

# **Impact of Low income Multifamily Housing on Crime Trends in Dallas Texas**

Pragati Srivastava  
School of Architecture,  
University of Texas at Austin

December 16, 2006

CRP: 386 Introduction to Geographic Information Systems

## **Executive Summary**

It is a widely held notion that affordable housing or low-income multifamily housing is closely associated with high crime rates and criminal activities. The negative image associated with the low-income population is one of the chief reasons that support the notion among the general public. This belief has led to a growing opposition among the neighborhood residents against the construction of affordable housing in their neighborhood. In view of these oppositions, the housing agencies are forced to put affordable housing in low-income areas, where they will face little to no opposition, thus furthering the common belief. Researchers throughout the country and abroad intrigued with the issue, examined the relationship between affordable housing and crime rates. With the development of Geographic Information Systems (GIS), the researchers have found it increasingly helpful in performing their analysis and presenting their results. This study used GIS to identify whether there is a relationship between the presence of affordable housing and crime rate in its neighborhood and if yes, how does affordable housing affect the crime trends.

For the purpose of this research, Dallas was chosen as the study area. Dallas is a especially interesting case, because of its pivotal role in the economy of Texas that attracts people from all over the state and country. The significant change in the demographic pattern of the city from 1990 to 2000 proves the above point. A significant portion of the city's population belongs to low-income minority population, thus making the issue of affordable housing imperative. Therefore the opposition to affordable housing becomes a critical area for examination.

This study examines the different factors that affect the issue of affordable housing in an effort to provide an insight into the problem. Both Macro and Micro level analysis of relevant datasets were performed. Time series analysis of property crime rate and total crime rate showed that affordable housing is primarily placed in areas with already high crime rate at census tract level. At the smaller level i.e. police reporting area the crime rates remained the same. Moreover the socio-demographic analysis showed that areas with affordable income have higher concentration of minority population with low income and low education status. The above data clearly showed that due to weak characteristics of the population in the area, they were also more susceptible to criminal activities at the census tract level. Lack of availability of complete data was a major challenge which made doing other type of analysis such as buffer analysis difficult. While the results of this study did not conclusively prove a definite relationship between the crime rate and affordable housing in a neighborhood, the analysis and insights from this study can be valuable inputs for performing further research in this area using complete data.

## 1. Introduction

Crime is one of the most important factors that influence a person's decision to move in or out of an area. High crime rates of an area have shown to indirectly affect the real-estate market as well as the economy of an area. The main sufferers of these indirect affects are the residents of that area. Although various parameters have been identified that contribute to the high crime rates e.g. income level, education level, familial status etc, but one factor that has inadvertently become a target of the general public scorn is the affordable housing. Many people believe that the low-income housing will attract people from outside the area, which will negatively impact the quality of life of their neighborhood. In accordance with the perceived impact of affordable housing, neighborhood residents often oppose the construction of such properties. Thus among the growing opposition it makes it really difficult for the housing agencies to provide for the low-income housing in decent neighborhoods.

The Department of Housing and Urban Development (HUD) defines affordable housing as a housing for which the occupant is not paying more than 30 percent of his or her income for the gross housing costs (Department of Housing and Urban Development, 2002). This is especially beneficial for the low-income households who otherwise face difficulties in finding an affordable place to live. Affordable housing in the country is primarily provided by three governments, federal, state and local. The Federal Government under HUD does its share of responsibility of filling the gap between the demand and supply for affordable housing by providing rental subsidies and public housing to low-income households throughout the country. The State and the Local Governments also contribute to the affordable housing pool in similar fashion as the Federal Government, but their specific policies vary from state to state. The Texas Department of Housing and Community Affairs (TDHCA) is the primary agency responsible for the implementation of the State's affordable housing policies. Through its multifamily program, the agency has been successful in providing low income multifamily properties throughout Texas.

One of the well know opponents of affordable housing are the NIMBY's (Not In My Back Yard), which are a collective group of neighborhood residents, who believe that such developments will result in lowering of quality of life in their neighborhood. The reasons that influence their decision are both economic as well as non-economic (Lake, Robert W, 1993). The economic reason is the alleged negative impact on the property values in the neighborhood. The residents believe that low-income housing in their neighborhood will affect the neighborhood's appeal, discouraging the potential home buyers to purchase property in their neighborhood, hence resulting into depreciation in their property values. On the other hand the primary non-economic reason is the concerned with the increase in crime rate and decrease in the quality of schools in the area because of the increase in load (Galster, Pettit and Santiago, 2003).

Many researchers both in US and abroad have studied the effect of affordable housing on the neighborhood crime and property value. Although each study uses different term for affordable housing but they all refer to housing for low-income

population. Out of all the studies very few have found any link between the crime and affordable housing. But irrespective of their objectives each study acknowledged the opposition faced by the housing authorities and developers from the neighborhood residents for such developments (Galster, Pettit and Santiago, 2003).

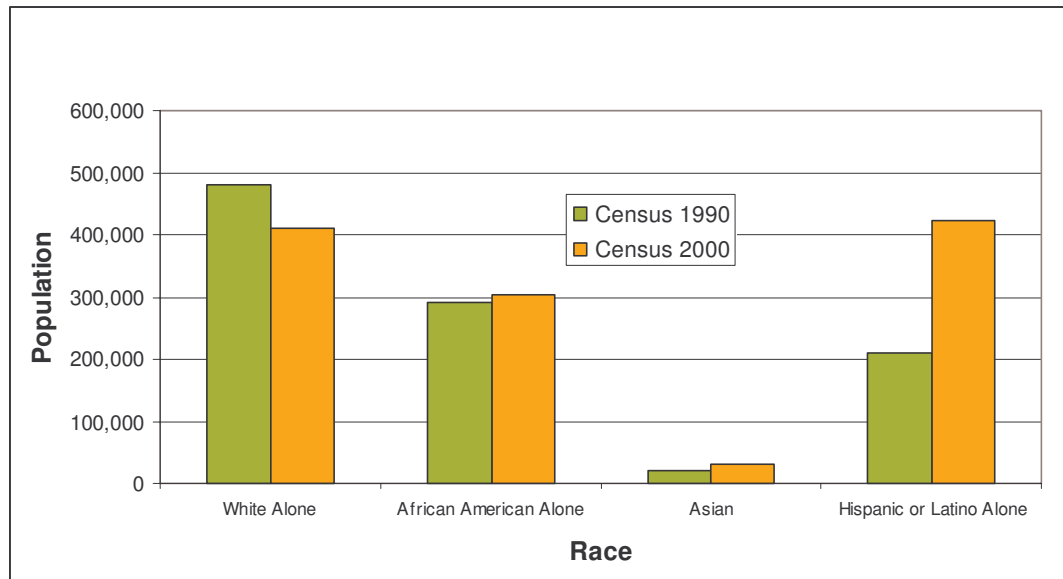
The current study is an effort in similar direction, which will examine the relationship between low-income multifamily housing and crime trends in Dallas, Texas.

### Study Area: Dallas Texas:

Dallas is the third largest city in Texas with an area of 385 square mile and population of 1,188,204 (US Census Bureau, 2000). It is a major contributor to the economy of Texas by playing the role of state's finance center and an international transportation hub. But even with the vibrant economy the city is not untouched with the issues of poverty. In 2004, the community survey conducted by the US Census Bureau ranked Dallas as one of the top twenty cities in the nation with high poverty rates (US Census Bureau, 2004).

The situation is getting worse because of the enormous increase in the growth of the minority population especially Hispanic or Latino (US Census Bureau, 2000; Figure 1). TDHCA along with HUD and the City of Dallas through their individual programs provide for affordable housing in the city. TDHCA has 114 whereas HUD has 47 multifamily properties in the city that are affordable in nature.

Figure 1 Population change Dallas, Texas- Race



Source: US Census Bureau, 2000

In 2004 a study conducted by Booze Allen Hamilton for a Dallas City Council identified that the city has various positive factors such as diverse economy, low cost of living etc., but all that are getting affected and one of reasons being the high crime rate in

the city (The Dallas News, 2004). They report further states that the crime rate is particularly bad in the southern part of the city, thus making a big divide between the North Dallas and South Dallas (The Dallas News, 2004). With an alarming rate of increase in the crime rate in the city it is become imperative to examine what is the real reason behind the increase rather than speculating and blaming affordable housing.

## **2. Problem Statement:**

There are various parameters that influence crime rates of an area low income, education and race are one of them. Since affordable housing is also perceived to have the above characteristics it is a prime target for opposition. There can be a link between the crime rates and affordable housing, but the question remains whether the affordable housing residents are perpetrator or victims. The answer to the above question will provide with a clear picture of the impact of affordable housing on crime rates. If the low income crime is affecting the crime rates of the neighborhoods then the housing agency will need to change its policy regarding the location of such properties. If no link is found between the two then the study will be helpful in providing answers to the neighborhood residents regarding their concerns.

One way to resolve this problem is to examine the neighborhood residents concern related with the crime rate and low income housing. Similar studies have been conducted in other States in the US but none has been for Texas.

### **Specific question that will be addressed:**

- Is there any relationship between the income, race and crime rate of the neighborhood?
- Are the low income housing generally constructed in areas with already higher crime rates?
- Are residents in the neighborhood primarily renters or owners

## **3. Methodology:**

The methodology adopted by the researchers who conducted similar studies, varied with their respective objectives and the study area location. Most of the studies created statistical models that evaluated the impact of affordable housing on crime trends. The common parameters used in the research included income level, education, familial status, race distribution, quality of construction, poverty level etc. Some studies also incorporated GIS as part of their research; using GIS they conducted buffer analysis around the affordable housing property which was then incorporated in their statistical model. The geographic level of analysis for most of the study was at the block or block group level that allowed them to study crime trends at the vicinity of the affordable housing property. All the studies did a time series analysis that varied from 4 years to 25 years of time frame.

The methodology adopted for this study is based on the literature review, study area and the available data sets. In accordance to my study goals, objective and previous researches, I conducted a time series analysis for a period of five years starting from 2000 to 2004. The time series analysis is the best method to examine the impact of affordable housing on crime rates because it gives you the crime trends for both pre and post construction period of the affordable housing. As mentioned before, affordable housing in Dallas is provided by three government agencies, because of the time limitations and availability of data I only selected affordable housing that were provided by the state agency TDHCA. The complete list of the affordable housing properties was obtained from TDHCA via Mr. David Danenfelzer, who is a program administrator in the multifamily program of the agency. The properties list was then geocoded using GIS and the file was saved as a new shape file. To conduct an effective time series analysis, only those properties were selected that were constructed by 2002. This decision was partly because of the data availability issues and partly to have consistent time series analysis. The selection allowed a comparative analysis of crime rates for two years before and after the construction of the property. When the above criteria were applied only nine properties qualified for the analysis, due to lack of information for two properties only seven were used for the final analysis.

### **3.1. Macro and Micro level analysis:**

Since the point location of crime data was not available, hence it wasn't possible to conduct the buffer analysis as done by most of the studies in the field. To accommodate for the above gap I added another level of detail in my analysis. Apart from conducting a time series analysis I also included studying the crime rates at macro level and micro level. For the macro level analysis I used census tracts as the base geography whereas for micro level police reporting area was used. Reporting area is a smaller subset of the police beat area which is an area defined for police patrolling purposes (Houston Police Department, 2005). The selected affordable housing properties were then used to identify the seven census tracts and the reporting areas.

### **3.2. Data Analysis**

In accordance to the above methodology, two data sets were identified for this study namely demographic and socio-economic, and crime data sets. The demographic and socio-economic data was obtained at the census tract level from Summary File 1 (SF1) and Summary File (3) of US Census 2000 from the US Census Bureau website. For the reporting area the data was obtained from the City of Dallas website that also had socio demographic data at the reporting area level which was derived from US census 2000. The parameters included for the analysis were poverty level, racial distribution, income levels, home ownership and education. The above demographic and socio-economic parameters were selected because they have been identified as the prime indicators of crime by most of the studies. These parameters allowed me to examine whether there is a common demographic or socio economic pattern that exists between the selected census tracts and reporting areas. Also, it provided an overview of the two

levels and helped in analyzing whether the reporting area is actually a sub set of the census tract or is it different.

The crime data was obtained from the Analyze Dallas for census tracts and Dallas Police Department (DPD) for reporting areas. The DPD reports crime for nine different categories which can be broadly classified into two main categories namely violent crimes and property crimes. The details of categories are as follows:

### **1. Property crime**

- 1.1. Burglary of motor vehicle
- 1.2. Theft
- 1.3. Burglary (individual and business)
- 1.4. Unauthorized use of motor vehicle

### **2. Violent crime**

- 2.1. Murder
- 2.2. Aggravated Assault
- 2.3. Simple Assault
- 2.4. Robbery
- 2.5. Car Jacking

Violent crimes are generally used to measure the quality of life indicator of the area, whereas property crimes are used to measure the rate of property damage in an area (Federal Bureau of Investigation, 2006). For this study the total crime rates and a property crime rate was used for the analysis. The crime rate per 1000 people was used instead of total number of crime because it will provide better result for a time series analysis. To calculate the crime rate, population data of census 2000 was used for all the five year period as there was only a minor increase in the population from 2000 to 2005 (North Central Texas Council of Governments, 2006). A comparative analysis of the crime rates from 2000 to 2004 at the two geographic levels was also conducted. To accurately compare the crime rate same classification methodology was adopted to map the results. The final crime rate analysis included a measure of percent crime change for both the geographic levels from 2000 to 2004. The crime change summarized the study by showing the net change in crime in those areas.

### **3.3. Steps to Conduct Analysis:**

#### **3.3.1. Context Maps:**

##### **Dallas Map**

- Added city boundary, railway line, roads, highway , parks and water bodies shape file
- Checked the projection system
- Created new shape file containing highways from roads shape file and added it to the data sets
- Map layout



### **Reporting area Map**

- Obtained reporting area shape file from DPD
- Added city boundary and highway shape file
- Inserted data frame, copied reporting area and added census tract boundary
- Map layout

### **TDHCA Properties:**

- Geocoded all the properties and saved it as a new addressed matched shape file
- Added city boundary, highway, properties and census tract boundary shape file
- Added and joined census 2000 summary file 3 data to census tract shape file
- Selected renter occupancy percentage to the total occupied units and displayed the data in percentage
- Map layout

### **Police District Map:**

- Added reporting area shape file; using union tool merged all the reporting area based on police district saved the merged file as district shape file
- Added city boundary, highway and police district shape file
- Map layout

### **Selected TDHCA properties:**

- From the addressed matched shape file selected seven properties by name and saved the it as a new file
- Added the selected properties shape file, city boundary, highway, parks and census tract boundary
- Map layout

## **3.3.2. Demographic and Socio economic Maps**

### **Racial Distribution maps (Hispanic, White and African American)**

- Joined summary file 1 file with the census tract shape file
- From the census tract shape file selected the seven census tract based on seven selected properties
- Exported the selected census tracts
- Displayed the data in percentage with total population of white, normalized by total population of the census tract
- Added city boundary, highway and selected census tract shape file
- Similar procedure for Hispanic and African Americans
- Three map layouts



### **Housing Characteristics (Renter and Owner Occupied):**

- Added city boundary, census tracts, highway and selected census tract shape file
- Total owner occupied housing units normalized by total occupied units displayed data in percentage
- Similar procedure for renter occupied housing units
- Two map layout

### **Education and Economy maps:**

- Added city boundary, census tracts, highway and selected census tract shape file
- Total number people with higher education normalized by total educated people units displayed data in percentage
- Map layout
- Total number people living below poverty level normalized by total population units displayed data in percentage
- Map layout
- Median household income for each census tract total number displayed
- Map layout

### **3.3.3. Crime Maps:**

#### **Total crime and property crime Maps:**

- Selected seven reporting area based on seven properties location and saved it as a new shape file
- Added selected census tract, selected reporting area and crime data base for reporting area and census tract
- Joined census tract crime data with census tract shape file and reporting area data with reporting area shape file
- Displayed the total crime rates for same year for both the geographic areas
- Added highway, selected properties and city boundary shape files
- Inserted data frame and copied city boundary shape file
- Similar procedure for property crime
- Ten map layouts

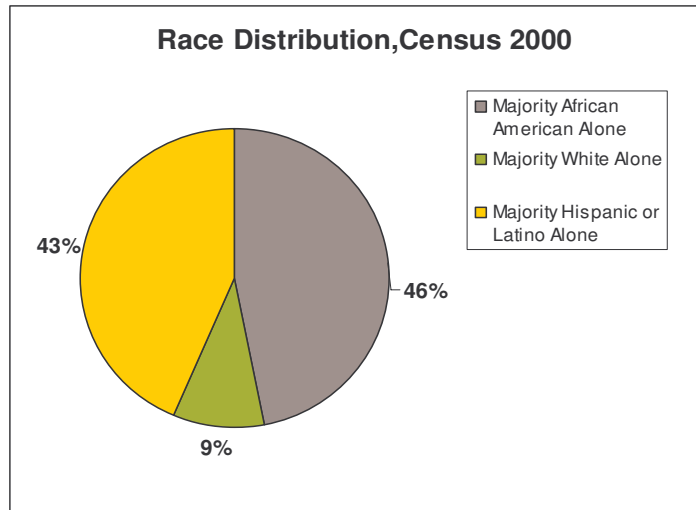
#### **Crime Change Maps:**

- Calculated crime change in percentage from 2000 to 2004 for census tract as well as reporting area
- Displayed crime rate change and used same classification method for both the geographies
- Added highway, selected properties and city boundary shape files
- Inserted data frame and copied city boundary shape file
- Similar procedure for property crime
- Two map layouts

#### 4. Findings:

TDHCA currently has 114 multifamily properties in the Dallas City area that are distributed in 65 census tracts of the city. Out of the 65 census tracts only seven qualified for the research analysis. Studying the racial composition of the 65 census tracts it was observed that 46 percent (30 census tracts) had African American as the majority population while 43 percent (28 census tracts) had Hispanic and Latino as the majority population and rest had White alone as the majority population (Figure 2).

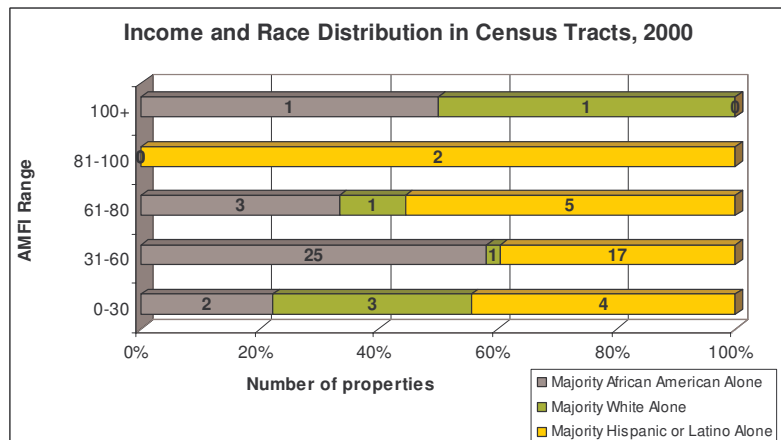
**Figure 2 Percentage of Census Tracts with a majority race**



Source: TDHCA and US Census Bureau, 2000

It is interesting to note that 80 percent (52 census tracts) of the census tract had household income lower than the area median family income provided by HUD (HUD User, 2006; Self calculations). Only two census tracts had higher household income than the area median family income. Thus it can be inferred that most of the census tracts have minority population with low household income (Figure 3).

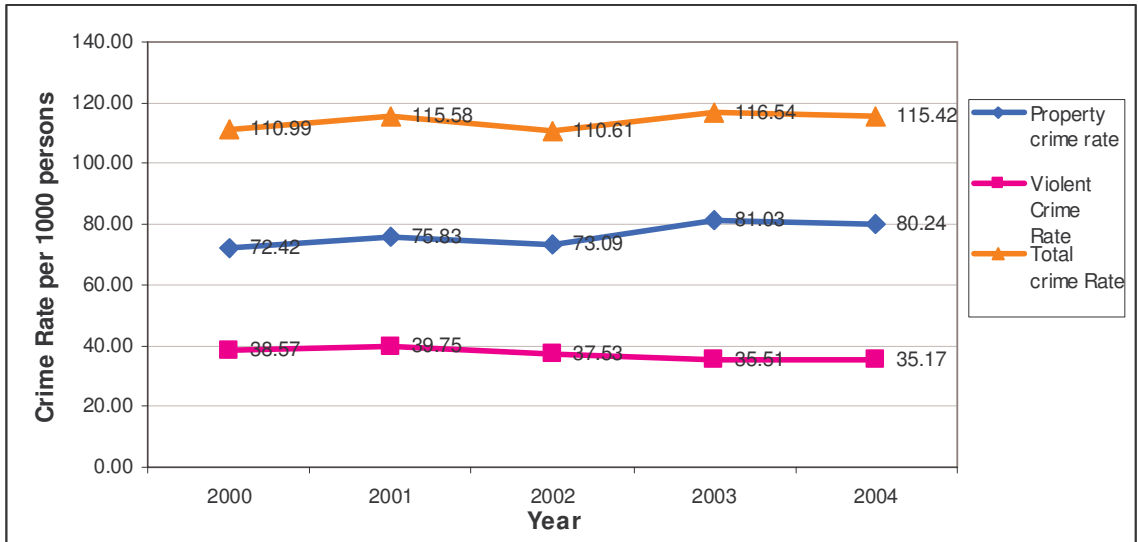
**Figure 3 Distribution of income in the census tracts**



Source: HUD, TDHCA and US Census Bureau, 2000

The total crime rate and the violent crime rate from 2000 to 2004 decreased throughout the city whereas it remained the same for property crime (Figure 4). Moreover, the crime change from 2000 to 2004 for property crime increased by 11 percent, whereas violent crime decreased by 9 percent and total crime increased by four percent (self calculation).

**Figure 3 Crime rate from 2000 to 2004 Dallas, Texas**

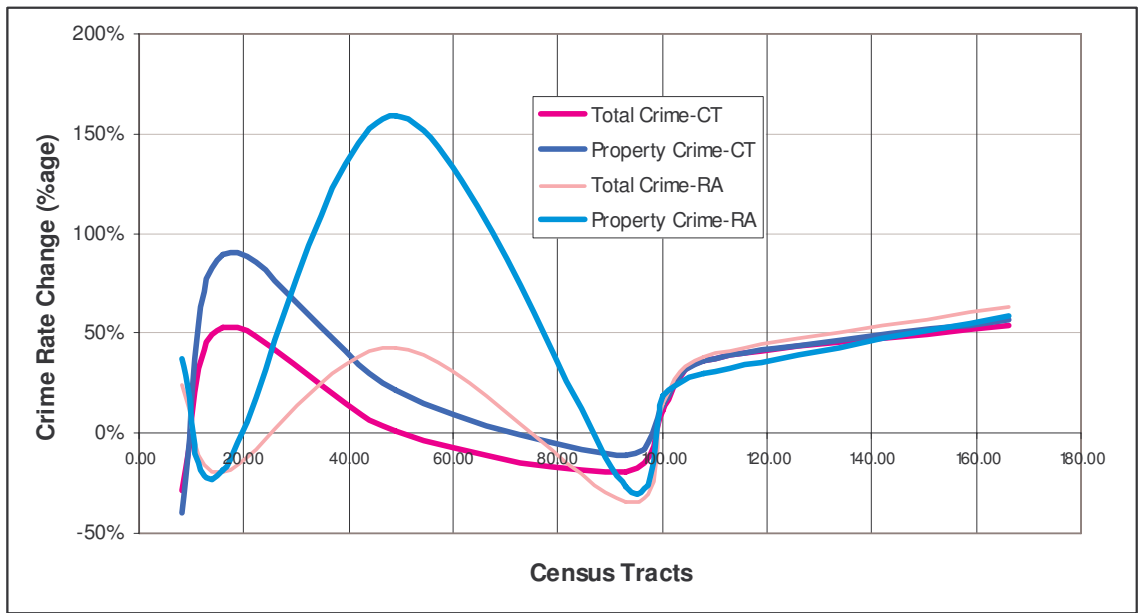


Source: Dallas Police Department, 2004

Examining the crime rates for the selected geographic levels (census tracts and reporting area) it was observed that the total crime rate for census tract and the reporting area varied a lot (Table 1). The crime rate change was similar for only four census tracts and their reporting areas, whereas the crime rate was different for the remaining three (table 1).

**Table 1 Crime Change from 2000 to 2004 for census tracts and reporting areas**


Census Tract	Total Crime Change – Census Tract	Total Crime-Change-Reporting Area	Property Crime-Change –Census Tract	Property Crime-Change-Reporting Area
<b>8.00</b>	-29%	24%	-40%	37%
<b>16.00</b>	53%	-19%	89%	-18%
<b>49.00</b>	1%	43%	22%	159%
<b>93.04</b>	-19%	-34%	-11%	-27%
<b>100.00</b>	12%	15%	15%	19%
<b>108.02</b>	37%	38%	36%	30%
<b>166.05</b>	54%	63%	57%	59%



# Dallas Texas

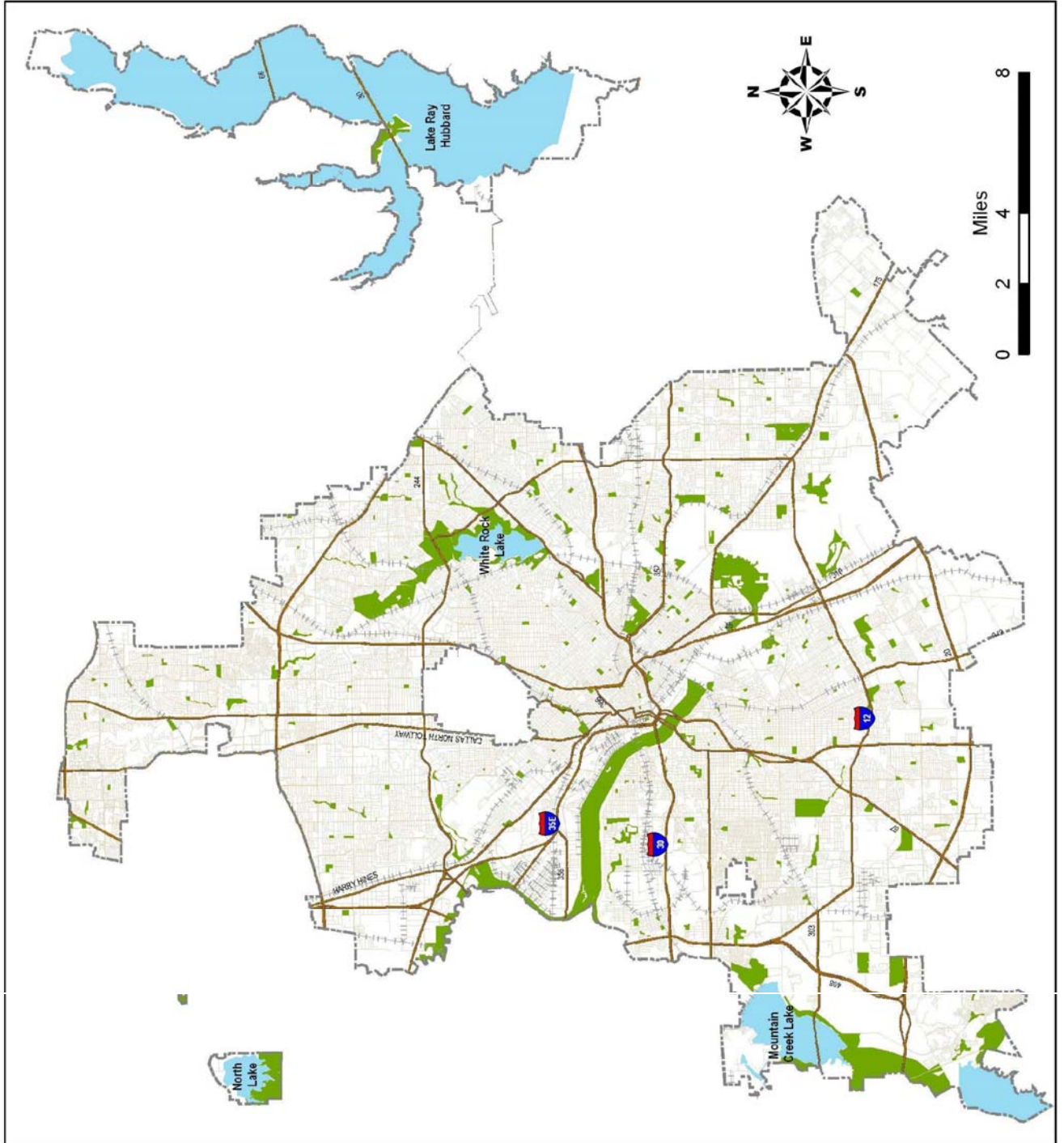
**Legend**

- City Boundary
- Highway
- Rail Line
- Parks
- Lakes
- Roads



Note:  
Projected Coordinate System:  
NAD83 Texas State Planes,  
North Central Zone, US Foot

Created By:  
Pragati Srivastava  
Date: November 28, 2006  
Source: NCTCOG




# Police Districts Dallas

**Legend**

- City Boundary
- Highway
- Districts

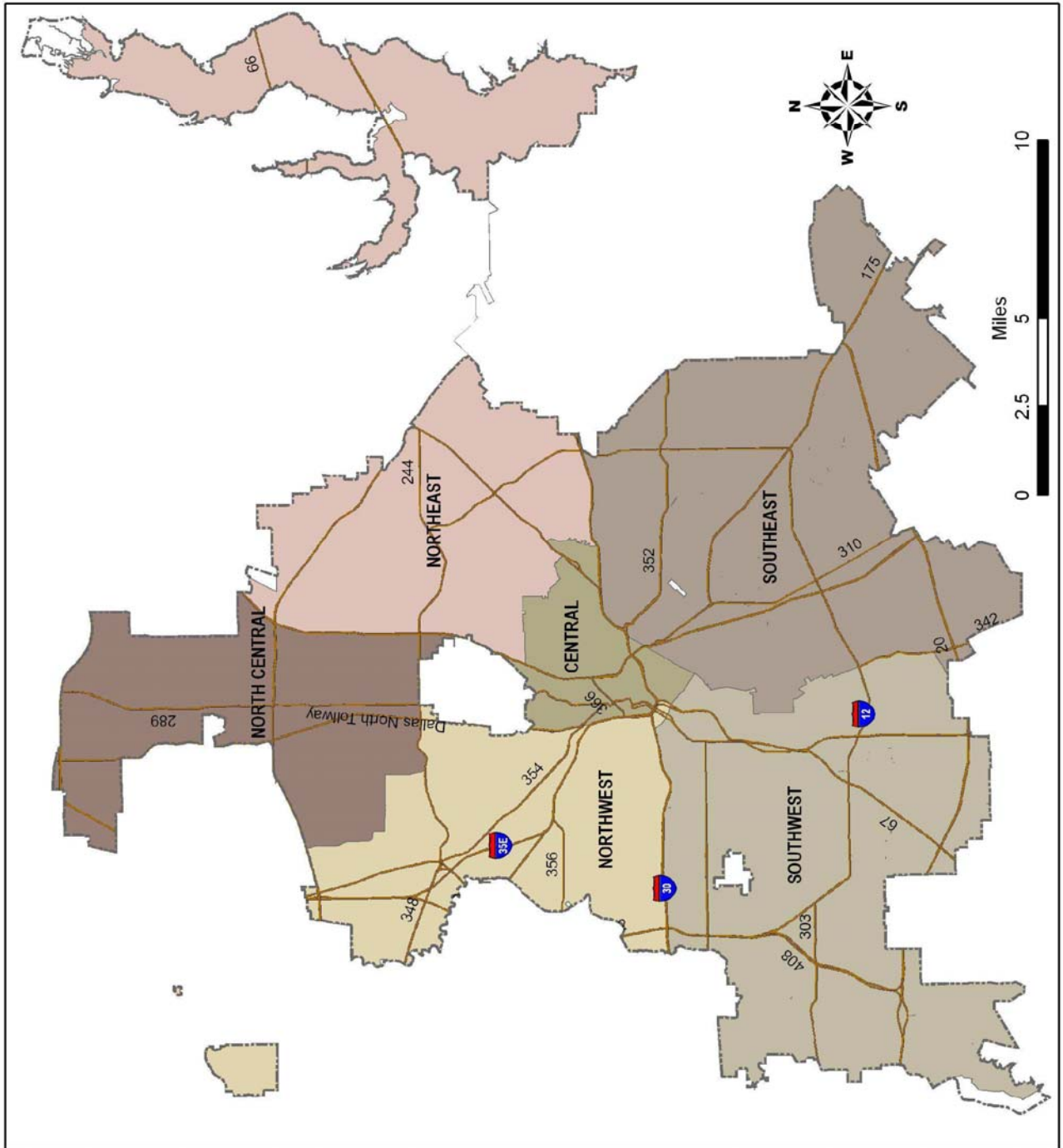
**Districts**

- CENTRAL
- NORTH CENTRAL
- NORTH EAST
- NORTH WEST
- SOUTH EAST
- SOUTH WEST



Note:  
Projected Coordinate System:  
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North Central Zone, US Foot

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Date: November 28, 2006  
Source: NCTCOG  
& Dallas Police  
Department





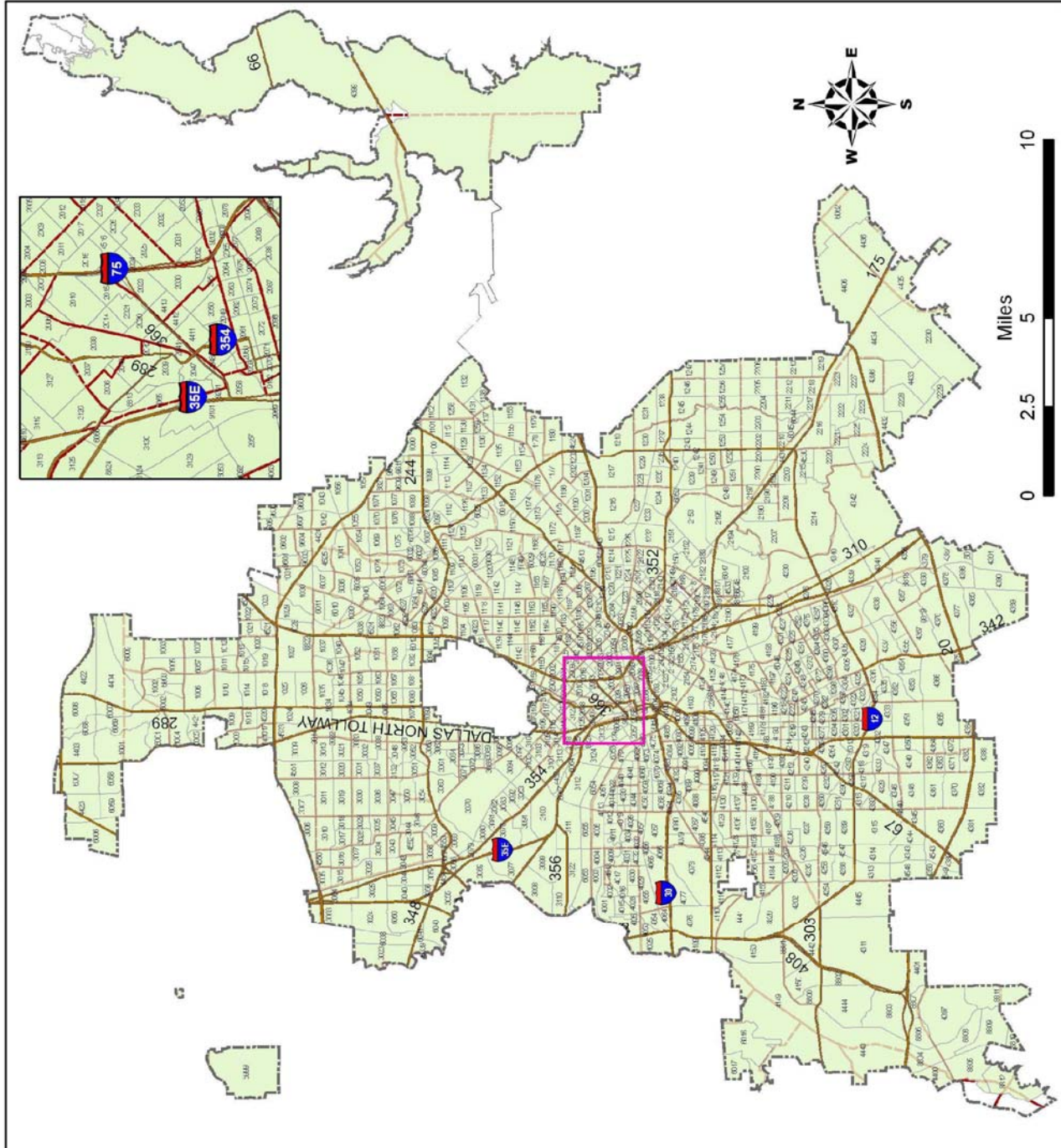
# Police Reporting Areas Dallas

- Legend**
- City Boundary
  - Highway
  - Reporting Area
  - Census Tract



Note:  
Projected Coordinate System:  
NAD83 Texas State Planes,  
North Central Zone US Foot

Created By:  
Pragati Srivastava  
Date: November 28, 2006  
Source: NCTCOG  
& Dallas Police  
Department





# TDHCA Multifamily Properties Dallas

**Legend**

- City Boundary
- Multifamily Housing

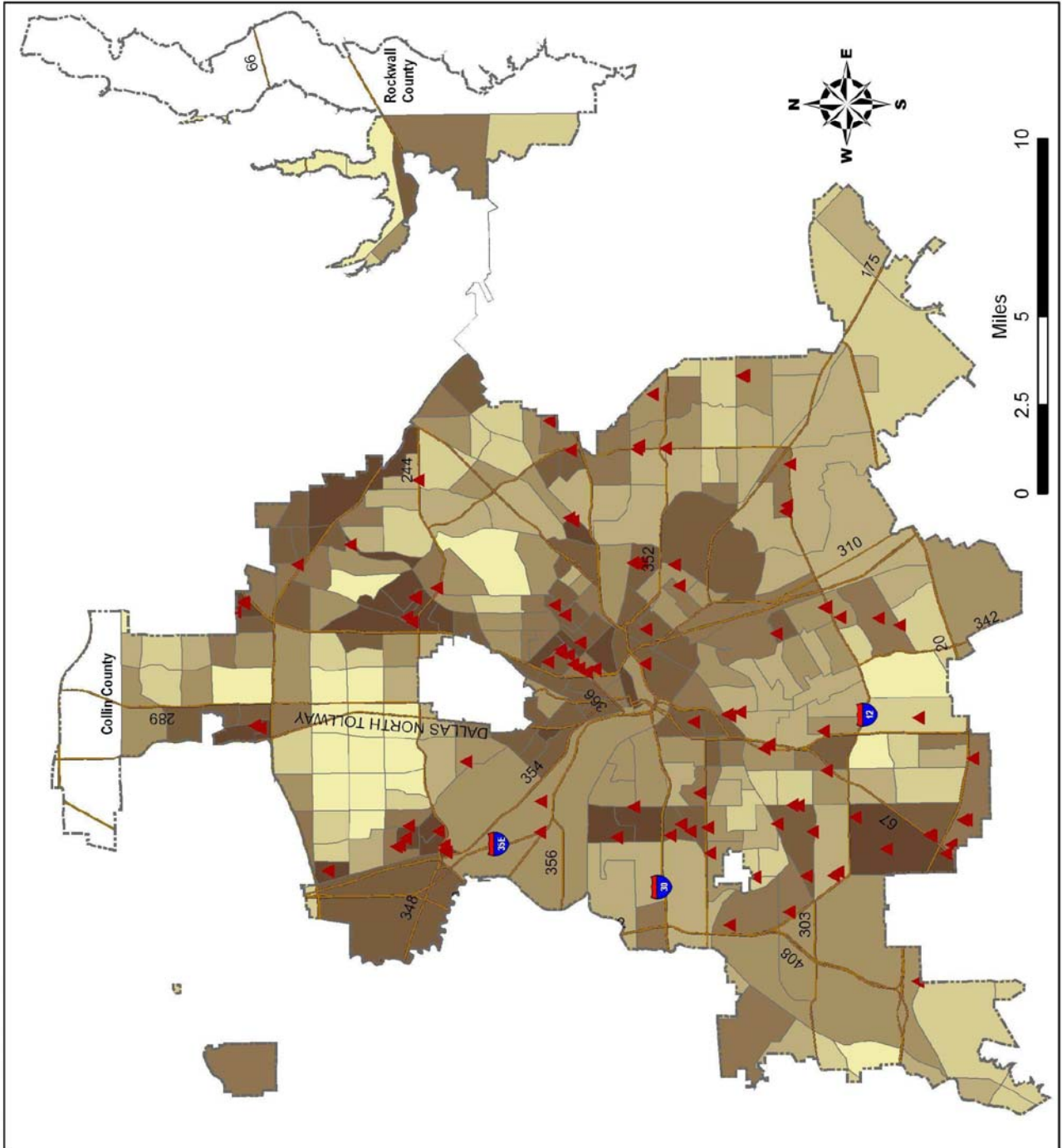
**Census Tract  
Renter Percentage**

	0% - 14%
	15% - 29%
	30% - 43%
	44% - 57%
	58% - 71%
	72% - 86%
	87% - 100%

Highway

**Note:**  
 1) Projected Coordinate System: NAD83 Texas State Planes, North Central Zone, US Foot  
 2) Data Used from Census 2000


**Created By:**  
 Pragati Srivastava  
 Date: November 28, 2006  
 Source: NCTCOG & TDHCA



# Selected TDHCA Multifamily Properties Dallas

**Legend**

- City Boundary
- Selected Properties
- Parks
- Highway
- Census Tract

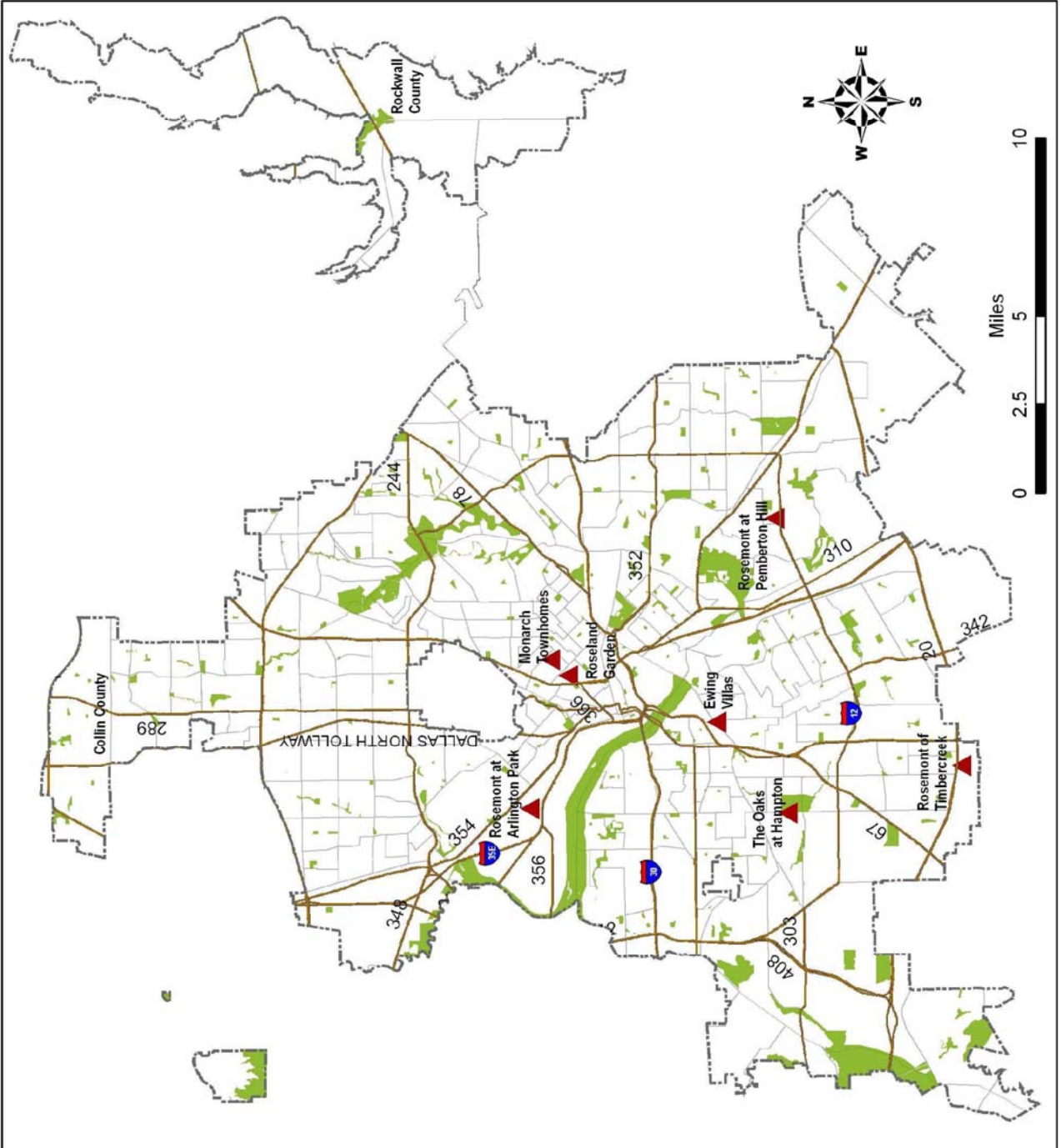


**Note:**

1) Projected Coordinate System:  
 NAD83 Texas State Planes,  
 North Central Zone, US Foot

2) Data used from Census 2000

**Created By:**  
 Pragati Srivastava  
 Date: November 9, 2006  
 Source: NCTCOG  
 & TDHCA



# Dallas White Population Percentage

**Legend**

- City Boundary
- Highway
- Census Tract

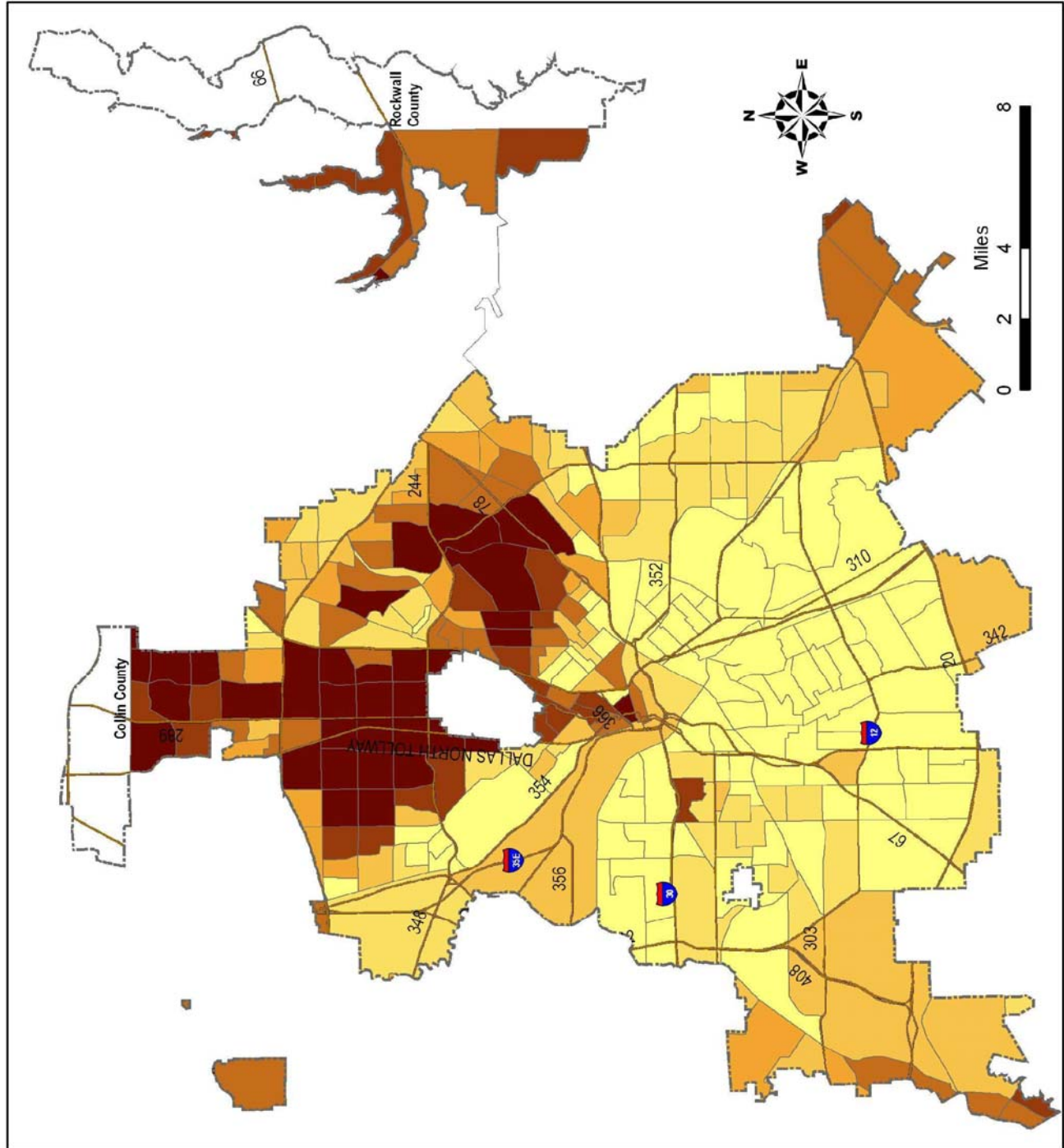
**White Population**

- 0% - 14%
- 15% - 29%
- 30% - 43%
- 44% - 57%
- 58% - 71%
- 72% - 86%
- 87% - 100%

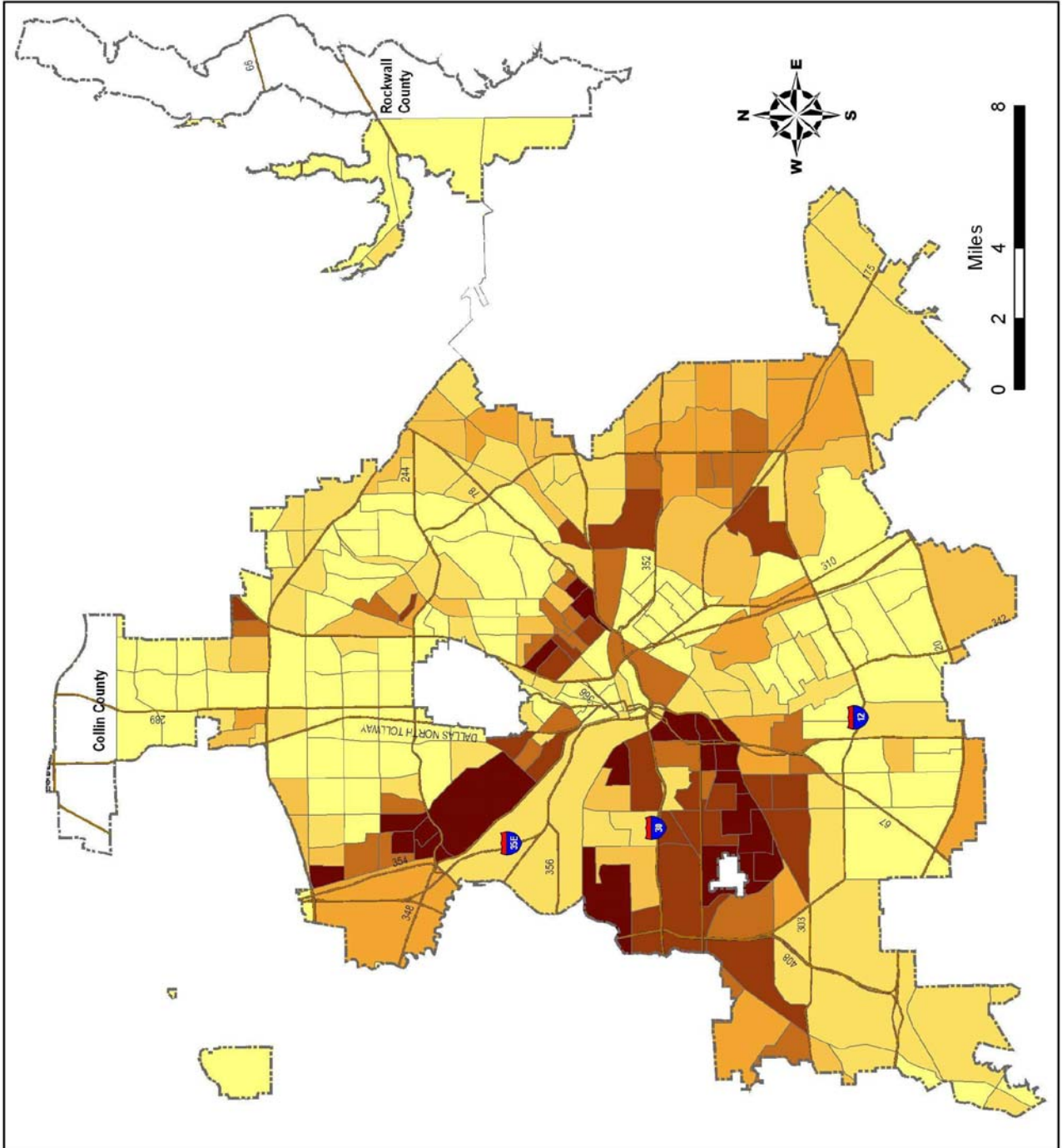
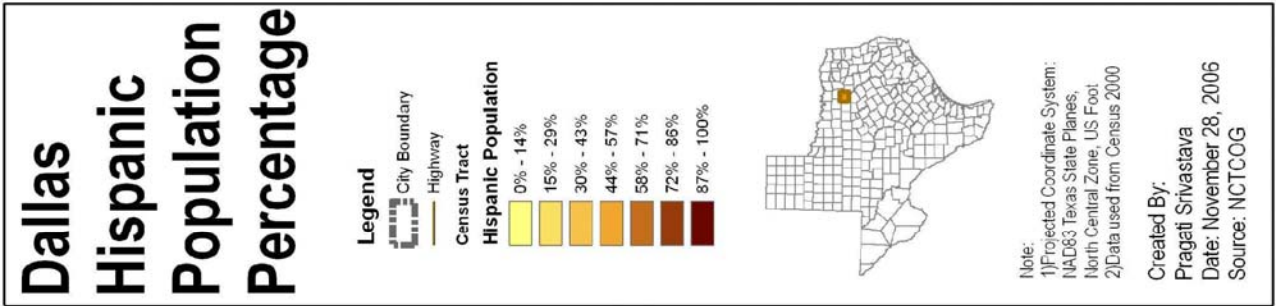
**Note:**

- 1) Projected Coordinate System: NAD83 Texas State Planes, North Central Zone, US Foot
- 2) Data used from Census 2000

**Created By:**  
 Pragati Srivastava  
 Date: November 28, 2006  
 Source: NCTCOG







# Dallas Black Population Percentage


**Legend**

- City Boundary
- Highway

**Census Tract**

**Black Population**

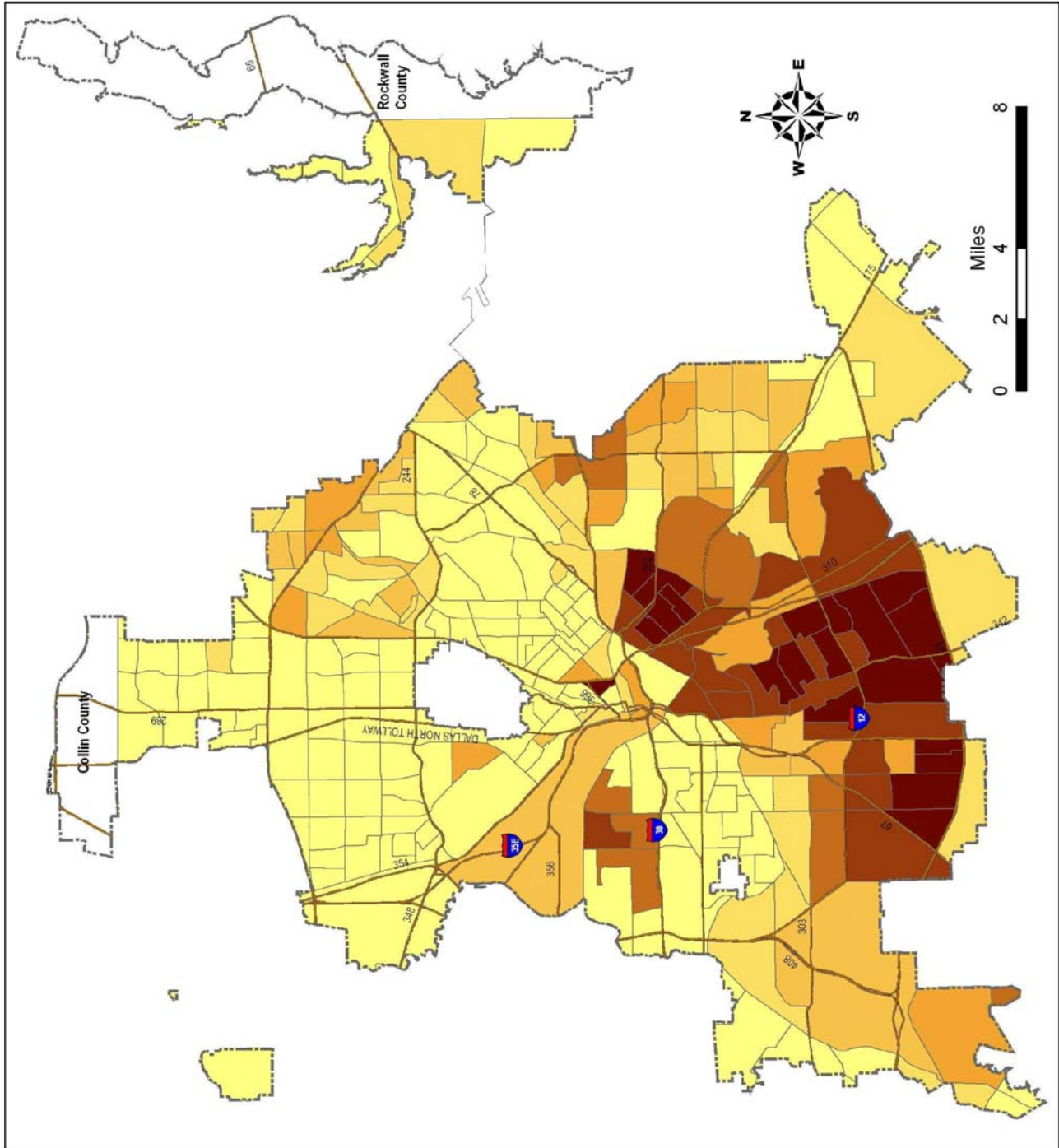
	0% - 14%
	15% - 29%
	30% - 43%
	44% - 57%
	58% - 71%
	72% - 86%
	87% - 100%



**Note:**

- 1) Projected Coordinate System: NAD83 Texas State Planes, North Central Zone, US Foot
- 2) Data used from Census 2000

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# Dallas Median Household Income

**Legend**

- City Boundary
- Highway
- Selected Census Tracts

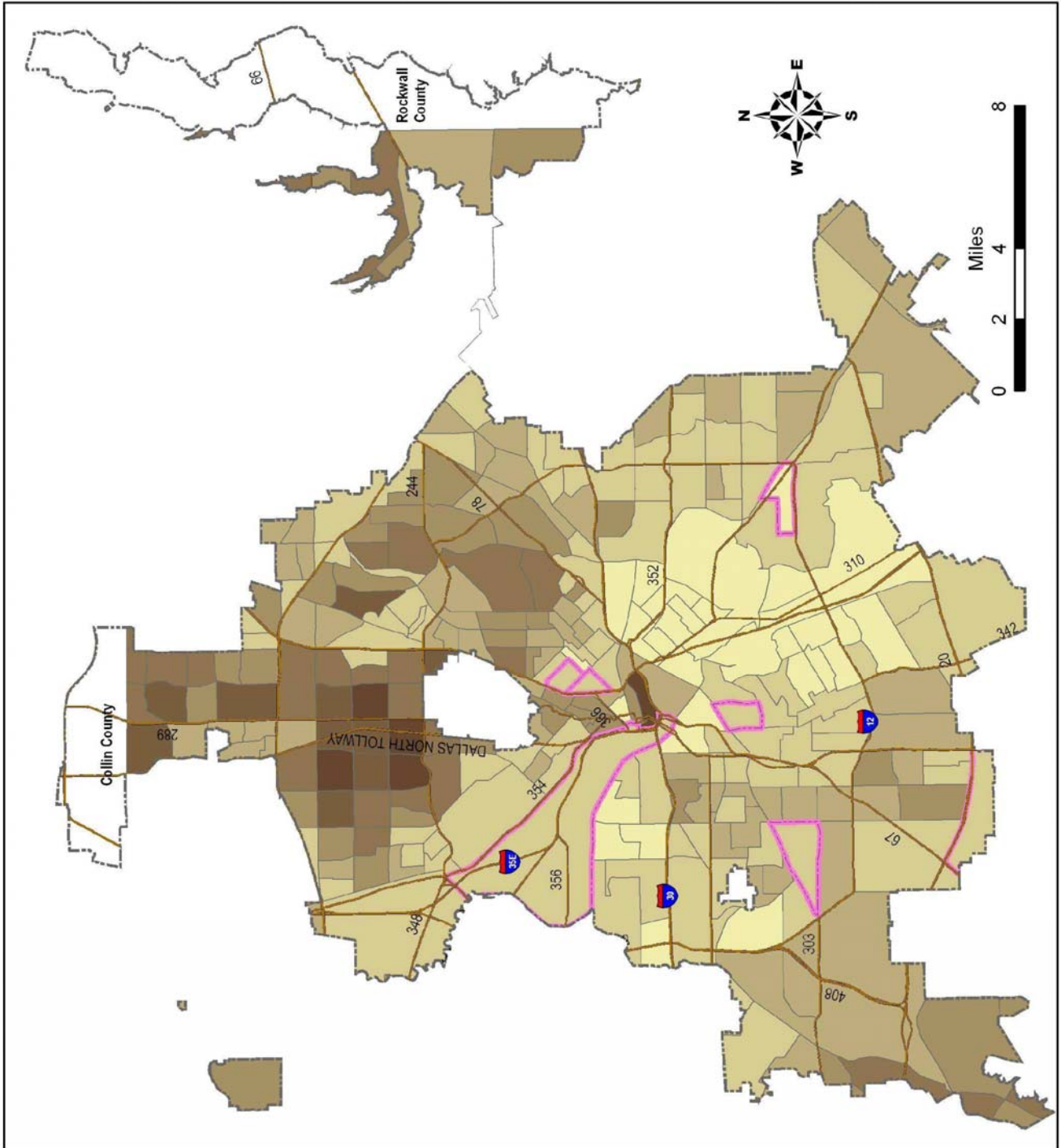
**Census Tract Household Income**

0 - 22,308
22,309 - 35,023
35,024 - 47,571
47,572 - 64,774
64,775 - 90,720
90,721 - 130,952
130,953 - 200,001

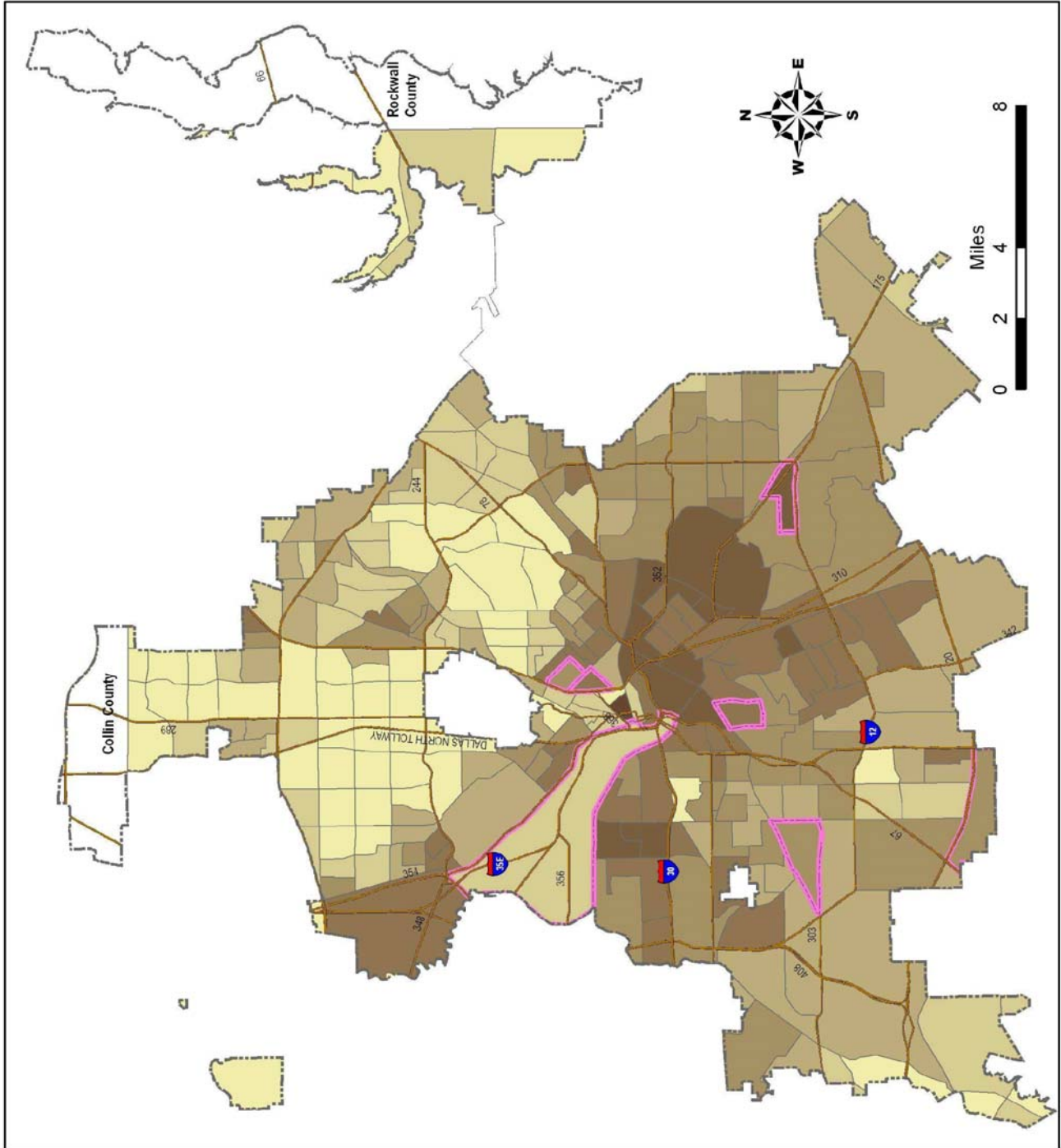
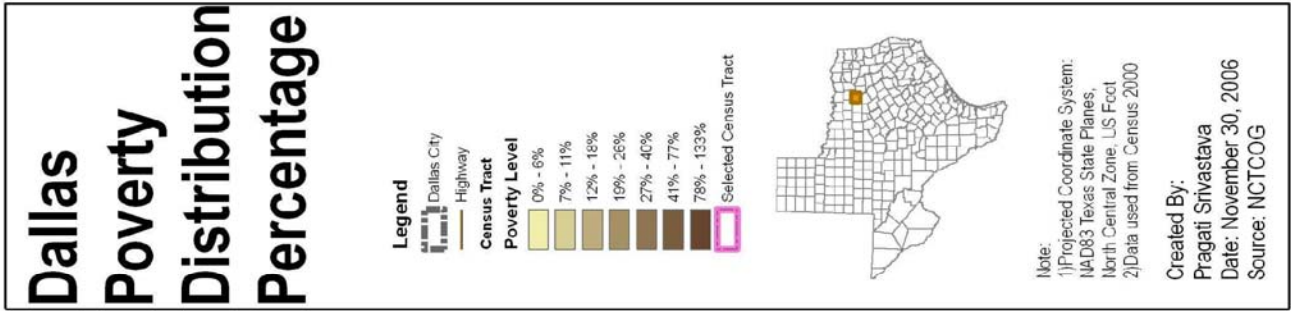


**Note:**  
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 2) Data used from Census 2000

**Created By:**  
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 Date: November 28, 2006  
 Source: NCTCOG & US Census Bureau

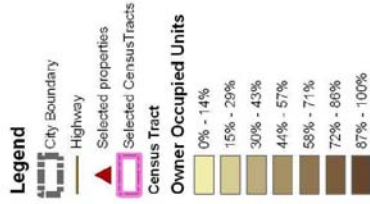






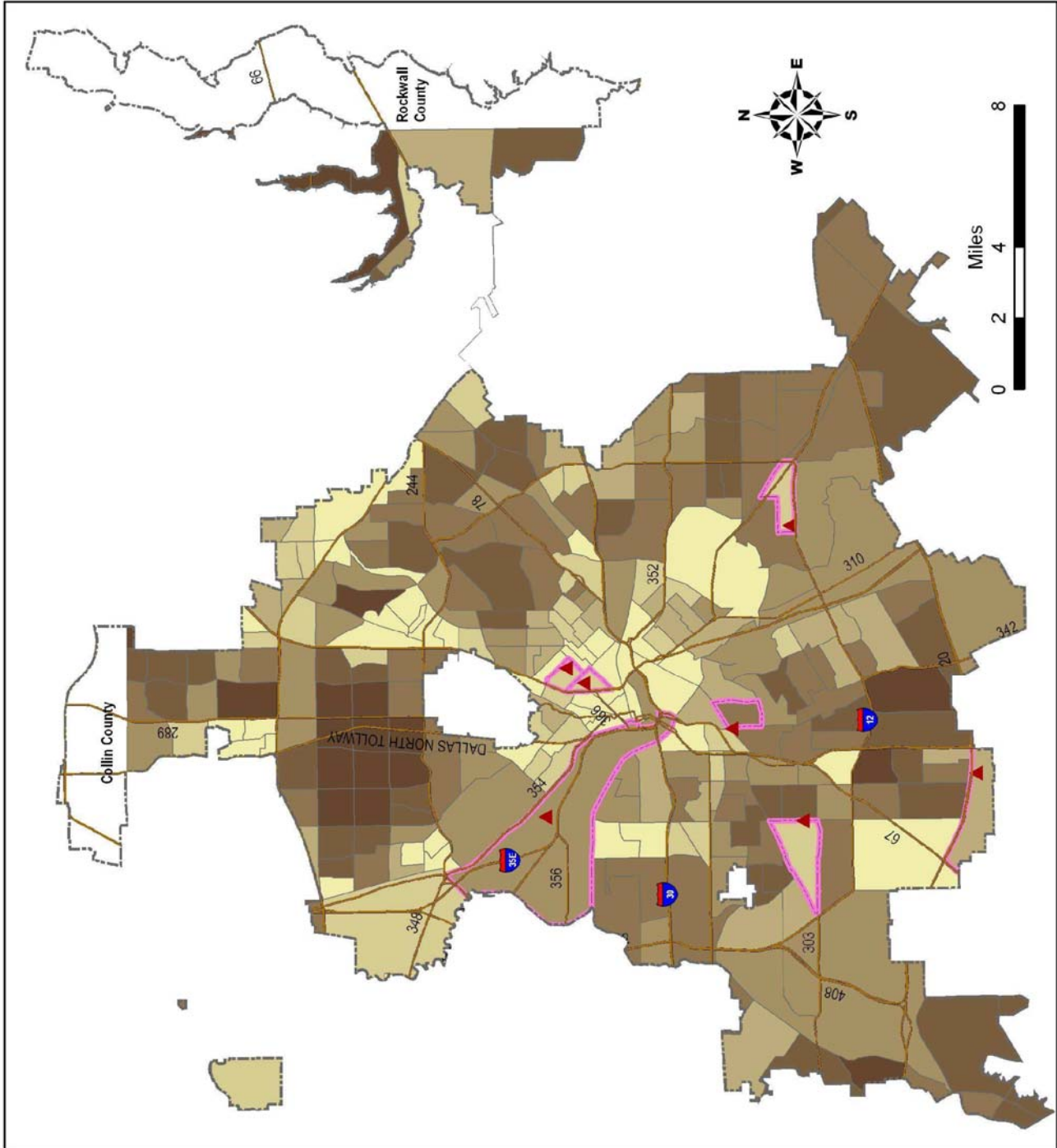


# Dallas Owner Occupied Housing Units

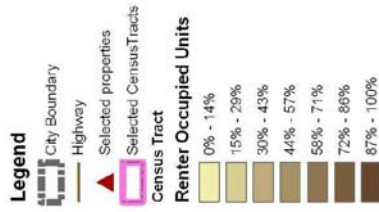


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US Census Bureau

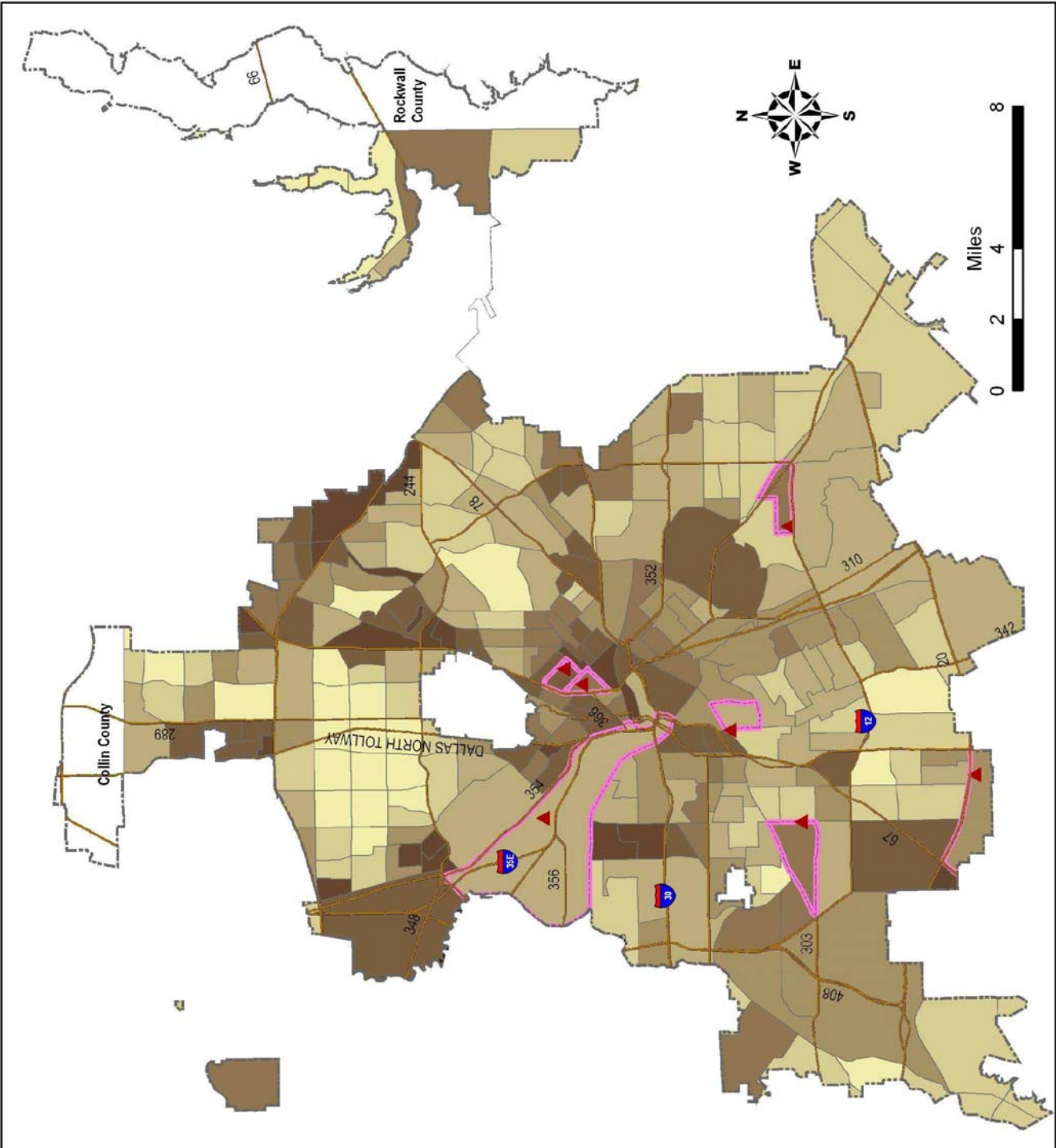


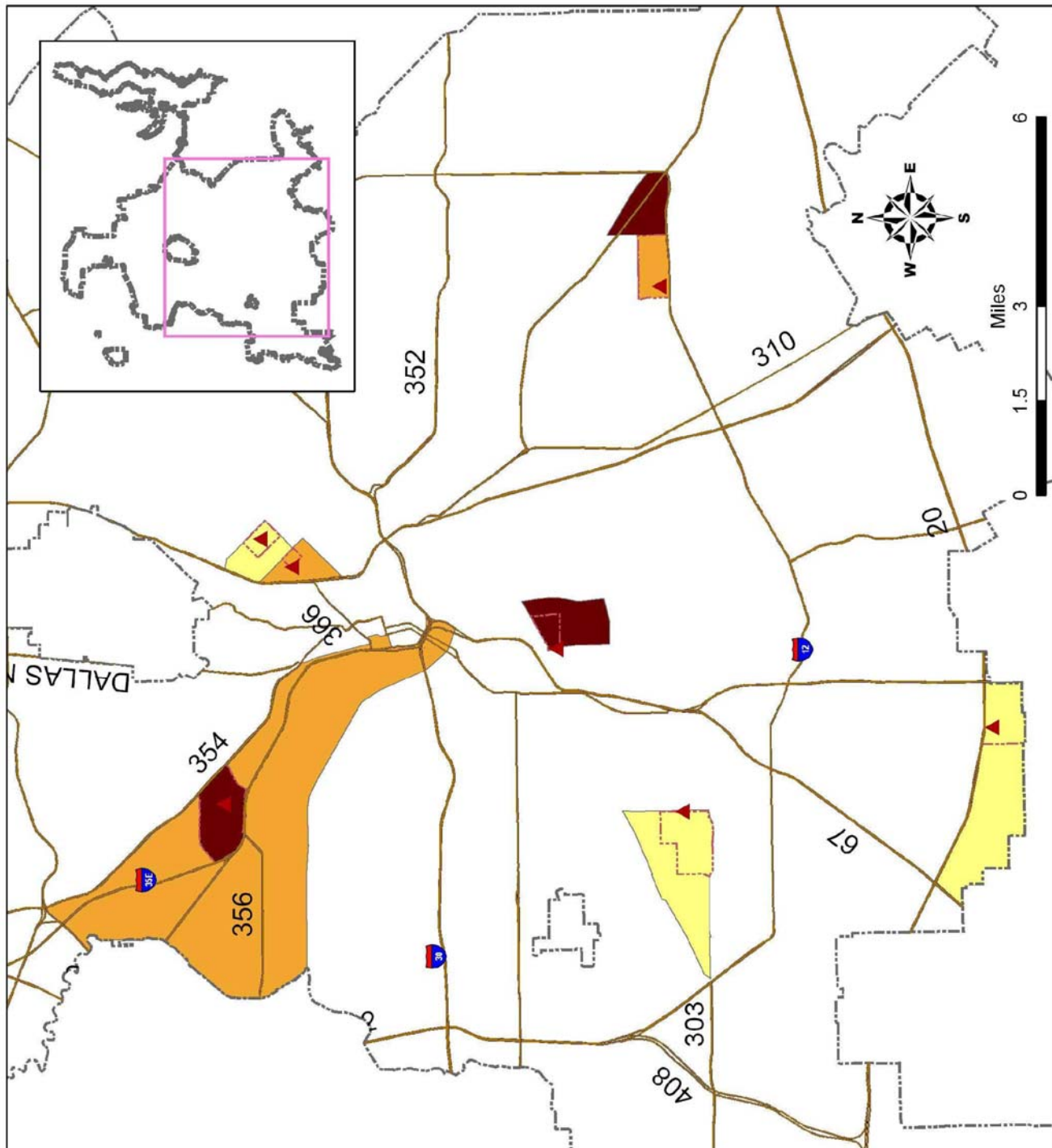
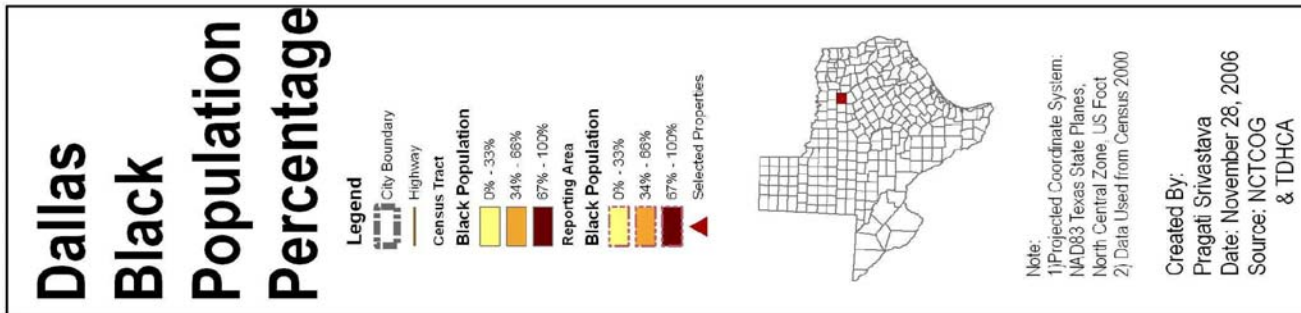
# Dallas Renter Occupied Housing Units



Note:  
1) Projected Coordinate System:  
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North Central Zone, US Foot  
2) Data used from Census 2000

Created By:  
Pragati Srivastava  
Date: November 28, 2006  
Source: NCTCOG &  
US Census Bureau







# Dallas Hispanic Population Percentage

**Legend**

- City Boundary
- Highway
- Census Tract


**Hispanic Population**

- 0% - 33%
- 34% - 66%
- 67% - 100%

**Reporting Area**

- 0% - 33%
- 34% - 66%
- 67% - 100%

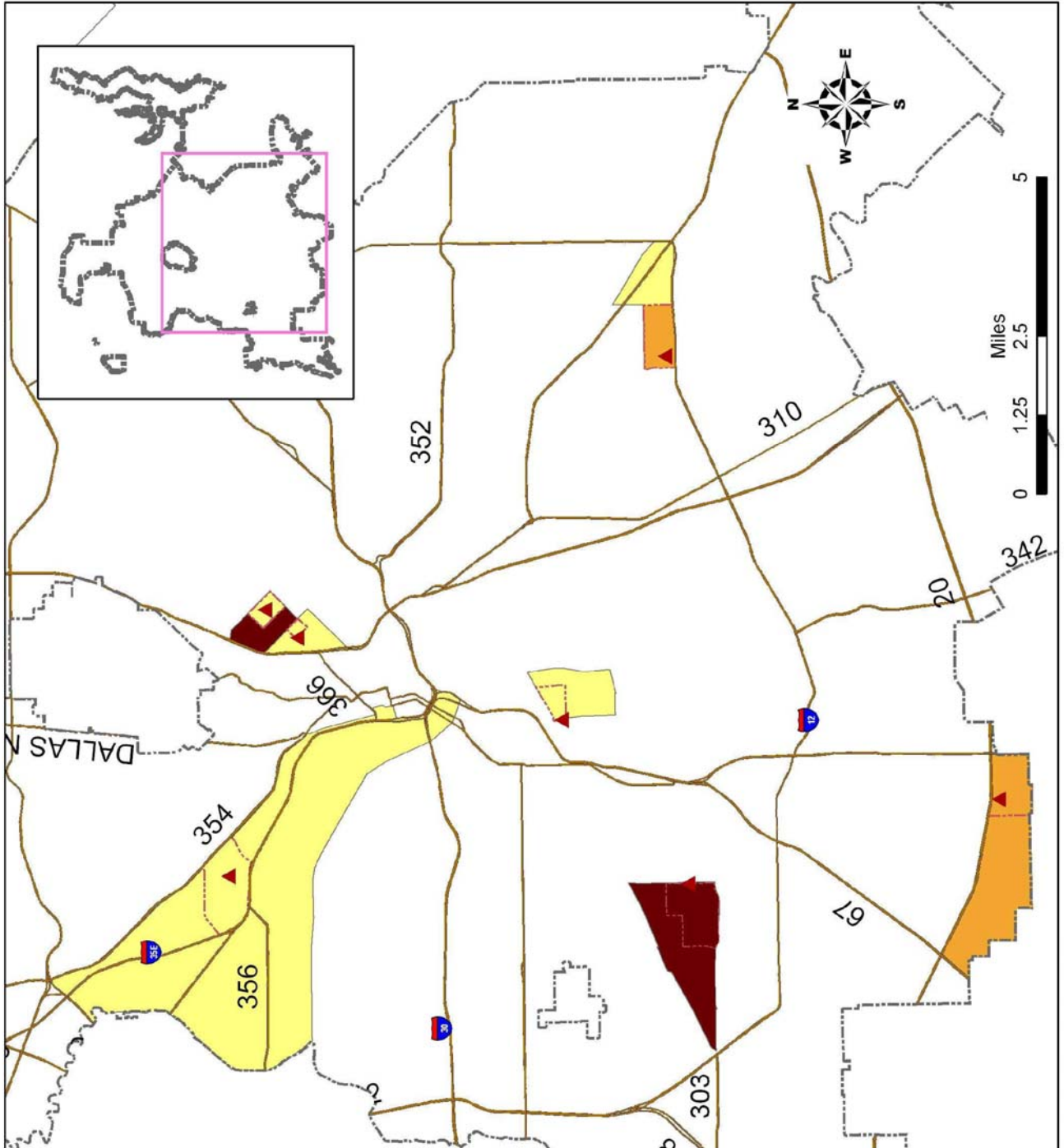
Selected Properties



**Note:**

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- 2) Data Used from Census 2000


Created By:  
 Pragati Srivastava  
 Date: November 28, 2006  
 Source: NCTCOG & TDHCA



# Dallas White Population Percentage

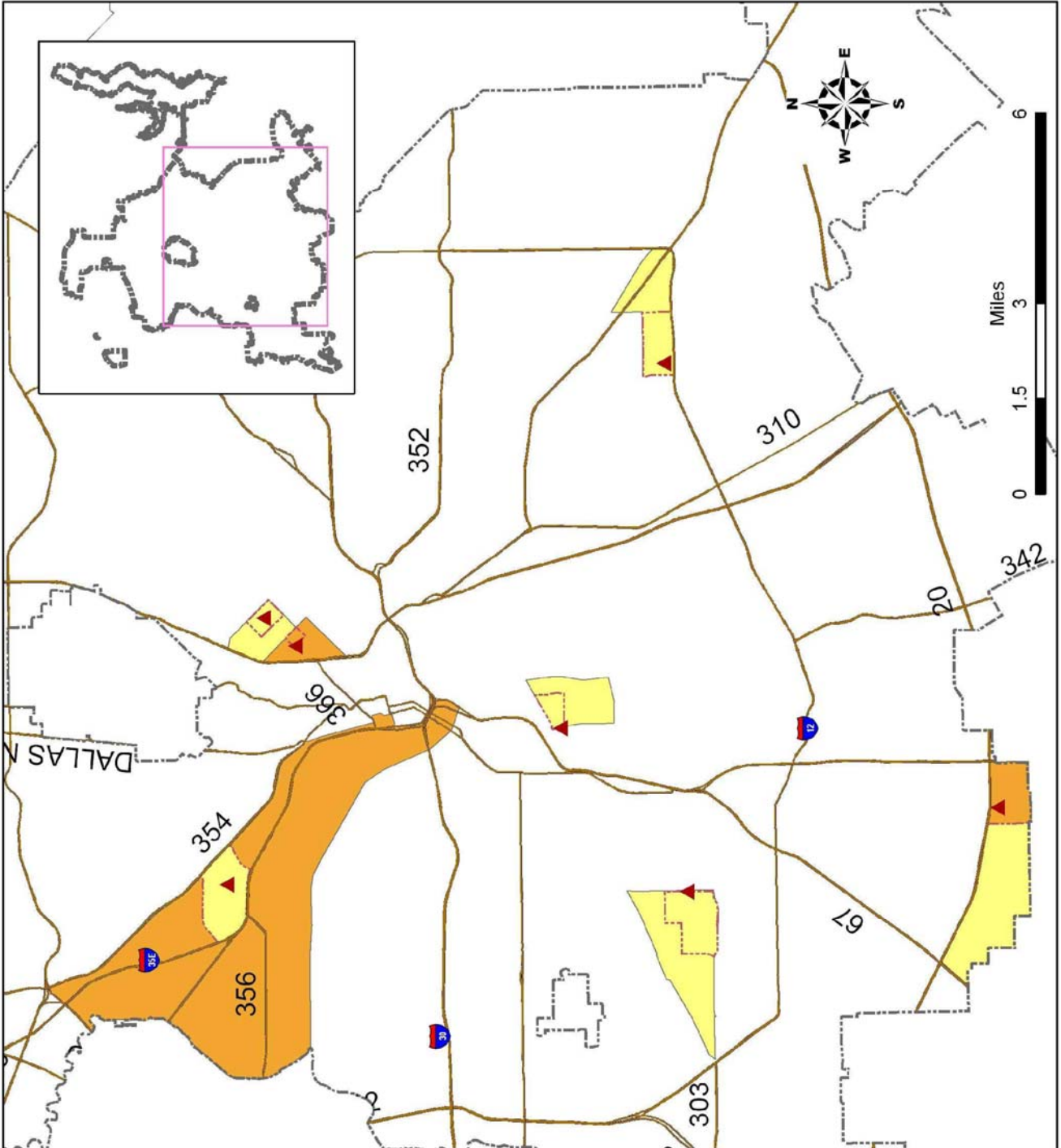
**Legend**

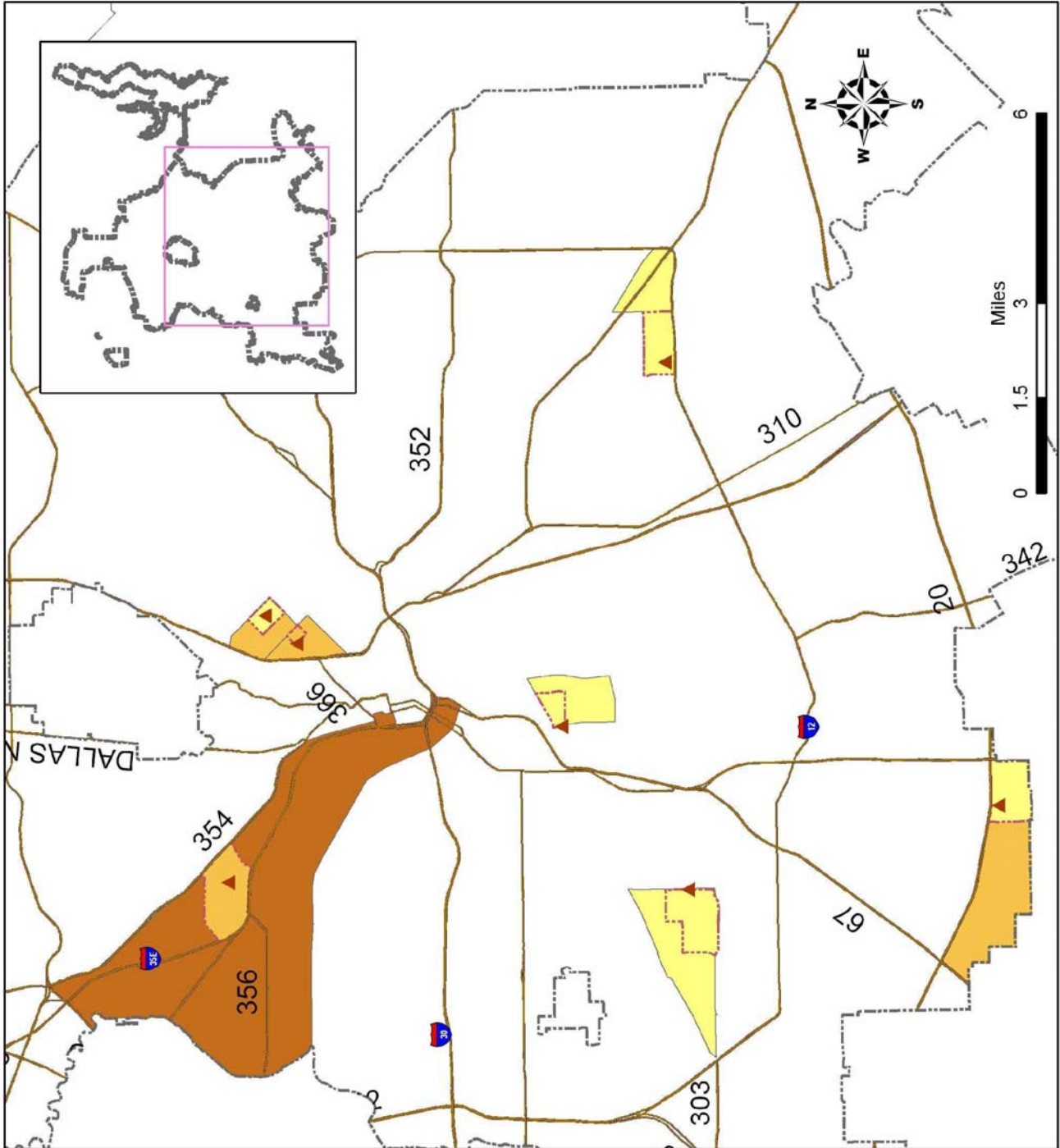
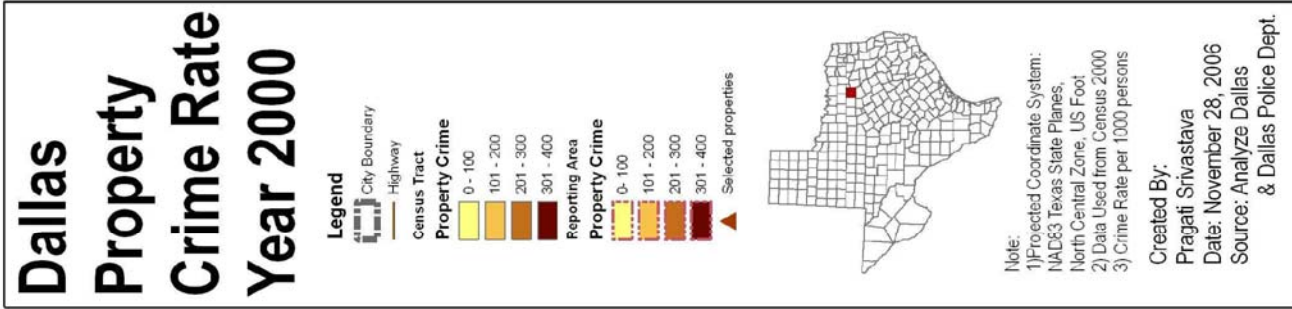
- City Boundary
- Highway
- Census Tract
- White Population**
- 0% - 33%
- 34% - 66%
- 67% - 100%
- Reporting Area
- White Population**
- 0% - 33%
- 34% - 66%
- 67% - 100%
- Selected Properties



**Note:**  
 1) Projected Coordinate System:  
 NAD83 Texas State Planes,  
 North Central Zone, US Foot  
 2) Data Used from Census 2000

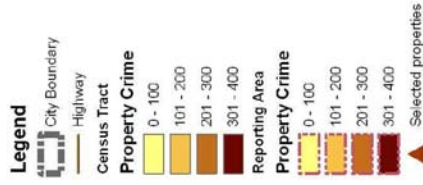
**Created By:**  
 Pragati Srivastava  
 Date: November 28, 2006  
 Source: NCTCOG  
 & TDHCA







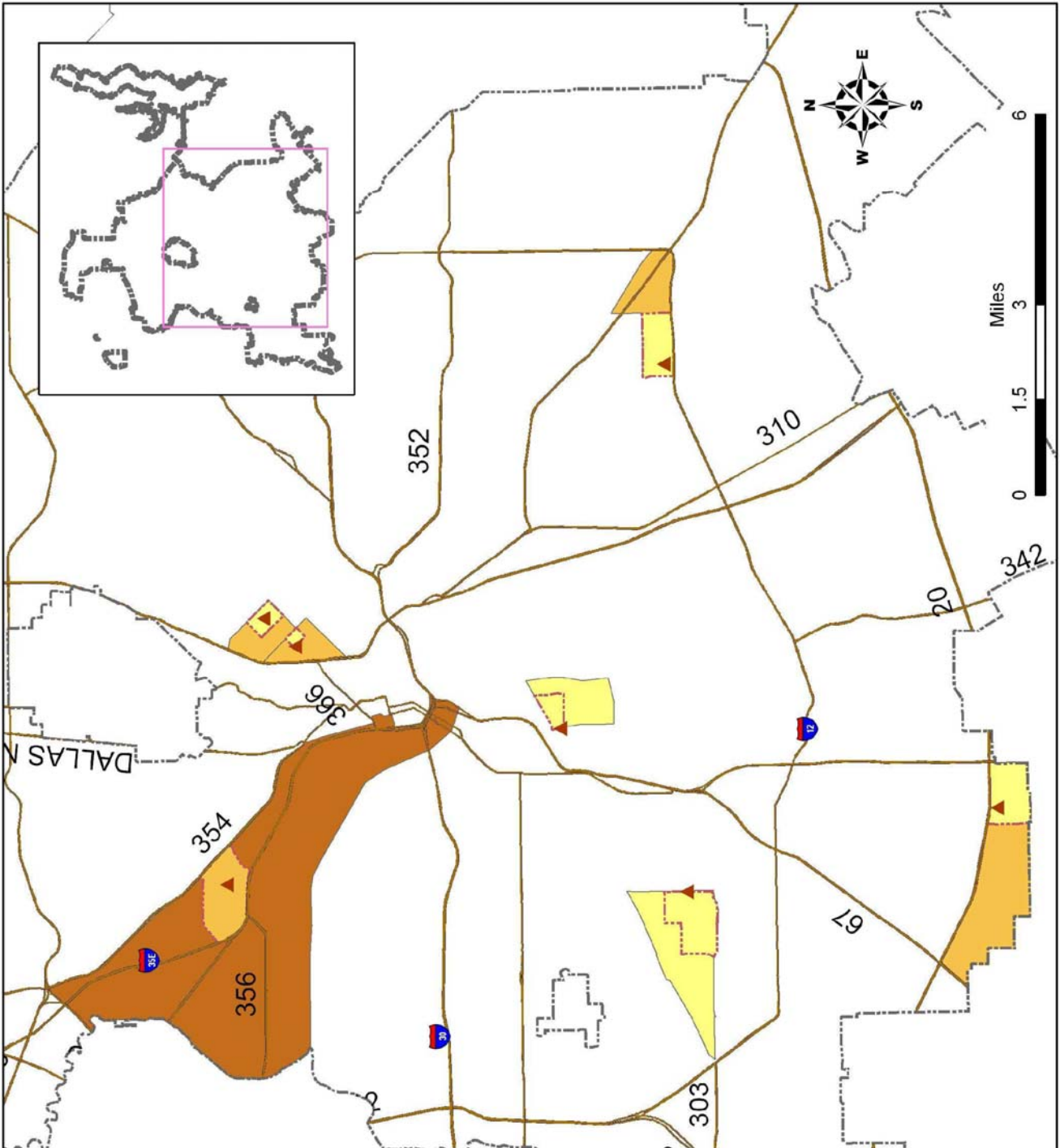
# Dallas Property Crime Rate Year 2001



**Note:**

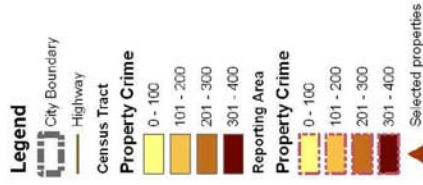
- 1) Projected Coordinate System: NAD83 Texas State Planes, North Central Zone, US Foot
- 2) Data Used from Census 2000
- 3) Crime Rate per 1000 persons

**Created By:**  
 Pragati Srivastava  
 Date: November 28, 2006  
 Source: Analyze Dallas & Dallas Police Dept.



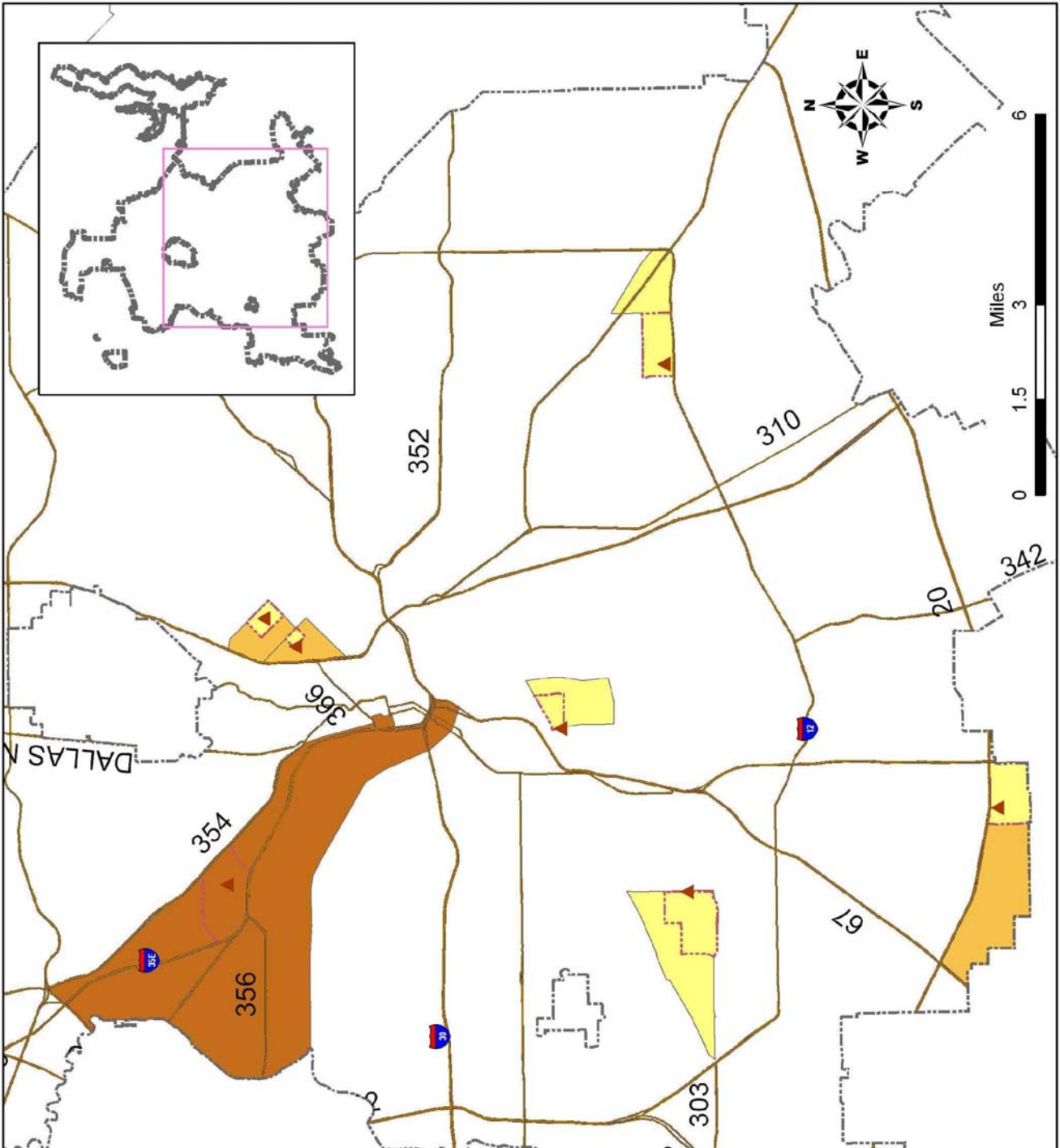


# Dallas Property Crime Rate Year 2002



Note:  
 1) Projected Coordinate System:  
 NAD83 Texas State Planes,  
 North Central Zone, US Foot  
 2) Data Used from Census 2000  
 3) Crime Rate per 1000 persons


Created By:  
 Pragati Srivastava  
 Date: November 28, 2006  
 Source: Analyze Dallas  
 & Dallas Police Dept.



# Dallas Property Crime Rate Year 2003

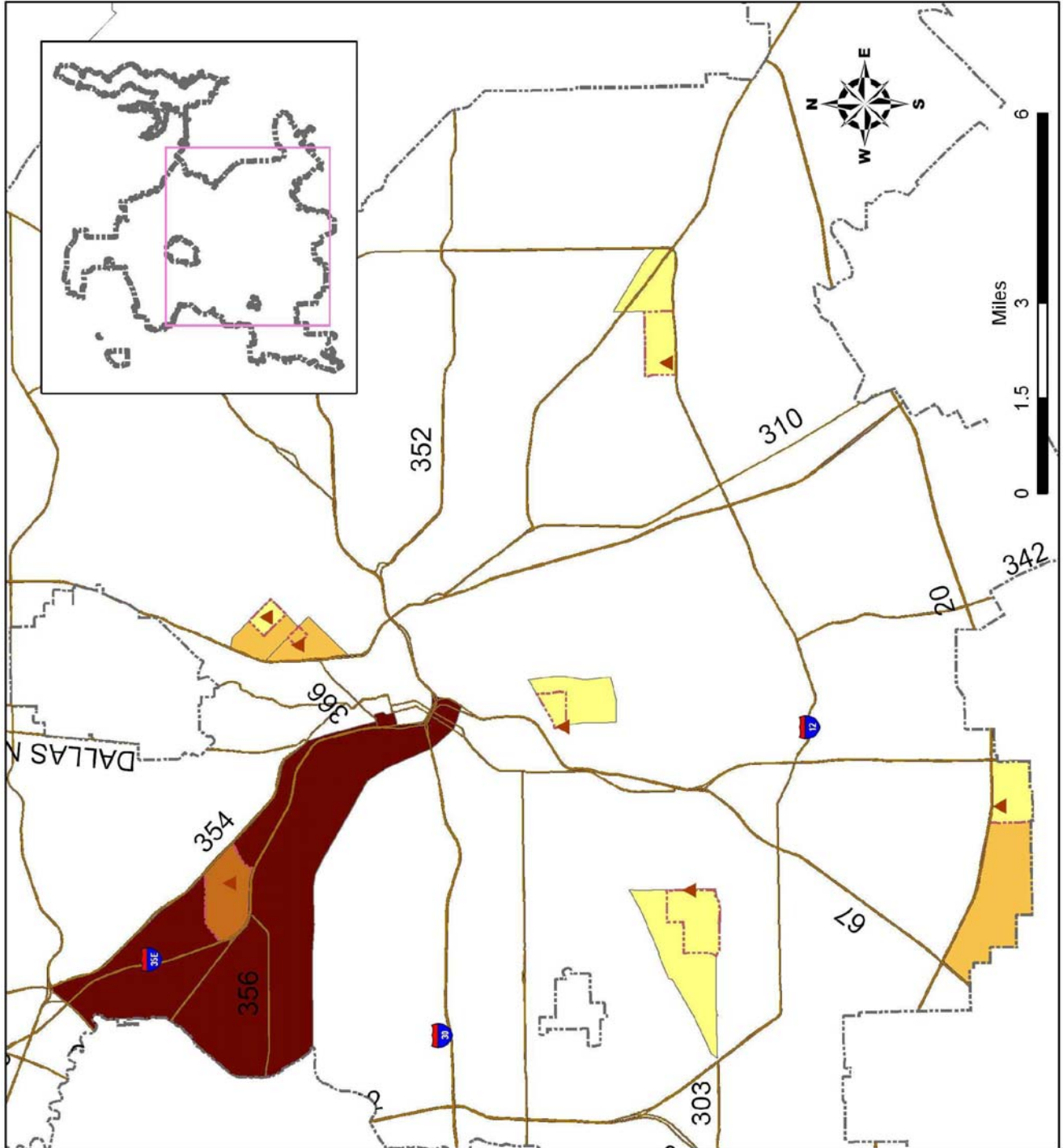
**Legend**

- City Boundary
- Highway
- Census Tract
- Property Crime**
- 0 - 100
- 101 - 200
- 201 - 300
- 301 - 400
- Reporting Area**
- Property Crime**
- 0 - 100
- 101 - 200
- 201 - 300
- 301 - 400
- Selected properties



**Note:**  
 1) Projected Coordinate System:  
 NAD83 Texas State Planes,  
 North Central Zone, US Foot  
 2) Data Used from Census 2000  
 3) Crime Rate per 1000 persons

**Created By:**  
 Pragati Srivastava  
 Date: November 28, 2006  
 Source: Analyze Dallas  
 & Dallas Police Dept.



# Dallas Property Crime Rate Year 2004

**Legend**

City Boundary  
 Highway

**Census Tract**

**Property Crime**


- 0 - 100
- 101 - 200
- 201 - 300
- 301 - 400

**Reporting Area**

**Property Crime**

- 0 - 100
- 101 - 200
- 201 - 300
- 301 - 400

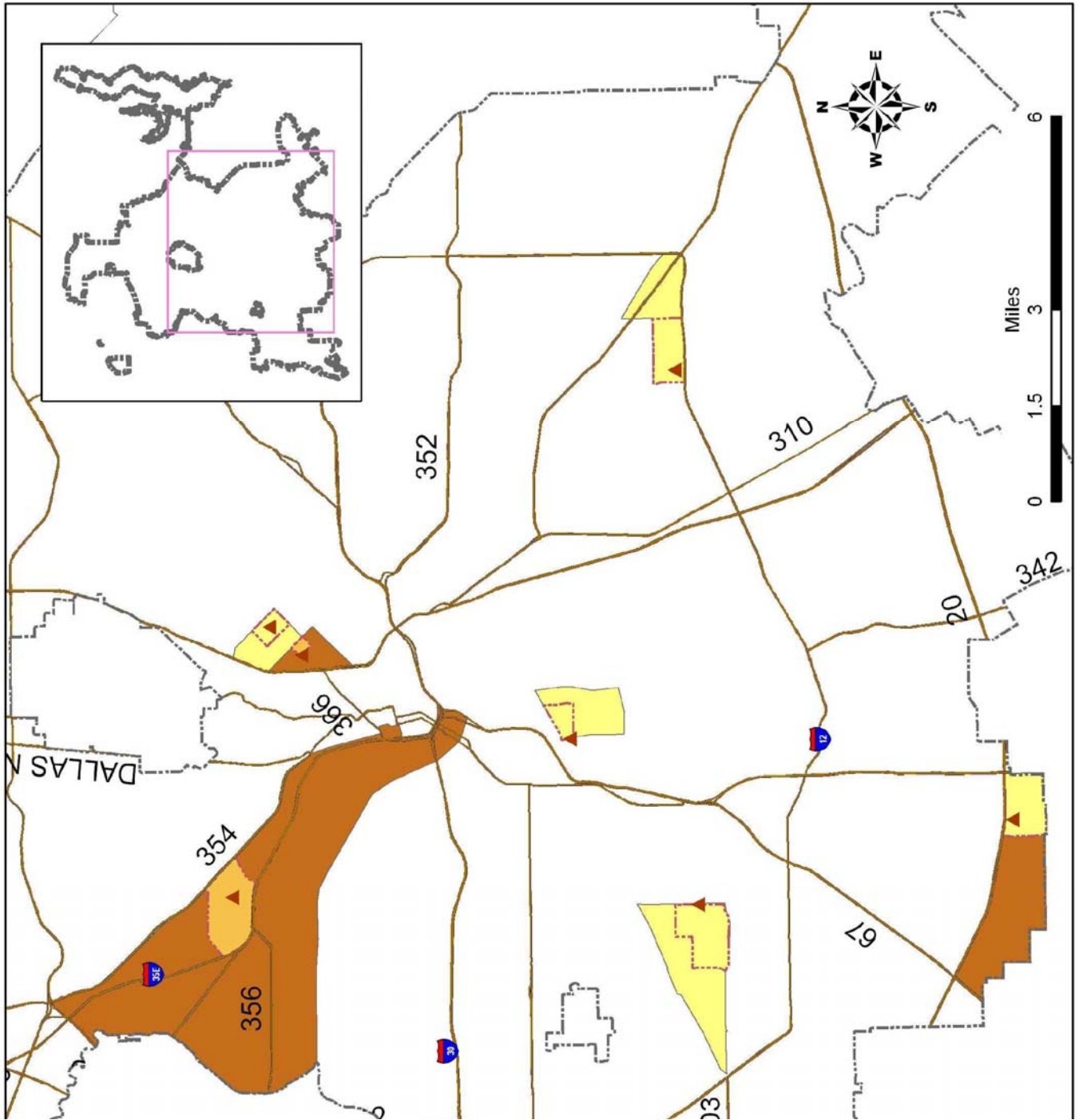
Selected properties



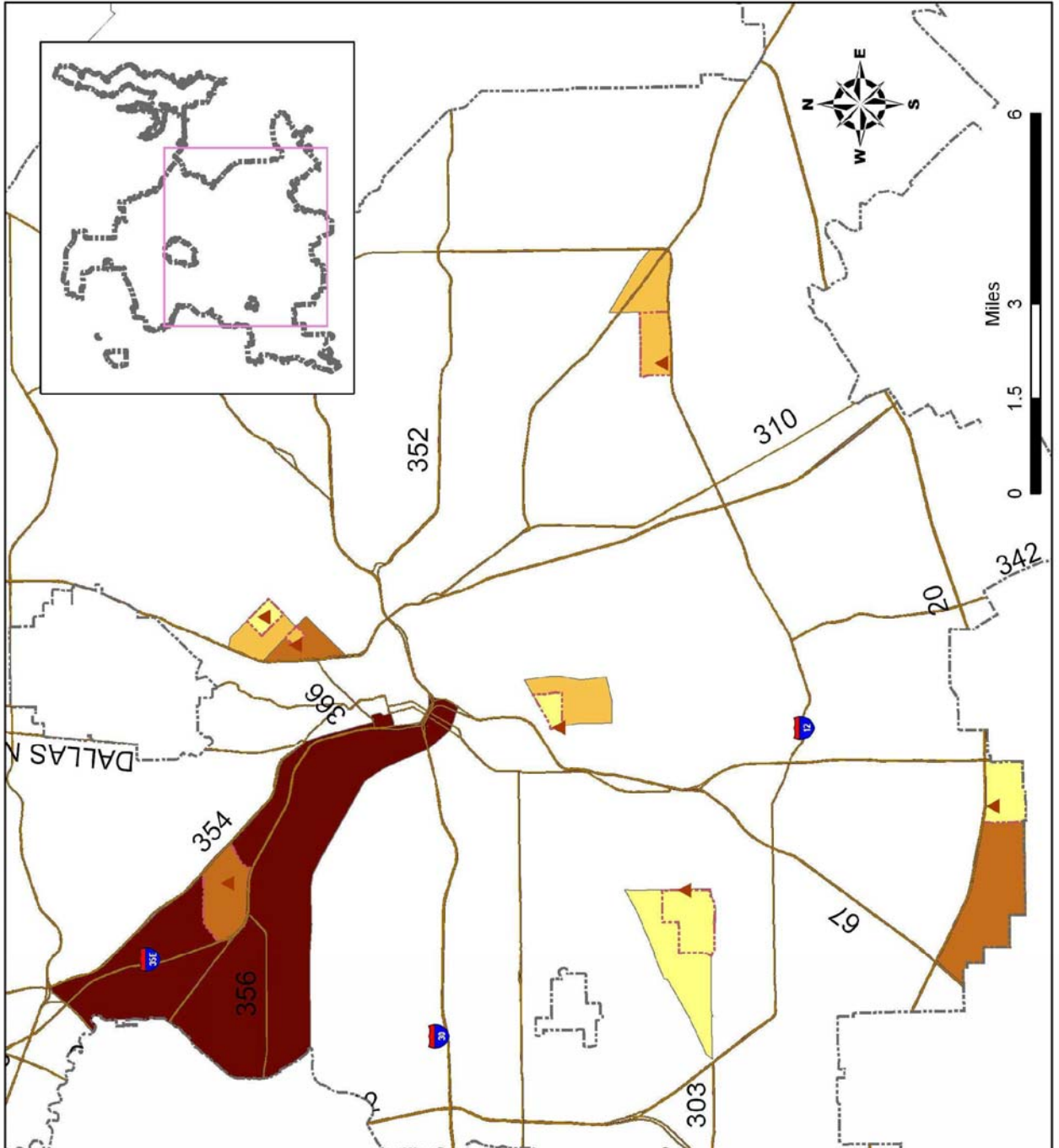
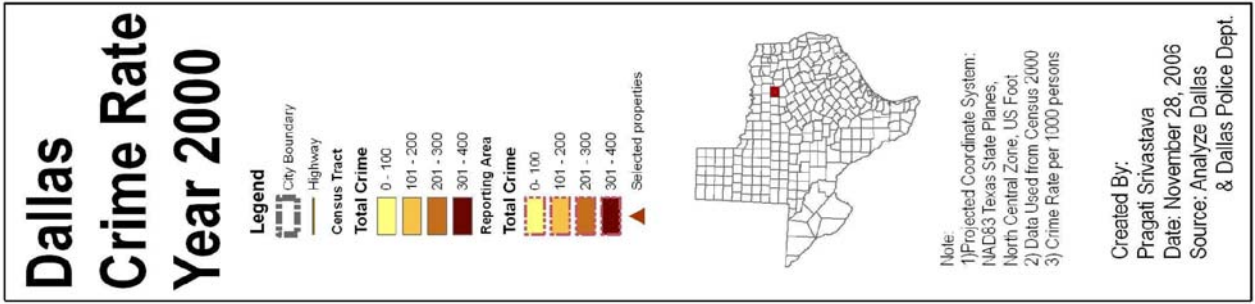
**Note:**

- 1) Projected Coordinate System: NAD83 Texas State Planes, North Central Zone, US Foot
- 2) Data Used from Census 2000
- 3) Crime Rate per 1000 persons

**Created By:**  
 Pragati Srivastava  
 Date: November 28, 2006  
 Source: Analyze Dallas & Dallas Police Dept.







# Dallas Crime Rate Year 2001

**Legend**

- City Boundary
- Highway
- Census Tract

**Total Crime**

- 
- 
- 
- 

**Reporting Area**

**Total crime**

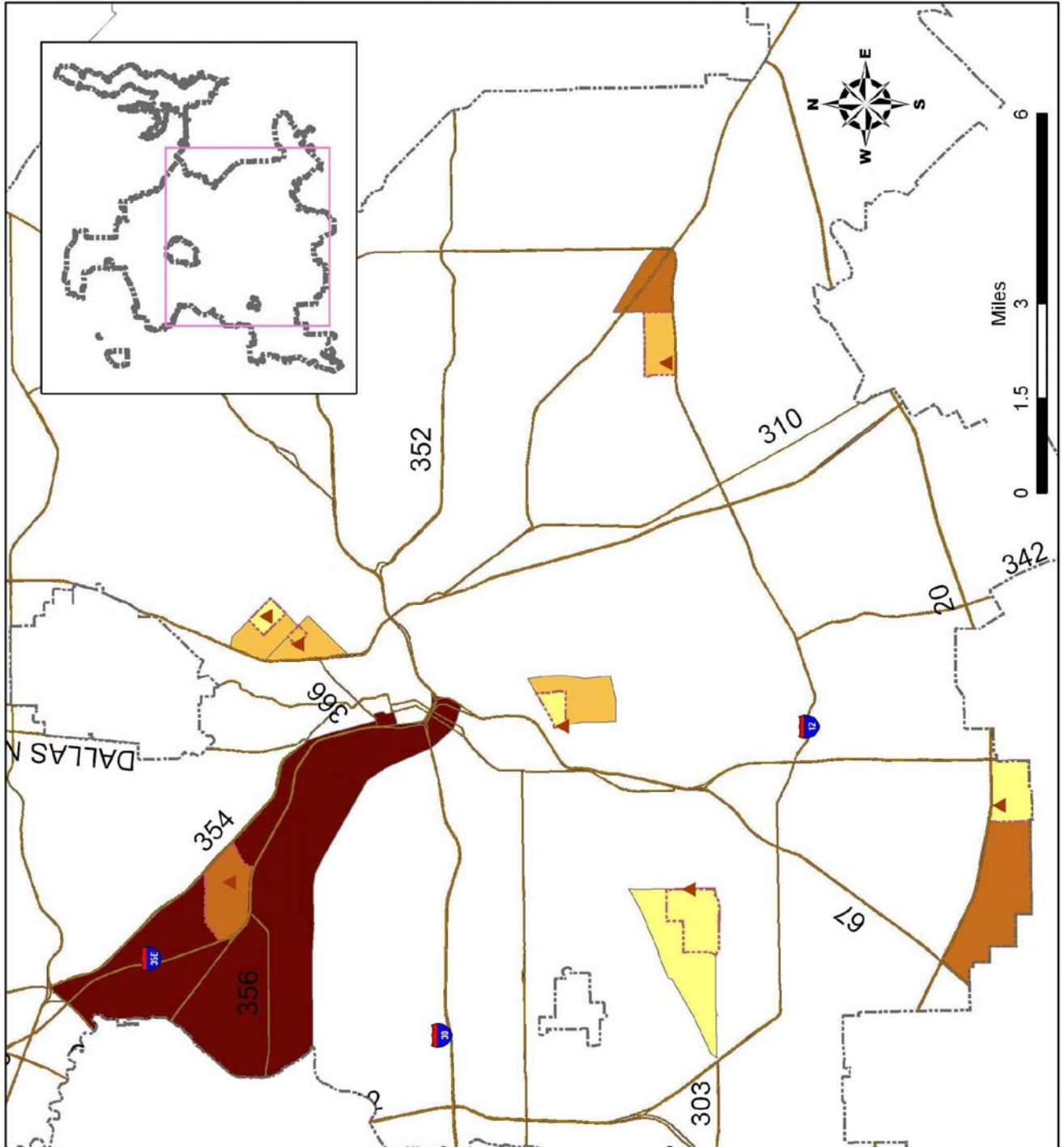
- 
- 
- 
- 

Selected properties

**Note:**

- 1) Projected Coordinate System: NAD83 Texas State Planes, North Central Zone, US Foot
- 2) Data Used from Census 2000
- 3) Crime Rate per 1000 persons

**Created By:**  
 Pragati Srivastava  
 Date: November 28, 2006  
 Source: Analyze Dallas & Dallas Police Dept.



# Dallas Crime Rate Year 2002

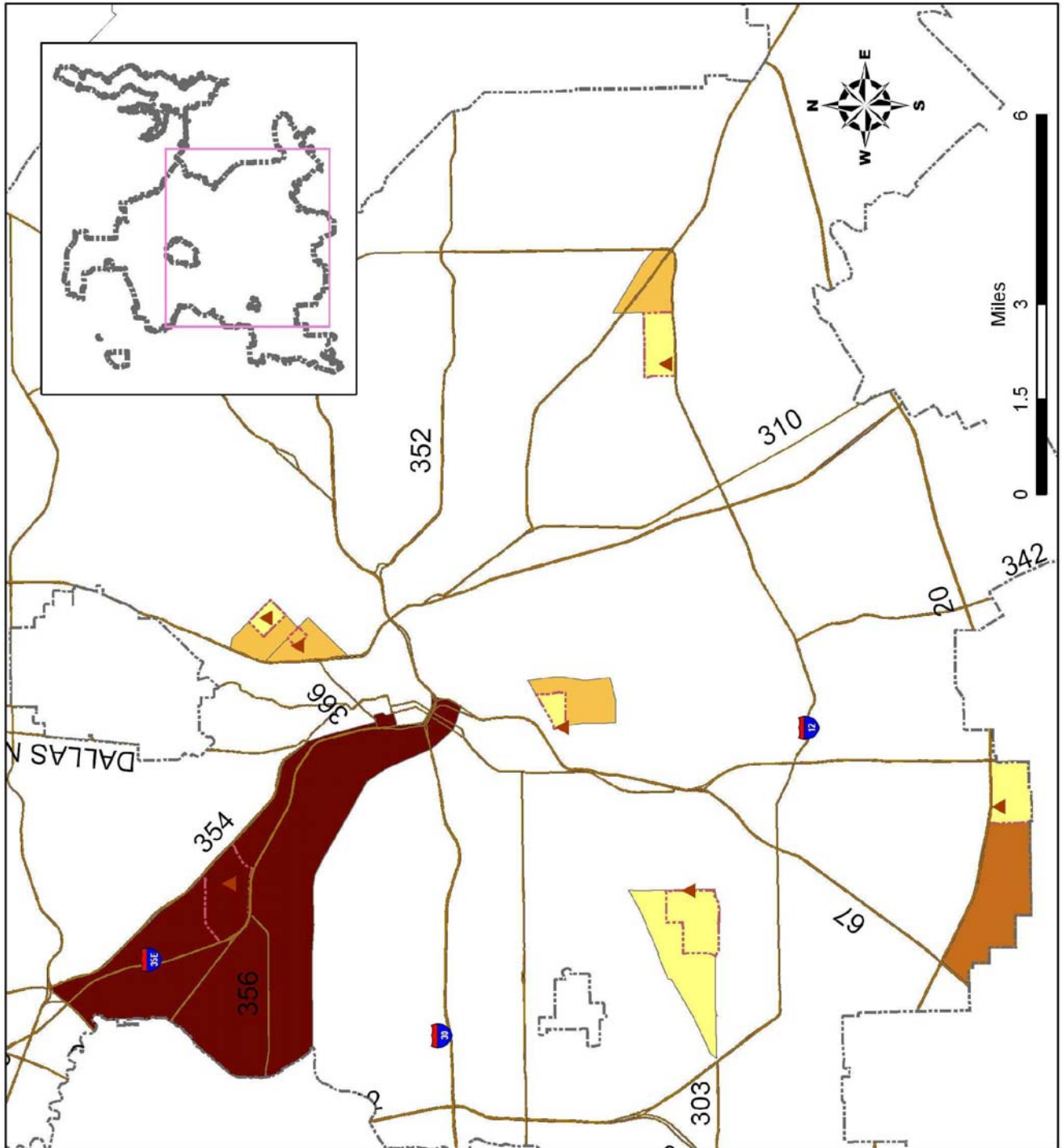
**Legend**

- City Boundary
- Highway
- Census Tract**
- Total Crime**
- 0 - 100
- 101 - 200
- 201 - 300
- 301 - 400
- Reporting Area**
- Total Crime**
- 0 - 100
- 101 - 200
- 201 - 300
- 301 - 400
- Selected properties

Note:

- 1) Projected Coordinate System: NAD83 Texas State Planes, North Central Zone, US Foot
- 2) Data Used from Census 2000
- 3) Crime Rate per 1000 persons

**Created By:**  
 Pragati Srivastava  
 Date: November 28, 2006  
 Source: Analyze Dallas & Dallas Police Dept.





# Dallas Crime Rate Year 2003

**Legend**

- City Boundary
- Highway
- Census Tract

**Total Crime**

- 0-100
- 101-200
- 201-300
- 301-400

**Reporting Area**

**Total Crime**

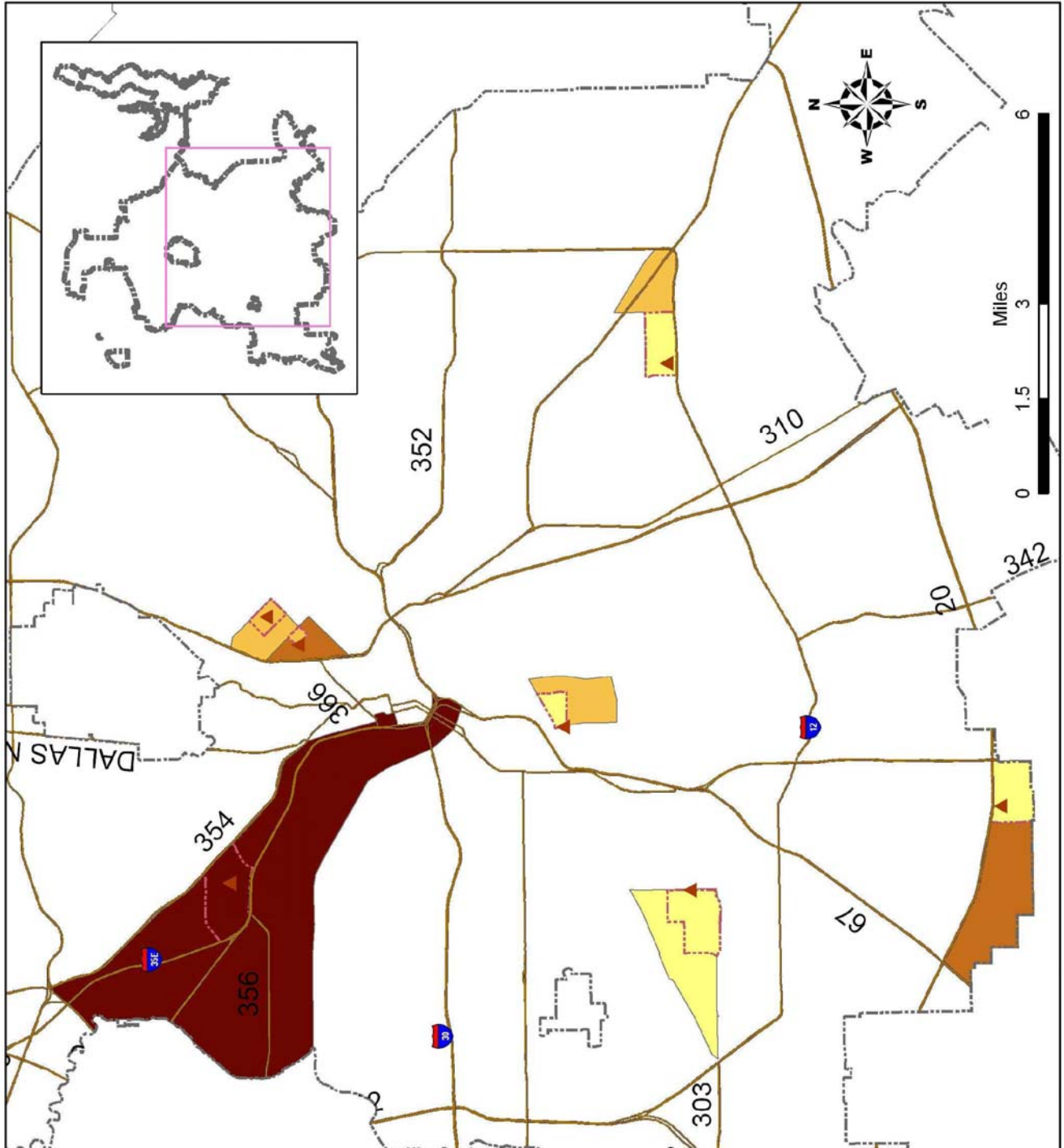
- 0-100
- 101-200
- 201-300
- 301-400

Selected properties

**Note:**

- 1) Projected Coordinate System: NAD83 Texas State Planes, North Central Zone, US Foot
- 2) Data Used from Census 2000
- 3) Crime Rate per 1000 persons

**Created By:**  
 Pragati Srivastava  
 Date: November 28, 2006  
 Source: Analyze Dallas & Dallas Police Dept.





# Dallas Crime Rate Year 2004

**Legend**

- City Boundary
- Highway
- Census Tract

**Total Crime**

- 0-100
- 101-200
- 201-300
- 301-400

**Reporting Area**

- 0-100
- 101-200
- 201-300
- 301-400

**Total Crime**

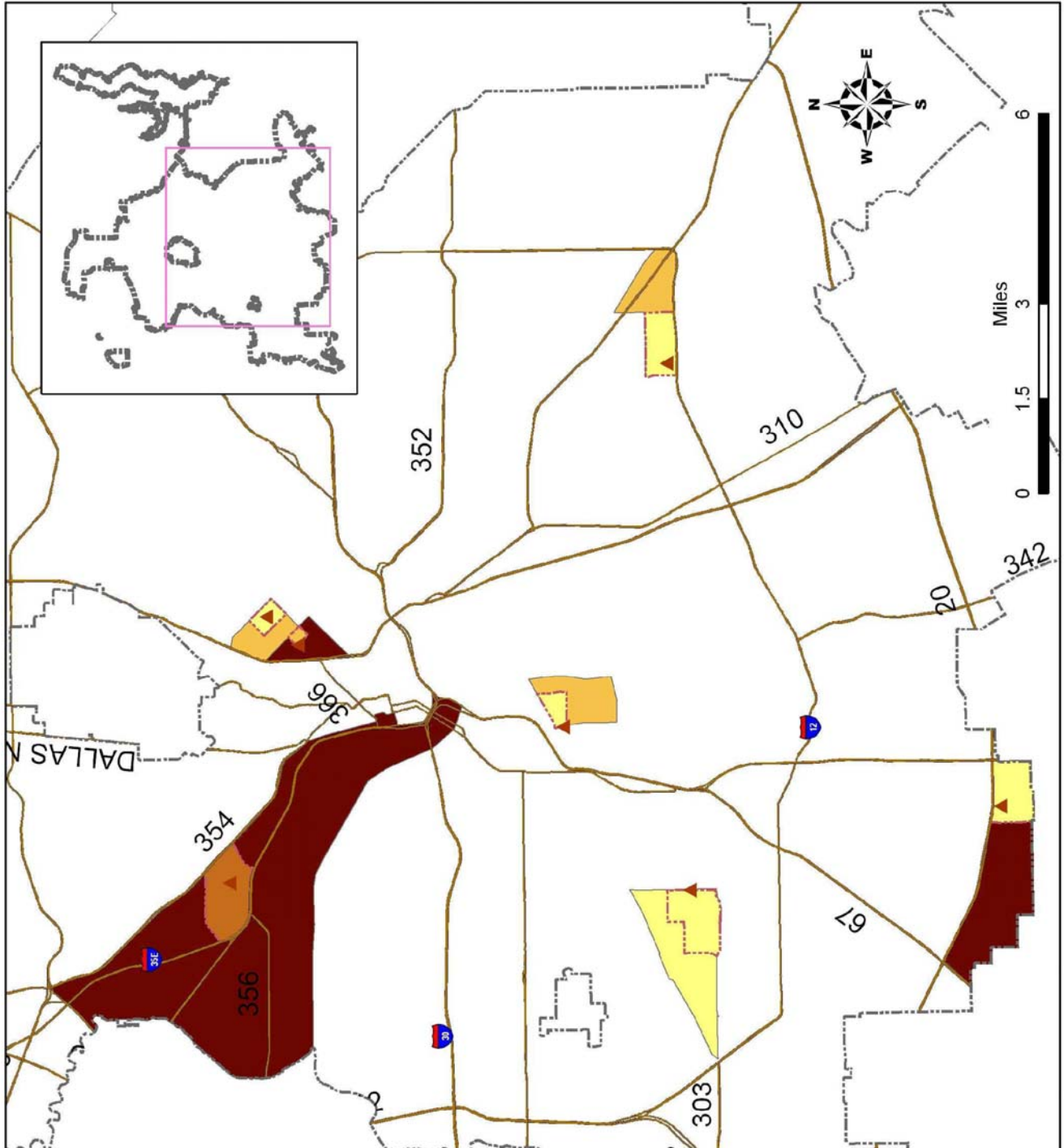
- 0-100
- 101-200
- 201-300
- 301-400

Selected properties

**Note:**

- 1) Projected Coordinate System: NAD83 Texas State Planes, North Central Zone, US Foot
- 2) Data Used from Census 2000
- 3) Crime Rate per 1000 persons

**Created By:**  
 Pragati Srivastava  
 Date: November 28, 2006  
 Source: Analyze Dallas & Dallas Police Dept.



# Dallas Crime Change From 2000 to 2004

**Legend**

- City Boundary
- Highway
- Selected Properties

**Census Tracts**

**Crime Change**

- Decreased
- 50% Increase
- More than 50 % Increase

**Reporting Area**

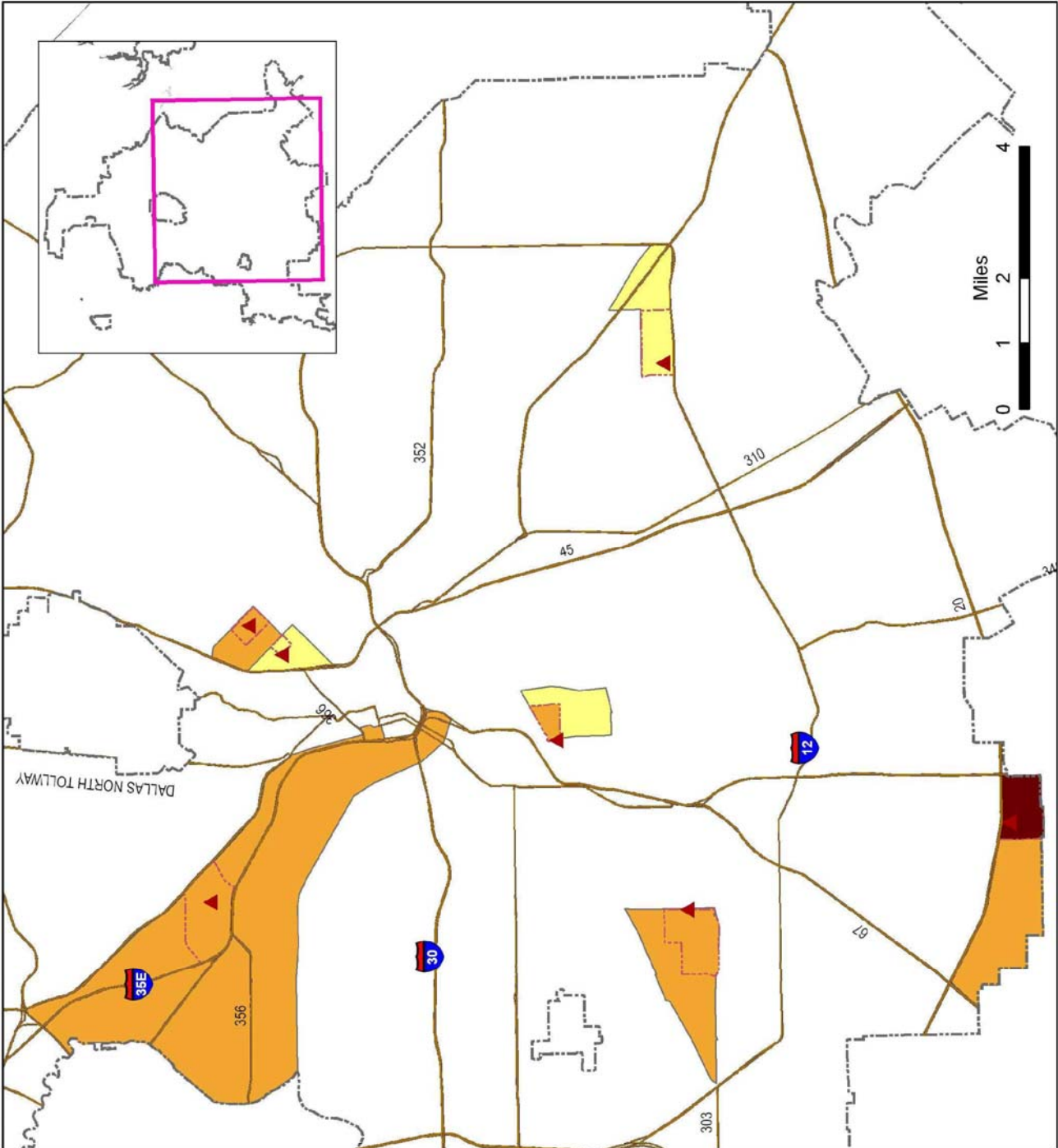
**Crime Change**

- Decreased
- 50% Increase
- More than 50 % Increase

**Note:**

- 1) Projected Coordinate System: NAD83 Texas State Planes, North Central Zone, US Foot
- 2) Crime Rate per 1000 persons
- 3) Data in percentage

**Created By:**  
 Pragati Srivastava  
 Date: November 9, 2006  
 Source: NCTCOG, TDHCA & Analyze Dallas



# Dallas Property Crime Change 2000 to 2004

**Legend**

- City Boundary
- Highway
- Selected Properties

**Census Tracts**


**Property Crime Change**

- Decreased
- 50% Increase
- More than 50% Increase

**Reporting Area**

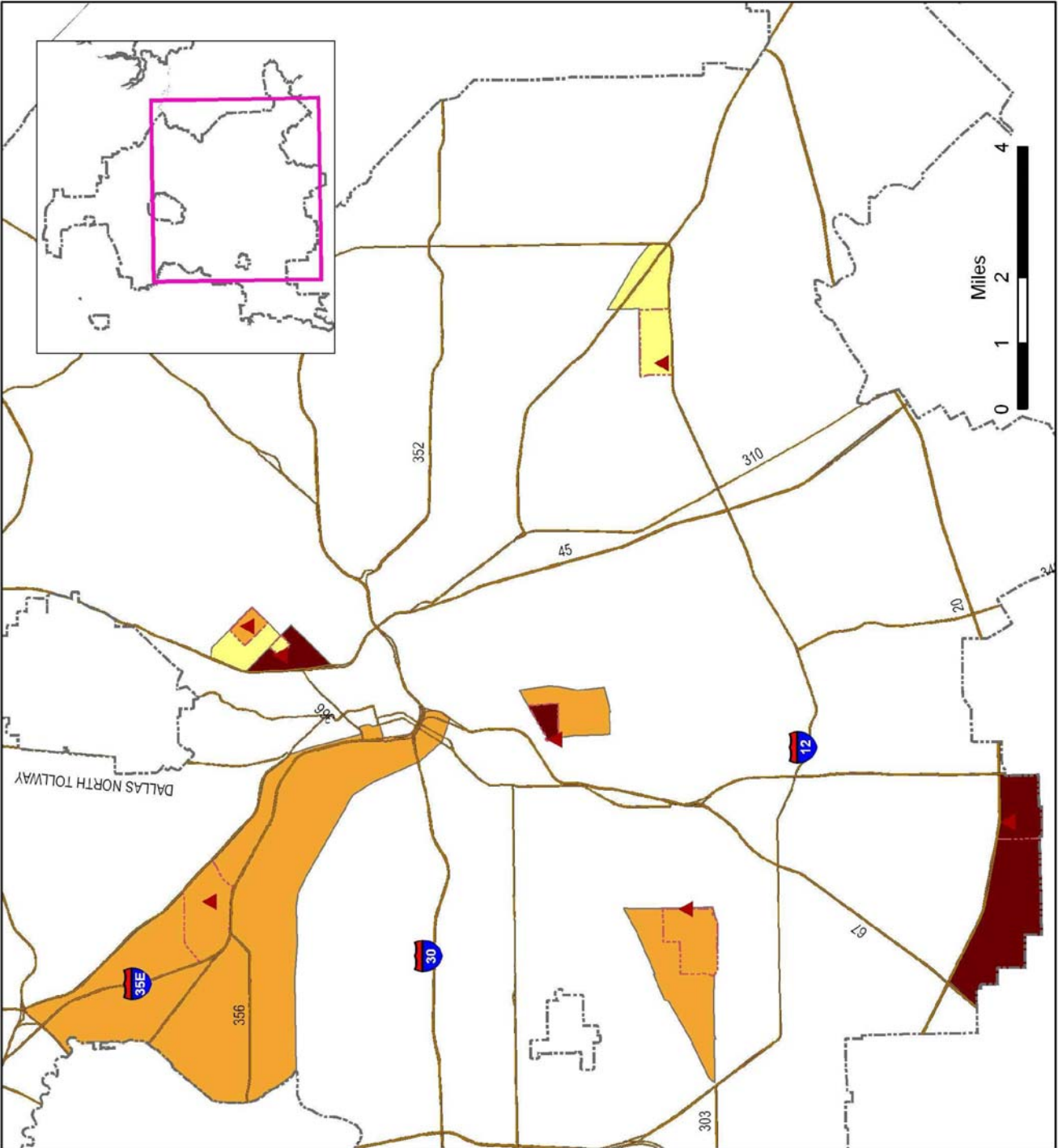
**Property Crime Change**

- Decreased
- 50% Increase
- More than 50% Increase



**Note:**  
 1) Projected Coordinate System: NAD83 Texas State Planes, North Central Zone, US Foot  
 2) Crime Rate per 1000 persons  
 3) Data in percentage

**Created By:**  
 Pragati Srivastava  
 Date: November 9, 2006  
 Source: NCTCOG, TDHCA & Analyze Dallas



## **1. Analysis:**

Studying crime trends of selected neighborhoods has generated some interesting results which are clearly represented by the maps. The comparative analysis of the study areas (census tracts and reporting areas), showed similar socio-demographic and crime trends. The seven study areas primarily have high percentage of minority population, with extremely low median household income. The poverty level of the study area ranged from 0 to 40 percent with low level of education. As mentioned in the beginning, the above statistics are the perfect ingredients for high crime rates. This supported one part of my hypothesis that affordable housing is located in areas that already have a high crime rate.

But my main hypothesis i.e. impact of affordable housing on crime rate produced mixed results. Five out of seven study areas showed similar increase and decrease in crime rates. The crime change for total and property crime rate also was similar for 5 study areas while it was different for two. There wasn't any significant increase in overall crime rates for the study area, the crime did increase but with similar rate as of the census tracts. But property crime rate showed slightly higher increase in rates than 2000. This can be explained by the high property crime rates of the city as a whole.

### **1.1. Caveats:**

Although this study did not find any evidence of affordable housing impact on crime rates, but some other issues that can modify the results were identified. First, this study has used the aggregate figures for property and total crime, which do not show the impact of affordable housing on crime. Most of the studies in this field have conducted buffer analysis, which calculate the number of crimes in each buffer. This allows seeing changes in number of crime as we move away from the affordable housing property. These studies used point location of crime to measure crime impact but due to unavailability of data sets for the current study the above process was not used.

Second, census 2000 population was used to calculate the crime rates for all the years. This might have resulted in some error in the calculation of crime rates, but yearly estimates of population are not available at the census tract levels, resulting in using population 2000 data. Similar methodology was used to calculate crime rates for reporting area. Thus, this study basically provides a snapshot of crime rates for the two geographic levels, but the due to data sets. Due to the above mentioned caveats, the impact if there was any wasn't clearly visible, hence making the study indecisive.

## **2. Conclusion**

Based on above analysis and findings it can be said that the results of this study were inconclusive. The crime rates for the two geographic levels did increase for some areas, while it remained the same or lowered down for others. The two geographies did show similar racial distribution with high concentration of minority population at both levels. The crime rates that increased for some did not show whether the affordable housing residents were victims or perpetrator. Since the affordable housing residents are



moving in to area from other areas, it makes them an easy target for criminals. But to get results for detailed analysis future studies should conduct a buffer analysis for the different crime around crime. Moreover statistical analysis like regression analysis and use of statistical model may also provide a conclusive insight into the factors that greatly affect crime rates in an area. This study can be considered as a preliminary analysis of the issues that in the future can be used to conduct an in depth analysis.

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## 4. Appendix:

### 4.1. Data Resources:

#### 4.1.1. Texas Department of Housing and Community Affairs

- Addresses of all the multifamily properties in Dallas, Texas

#### 4.1.2. US Census Bureau

- Census 2000 SF1, Demographic and Housing data at census tract level for Dallas County, Texas
- Census 1990 SF1, Demographic and Housing data for Dallas City, Texas
- Texas Counties Shape file

#### 4.1.3. Dallas Police Department

- Crime data at Reporting Area level from 2000 to 2004 for City of Dallas
- Reporting Area and Beat Area shape files

#### 4.1.4. Analyze Dallas

- Crime data at Census Tract level from 2000 to 2004 for City of Dallas

#### 4.1.5. The North Central Texas Council of Governments (NCTCOG)

- Dallas City Boundary Shape File
- Dallas County Highway Shape File
- Dallas County Roads Shape File
- Dallas County Parks Shape File
- Dallas County Lakes Shape File
- Dallas County Streams Shape File
- Dallas County Boundary Shape File

### 4.2. Steps in Analysis

#### Dallas, Texas:

- Checked projection system of roads, highway, lakes, rail line city boundary shape files (NAD 1983 State Plane Texas North Central FIPS\_4202 Feet State plane coordinate system)

- Add City Boundary, Parks, Highways, Roads, Lakes and Rail Line shape files.
- Dissolved the Highway shape file with highway number as the dissolve field.
- Changed the layers extent properties to clip to City of Dallas boundary Shape file.
- Labeled the Lakes and the Highway shape files
- Converted the labels to annotation for lakes shape file and manually edited the font sizes.
- Inserted new data frame for index map and added Texas Counties Shape file.
- Selected Dallas County from the Texas counties shape file using county name in the select by attribute tool.
- Exported and saved the selection as Dallas County and added it to the new data frame.
- Drew an extent window around the Dallas County file
- Manually changed the symbology of the entire shape file with blue fill for Lakes and green fill for Parks.
- Map Layout in Color

### **Reporting area Map**

- Obtained reporting area shape file from Dallas Police Department
- Checked projection system of the shape file
- Added city boundary and highway shape file
- Labeled reporting area with reporting area ID and also highway
- Inserted a new data frame, copied reporting area and highway shape file, and added census tract boundary
- Changed the color of census tract to no fill with red outline
- Map layout in color

### **Dallas Hispanic, Black and White Population Percentage:**

- Downloaded SF1 demographics and housing data in Microsoft excel format from US Census Bureau website for Dallas County, 2000.
- Manually cleaned the excel sheet, sorted the table in ascending order (census tract number) and saved the new file in DBF IV (database) format.
- Opened the DBF file of the Dallas County, 2000 census tract shape file and sorted the table in ascending order based on census tract numbers.
- Copied the census tract column from the county database file and pasted it into the census database file.
- Added Census tract, Dallas City, Highway shape file to ArcMAP.
- Joined with the census tract shape file the census database file using tract name as the common attribute.
- Graduated color Symbology used to represent the percentage of Hispanic population to the total population at census tract level (similar methodology for Black and White population maps).
- Manually changed the classification used for the data representation with 7 classes.
- Map Layout in Color

**Police District Map:**

- Added reporting area shape file
- Using dissolved tool, merged all the reporting area based on police district saved the merged file as district shape file
- Labeled the police districts with their name
- Added city boundary, highway and police district shape file
- Map Layout in Color

**TDHCA Multifamily Properties Dallas:**

- Obtained list of TDHCA's properties in Microsoft excel format from the agency via Mr. David Danenfelzer
- Edited the excel sheet and saved it as a database file (DBF IV)
- Created a new address locator using the streets shape file
- Geocoded all the properties and saved it as a new addressed matched shape file
- Added city boundary, highway, properties, census tract boundary and new addressed matched shape file
- Added and joined census 2000 summary file 3 data to census tract shape file with housing characteristics and socio demographic data
- Selected renter occupancy percentage to the total occupied units and displayed the data in percentage
- Manually changed the classification used for the data with 7 classes
- Map Layout in Color

**Selected TDHCA Multifamily Properties Dallas:**

- Added addressed matched, census tract, highway, parks and city boundary shape file
- Using select by attribute tool, selected properties by year equal 2002 from the addressed matched shape file and saved the selected properties as new shape file
- Added the selected addresses shape file and removed addressed matched shape file
- Converted the labels to annotation for selected addresses shape file and manually edited the font size
- Map Layout in Color

**Housing Characteristics (Renter and Owner Occupied Housing units percentage):**

- Added city boundary, census tracts, highway and selected census tract shape file
- Selected renter occupancy to the total occupied units and displayed the data in percentage
- Similar procedure for owner occupied housing units
- Manually changed the classification used for the data with 7 classes
- Map Layout in Color

**Education and Economy maps:**



- Added city boundary, census tracts, highway, selected census tract and selected addresses shape file
- Selected higher education to total educated population and displayed the data in percentage
- Manually changed the classification used for the data with 7 classes
- Similar procedure for poverty level and displayed map in percentage
- For median household income, maps showed in income and natural break classification method used
- Map layout in color

### **Crime maps (total crime rate and property crime rate)**

- Added reporting area, city boundary, census tract and selected properties shape file
- Using select by location tool, selected census tract and reporting that contain selected properties shape file
- Exported and saved selected census tract and reporting area shape file as 7 census tract and 7 reporting area
- Added newly saved 7 census tract 7 reporting area shape file
- Downloaded total crime data and property crime data from Dallas police Department (reporting area) and Analyze Dallas (census tract) from 2000 to 2004
- Created two excel files containing total crime and property crime from 2000 to 2004 one for 7 census tract and one for 7 reporting area
- Also added the total population and ID of census tract and reporting area to the excel file
- Calculated crime rate for five years per 1000 people for total crime and property crime for two geographies
- Also calculated crime change from 2000 to 2004 for both the total crime and property crime rate for the two geographies
- Saved the two excel file as database (DBF IV) file
- Added database file to the layout and joined census tract crime rate database file to census tract shape file census tract ID as common field
- Displayed data on map and manually classified the data into four categories
- For crime change displayed data in percentage, manually changed classification with three 3 classes
- Similar procedure for reporting area crime rates
- Map layout in color