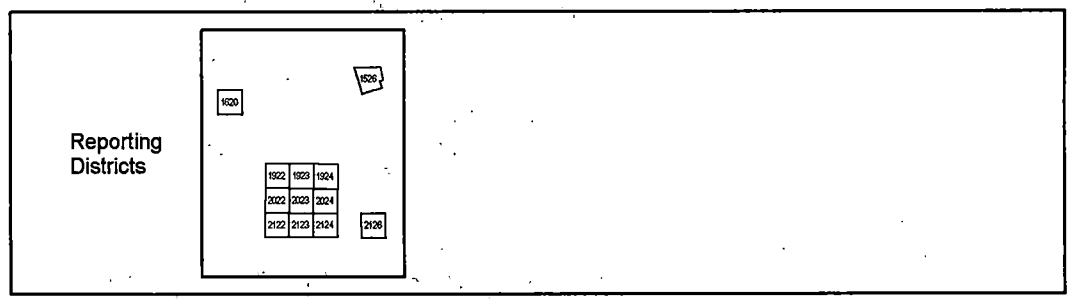
Area 1	1998	2002
Property	7.49	8.20
Violent	0.97	0.73
Disorder	41.61	34.55
Drug	1.25	0.29
All Other	48.68	56.22
Disturbance	32.18	18.59
Robbery	0.28	0.44
Burglary	1.66	2.64
Assault	4.99	3.95
Auto Theft	0.83	2.05
All Other	60.06	72.33

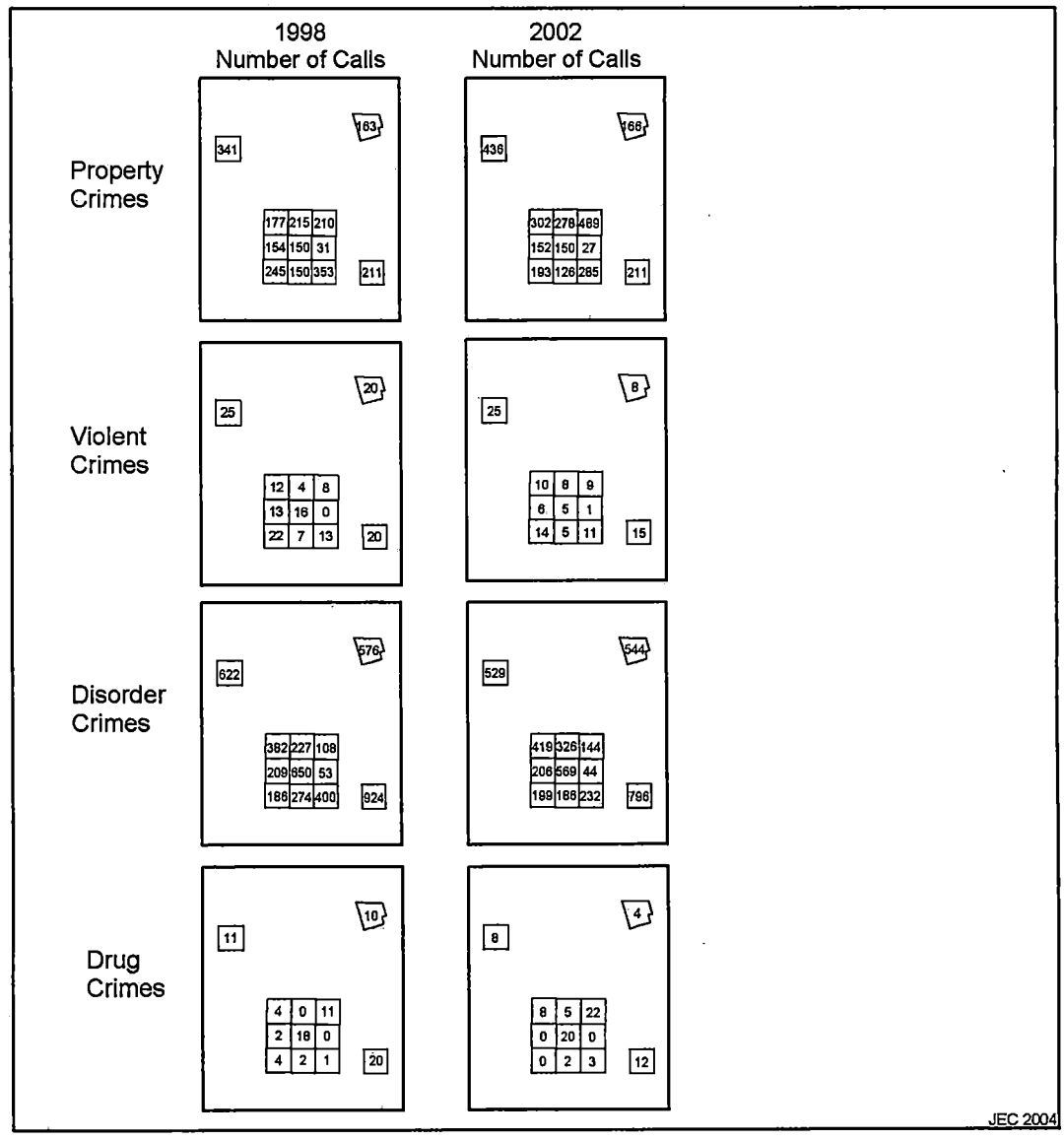
Area 2	1998	2002
Property	11.98	18.77
Violent	1.65	1.00
Disorder	42.98	34.22
Drug	0.96	0.17
All Other	42.42	45.85
Disturbance	30.44	23.75
Robbery	0.69	0.83
Burglary	5.51	7.48
Assault	5.51	2.82
Auto Theft	2.34	3.65
All Other	55.51	61.46

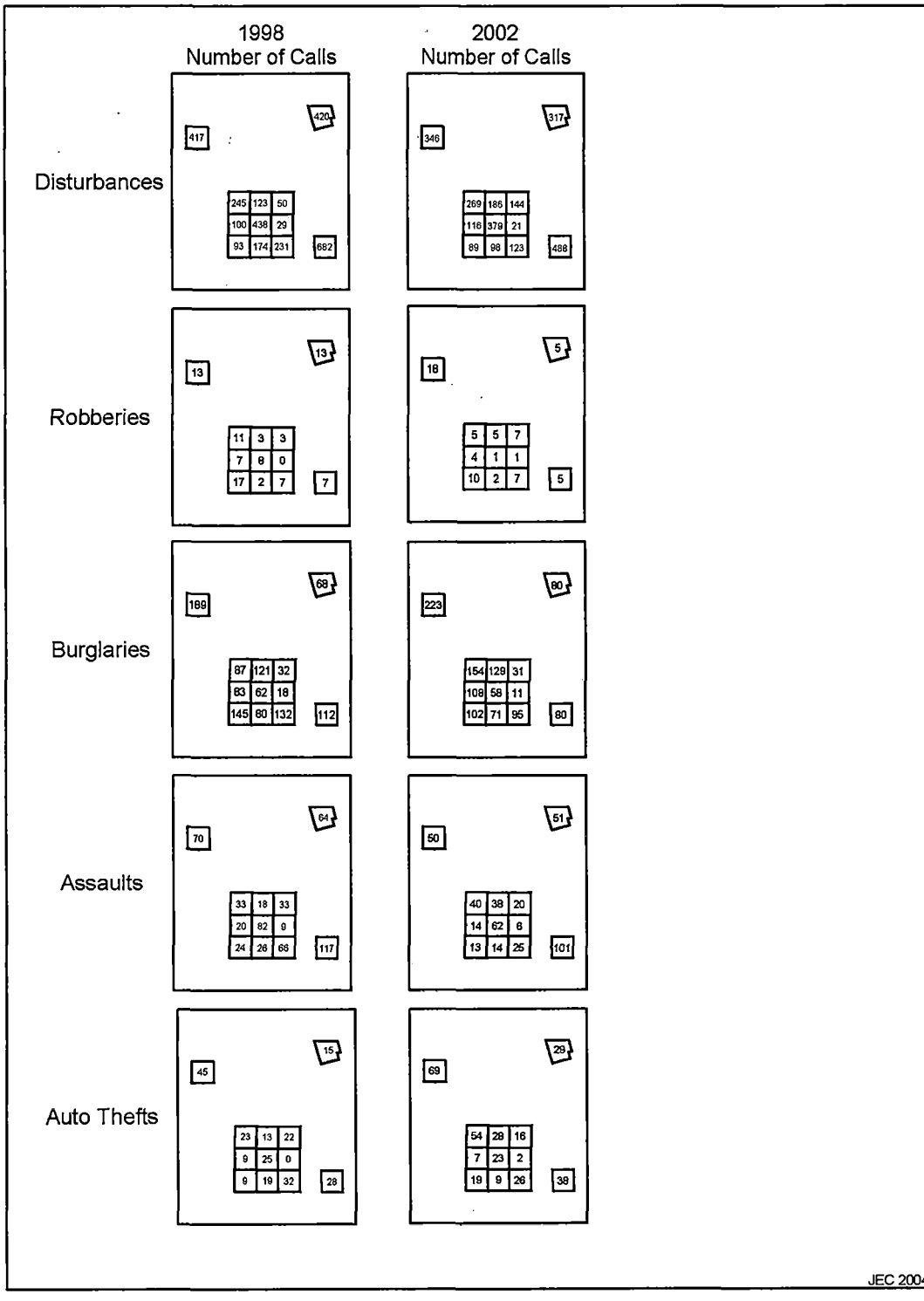
Area 3	1998	2002
Property	3.03	4.23
Violent	1.26	0.88
Disorder	43.43	36.50
Drug	0.63	0.44
All Other	51.64	57.96
Disturbance	33.21	23.65
Robbery	0.63	0.29
Burglary	1.26	1.31
Assault	4.92	4.67
Auto Theft	0.76	1.02
All Other	59.22	69.05

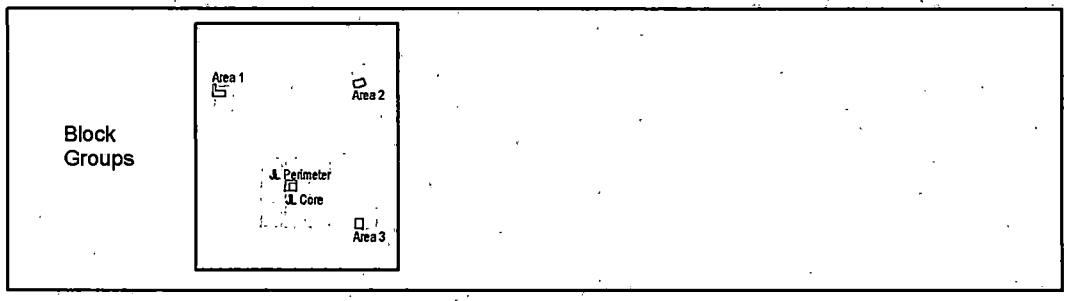
APPENDIX H

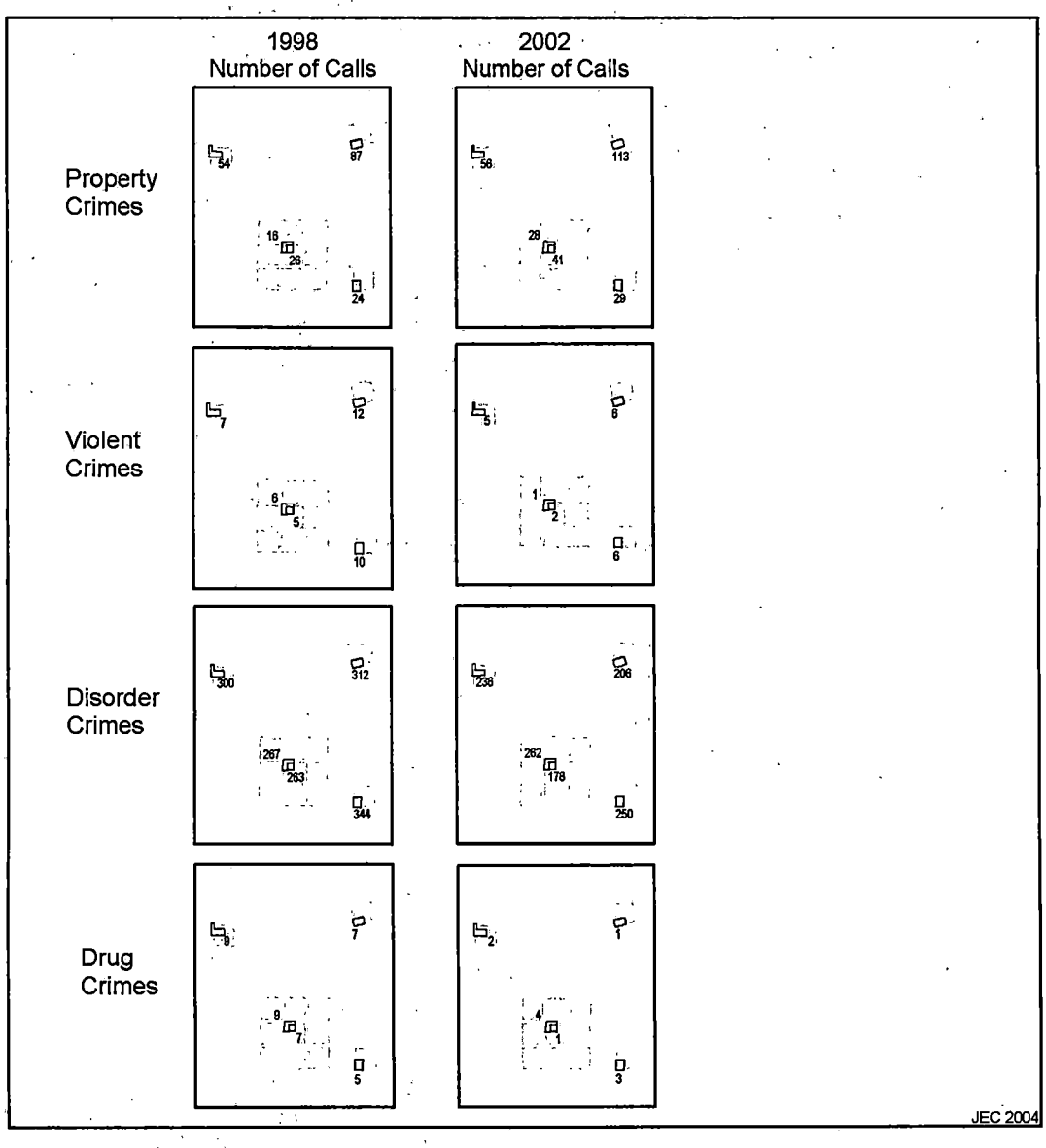
CALLS FOR SERVICE COUNTS

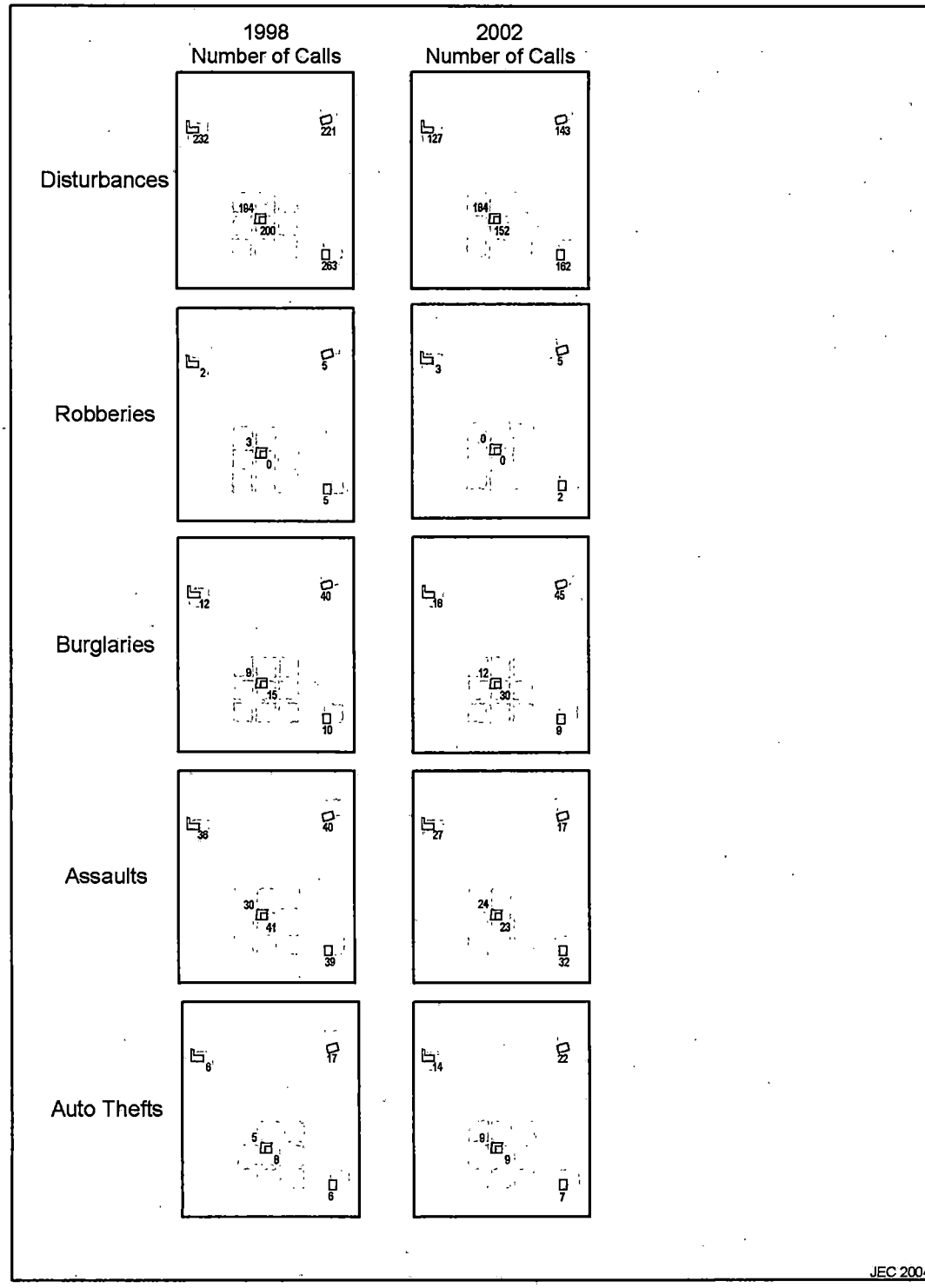

Reporting Districts
1526
1620
1922 1923 1924
2022 2023 2024
2122 2123 2124
2126


1998 Number of Calls
2002 Number of Calls
Property Crimes
341
183
177 215 210
154 150 31
245 150 353
211
436
166
302 278 489
152 150 27
193 126 285
211
Violent Crimes
25
20
12 4 8
13 16 0
22 7 13
20
25
8
10 8 9
6 5 1
14 5 11
15
Disorder Crimes
622
576
382 227 108
209 850 53
186 274 400
924
529
544
419 326 144
206 569 44
189 186 232
796
Drug Crimes
11
10
4 0 11
2 18 0
4 2 1
20
8
4
8 5 22
0 20 0
0 2 3
12
JEC 2004


1998
Number of Calls
2002
Number of Calls
Disturbances
417
420
245 123 50
100 438 29
93 174 231
682
346
317
269 186 144
116 379 21
89 98 123
488
Robberies
13
13
11 3 3
7 8 0
17 2 7
7
18
5
5 5 7
4 1 1
10 2 7
5
Burglaries
189
68
87 121 32
83 62 18
145 80 132
112
223
80
154 129 31
108 58 11
102 71 95
80
Assaults
70
64
33 18 33
20 82 9
24 26 66
117
50
51
40 38 20
14 62 8
13 14 25
101
Auto Thefts
45
15
23 13 22
9 25 0
9 19 32
28
69
28
54 28 16
7 23 2
19 9 26
38
JEC 2004


Block Groups
Area 1
Area 2
JL Perimeter
JL Core
Area 3


1998
Number of Calls
2002
Number of Calls
Property Crimes
54
87
18
26
24
56
113
28
41
29
Violent Crimes
7
12
6
5
10
5
8
1
2
6
Disorder Crimes
300
312
267
263
344
238
208
262
178
250
Drug Crimes
9
7
9
7
5
2
1
4
1
3
JEC 2004


1998
Number of Calls
2002
Number of Calls
Disturbances
232
221
184
200
263
127
143
184
152
162
Robberies
2
5
3
0
5
3
5
0
0
2
Burglaries
12
40
9
15
10
16
45
12
30
9
Assaults
36
40
30
41
39
27
17
24
23
32
Auto Thefts
6
17
5
8
6
14
22
9
9
7
JEC 2004

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