Table of Contents

# Geographic Analysis of Retailer Access

Submitted to:

**USDA/Food and Consumer Services**
**Office of Analysis and Evaluation**
**ATTN: Ken Offerman, Program Analyst**
**3101 Park Center Drive - Room 208**
**Alexandria VA 22302**

**Contract # 53-3198-3-007**

by:

**Macro International Inc.**
**11785 Beltsville Drive**
**Calverton, Maryland 20705**

**September 18, 1995**

# Table of Contents

## Table of Contents (cont'd)

## Table of Contents (cont'd)

# List of Exhibits

# List of Exhibits (cont'd)

# List of Exhibits (cont'd)

## List of Exhibits (cont'd)

Table of Contents

# Executive Summary

# Introduction

The Food Stamp Act of 1977 declared it a policy of Congress "to safeguard the health and well-being of the Nation's population by raising levels of nutrition among low-income households." To alleviate hunger and malnutrition, Congress authorized "a food stamp program . . . which will permit low-income households to obtain a more nutritious diet through normal channels of trade by increasing food purchasing power for all eligible households who apply for participation." [1]

The ability of the Food Stamp Program (FSP) to meet its health and nutrition goals depends upon the nature and characteristics of the "normal channels of trade" actually available to participants. In practice, the Nation's commercial retail food distribution system is the vehicle through which food stamp recipients purchase food with food stamps. Food retailers meeting specified criteria are authorized to accept food stamp coupons or Electronic Benefit Transfer purchases for eligible foods.[2] Overtime, the FSP has authorized over 200,000 stores to accept food stamps. In addition to supermarkets, authorized retailers include large and small groceries, convenience stores, gas/grocery stores, food delivery routes, health food stores, specialty stores (such as meat and fish markets), and a variety of establishments that sell food as a secondary line of business.

The program's strategy of broad authorization is likely to increase access to food stores; however, it does not ensure that retailers are located near food stamp households. Moreover, it does not ensure that FSP households have nearby access to a wide variety of quality foods at reasonable prices. This study focuses on this key dimension of proximity by examining the degree to which authorized stores are proximate to food stamp participants. Critical to this analysis is the proximity of food stamp households to supermarkets or large groceries since these are the store categories most likely to provide a satisfactory variety of quality foods at competitive prices.

# Data and Methods

The sites examined in this study were drawn from the 40 Primary Sampling Units (PSUs) used in a nationally representative study on retailer characteristics. Five of the 40 PSUs were selected to represent a cross section that differs in urbanization, income, and ethnic characteristics.

Each of the PSUs is large in area with a diverse mix of communities. In this report, we divide these communities as follows:

[1] The Food Stamp Act of 1977, Declaration of Policy.

[2] Most foods sold in food stores are eligible. Foods that are not eligible include hot foods prepared for away-from-home consumption. Other items not eligible include: alcoholic beverages, tobacco products, vitamins, paper goods, and household supplies.

- Highly urban—central cities or suburbs with populations in the hundreds of thousands, and no adjoining rural areas

- Smaller SMAs—counties or parts of counties with a city of 50,000-90,000 and surrounding rural areas.

- Sparsely populated areas—counties outside of MSAs with cities of 5,000 to 30,000 and substantial surrounding rural areas.

Applying this scheme to the 5 PSUs yielded 9 study sites:

- Highly urban—Baltimore, Maryland; southeast Los Angeles; and Pasadena, California.

- Smaller MSAs—Charleston, West Virginia and surrounding Kanawha County communities; Las Cruces, New Mexico and surrounding Dona Ana County communities; and Palmdale, California, and surrounding parts of Antelope Valley.

- Sparsely populated areas—Boone County, West Virginia; Dillon and Marion Counties, South Carolina; Otero and Lincoln Counties in New Mexico.

Using Geographic Information Systems (GIS) software, the street addresses of authorized food retailers and FSP participants were located and mapped in each community to derive measures of proximity. Information obtained from site visits and from census demographics was used to describe the communities. In addition, we calculated the inflow of issuances to participants and the outflow of redemptions at stores in each of the ZIP Code areas within these communities. The ratio provides information on whether or not participants were shopping near their residences (but does not address why or why not).

## Findings

The findings indicate that

- In our three central city areas, most households are close to an authorized retailer. In Baltimore, almost 100 percent of participant households were within one quarter mile of a retailer, and 96 percent were within one half-mile of a large retailer. Eighty-nine percent were within one half-mile of a supermarket. In Pasadena, 80 percent of the participant households were within one quarter-mile of a retailer and 93 percent were within one half-mile of a larger retailer. More than half of the recipient households were within one half-mile of a supermarket. In Southeast Los Angeles, 96 percent of the households were within one quarter-

mile of a retailer, and 90 percent were within one half-mile of a larger retailer. Fifty-five percent of the households in this area were within one half-mile of a supermarket.

- In MSAs containing large rural areas, most households were close to retailers in the urbanized areas, but distances to larger retailers increased in the more rural areas. In two of the areas, Kanawha and Palmdale, over two-thirds of the households lived within one mile of an authorized supermarket or large grocery. In the other area, Dona Ana, almost half of the food stamp household members lived within one mile of an authorized large retailer. There was strong evidence that households in many rural parts of these areas traveled into the more urbanized areas to shop. In all three areas, a major issue was transportation for those individuals living outside of the urbanized areas. Motor vehicles were a necessity in the outlying areas. Another issue for these areas relates to population growth and its affect on proximity. In some areas, rapid growth seemed to pose problems for food stamp participants in terms of locating stores with sanitary conditions. This is a problem in Dona Ana County, where 22 percent of the population live in colonias, which lack the necessary water, waste, road, and drainage infrastructure to maintain supermarkets.

- In sparsely populated rural areas that may center in one or several small towns, again, participant households have mixed access to retailers. Most of the food stamp households in these areas live in the populated centers, which contain the majority of retailers. Outside of these areas, smaller stores "fill-in." In the more geographically remote areas, conditions of the roads and long distances to retailers are a factor.

- The study also indicates that even when food stores are present, they tend not to be utilized to the extent expected. We found that food stamp recipients tended to use their benefits in areas other than those in which they lived. This was particularly true for rural areas, where food stamps were redeemed in the higher-population centers where the larger retailers were located. However, this pattern was exhibited in the central city areas. Although evidence suggests that central city residents traveled to more affluent areas to shop, it indicates that many households seemed to travel to "market areas" within the city. This latter pattern was particularly evident in Baltimore, where a system of large indoor fresh food markets thrive.

These analyses indicate that a large majority of low-income households are in close proximity to a full-line grocery store or supermarket. There is evidence, as expected, that some households in rural areas are relatively far from larger food retailers. Even in these areas, however, most of the food stamp participant households live in small and larger cities that have larger retailers.

Table of Contents

# Section I

# Introduction

## Section I. Introduction

The Food Stamp Act of 1977 declared it a policy of Congress "to safeguard the health and well-being of the Nation's population by raising levels of nutrition among low-income households." To alleviate hunger and malnutrition, Congress authorized "a food stamp program . . . which will permit low-income households to obtain a more nutritious diet through normal channels of trade by increasing food purchasing power for all eligible households who apply for participation." [1]

The ability of the Food Stamp Program (FSP) to meet its health and nutrition goals depends upon the nature and characteristics of the "normal channels of trade" actually available to participants. In practice, the Nation's commercial retail food distribution system is the vehicle through which food stamp recipients purchase food with food stamps. Food retailers meeting specified criteria are authorized to accept food stamp coupons or Electronic Benefit Transfer purchases for eligible foods.[2] Overtime, the FSP has authorized a broad base of store to accept food stamps: over 200,000. In addition to supermarkets, authorized retailers include large and small groceries, convenience stores, gas/grocery stores, food delivery routes, health food stores, specialty stores (such as meat and fish markets), and a variety of establishments that sell food as a secondary line of business.

The program's strategy of broad authorization is likely to increase access to food stores; however, it does not ensure that retailers are located near food stamp households. Moreover, it does not ensure that FSP households have nearby access to a wide variety of quality foods at reasonable prices. This study focuses on this key dimension by examining the degree to which authorized stores are proximate to food stamp participants. Critical to this analysis is the proximity of food stamp households to supermarkets or large groceries since these stores are the most likely store categories to provide a satisfactory variety of quality foods at competitive prices.

The geographic proximity of food stores to low-income populations (the primary beneficiaries of the Food Stamp Program) is a key dimension of program success. Proximity to stores that can provide a full range of foods at acceptable prices expands shoppers' range of options. Consumers lacking transportation and without access to nearby larger stores may have to pay more for their food and get less value for their money.

Retail food establishments are commonly divided into two categories: *grocery stores* and *specialty food stores*. The principal distinguishing characteristic is that grocery stores sell a wide variety of foods while specialty food stores, as the name implies, specialize in selling a single food category such as dairy products or seafood. Types of grocery stores are further subdivided, generally by dollar sales

Supermarkets are clearly the dominant player in the food retailing market. In 1992, supermarkets accounted for 71 percent of total food store sales.[3] However, other types of food stores play a significant role in supplying food. Smaller stores, whether they are full-line grocery, convenience, or specialty stores, tend to fill in the gaps in areas that are more distant from supermarkets. In addition, smaller stores can provide services and product lines (e.g. ethnic foods) that are generally not available at larger stores. Part of the rationale for involving a wide range of retailers in the FSP is that it provides food stamp participants with more options, which increases customer access. On the other hand, this strategy places a burden on the FSP to ensure that retailers meet program requirements.

In recent years, several studies have addressed the adequacy and accessibility of food retailers in low-income neighborhoods. These studies have focused on supermarket or chain store density in different areas, on price differences, and on the condition of the stores. The emphasis of these studies on chain stores or supermarkets assumed that other types of stores in an area could not meet basic food shopping needs.

The concept of access depends on the criteria used to determine the level of service that meets shoppers' needs. In an ancillary study using a representative sample of over 2,500 retailers nationwide, supermarkets were shown to provide a higher level of service than other types of food stores.[4] The study also indicated that full-range grocery stores with gross sales of between $500,000 and $2,000,000 were differentiated from smaller grocery stores, and from convenience and specialty stores in their prices and in the variety of foods offered. One significant finding was that supermarkets and grocery stores in rural areas were very similar in their level of services. Given this evidence, the focus in some studies on access to supermarkets as opposed to other types of food stores seems too restrictive. Building on this evidence, we explored whether these supermarkets and large grocery stores are available to food stamp participants in the five geographically limited study areas, and, if they were not, the extent to which other stores were available to program participants.

With each study area, we addressed the following questions:

- Where are Food Stamp Program (FSP) participant households located?
- Where are FSP authorized retailers located?
- Are FSP households located near authorized retailers?
- What are the geographic or social factors that facilitate or inhibit access to food stores?

[3] The Economic Research Service (ERS) classifies supermarkets on the basis of gross sales, adjusting the sales level each year on the basis of a price index of the prices of all products sold in grocery stores. In 1990, grocery stores with sales of $3.307 million or above were classified as supermarkets using this criterion. This classification is different than that used by the industry and by FCS, which identifies supermarkets as having sales of $2 million or more.

[4] Authorized Retailers' Characteristics and Access Study. Macro International, Food and Consumer Service/USDA. Washington, DC. Forthcoming.

Selection of the five study areas was determined in two phases. First, as part of a larger national survey, 40 PSUs were selected to provide a range of urbanization and geographic representation. Areas were defined by travel limitations as well as by the number of local authorized retailers. In the second phase, five of the 40 PSUs in the larger survey were selected, based on

- Urbanization—Study areas were selected to represent a range of areas from urban to rural. Major urbanization in categories ranged from sparsely populated areas to highly urbanized central city areas as well as their suburbs.

- Poverty Status—The areas selected had poverty rates ranging from approximately 10 percent to more than 50 percent.

- Low Income/Urban Areas—Urban areas identified as having a high level of poverty were included among the intensive sites.

- Transportation and Geographic Barriers—Within the areas, a range of transportation resources were available that would facilitate access, as well as a range of geographic barriers that might hinder access.

- Demographic and Socioeconomic Profiles—Areas were selected to represent variations in cultural context as indicated by socioeconomic differences.

The areas selected include: (1) the central city area of Baltimore, Maryland, (2) two counties in West Virginia, (3) two counties in northern South Carolina, (4) an area in South Central New Mexico, and (5), three areas in Los Angeles County, California. This analysis provides a detailed examination of the geographic relationship between retailers and FSP participant households. It also provides a context for examining access and geographic or sociological barriers in each of the representative communities. The next section discusses the approach used in the analysis. Findings for each of the five areas are presented in subsequent sections.

# Approach

## *Data Sources*

Data sources for this analysis include the Store Tracking and Redemption Subsystem (STARS) database, the 1990 Census, food stamp participant files provided by the States or local social service departments, and information collected in a series of site visits.

- STARS—Data on authorized retailers were provided by the Food and Consumer Service (FCS) for 1988 through 1993. These data reflect information provided by the retailers during FSP authorization or reauthorization, and include details on the type of store

operated, the store's location, and gross annual sales. In addition, information was supplied on the monthly food stamp redemptions of all authorized stores during the period.

- 1990 Census—Demographic information was extracted from a file provided by CACI.[5] These data provided a variety of population-based estimates for describing specific locations (as defined by ZIP Code area) within each site.

- Participant Files—State and local agencies administering the Food Stamp Program provided information on all households that received benefits in February 1994 and that resided in the study area. Information included the location of the participant household, benefits and issuances received, and characteristics of the household members.

- Intensive Site Visits—Each site was visited to obtain an understanding of food access problems in the area. At each site, information was collected in interviews with persons involved in food access issues and from documents, reports, newspapers, and other sources.

## *Analytic Approach*

Analysis of retailer access in the five intensive areas involved two distinct methods. First, addresses provided by STARS and participant files were used to map retailers and participant households using Geographic Information System (GIS) technology. Although most participants and retailers were mapped in all five areas, locating some participants was problematic (e.g., when the only address was a rural delivery route). Mapping problems were handled in a variety of ways, as detailed in Appendix A. The geocoding resulted in a set of maps that displayed the locations of retailers and recipients within each of the areas. The geocoded data set was also used to calculate distances between FSP recipient households and retailers in the area. The calculations and maps in some cases represent samples of all households that could be geocoded. Sampling was used because of resource and time constraints.

The second method, which complemented the geocoding, provided a statistical view of each of the sites. By combining the retailer database with Census demographics, ZIP Code areas within each site could be compared with respect to retailer density, redemptions, and issuances. Comparing redemptions and issuances within an area produces a rough measure of redemption flows. In other words, under the assumption that shoppers will purchase food from a local retailer—provided its foods are attractively priced, are of a certain standard of quality, and offer the variety needed for a nutritious diet—redemptions in an area will be roughly comparable to issuances. The need to travel outside one's community to shop is likely to reflect

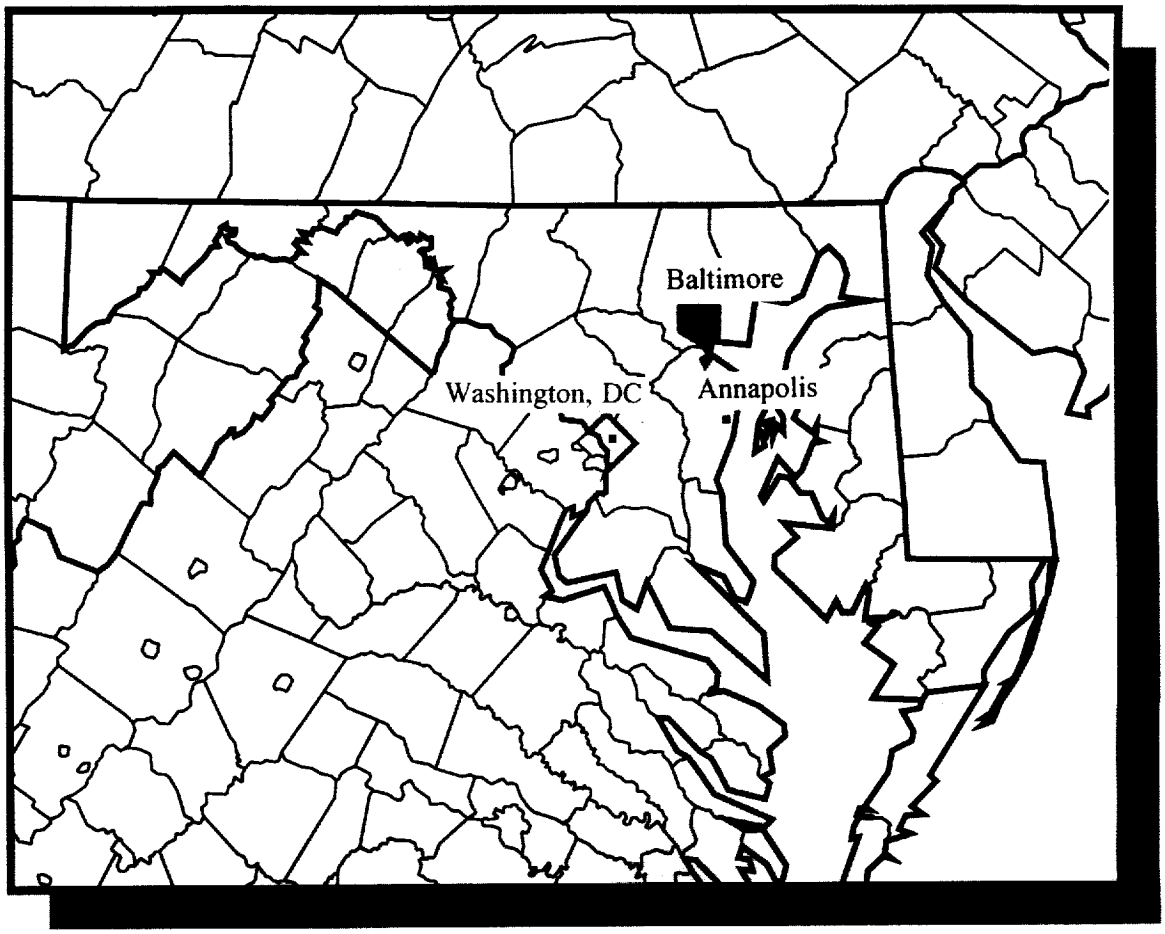
[5] CACI. *The Sourcebook of ZIP Code Demographics: Census Edition.* 1992. Arlington, VA.

shoppers' inability to satisfy their food shopping needs locally and thus leads to a lower redemption-to-issuances ratio.

Table of Contents

# Section II

## Baltimore, Maryland Study Area



# Section II. Baltimore, Maryland Study Area

With a population of approximately 750,000, Baltimore City is the 12th largest city in the United States and is the central city for the Baltimore Metropolitan Statistical Area (MSA).[1] The city contains a variety of neighborhoods ranging from low-income (The Johns Hopkins Hospital area) to affluent (Guilford). The focus of our study in Baltimore is an area near the center of the city. An orientation map (Exhibit II-1) shows the position of the study area within the city and its primary communities. These communities form six separate study components: Union Square, Harlem Park/Bolton Hill, Lexington Market, Downtown/Greenmount, Hopkins Hospital, and Clifton Park.[2] An important consideration in selecting this study area was its ability to provide information on retailer access in an inner-city environment. In recent years, substantial attention has been paid to the relative lack of access inner-city residents have to supermarkets and other large stores.

Overall, approximately 74,000 households and 207,000 individuals live within this study area.[3] Housing in the area ranges from high-rise public housing projects to privately-owned row houses. Detached housing is rare in this central city area. African-Americans constitute approximately two-thirds of the population, ranging from 64 percent in the Union Square area to 93 percent in the Harlem Park area (Exhibit II-2). Hispanics constitute less than 1 percent of the population. The 1990 census indicated that, on measures of economic wellbeing, such as unemployment and poverty rate, the central city ranks far below other parts of the city. Unemployment in 1990 ranged from 11 to 16 percent in the various sub-areas under study; about one-fifth to one-half of the households were under the poverty line; and from one-half to two-thirds of the households did not have access to an automobile.

Exhibit II-3 provides a geographic view of poverty within the core area. Using the proportion of individuals at or below 125 percent of the poverty line, two distinct areas of poverty are defined to the east and the west sides of the downtown area that follows a retail/residential corridor. In a large proportion of the study area, more than 40 percent of the population is poor or "near poor."

---

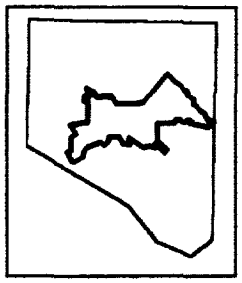
[1] Metropolitan Statistical Areas (MSAs) are defined by the Office of Management and Budget as consisting of counties with a central city of 50,000 or more and surrounding counties that are socially and economically integrated with the central city.

[2] The analysis focuses on areas corresponding to the following ZIP Code areas: 21223 (Union Square), 21201 (Lexington Market), 21202 (Downtown/Greenmount), 21217 (Harlem Park/Bolton Hill), 21205 (Hopkins Hospital), and 21213 (Clifton Park).

[3] These numbers are based on ZIP Code statistics supplied by CACI.

# General Orientation Map

## Baltimore Study Area



*The location of the Baltimore Study Area within the City is shown in the map on the left.*

Streets
City Limits
Railroads
Shoreline
Study Area

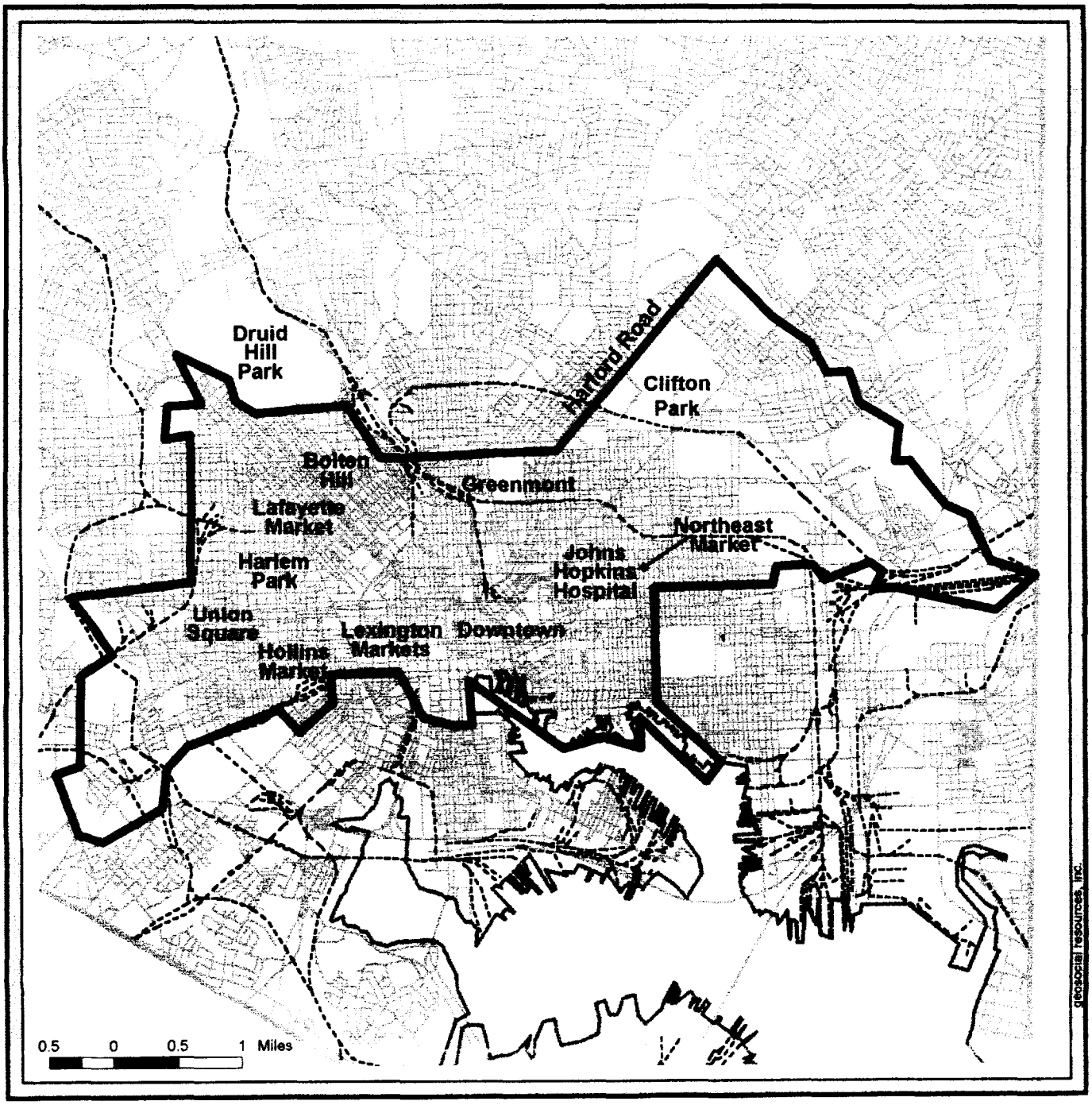


**Exhibit II-2**

**Comparative Demographics for the Baltimore Study Area**

| Geographic Component | Population | Minority Representation | Unemployment Rate | Poverty Rate | Percentage of Households Without Access to an Automobile |
|---|---|---|---|---|---|
| Union Square | 39,170 | 64.0% | 14.5% | 37.0% | 55.9% |
| Lexington Market | 16,255 | 71.9% | 11.0% | 48.3% | 66.1% |
| Downtown/Greenmount | 28,655 | 79.7% | 15.7% | 40.6% | 65.2% |
| Harlem Park/Bolton Hill | 52,500 | 93.2% | 13.7% | 35.8% | 63.1% |
| Clifton Park | 47,170 | 76.2% | 11.6% | 23.4% | 45.5% |
| Hopkins Hospital | 23,762 | 70.3% | 12.7% | 30.8% | 52.3% |
| Study Area | 207,512 | 77.6% | 13.2% | 34.4% | 57.4% |
| Baltimore City* | 773,331 | 56.0% | 8.8% | 19.7% | 35.9% |

Source: CACI Sourcebook.
*Includes ZIP Code areas defined by city limits.

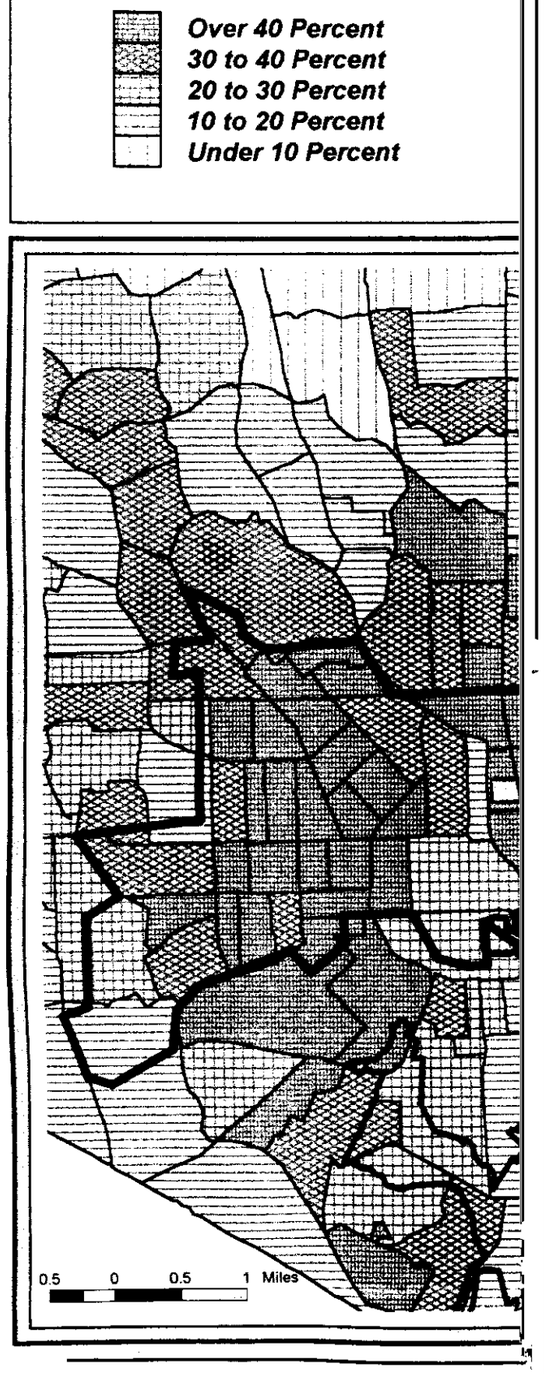
## Geographic Barriers and Transportation

The area under study is built up, with no natural barriers that might impede travel. The street system, as in most urban areas, allows easy access to all parts of the area. However, it should be noted that the distance from the extremes of the study area to the area that contains Lexington Market is 2 miles or more for many residents living in the area.

Transportation options available for shoppers in the area include subway, bus, and taxi. The subway stops at several locations within the study area and provides access to the downtown area and the northwest portion of the study area. The most significant stop is Lexington Market, which has a concentration of food retailers both inside and around the market. The northeast extension line provides subway service to The Johns Hopkins Hospital and has increased access for those living in the eastern part of the study area to the Downtown and Lexington Market areas. The extensive public bus and light rail systems tie together the study area and link it to other parts of the city. There are also several radio-dispatched taxi services operating within the area.

Table of Contents

**Percentage Below 125% of Pove**
**(FSP Recipients and Non-Recipi**



## Food Stamp Participants

In total, 35,751 households received food stamps in February of 1994 in the Baltimore City ZIP Code areas under study. This number represents less than 50 percent of the households in the study area. These households redeemed about $6.2 million in that month, which translates to $74 million yearly.[4] Exhibit II-4 shows the distribution of participant households across the study area (as well as in adjoining portions of the city). As indicated, food stamp participants are spread in two clusters to the east and west of the central downtown corridor. Participant households are also spread around the periphery of the study area. Exhibit II-3 indicates that these areas lack the high-poverty or near-poverty rate observed in the study area.

## Retailers

Overall, 585 stores are located in the study area, redeeming about $70 million in food stamps annually. As can be seen in Exhibit II-5, the number of stores varies considerably by area, with Union Square and Harlem Park/Bolton Hill accounting for just over two-fifths of the stores and of the redemptions in this study area. The densest concentrations of retailers are found in the Union Square and Lexington Market areas (i.e., 22 and 28 retailers, respectively, per 1,000 FSP household). This high density of retailers can probably be attributed to the presence of Lexington Market and Hollins Market.[5]

Supermarkets and large grocery stores account for a surprisingly low proportion of the stores and redemptions in the ZIP Code areas. They generally make up less than 4 percent of the authorized retailers and less than half of the redemptions. In one area (Downtown/Greenmount), these stores account for only 9 percent of the redemptions.

Exhibit II-6 provides the geographic distribution of food stamp redemptions by all authorized retailers in the study area. Redemptions tend to cluster in two large areas corresponding to the high-poverty areas of the study site.

---

[4] This estimate is the amount reported in February 1994 multiplied by 12. Data supplied by the Maryland Department of Human Services indicate that this may be an overestimate of issuances over the previous 12 months. Income Maintenance Administration Statistical Report: February 1994. Department of Human Resources. Baltimore, Maryland.

[5] Lexington Market is a large enclosed mall with many small retailers who specialize in a few items. It contains numerous fruit and vegetable stalls; bakery, dairy, and meat counters; and other assorted retailers. With some exceptions, canned or packaged goods are not sold. The retailers operate year round in an assigned location. Other smaller markets are located in other areas of the city. Hollins Market is in the southwest, Lafayette Market is in the northwest, and Northeast Market is near Hopkins Hospital.

**Exhibit II-5**
**Authorized Retailer Presence in the Baltimore Study Area**

| Geographic Component | Supermarkets and Large Groceries | | All Stores | | |
|---|---|---|---|---|---|
| | Percentage of All Stores in Geographic Component | Percentage of All Redemptions in Geographic Component | Number of Stores | Total Redemptions ($) | Stores per 1,000 FSP Households |
| Union Square | 3.3% | 52.6% | 152 | 16,446,174 | 22.27 |
| Lexington Market | 2.3% | 41.3% | 87 | 7,431,937 | 27.59 |
| Downtown/ Greenmount | 3.0% | 9.0% | 66 | 4,754,185 | 13.85 |
| Harlem Park/Bolton Hill | 4.0% | 45.0% | 124 | 16,775,875 | 12.23 |
| Hopkins Hospital | 3.0% | 46.7% | 66 | 8,593,202 | 17.00 |
| Clifton Park | 7.7% | 92.4% | 90 | 16,376,968 | 12.90 |
| Total Study Area | 3.9% | 55.2% | 585 | 70,378,341 | 16.36 |
| Baltimore City | 6.2% | 57.1% | 1,217 | 140,950,075 | 15.77 |

Source: Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/ Food and Consumer Service, Office of Analysis and Evaluation, 1994.

Exhibit II-7 provides a perspective on redemptions occurring at supermarkets and larger groceries. Redemptions at these stores are scattered uniformly throughout the area. When Exhibit II-6 and Exhibit II-7 are compared, the number of stores with gross sales of less than $500,000 annually show substantial levels of redemptions. This pattern reflects, to a large extent, the role of the four markets in providing services to food stamp participants. There are a cluster of redemption sites within the Lexington Market area, seen near the south central part of the study area. Another cluster falls in and near Lafayette Market, which, in Exhibit II-6, appears as a group of large symbols toward the northwestern corner of the study area. Other sets of redemptions fall in the far southwest corner and the eastern border of the study area (in proximity to Northeast Market). The evidence suggests that smaller stores are used more than larger stores.

## Proximity of FSP Participants to Retailers

Exhibit II-8 summarizes the proximity of FSP participants to authorized retailers in the Baltimore study area. Almost all recipient households in the study area (98.9 percent) are within one

## Monthly FS Redemptions: All Participating Outlets

***Exhibit II-6***
***Baltimore Study Area***

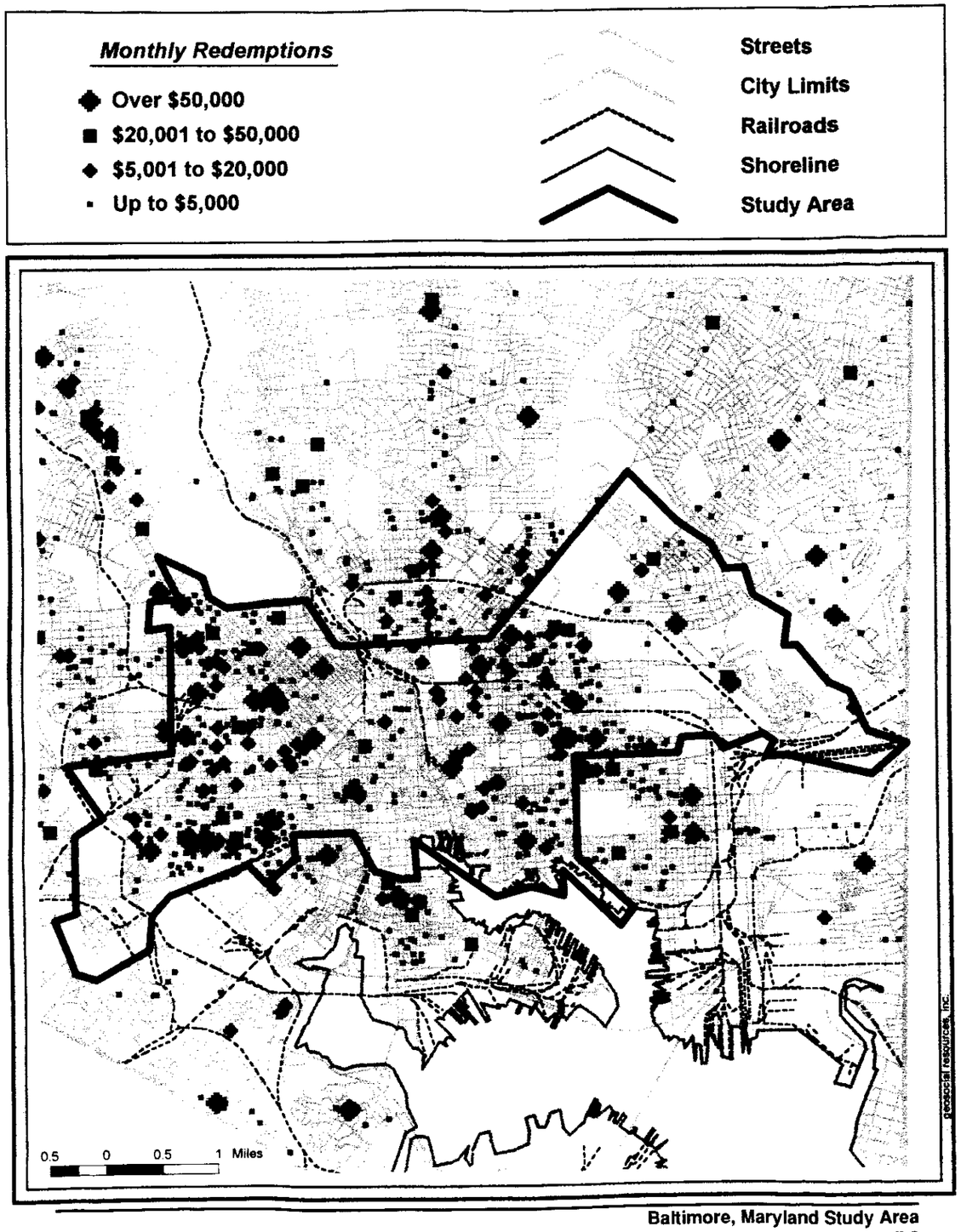
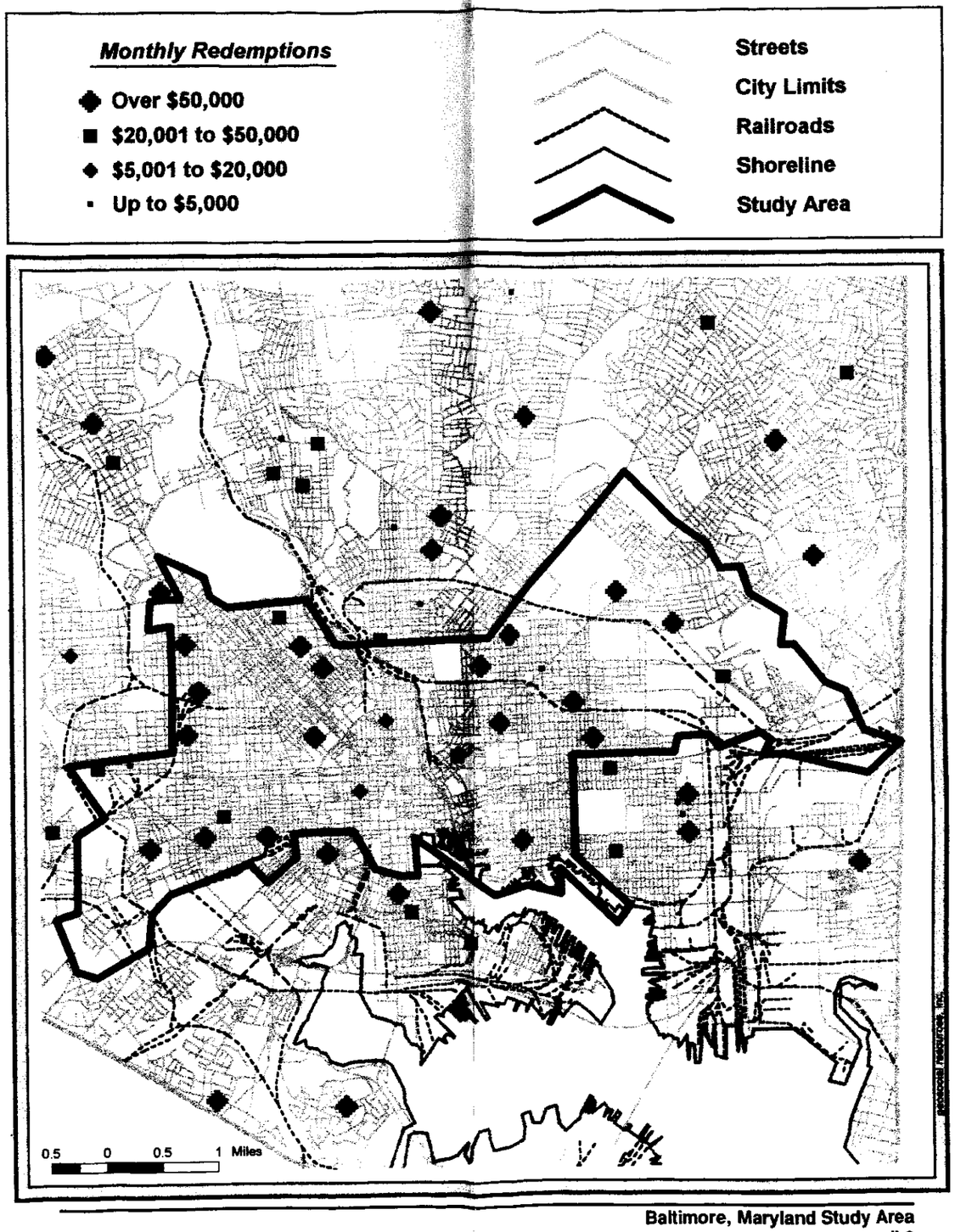





Table of Contents

## Monthly FS Redemptions: SM/GS With Annual Sales Over $500,000

***Exhibit II-7***
***Baltimore Study Area***



**Exhbit II-8**

**Proximity of Food Stamp Participating Retailers to Recipients**

**Baltimore Study Area[1]**

| FSP Retailer Type: | Total Recipients* | Under .25 mile | Under .5 mile | Under 1 mile | Under 2 miles | Under 5 miles | Median Distance | Mean Distance |
|---|---|---|---|---|---|---|---|---|
| Supermarket | [13393] | 5054 | 11900 | 13393 | 13393 | 13393 | | |
| | *% of total* | *37.74* | 88.85 | *100.0* | *100.0* | *100.0* | 0.30 | 0.31 |
| Large Grocery | [13393] | 1357 | 5040 | 12604 | 13393 | 13393 | | |
| | *% of total* | *10.13* | 37.63 | *94.11* | *100.0* | *100.0* | 0.60 | 0.60 |
| Small Grocery | [13393] | 12945 | 13228 | 13303 | 13393 | 13393 | | |
| | *% of total* | *96.65* | 98.77 | *99.33* | *100.0* | *100.0* | 0.07 | 0.10 |
| Convenience Store | [13393] | 7383 | 12494 | 13393 | 13393 | 13393 | | |
| | *% of total* | *55.13* | 93.29 | *100.0* | *100.0* | *100.0* | 0.23 | 0.25 |
| Specialty Food Store | [13393] | 5022 | 11176 | 13391 | 13393 | 13393 | | |
| | *% of total* | *37.50* | *83.45* | *99.99* | *100.0* | *100.0* | 0.32 | 0.33 |
| Gas/Grocery Combination | [13393] | 802 | 2917 | 9773 | 13228 | 13393 | | |
| | *% of total* | *5.99* | *21.78* | *72.97* | *98.77* | *100.0* | 0.78 | 0.79 |
| All Others | [13393] | 11828 | 13266 | 13393 | 13393 | 13393 | | |
| | *% of total* | *88.31* | *99.05* | *100.0* | *100.0* | *100.0* | 0.12 | 0.14 |
| **Supermarket or Large Grocery** | **[13393]** | **5963** | **12812** | **13393** | **13393** | **13393** | | |
| | ***% of total*** | ***44.52*** | ***95.66*** | ***100.0*** | ***100.0*** | ***100.0*** | ***0.27*** | ***0.28*** |
| All Retailers | **[13393]** | 13248 | 13393 | 13393 | 13393 | 13393 | | |
| | *% of total* | *98.92* | *100.0* | *100.0* | *100.0* | *100.0* | *0.06* | *0.07* |

Source: Geo Social Resources Inc. and Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

[1] A 50% sample of geocoded recipients was used in the Baltimore study area.

quarter-mile of an authorized retailer, with the median distance to an authorized retailer about .06 mile. This level of close proximity arises primarily from the presence of smaller groceries (defined as annual sales under $500,000). Almost 90 percent of the recipients were within one quarter-mile of these types of stores. In contrast, over half of the recipient households were within one quarter-mile of an authorized convenience store in the study area. It should also be noted that almost 90 percent of the FSP population was within one quarter-mile of "other store" types, a category that includes produce stands and combination stores. Some of these stores are in or near Lexington Market and other markets throughout the city.

Although the vast majority of participant households in the study area live in close proximity to an authorized retailer, access specifically to supermarkets and large groceries is somewhat more limited. First, Exhibit II-8 shows that about half of the FSP households are more than one quarter-mile from such a retailer. Exhibit II-9 shows that these households are distributed across most of the study area with two to three recognizable clusters. Most notable is the cluster encompassing the Harlem Park/Bolton Hill area. Most of these households, however, are within one half-mile of a large retailer (Exhibit II-10).

Recipient households in the study area were somewhat closer to authorized supermarkets and large groceries than were households in other parts of Baltimore. For instance, 96 per-cent of the households in the study area were within one half-mile of a large retailer, compared with only 73 percent elsewhere in Baltimore City.

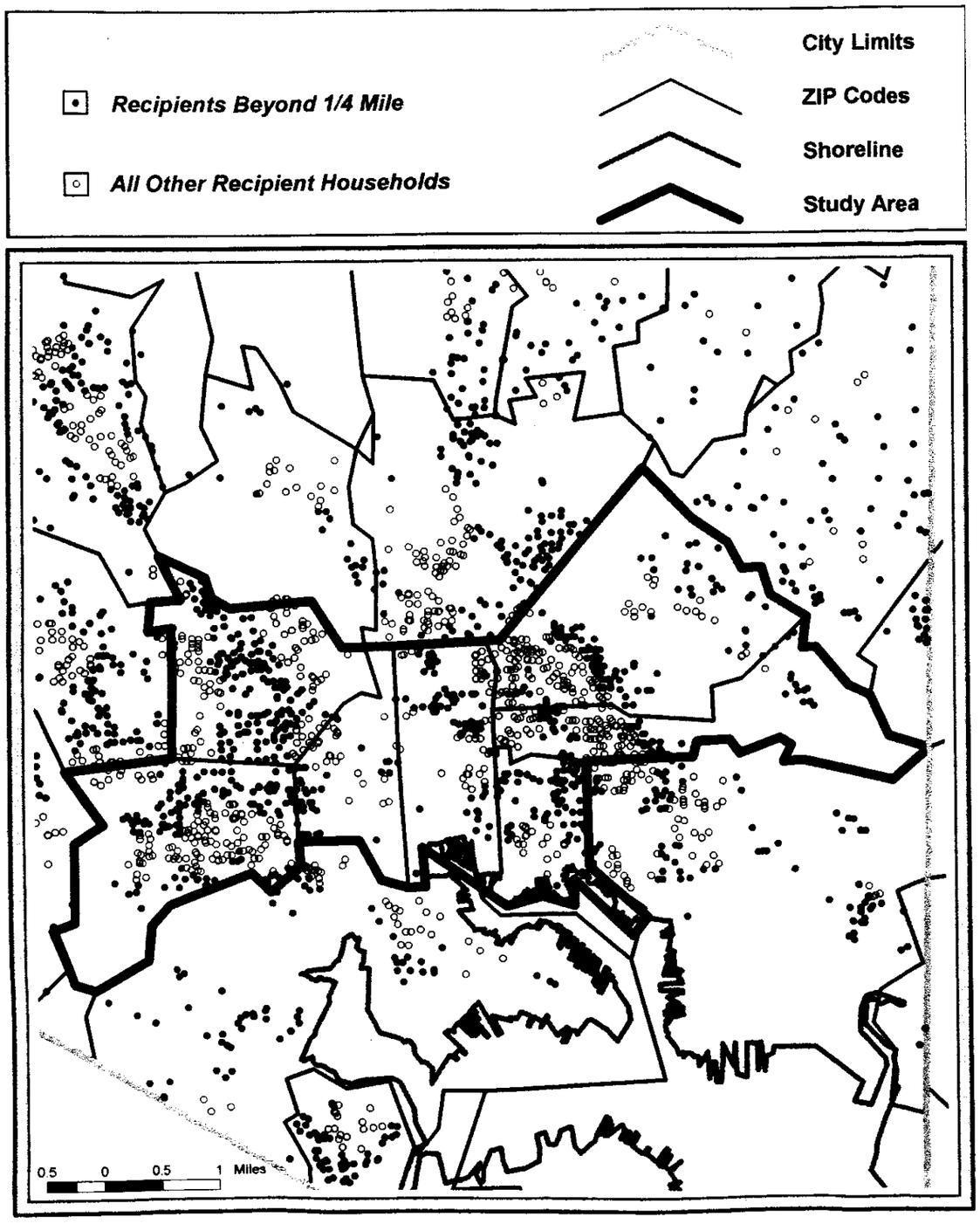
## Redemption Flows

A ratio of redemptions to issuances greater than 1.0 indicates an "inflow" of food stamps into the area. By drawing food stamps from other areas, the inflow indicates greater capacity than is needed to serve local residents. An "outflow" (i.e., food stamps redeemed outside of the area, or a redemptions-to-issuances ratio of less than 1.0) indicates a lack of capacity. It should be noted that this measure reflects the areas where food stamp participants choose to do business.

There are two study areas in which redemptions exceed issuances and three areas in which issuances exceed redemptions (Exhibit II-11). The Lexington Market and Union Square areas experienced an inflow of food stamps, probably reflecting the importance of Lexington and Hollins Markets in providing access. The ratios for the Hopkins Hospital and Clifton Park areas shows that redemptions in the area are occurring in proportion to issuances, indicating that shopping opportunities in this area, which is relatively distant from the Lexington Market area, seem to serve FSP recipients. The other two areas, Downtown/Greenmount and Harlem Park/Bolton Hill experience an outflow of issuances.

## Exhibit II-9
## Baltimore Study Area

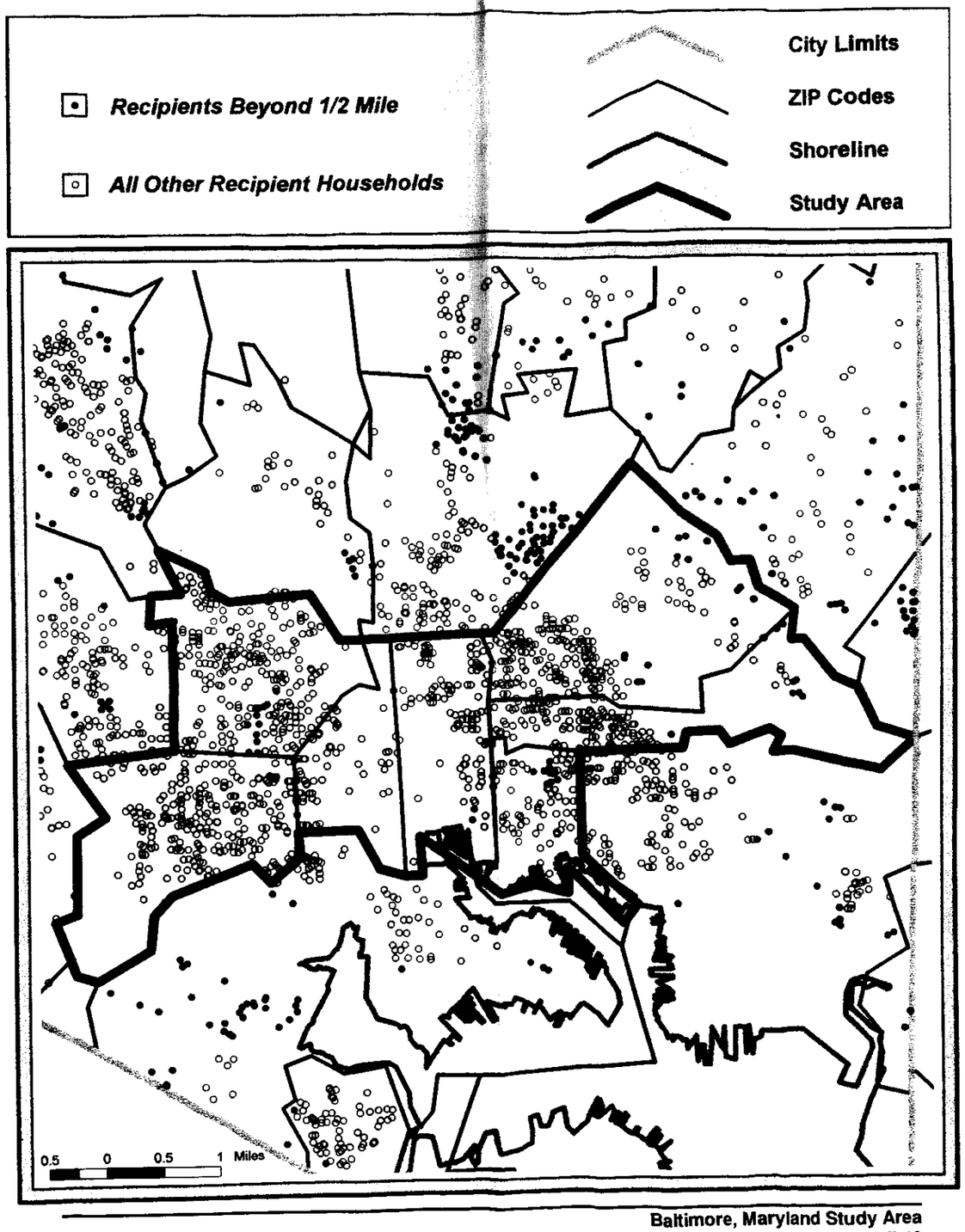
### Quarter-Mile Access to FSP SM/GS With Annual Sales Over $500,000




Baltimore, Maryland Study Area
II-12

## Exhibit II-10
## Baltimore Study Area

### Half-Mile Access to FSP SM/GS With Annual Sales Over $500,000




Baltimore, Maryland Study Area
II-13

**Exhibit II-11**

**Redemption Flows in the Baltimore Study Area**

| Geographic Component | Ratio of Redemptions to Issuances |
|---|---|
| Union Square | 1.11 |
| Lexington Market | 1.31 |
| Downtown/Greenmount | 0.51 |
| Harlem Park/Bolton Hill | 0.78 |
| Hopkins Hospital | 0.98 |
| Clifton Park | 1.10 |
| Study Area | 0.94 |
| Baltimore City | 0.84 |

Source: Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

## Discussion

The Baltimore study area analysis addresses access in a central-city area containing a majority of ethnic/racial minorities, a high degree of representation of low-income households, and a high unemployment rate. Previous studies addressing access to food retailers within such central cities have focused on the absence of chain supermarkets and other large stores that would be able to provide high-quality food at reasonable prices. The data presented in this section indicate that:

- **The core area has proportionately fewer supermarkets and large grocery stores than other Baltimore City areas.** One household in 20 lives more than one half-mile from an authorized supermarket or larger grocery store, and nearly two out of three households are more than one quarter-mile from a large supermarket. Supermarkets and large groceries account for less than 4 percent of the retailers in the core area. This percentage is somewhat less than was found in the Baltimore City area as a whole, and much less than those for supermarkets and large groceries nationally. In one area (Clifton Park) supermarkets were an important source of food for food stamp participants, while in another sub-area (Downtown/Greenmount), they were a minor source. The difference in demographics is notable, with Downtown/Greenmount demonstrating almost twice the poverty rates of Clifton. It must also be noted that supermarket chains are represented in the area, although they are not the largest local chain. Some local multi-store firms are also represented.

- **Local markets play an important role in providing food for low-income populations.** Lexington, Lafayette, Hollins, and Northeast Markets—as examples of urban indoor farmers markets—are used to a large degree by local residents. The markets supply a wide range of perishable foods throughout the year. The markets are widely dispersed throughout the area and serve as alternatives to supermarkets for certain types of foods.

- **Local neighborhood groceries are patronized far more than larger stores.** As suggested from our on-site interviews with community leaders, Baltimore is a city of neighborhoods or small communities. The evidence from these interviews and from the analysis of food stamp redemptions suggests that residents rely upon small neighborhood groceries for retail purchases. Almost 99 percent of the participant households are within one quarter-mile of an authorized small grocery store.

The evidence in this chapter offers a somewhat different view of access than that provided through on-site interviews with industry and community leaders. The general impression of those interviewed was that supermarkets were not available to most central city residents. Comments indicated that persons living in housing projects were miles away from a supermarket, that supermarkets have generally vacated the area, and that residents meet their food needs through trips to suburban stores. The comments would suggest that individuals in the central city area were disadvantaged. Yet, the Lexington and other markets were recognized by these individuals as providing "supermarket-like" access within the area.

Another factor perceived to complicate access was the increasing presence of Korean-American grocers in the area. Interviews with officials from the Mid-Atlantic Food Dealers Association, Inc., and the Korean-American Grocers Association of Baltimore indicate that language and cultural problems lead to misunderstandings between grocers and customers. Problems were cited relating to the ability of Korean-American grocers to tap into food distribution networks that would make their operations more efficient and price-competitive.

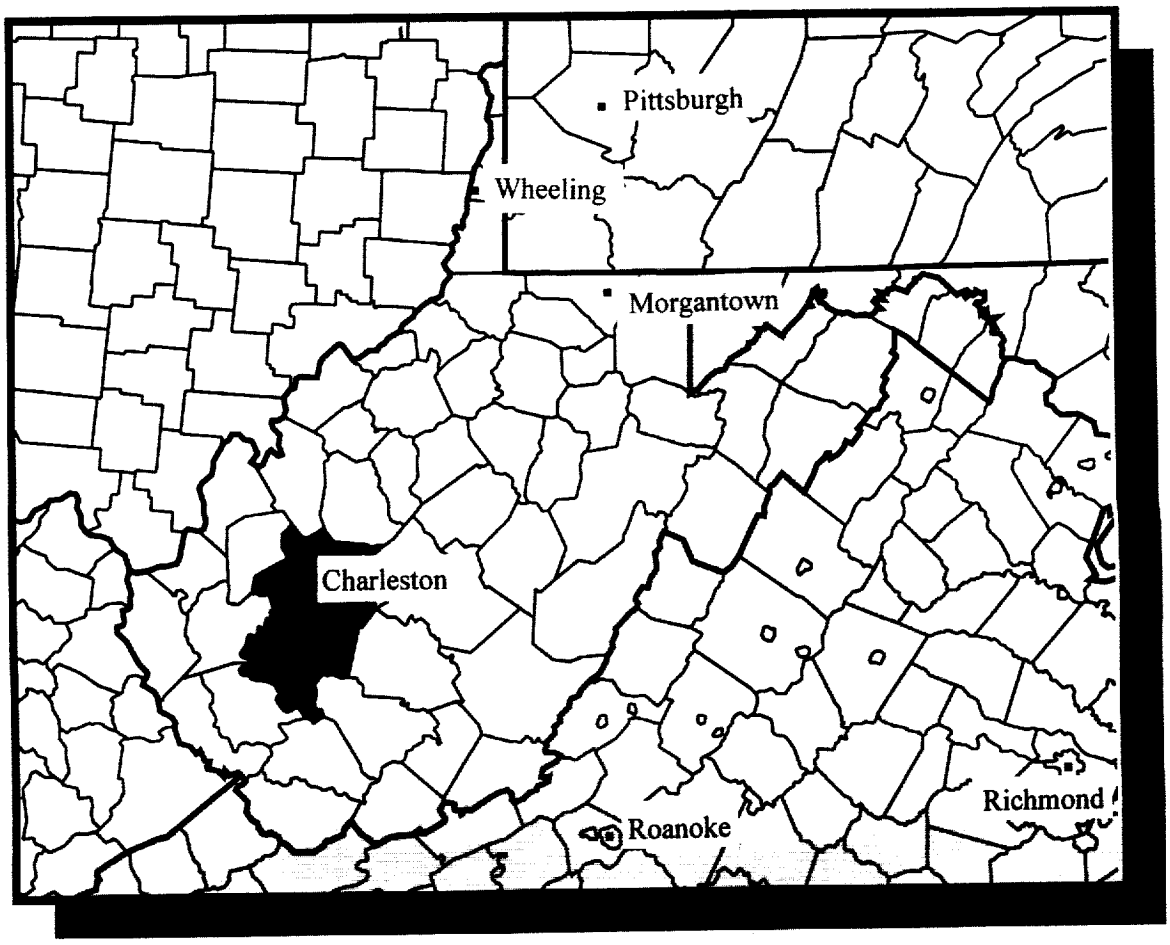
Also cited as affecting access was the presence of marginal stores such as sandwich shops and liquor stores. Interviews indicate that such stores generate instability in the market, as they tend to disappear quickly, only to be replaced by similar stores at different locations.

Clearly, our analysis shows the presence of large retailers in the area; however, it also shows that individuals are less inclined to redeem their food stamps at these retailers, preferring the indoor markets (such as Lexington Market). The real issue raised by the Baltimore study results may not be the effect of the presence or absence of large stores, but rather, the alternative stores that reflect shopper preferences in the area.

Table of Contents

# Section III

## West Virginia Study Area



# Section III. West Virginia Study Area

West Virginia is geographically dominated by the Appalachian Mountains, which define much of its character. Its population tends to be nestled in valleys along the major rivers, in communities in proximity to coal mines, or in isolated backwoods areas. The sense of community is strong and is reinforced by both the geography and the focus on the primary industry in the area: coal mining. Over the last several decades, with increased mechanization and the shift toward cleaner-burning fuels, coal mining has declined. As coal mines have closed, younger workers have tended to leave the area for employment in larger cities, leaving an increasingly aging population. As a consequence, West Virginia ranks in the top six States in the proportion of elderly people residing in the State.

The focus of our analysis was on Kanawha and Boone Counties, located in south central West Virginia (Exhibit III-1). Kanawha County, the most populous county in the State, contains Charleston, the capital city of West Virginia, and the central city of the Charleston Metropolitan Statistical Area (MSA). Boone County, although contiguous to Kanawha county, is not part of this MSA, reflecting the perception that Boone is not economically integrated with Charleston. Kanawha is the larger county, covering more than 901 square miles and with a 1990 population of approximately 207,000. The population density approximates 230 persons per square mile. Over one quarter of the population (58,000) is located in the city of Charleston, and a large portion of the remaining population is located in towns and areas along the Kanawha River. Other small population centers (such as Elk View and Clendenin) lie along the Elk River in the northern portion of the county.

Boone County has a population of only 25,870 spread over 503 miles, equating to 51 persons per square mile. Madison and Danville, located together in the northwest portion of the county, had a total population of 5,000 in 1990. Other smaller population centers within the county lie along State highways or off the mountains.

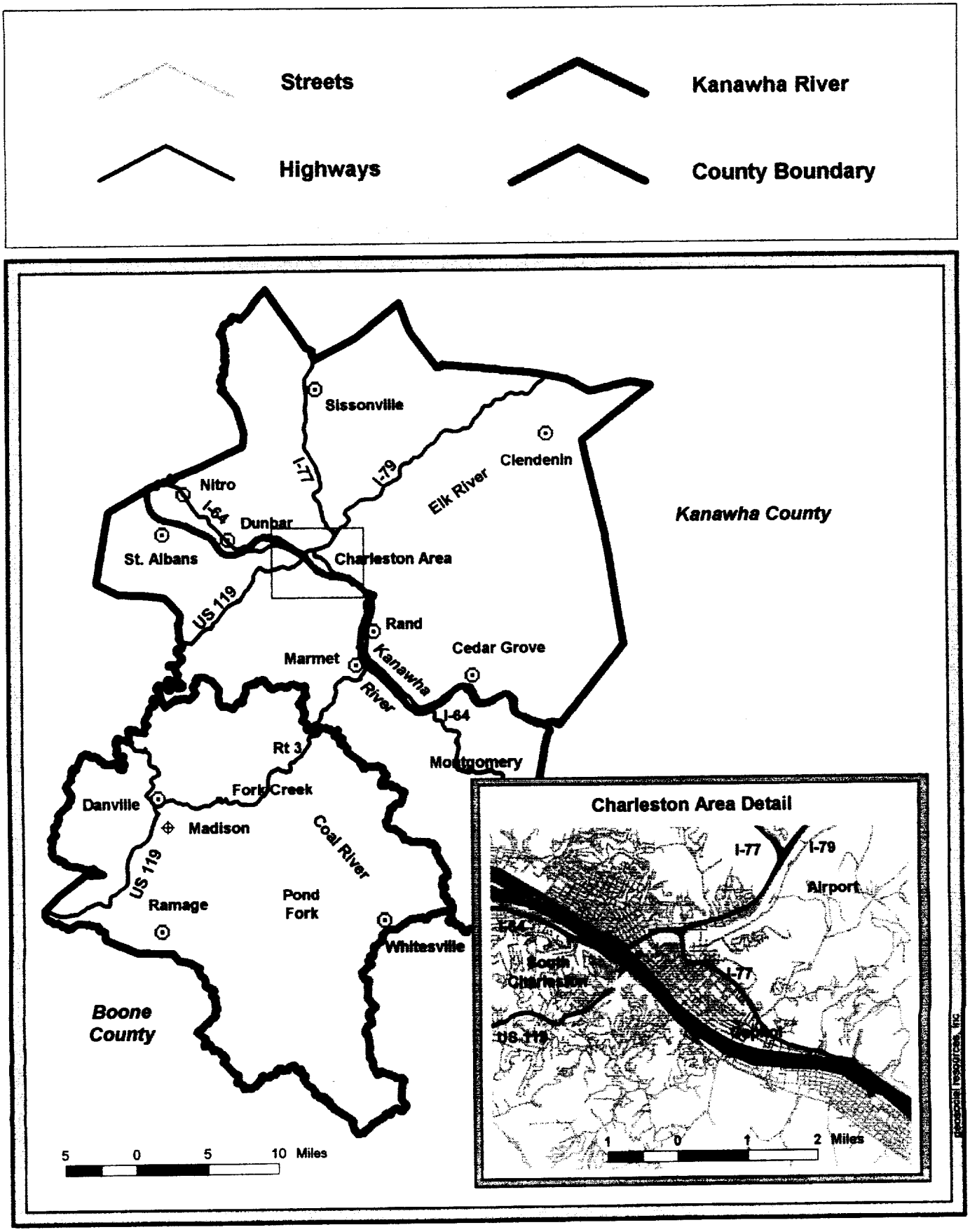
Other differences between the two counties are presented in Exhibit III-2. Of particular note are the low level of urbanization in Boone County (12 percent) compared to Kanawha County (71 percent), and the almost two-fold higher level of poverty in Boone County than in Kanawha County.

The prevalence of poverty within the two-county region is presented geographically in Exhibit III-3. The contrast between counties is striking, with high levels of poverty observed in western Boone County and in Charleston. In these areas, the proportion of those living below 125 percent of the poverty level is higher than 30 percent. In the northern portion of the study area, the proportion living at 125 percent or less of the poverty level is from 15 to 20 percent. This difference may reflect the high emphasis on coal mining in Boone county and the unemployment that results from the decline in this industry.

Table of Contents

# General Orientation Map

## *West Virginia Study Area*



| Exhibit III-2<br>Comparative Demographics on Kanawha and Boone Counties, West Virginia | | |
|---|---|---|
| | Kanawha | Boone |
| Total Population | 207,619 | 25,870 |
| Change in Population (1980-1990) | Down 10% | Down 15% |
| Change in Population Under Age 18 | Down 20% | Down 30% |
| Percent Minorities | 7.5% | 1.1% |
| Population Density per Square Mile | 230 | 51 |
| Median Income | $30,030 | $21,221 |
| Poverty Rate | 15.1% | 26.9% |
| Unemployment | 7.2% | 16.3% |
| Percent Urban | 70.9% | 11.8% |
| Source: CACI Sourcebook. | | |

## Geographic Barriers and Transportation

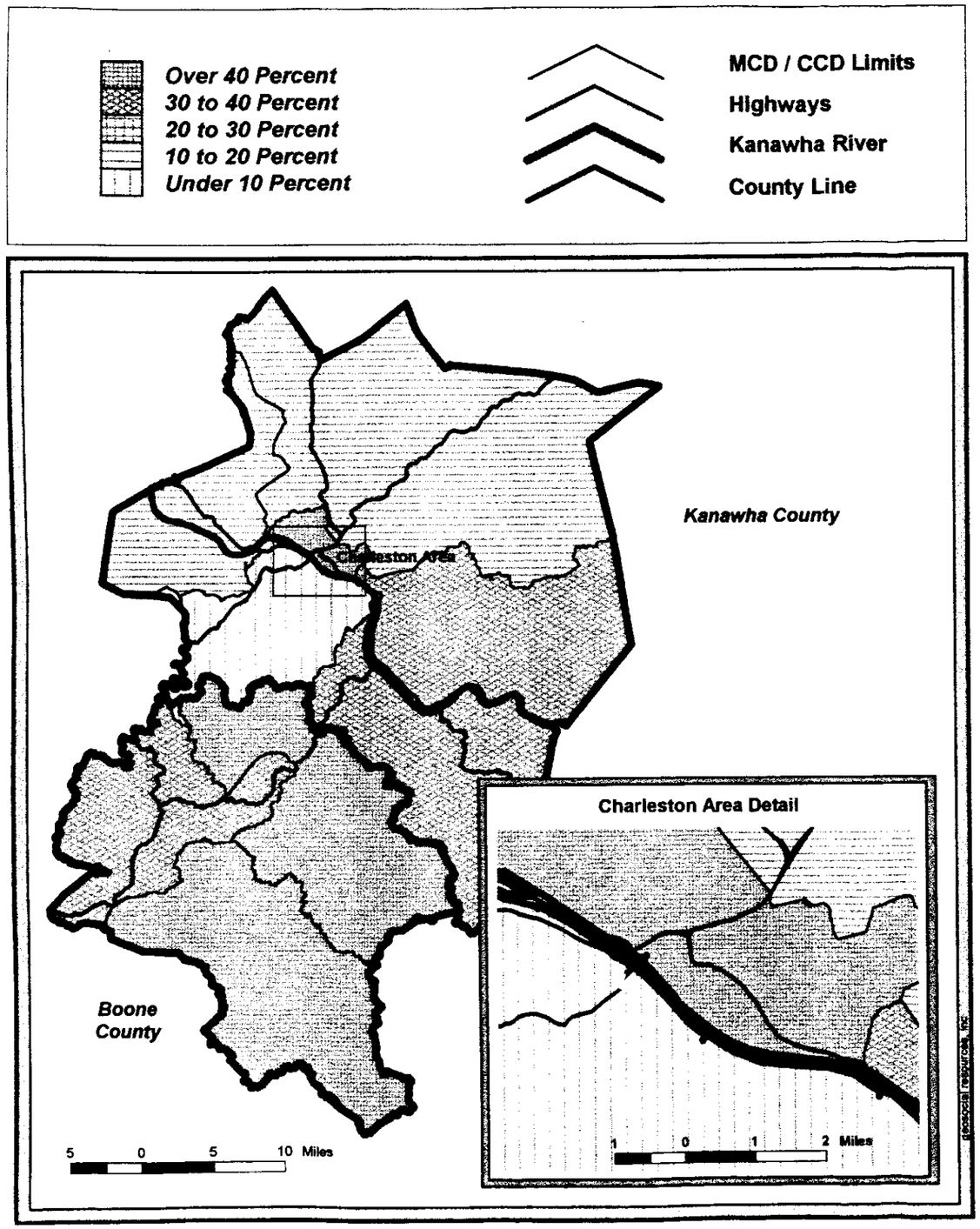
There are two geographic barriers for individuals living in these counties. First, the mountains are instrumental in the placement of and access to communities. Most communities lie in valleys and hollows, either along secondary routes through the mountains or on tertiary paved and unpaved routes following streambeds into the mountains. Thus, the pattern of access from these remote communities is downward to the valleys and then into the larger population centers. This pattern is particularly evident in Boone County, where population centers are located along Routes 3, 85, and 17. The analysis takes these routes into account by clustering population centers into five areas within Boone County. These areas are:

- Madison/Danville
- Coal River
- Pond Fork
- Ramage/Route 17
- Fork Creek Area.

Exhibit III-1 depicts the locations of these areas.

## Exhibit III-3
## West Virginia Study Area

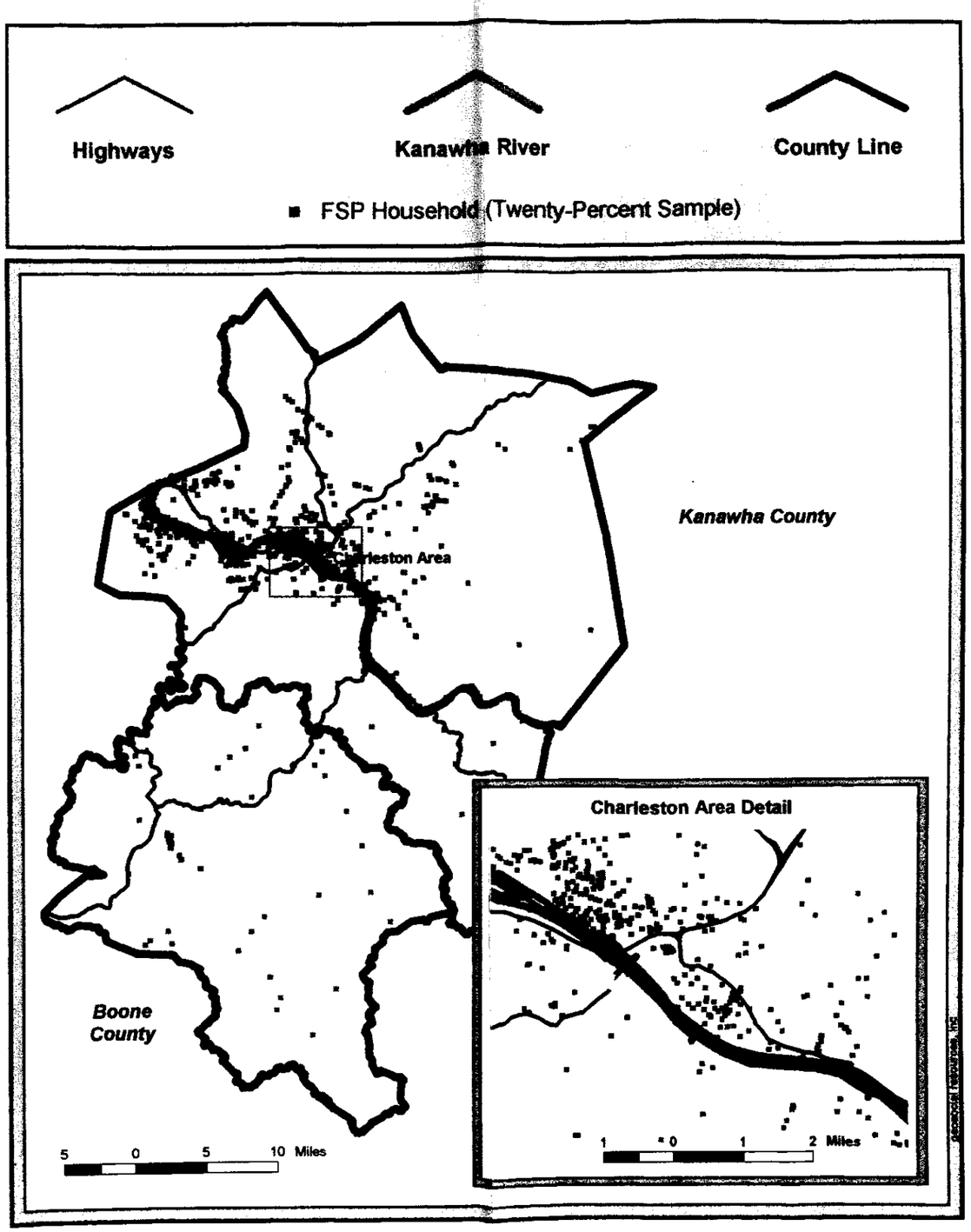
**Percentage Below 125% of Poverty Level (FSP Recipients and Non-Recipients)**






## Exhibit III-4
## West Virginia Study Area

**Distribution of FSP Participant Households**



Kanawha County also displays this pattern of routes emerging from the mountains and extending into the population centers. But the major geographic factor is the Kanawha River. The majority of the population of Kanawha County is dispersed along the northern and southern banks of the river in small communities; with Charleston constituting the largest population concentration on the north side of the river. With the exception of Charleston and a few other places, the bridges crossing the river are widely spaced, and extensive travel is required to reach the other side of the river. As in Boone, Kanawha was split into several areas to conform to the geography of the area. These are

- Nitro—Communities on the Kanawha River's north bank and west of Charleston
- St. Albans—Communities on the Kanawha River's south bank and west of South Charleston
- Dunbar—Communities located on the Kanawha River's north bank just west of Charleston
- Charleston—Those parts of the city on the Kanawha River's north bank
- South Charleston—Those parts of Charleston and South Charleston on the Kanawha River's north bank
- Elk River/Sissonville—The area along the Elk River and to the north of Charleston
- Marmet/Montgomery—Communities on the Kanawha River's south bank and east of Charleston
- Rand/Cedar Grove—Communities on the Kanawha River's north bank and east of Charleston.

Because of the rural, isolated nature of much of Kanawha and all of Boone County, people are dependent upon the automobile for doing much of their daily business. Data from the 1990 census indicate that 85 percent of the households in Kanawha County and Boone County have access to an automobile. Despite the high level of access to vehicles, residents in this area still have problems traveling to retailers. A recent survey indicated that about 62 percent of the respondents in Boone County and 40 percent of the respondents in Kanawha county had trouble accessing shops, businesses, etc.[1] Inadequate transportation was cited by 74 percent of those interviewed in Boone County and 47 percent of those in Kanawha County.[2]

[1] Regional Family Resource Network. Community Service Fact Sheet. Charleston, West Virginia, 1992.

[2] Community Council of Kanawha County. Focus 93: An Assessment of Household and Community Needs and the Resources of United Way Agencies in Kanawha and Putnam Counties. Charleston, West Virginia, 1992.

Persons who do not have cars frequently arrange for a ride into the city with relatives or neighbors, who often charge for this service.

The building of the major highways has been critical in the development of Charleston. The three major highways (I-79, 64, and 77) that run through Charleston have made it the focus of economic activity in the area. A new State highway called Corridor G connects Boone County with Charleston. Before Corridor G, a trip from Madison (a town in the northern portion of Boone County) to Charleston took 2 hours; now it takes 35 minutes. Other roads, particularly in Boone County, are deteriorated and overloaded.

Public transportation is available in Charleston and its immediate communities, and limited bus service is available in other areas of Kanawha County. Public transportation is almost nonexistent in Boone County, and there is only one taxi. Transportation for the elderly is provided by groups that offer van service to senior centers and other places.

## Food Stamp Participants

In 1993, the average monthly number of food stamp cases in Kanawha County was 14,052, or approximately 17 percent of the households in that county. Allotments for 1993 totaled $28.6 million. In Boone County, there was an average of 2,345 cases per month in 1993. This constituted approximately one quarter of all the households in the county and $5.7 million in allotments.

The distribution of recipients across the study area is presented in Exhibit III-4. As shown, the recipient population clusters in the communities of the Kanawha River valley and along the Elk River and major highways in Kanawha County. The highest density of participants is in Charleston and in the region to the west of Charleston (i.e., Nitro, Dunbar, and St. Albans). In Boone County, the food stamp population is scattered along the major and secondary routes in the mountains.[3] Each location represents a small community, sometimes located along a secondary route (e.g., Route 3) or along a tertiary route in the mountains.

## Retailers

Kanawha County has 216 food retailers authorized to redeem food stamps, or 19.5 retailers for every 1,000 food stamp households (Exhibit III-5). Of these, more than 40 percent are located in

[3] On this map, several locations represent clusters of recipient households, sometimes involving more than 100 households that were geocoded to a single location. This usually occurs in the outlying communities, where the ZIP + 4 geocoding of recipients placed them at a central location within the five-digit ZIP Code area. (For some of these outlying communities, all addresses reverted to a general delivery location, and for others the rural delivery routes were placed at a central location.)

Charleston and South Charleston. The communities along the Elk River have lower density of retailers, although they have the highest comparative level of supermarkets. Twenty-five percent of the stores (54) in the county are classified as supermarkets or large groceries. These stores are responsible for approximately 92 percent of the redemptions in the county.

**Exhibit III-5**

**Authorized Retailer Presence in Kanawha and Boone Counties**

| Geographic Component | Supermarkets or Large Groceries | | All Stores | | |
|---|---|---|---|---|---|
| | Percentage of All Stores in Geographic Component | Percentage of All Redemptions in Geographic Component | Number of Stores | Total Redemptions ($) | Stores per 1000 FSP Households* |
| **Study Area** | 23.0% | 90.7% | 274 | 34,107,110 | 20.95 |
| **Kanawha County** | 25.0% | 91.9% | 216 | 29,703,603 | 19.47 |
| Charleston | 22.2 % | 91.5% | 63 | 10,055,399 | 16.01 |
| South Charleston | 27.8% | 95.0% | 36 | 4,731,746 | 23.51 |
| Nitro | 23.5% | 89.9% | 17 | 1,383,753 | 22.55 |
| St. Albans | 17.4% | 89.0% | 23 | 2,656,819 | 17.82 |
| Dunbar | 27.3% | 90.9% | 11 | 1,303,731 | 22.49 |
| Elk River/Sissonville | 33.3% | 94.3% | 18 | 3,755,181 | 14.94 |
| Rand/Cedar Grove | 30.8% | 90.4% | 26 | 2,686,500 | 25.67 |
| Marmet/Montgomery | 22.7% | 91.1% | 22 | 3,129,874 | 25.09 |
| **Boone County** | 15.5% | 82.5% | 58 | 4,403,507 | 29.26 |
| Madison/Danville | 18.8% | 94.2% | 16 | 2,921,423 | 22.99 |
| Coal River | 23.1% | 83.7% | 13 | 896,600 | 26.64 |
| Pond Fork | 16.7% | 60.0% | 12 | 168,287 | 50.21 |
| Ramage/Route 17 | 11.1% | 14.6% | 9 | 199,121 | 29.80 |
| Fork Creek | 0% | 0% | 8 | 218,076 | 31.13 |

Source: Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

*Retailer density figures may exceed the number of stores in areas where the FSP households are few in number. We use the denominator of 1,000 to be consistent across all study areas.

Boone County contains 58 authorized retailers, or about 29 retailers per 1,000 food stamp households. Sixteen percent of these stores are supermarkets or large groceries. These larger stores are available throughout the county, except the Ramage and Fork Creek areas. These two areas, however, have relatively easy access to Route 119 and Madison and Danville. With the exception

of Madison and Danville, supermarkets or large groceries play a relatively small role in food stamp redemptions in the county.

There are four major grocery chains in the area and a number of independent stores. The major chain in Kanawha County is Kroger's. Other chains represented in the area are Big Bear, Food Land (IGA), and Fas Chek. Food Land is the primary retailer in Boone County. Two recently opened food stores, Sam's and a Walmart's, are drawing business away from existing stores further into Boone County. There are a number of independents and small stores, both in the rural areas and in Charleston. Gas-N-Go and 7-11 have franchises in the Charleston area. In addition to "mom and pop" stores throughout the rural areas, the State operates produce markets, some of which are open throughout the year.

Exhibit III-6 shows that most redemption activity occurs in Charleston, along the river valleys or transportation routes, and in Madison and Danville, with subsidiary activity occurring across the county, particularly along the Coal River. Redemptions in the Coal River area are largely concentrated around the Whitesville area. On a similar map showing large stores with annual sales of more than $500,000, areas of high redemption lie in the communities along the Kanawha River, supplemented by the other two groupings noted above, as well as a scattering of retailers across Boone County (Exhibit III-7). Comparing these data to Exhibit III-6, one can see the "filling-in" influence of stores such as smaller groceries and convenience stores, particularly in Boone County.

## Proximity of FSP Participants to Retailers

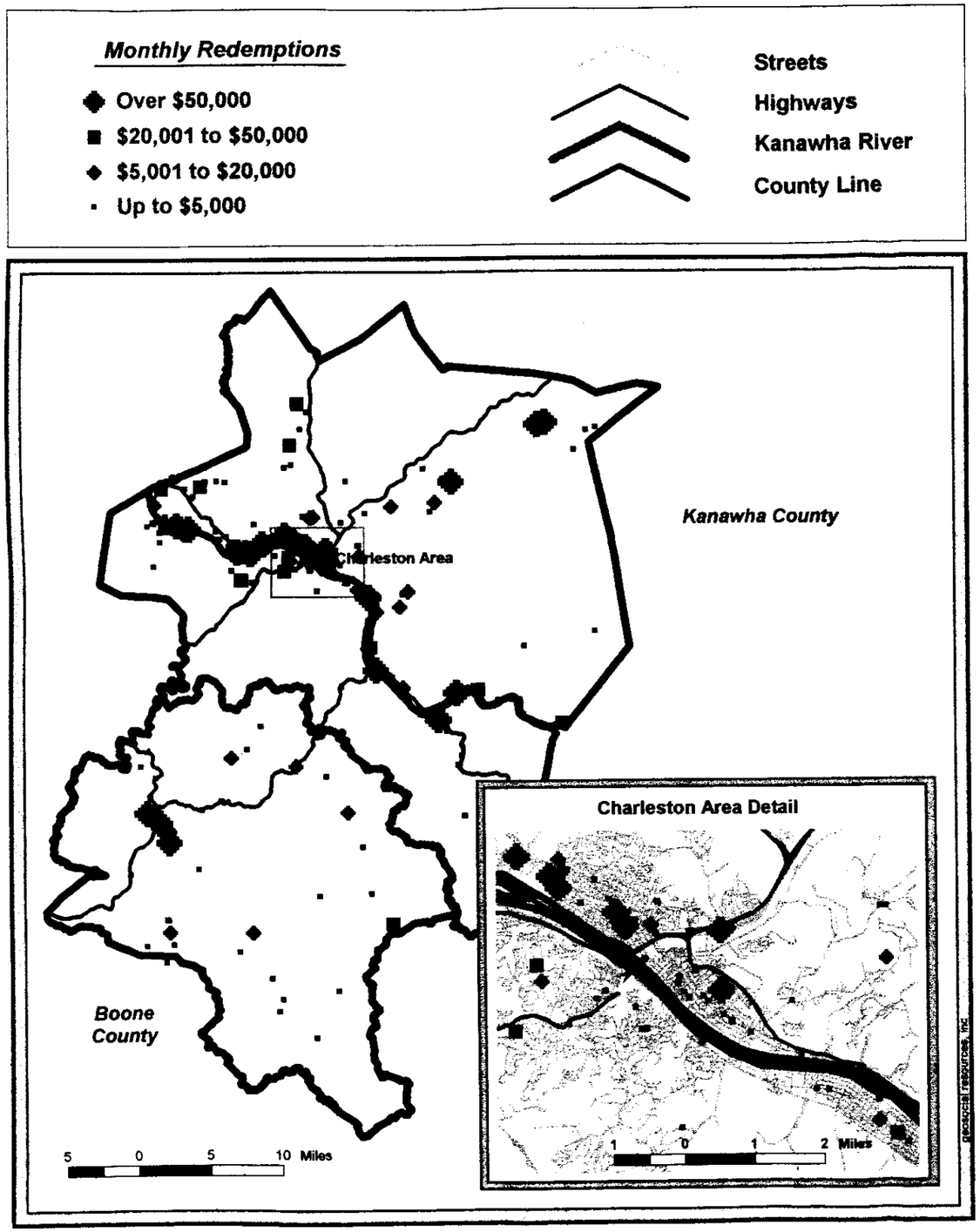
Exhibit III-8 summarizes the access analysis for the West Virginia study area, and Exhibit III-9 summarizes the results for Charleston. Across the full study area, three-fourths of recipient households are within one half-mile of an authorized retailer, and 90 percent are within one mile. All participants were within five miles of a retailer, and the median distance to an authorized retailer is one-fifth of a mile. About two-thirds of the population is within one mile of a super-market or large grocery store, and almost 60 percent are within one mile of a supermarket. Thus, most households are close to large food stores.

This pattern arises from two considerations. First, the proportion of participants living within one mile of an authorized retailer is somewhat higher in the city of Charleston, which accounts for almost half of the recipient households in the full study area. Second, the many convenience stores, combination gas station and small grocery stores in the more populated areas, and widely dispersed small grocers in the remote areas cover much of the study area.

## Monthly FS Redemptions: All Participating Outlets

***Exhibit III-6***

***West Virginia Study Area***






## Monthly FS Redemptions: SM/GS With Annual Sales Over $500,000

***Exhibit III-7***

***West Virginia Study Area***

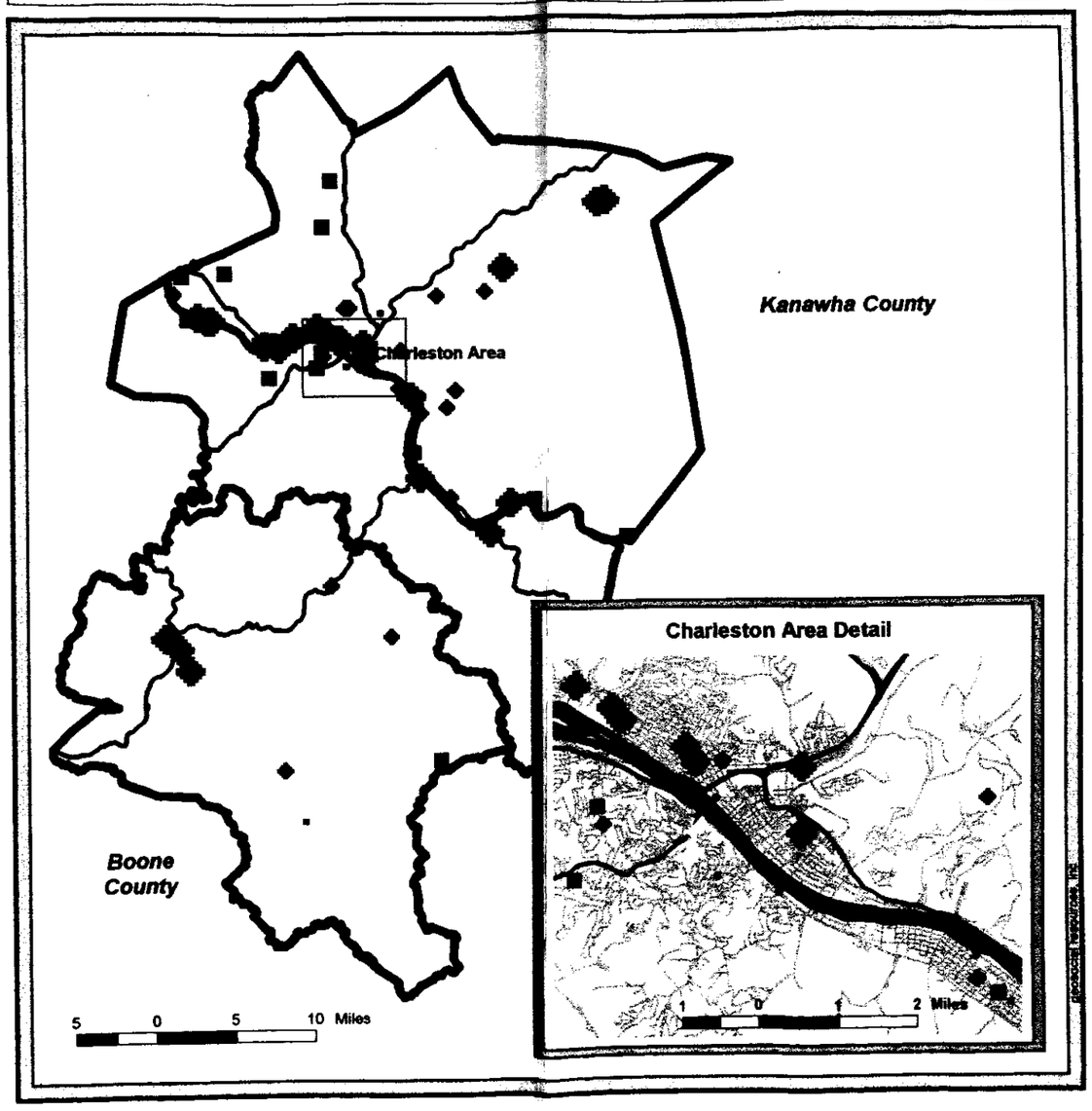


**Exhibit III-8**

**Proximity of Food Stamp Participating Retailers to Recipients**
**West Virginia Study Area**

| FSP Retailer Type: | Total Recipients | Under .25 mile | Under .5 mile | Under 1 mile | Under 2 miles | Under 5 miles | Median Distance | Mean Distance |
|---|---|---|---|---|---|---|---|---|
| Supermarket | [14129] | 1788 | 4358 | 8445 | 11025 | 13106 | | |
| | *% of total* | *12.65* | *30.84* | *59.77* | *78.03* | *92.76* | 0.69 | 1.50 |
| Large Grocery | [14129] | 515 | 2206 | 5079 | 8183 | 11201 | | |
| | *% of total* | *3.64* | *15.61* | *35.95* | *57.60* | *79.28* | 1.60 | 2.67 |
| Small Grocery | [14129] | 3349 | 5176 | 7102 | 9825 | 13503 | | |
| | *% of total* | *23.70* | *36.63* | *50.27* | *69.54* | *95.57* | 1.00 | 1.57 |
| Convenience Store | [14129] | 3574 | 6483 | 9190 | 11698 | 13478 | | |
| | *% of total* | *25.30* | *45.88* | *65.04* | *82.79* | *95.39* | 0.59 | 1.20 |
| Specialty Food Store | [14129] | 1119 | 2425 | 3892 | 7227 | 10144 | | |
| | *% of total* | *7.92* | *17.16* | *27.55* | *51.15* | *71.80* | 1.93 | 4.06 |
| Gas/Grocery Combination | [14129] | 1769 | 3858 | 7811 | 11476 | 13527 | | |
| | *% of total* | *12.52* | *27.31* | *55.28* | *81.22* | *95.74* | 0.85 | 1.38 |
| All Others | [14129] | 2310 | 3904 | 6579 | 9086 | 12398 | | |
| | *% of total* | *16.35* | *27.63* | *46.56* | *64.31* | *87.75* | 1.07 | 2.02 |
| **Supermarket or Large Grocery** | **[14129]** | **2253** | **5533** | **9704** | **11599** | **13732** | | |
| | ***% of total*** | ***15.95*** | ***39.16*** | ***68.68*** | ***82.09*** | ***97.19*** | ***0.60*** | ***1.13*** |
| All Retailers | [14129] | 7731 | 10628 | 12811 | 13533 | 14129 | | |
| | *% of total* | *54.72* | *75.22* | *90.67* | *95.78* | *100.0* | *0.20* | *0.43* |

Source: Geo Social Resources Inc. and Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

**Exhibit III-9**

**Proximity of Food Stamp Participating Retailers to Recipients**
**Charleston Component**
**(West Virginia Study Area)**

| FSP Retailer Type: | Total Recipients | Under .25 mile | Under .5 mile | Under 1 mile | Under 2 miles | Under 5 miles | Median Distance | Mean Distance |
|---|---|---|---|---|---|---|---|---|
| Supermarket | [6667] | 1035 | 2720 | 5208 | 6310 | 6656 | | |
| | *% of total* | *15.52* | 40.80 | *78.12* | *94.65* | *99.84* | 0.52 | 0.73 |
| Large Grocery | [6667] | 286 | 1470 | 3513 | 5827 | 6509 | | |
| | *% of total* | *4.29* | 22.05 | *52.69* | *87.40* | *97.63* | 1.00 | 1.25 |
| Small Grocery | [6667] | 1620 | 3173 | 4412 | 5375 | 6663 | | |
| | *% of total* | *24.30* | 47.59 | *66.18* | *80.62* | *99.94* | 0.56 | 1.02 |
| Convenience Store | [6667] | 2324 | 4318 | 5517 | 6375 | 6667 | | |
| | *% of total* | *34.86* | 64.77 | *82.75* | *95.62* | *100.0* | 0.38 | 0.58 |
| Specialty Food Store | [6667] | 837 | 1675 | 2942 | 5331 | 6410 | | |
| | *% of total* | *12.55* | *25.12* | *44.13* | *79.96* | *96.15* | 1.19 | 1.48 |
| Gas/Grocery Combination | [6667] | 969 | 2194 | 4729 | 6153 | 6667 | | |
| | *% of total* | *14.53* | *32.91* | *70.93* | *92.29* | *100.0* | 0.68 | 0.86 |
| All Others | [6667] | 1636 | 2913 | 4443 | 5583 | 6619 | | |
| | *% of total* | *24.54* | *43.69* | *66.64* | *83.74* | *100.0* | 0.61 | 1.04 |
| **Supermarket or Large Grocery** | **[6667]** | **1271** | **3321** | **5615** | **6495** | **6667** | | |
| | ***% of total*** | ***19.06*** | ***49.81*** | ***84.22*** | ***97.42*** | ***100.0*** | ***0.50*** | ***0.60*** |
| All Retailers | **[6667]** | 3930 | 5616 | 6411 | 6650 | 6667 | | |
| | *% of total* | *58.95* | *84.24* | *96.16* | *99.75* | *100.0* | *0.19* | *0.30* |

Source: Geo Social Resources Inc. and Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

Within the City of Charleston, however, only one-eighth of the addresses had to be geocoded to a five-digit ZIP Code location, for the reasons noted in Appendix A. For that portion of the recipient population (just under half of the full study area), we find that nearly five-sixths of the recipient population are within one half-mile of some authorized retailer, and 96 percent are within one mile. Looking elsewhere in Exhibit III-9, it appears that this result is attributable in part to the widespread availability of convenience stores. It must also be noted that, at a distance of 1 mile, availability of supermarkets is surprisingly similar to the availability of convenience stores.

One-mile proximity to an authorized retailer is generally achieved in the populous areas, especially the Kanawha River valley (Exhibit III-10). However, it is not achieved by households located off the river or off major highways. Although households in Kanawha county are, on the whole, closer to retailers than those in Boone County, the proximity of households living away from the Kanawha River valley seems to be worse than for those living in the southern reaches of Boone County. Exhibit III-11 shows the geographic distribution of households that are more than one half-mile from any authorized retailer. A substantial number of households, particularly around Charleston, are within one half-mile of an authorized retailer.

As Exhibit III-12 indicates, however, 1-mile proximity to an authorized larger supermarket or grocery is more confined to the communities within the Kanawha River valley and a few population points elsewhere, such as Nitro (in the western portion of Kanawha county) and Madison (at the center of Boone County). Other areas are relatively distant from authorized retailers. In Charleston, the inset indicates that most households are near retailers. Exhibit III-13 shows the comparative proportion of households within one half-mile of large stores. The map indicates that most households have poor access at this distance, except for those in the City of Charleston.[4]

## Redemption Flows

Exhibit III-14 presents the ratio of redemptions to issuances in various sub-areas. The data present several interesting findings. First, all areas within Kanawha County show more redemptions than issuances. This means that all locations are drawing food coupons from other surrounding counties. On the other hand, all areas in Boone County except for the Madison and Danville areas have ratios of less than 1, indicating that allowances exceed redemptions.

[4] It should be noted, however, that many of the locations in rural, southeastern Boone County that appear to fall within the half-mile radius reflect geocoding to the five-digit ZIP Code. In those remote areas, geocoding placed recipients and stores in closer proximity than they would be if we had been able to map the recipients at their actual locations.

*Exhibit III-10*

## One-Mile Access to Any FSP Participating Retailer

*West Virginia Study Area*

*Recipients Beyond One Mile*

*All Other Recipient Households*

Highways

Kanawha River

County Line

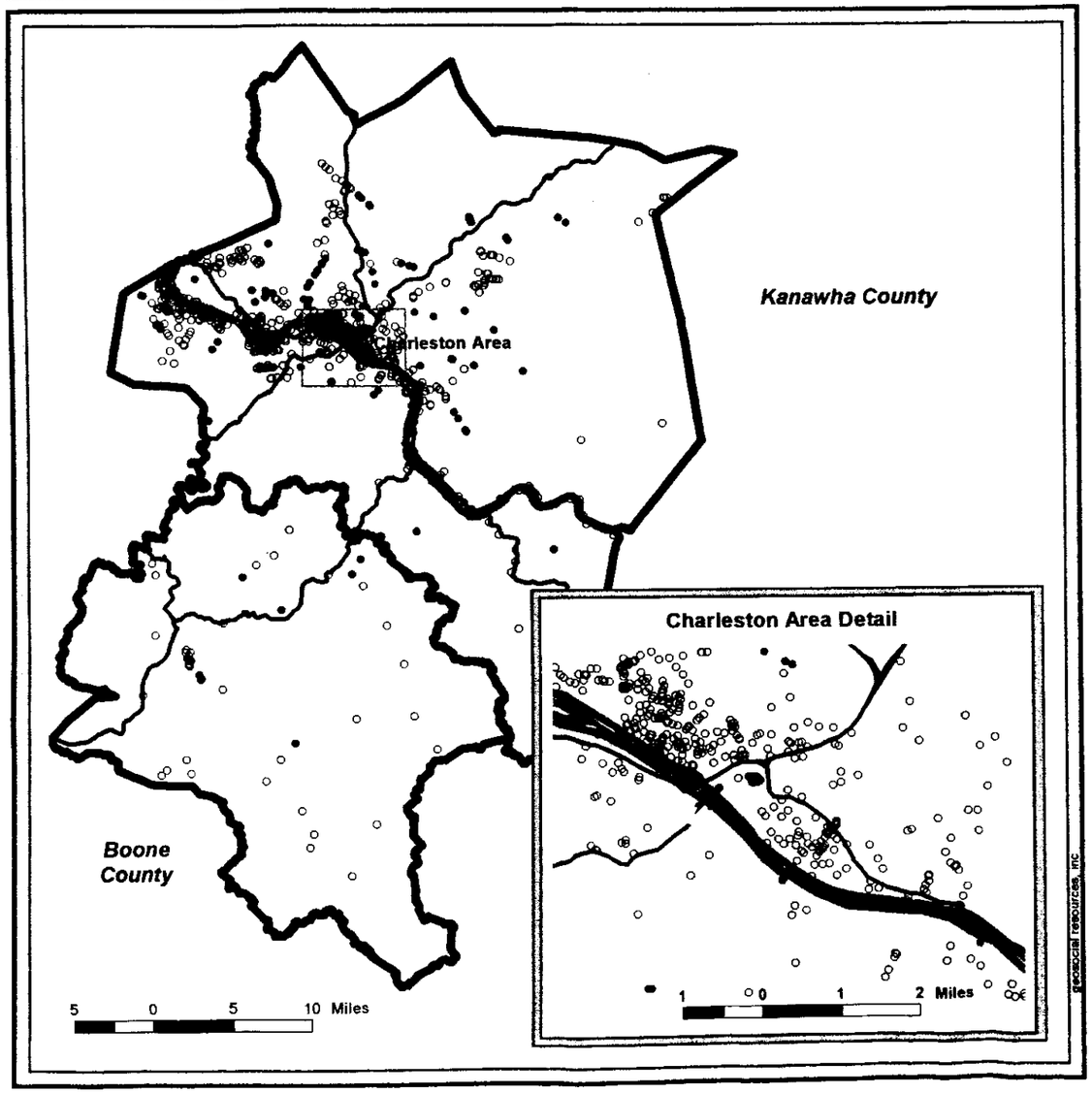





*Exhibit III-11*

## Half-Mile Access to Any FSP Participating Retailer

*West Virginia Study Area*

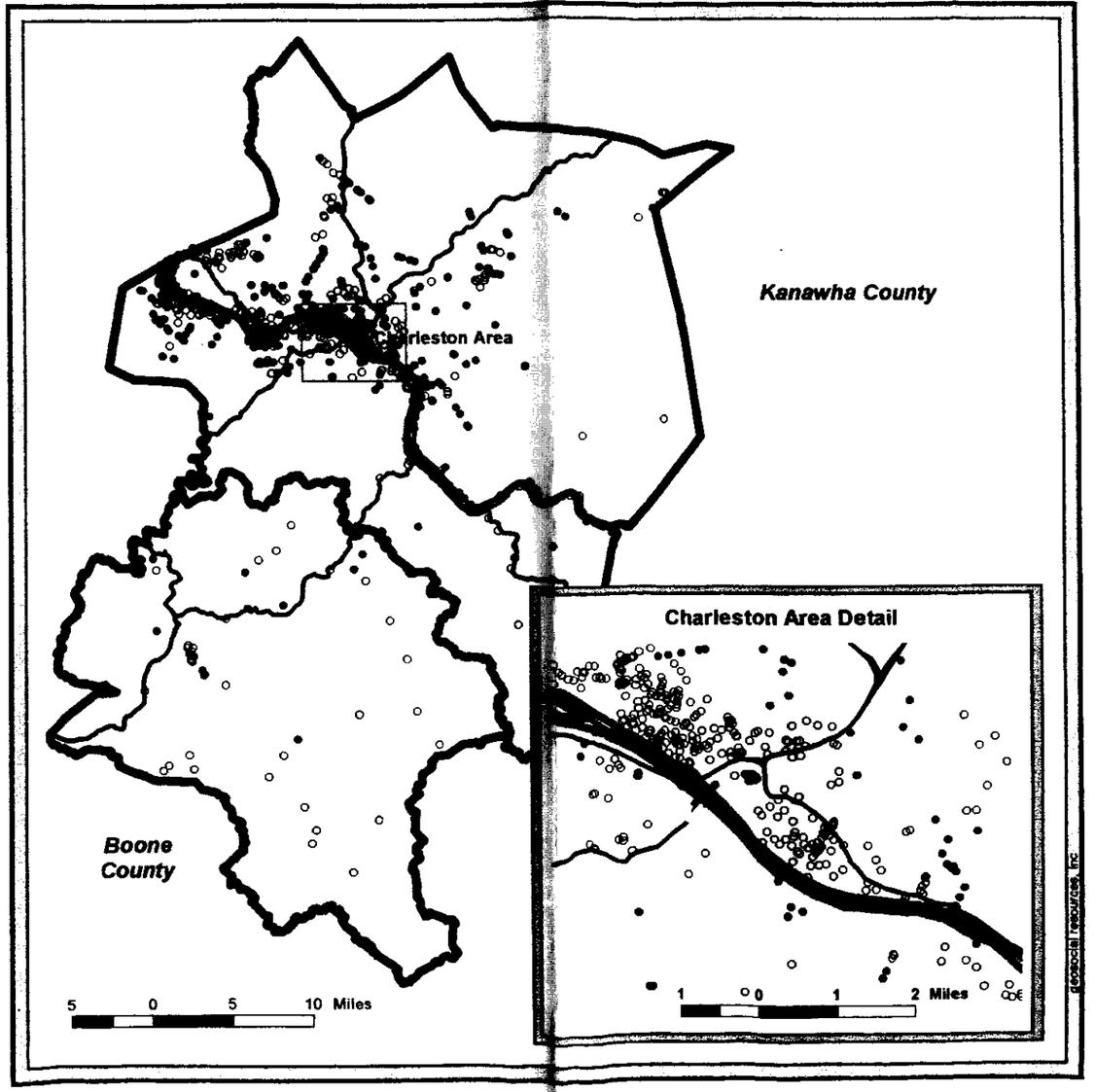
*Recipients Beyond 1/2 Mile*

*All Other Recipient Households*

Highways

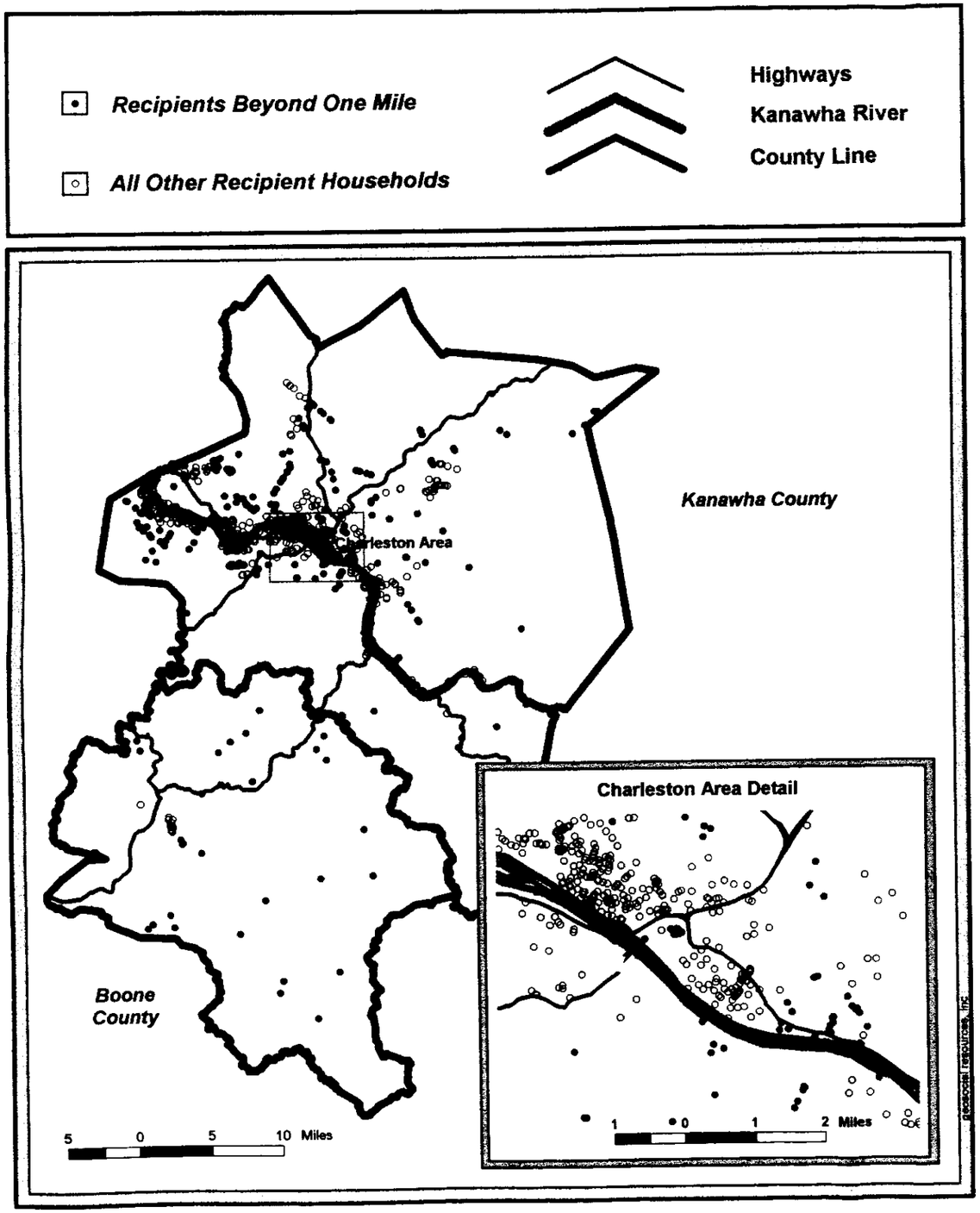
Kanawha River

County Line



## Exhibit III-12
## West Virginia Study Area

### One Mile Access to FSP SM/GS With Annual Sales Over $500,000




### Half-Mile Access to FSP SM/G With Annual Sales Over $500,(

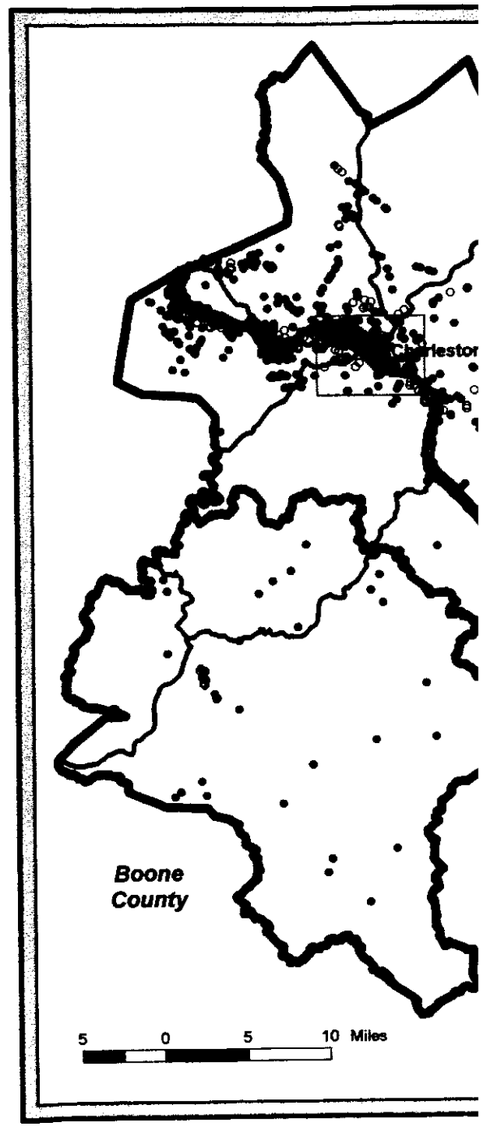


**Exhibit III-14**

**Redemption Flows in Food Stores in Kanawha and Boone Counties**

| Geographic Component | Ratio of Redemptions to Issuances | Geographic Component | Ratio of Redemptions to Issuances |
|---|---|---|---|
| **Kanawha County** | 1.28 | **Boone County** | 0.94 |
| Charleston | 1.33 | Madison/Danville | 1.96 |
| South Charleston | 1.44 | Coal River | 0.74 |
| Nitrro | 0.86 | Pond Fork | 0.30 |
| St. Albans | 0.94 | Ramage | 0.28 |
| Dunbar | 1.23 | Fork Creek | 0.38 |
| Elk River/Sissonville | 1.40 | | |
| Rand/Cedar Grove | 1.20 | | |
| Marmet/Montgomery | 1.59 | | |

Source: Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

## Discussion

The Kanawha River and the mountainous terrain in Kanawha and Boone Counties have affected the placement of population centers within Kanawha and Boone Counties. These counties, with contrasting economies and social needs, present two different perspectives of access. The following are the major findings on this study area:

- **Distance to all retailers, and to supermarkets and large groceries are short in and around Charleston.** Charleston and the surrounding towns have the majority of large stores and account for the largest proportion of redemptions within the study area. The data show that 85 and 50 percent of FSP households are with one half-mile of a retailer and a large retailer, respectively. Equivalent percentages for the remaining portion of the study area are 67 percent and 30 percent. The maps also suggest that most households are close to stores in the immediate Charleston area.

- **Retailers are proximate to households in the communities along the Kanawha and Elk Rivers.** Retailers in these areas seem to draw participants from the various communities in the north and south of Kanawha County. Although Nitro and St. Albans seem to have representation from large retailers, their redemptions-to-issuance ratio is lower than in other areas, suggesting an outflow of food stamps.

- **In Boone County, two small population centers, Madison and Danville, seem to provide large store coverage.** Although there are other large stores in the area, there seems to be a migration of food stamps to these two centers.

- **Smaller stores in Boone County provide additional coverage.** Boone County consists of numerous hamlets scattered along its roads and highways. All of these hamlets have access to a retailer, and some are proximate to a large retailer.

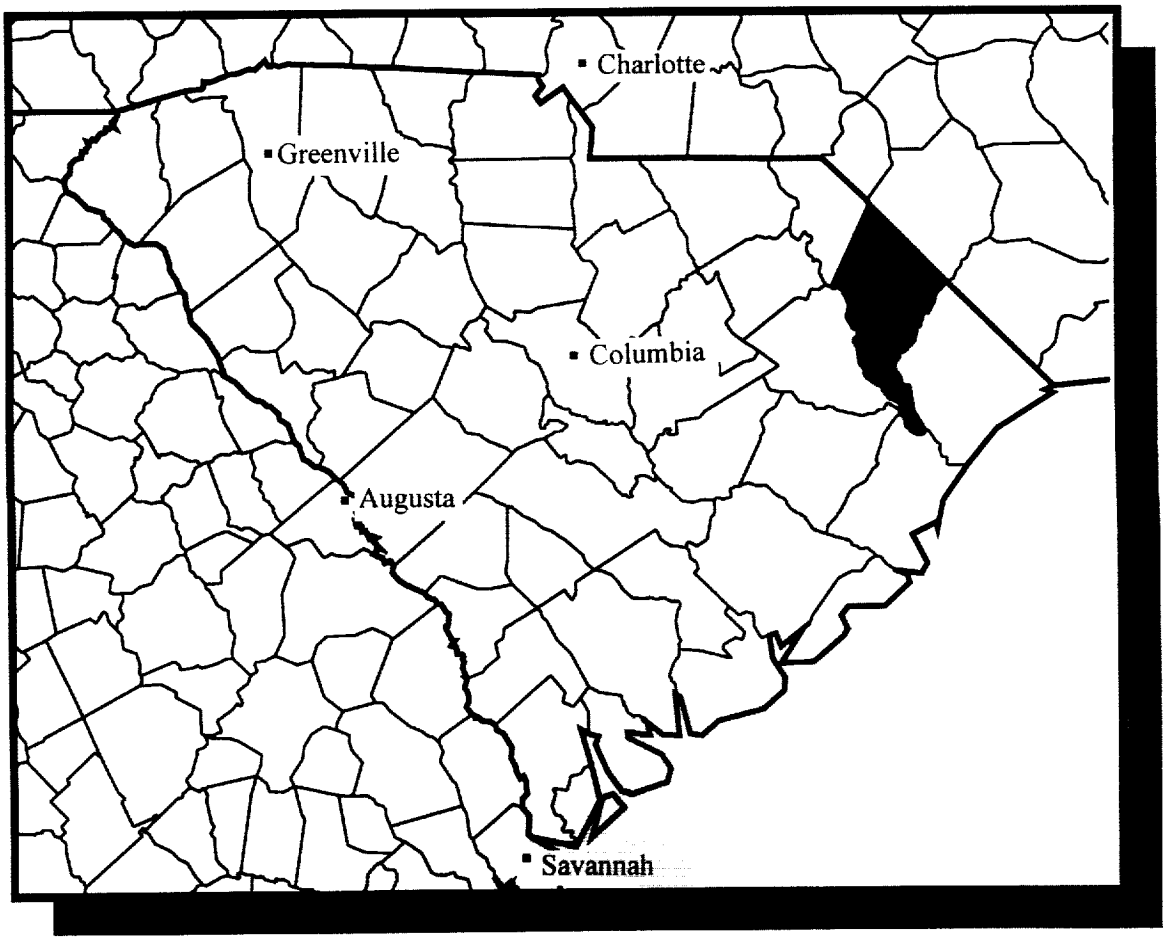
In Kanawha County, well-defined population concentrations support full-line grocery stores. These stores draw individuals from outside the Kanawha and Elk River Valleys. In Boone County, Madison and Danville offer access to full-line stores, with smaller stores providing coverage in the outlying areas.

Comments from organizations involved in food access focused on difficulties of access in rural areas. The remoteness and conditions of the roads in Boone County and in certain areas of Kanawha County were perceived as the major factors hindering access. Others emphasized the inability of the small rural stores to provide the lower level of prices found in full-range stores such as supermarkets. However, smaller stores were perceived to be more integrated into the communities and to provide an environment and services (e.g., credit) not available from retailers outside of the community.

Table of Contents

# Section IV

## South Carolina Study Area



# Section IV. South Carolina Study Area

The South Carolina study area comprises Dillon and Marion Counties. Lying to the northeast of the Florence, South Carolina Metropolitan Statistical Area, and on the border of North Carolina, these counties are largely rural, with large tracts of farmland and cypress swamp. Exhibit IV-1 provides an orientation to this area, with highways serving as the basic reference points. In 1990, the United States Census reported approximately 29,000 and 34,000 individuals living in Dillon and Marion Counties, respectively. Like many rural areas, the two-county region has witnessed a marginal decline in population since 1980, much of which can be attributed to the 5 percent population decline in Dillon County (Exhibit IV-2). The inset map in Exhibit IV-1 shows details for a core area containing four population centers: the cities of Dillon and Latta in Dillon County, and the cities of Marion and Mullins in Marion County. The city of Dillon, with 6,800 persons in the city proper and another 3,700 in the nearby suburbs, is the seat of Dillon County, and is located in the approximate center of the county. Latta, five miles southwest of the city of Dillon, contains approximately 2,000 individuals. The city of Marion, the county seat of Marion County, has a population of 7,500 persons and is 14 miles south of the city of Dillon. Mullins, also in Marion County, has a population of 6,000 and is approximately 14 miles south of the city of Dillon and 8 miles east of the city of Marion.

Several smaller population centers, including Zion, Floyd Dale, and Fork, lie within the area defined by these incorporated places. This core area defines a concentration of population and commercial activity within the two-county site. Several other small population centers lie within a 5-mile radius of this core area, including Nichols and Lake View (east of the core area); Sellers (west of the core area); and Little Rock and Hamer (north of the core area). The transportation network is still relatively dense in these areas.

There are two small, isolated population centers in southern Marion County: Centenary and Gresham are, respectively, 10 and 20 miles south of Marion. The road system in this area tends to be sparse, and the population is scattered along the major roads.

Both counties contain large proportions of poor and near-poor. The percentage of households below the poverty line in 1990 approximates 25 percent in both Dillon and Marion counties. Approximately 40 percent of the population live below 125 percent of the poverty line. As Exhibit IV-3 shows, the area around Lake View has a lower incidence of low-income population, and the areas at the very northern and southern portions of the two-county area show a greater incidence of low-income populations.

The eastern portion of the two-county region, centered around Lake View, has the highest proportion of persons 65 years and over. This area is regarded as a retirement area. The proportion of elderly persons in other areas ranges from 8 to 14 percent, with the most northerly and southerly ends of the study area having smaller proportions of the elderly population.

# General Orientation Map

## South Carolina Study Area

Streets

Highways

County Boundary

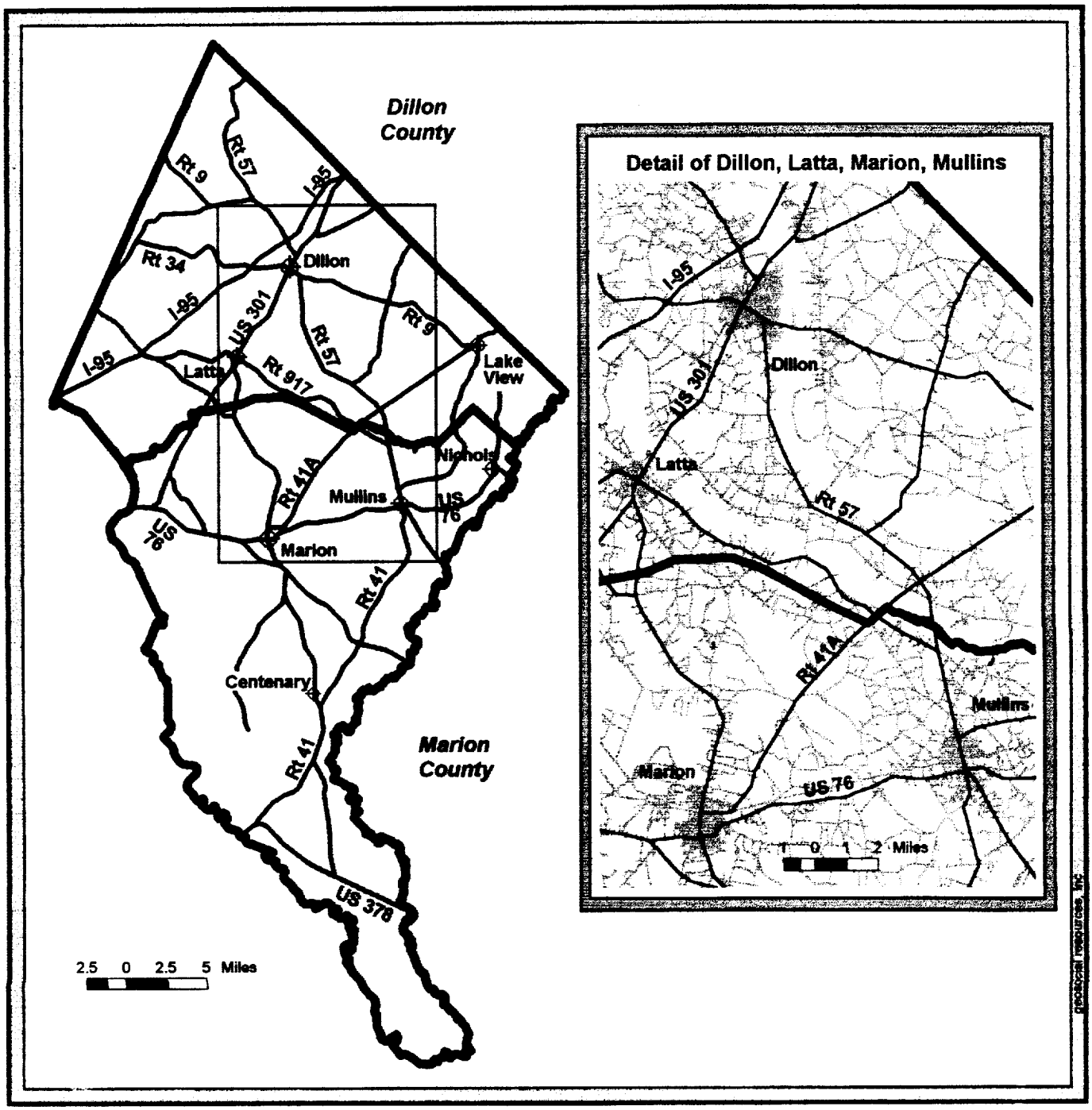


**Exhibit IV-2**

**Comparative Demographics for Dillon and Marion Counties, South Carolina**

| | Dillon | Marion |
|---|---|---|
| Total Population | 29,432 | 34,562 |
| Change in Population (1980-1990) | Down 5.3% | Up 1.1% |
| Percent Minorities | 45% | 54% |
| Population Density per Square Mile | 73 | 71 |
| Median Household Income | $18,365 | $17,825 |
| Households Below Poverty Level | 22% | 24% |
| Unemployment | 10% | 12% |
| Percent Urban | 23% | 40% |

Source: Bureau of Census County and City Data Book 1994

## Geographic Barriers and Transportation

The dominant features in this two-county region are the Little Pee Dee and the Pee Dee Rivers and the swamp area located between them. Many of the inhabitable areas are located in the central and northern part of the two-county area and along the major roads to the south.

The 1990 Census indicates that at least 80 percent of households have access to automobiles. Most roads in the area are paved, and weather is seldom a hindrance to access. Public transportation is provided by the Pee Dee Regional Transportation Authority (PDRTA). PDRTA works off a hub system, in which individuals are picked up at their homes and transported to major carriers at a central location. The Council on Aging provides transportation for older citizens for shopping and other activities. There are two taxi services in Marion County and one in Dillon County.

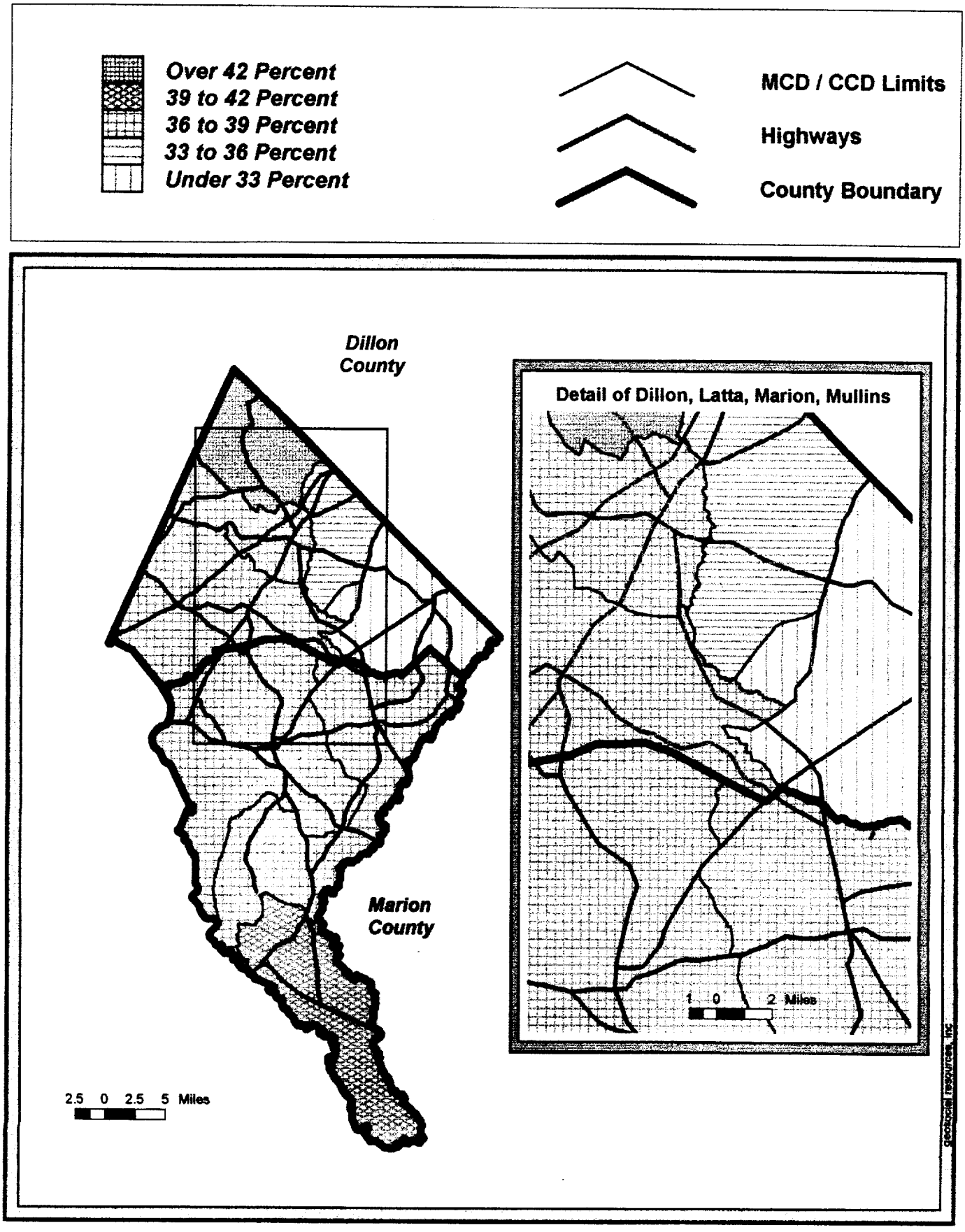
A survey performed in nearby Darlington County in preparation for Electronic Benefits Transfer (EBT) implementation provides some information on shopping patterns in this region.[1] The survey indicated that about 17 percent of respondents indicated that they traveled less than one mile to do shopping, while 32 percent traveled more than five miles. Thirty-eight percent drove to their shopping destination, 9 percent walked, and 8 percent took a taxi (the remainder replied "other" in response to this survey question). Twelve percent shopped once a week, and 83 percent shopped, at most, four times a week. Approximately 15 percent indicated that they were unable to travel for shopping for various unstated reasons.

[1] Statistics provided during interview with South Carolina Department of Social Services staff.

Table of Contents

# Percentage Below 125% of Povery Level: FSP Recipients and Non-Recipients

## South Carolina Study Area



## Food Stamp Recipients

The two counties have similar food stamp participant profiles. In the last 6 months of 1993, an average of 2,588 households participated monthly in the Food Stamp Program in Dillon County, or approximately 24 percent of the households in the county. In Marion County, the average was 2,974 households monthly, or 22 percent of the households in the county. For the area as a whole, approximately $10 million in benefits were issued to this population during 1993, evenly distributed between the two counties.

The distribution of recipient households in the study area was mapped using a 20 percent sample. As seen in Exhibit IV-4, the study population is largely concentrated in the four communities covered by the inset map.[2] Approximately 82 percent of the food stamp households live within this core area, 14 percent live just outside the core area, and only 4 percent live in the outlying areas (Centenary and Gresham).

## Food Retailers

Most food retailers in the area are authorized to redeem food stamps. In 1993, 83 retailers were authorized in Dillon County and 82 in Marion County (Exhibit IV-5). Across the two-county study region, there is an average of 38 stores per 1,000 food stamp households. Among those areas with five or more stores, Nichols, in Marion County, shows by far the highest density of retailers, and Marion and Mullins demonstrate the lowest densities. Little Rock, on the other hand, is unserved. In all, there were 16 supermarkets or large groceries with annual gross sales of more than $500,000 in each of the two counties. Some of these stores are part of large chains (Winn-Dixie, BiLo, Food Lion, and Piggly Wiggly), but there are a number of large independent stores also. The presence of supermarkets or large groceries varies dramatically across communities. Two of the six stores in Lake View and four of the 31 stores in Marion are large stores. On the other hand, many smaller communities do not have a supermarket or large grocery. In places that have large stores, the percentage of redemptions accounted for by supermarkets is 76 percent in Dillon County and 65 percent in Marion County. Nichols demonstrates a notably lower percentage of redemptions in supermarkets (20.2%) than other areas.

Exhibit IV-6 presents the geographic distribution of redemptions for all authorized food stamp retailers in the area. The data indicate that redemptions are concentrated in the core area (see the inset map), falling in and around the four communities shown there. Almost 90 percent of the redemptions in Dillon County flow through retailers in Dillon, Lake View, and Latta and 84 percent of the redemptions in Marion County flow through Marion and Mullins. The network of stores and redemptions runs mainly along the highways extending out of the city of Dillon, especially U.S. 301,

[2] It should be noted, however, that in a few communities (e.g., Lake View and Nichols in the east, and Rains, Centenary, and Gresham in the south), individuals were mapped to central locations and therefore exhibit themselves as multiple households. Some households in and around the four most populous communities were also mapped to central locations, because their addresses could not be better specified in the geocoding.

# Distribution of FSP Participating Households

## *South Carolina Study Area*

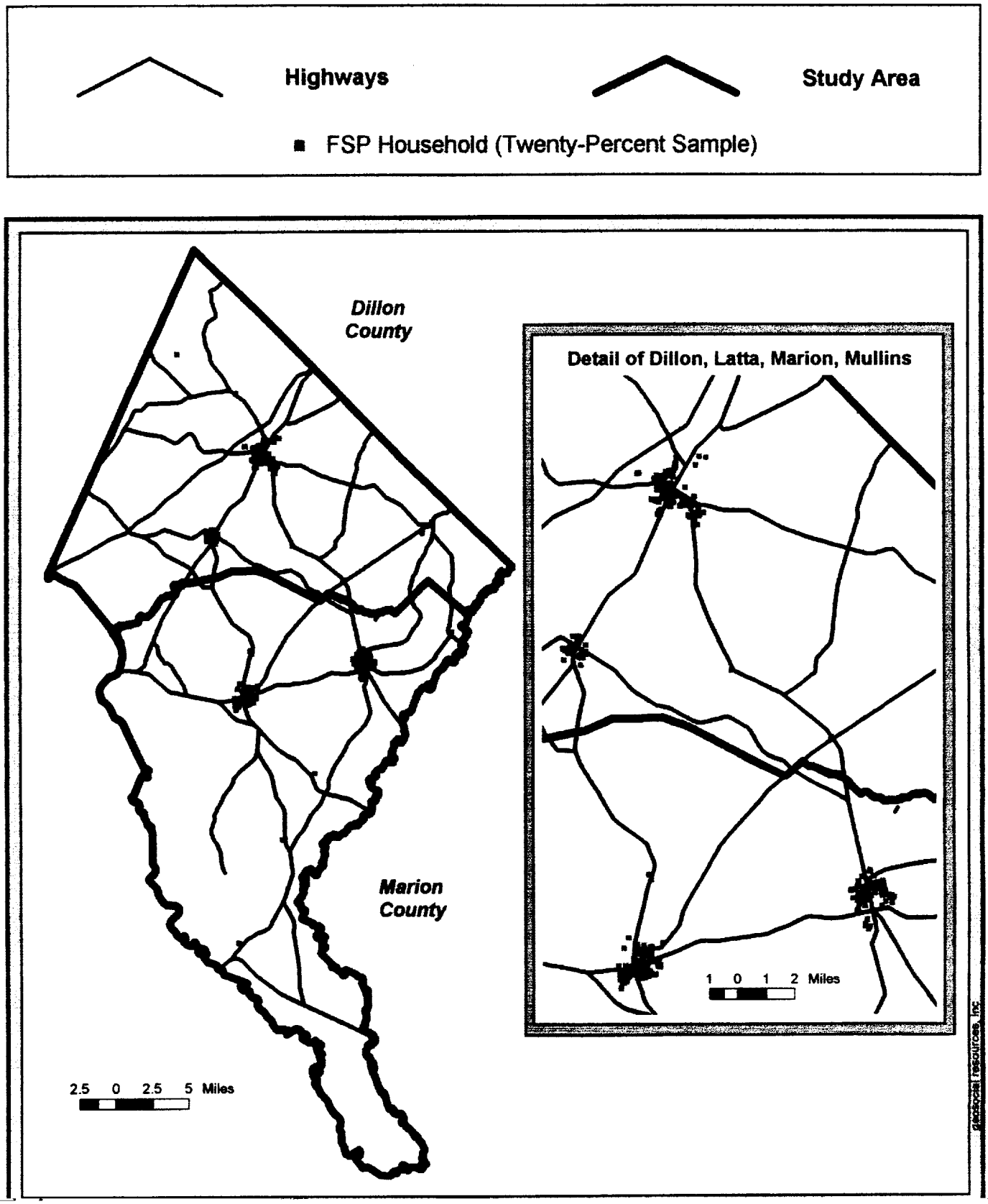


**Exhibit IV-5**

**Authorized Retailer Presence in the South Carolina Study Area**

| Geographic Component | Supermarkets and Large Groceries | | All Stores | | |
|---|---|---|---|---|---|
| | Percentage of All Stores in Geographic Component | Percentage of All Redemptions in Geographic Component | Number of Stores | Total Redemptions ($) | Stores per 1,000 FSP Households* |
| **Dillon County** | 9.6% | 75.8% | 83 | 5,078,666 | 36.07 |
| Dillon | 10.2 % | 79.6% | 49 | 4,082,058 | 35.03 |
| Floyd Dale | 0% | 0% | 1 | 5,545 | 111.1 |
| Fork | 0% | 0% | 1 | 115,895 | 41.67 |
| Hamer | 0% | 0% | 6 | 70,953 | 56.60 |
| Lake View | 33.3% | 83.8% | 6 | 320,486 | 31.58 |
| Latta | 5.3% | 68.6% | 19 | 479,829 | 39.26 |
| Little Rock | 0% | 0% | 0% | 0% | --- |
| Minturn | 0% | 0% | 1 | 3,900 | 71.43 |
| **Marion County** | 9.8% | 64.9% | 82 | 5,582,924 | 30.19 |
| Rains | 0% | 0% | 1 | 30,995 | 18.18 |
| Sellers | 0% | 0% | 2 | 454,881 | 19.80 |
| Marion | 16.1% | 85.9% | 31 | 2,848,992 | 26.29 |
| Mullins | 7.1% | 60.7% | 28 | 1,849,643 | 26.39 |
| Nicols | 9.1% | 20.1% | 11 | 254,430 | 102.80 |
| Centenary | 0% | 0% | 2 | 69,205 | 42.55 |
| Gresham | 0% | 0% | 7 | 74,778 | 42.17 |

Source: Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

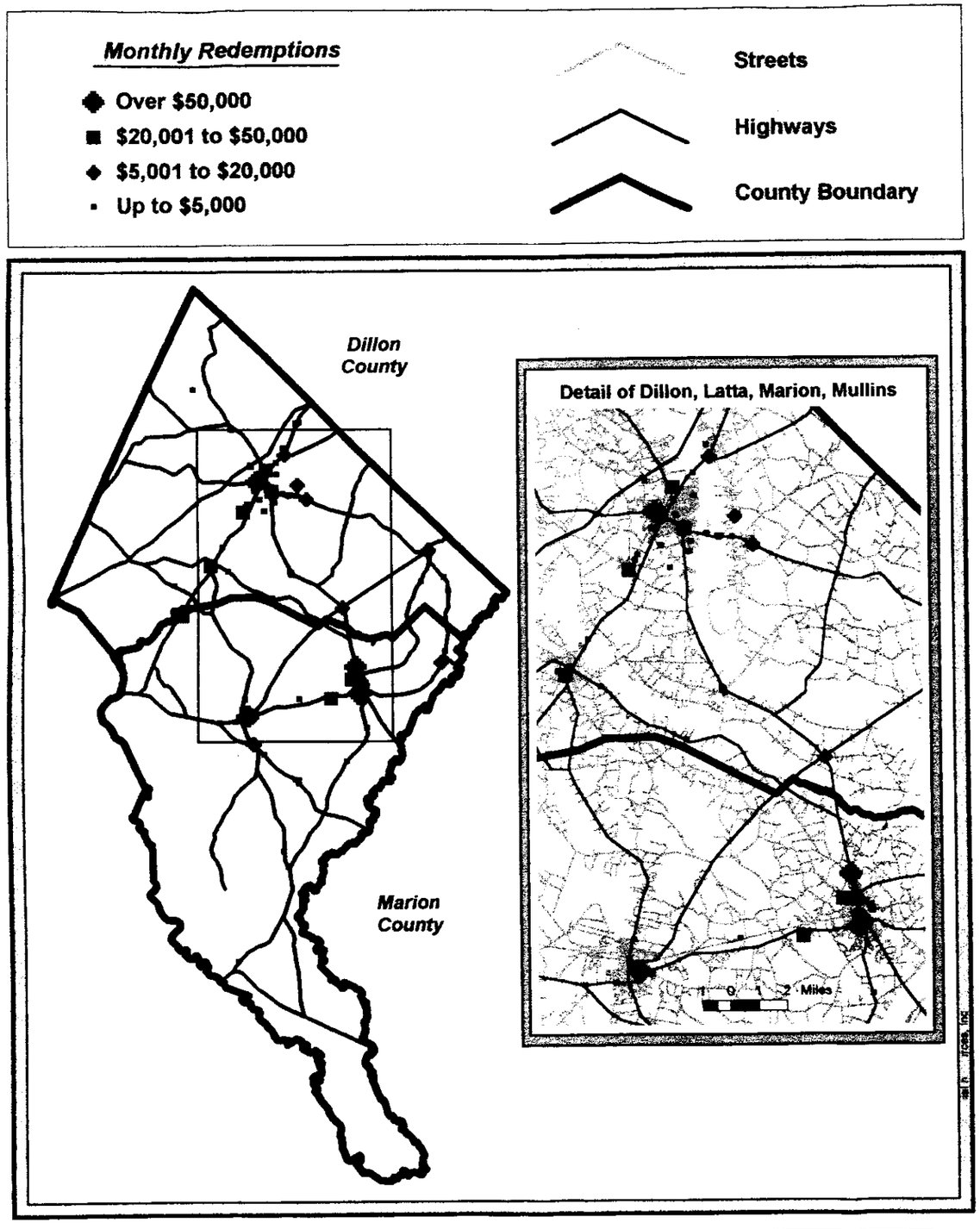
*Retailer density figures may exceed the number of stores in areas where FSP households are few in number. We use the denominator of 1,000 to be consistent across all study sites.

Route 57, and Route 9. One runs between Marion and Mullins, along U.S. 76. Another concentration of authorized retailers runs along U.S. 301 between Dillon and Latta. Exhibit IV-7, which maps redemptions for stores with sales over $500,000, shows a further concentration of retailers within the core area.

**Exhibit IV-6**

## Monthly FS Redemptions: All Participating Outlets

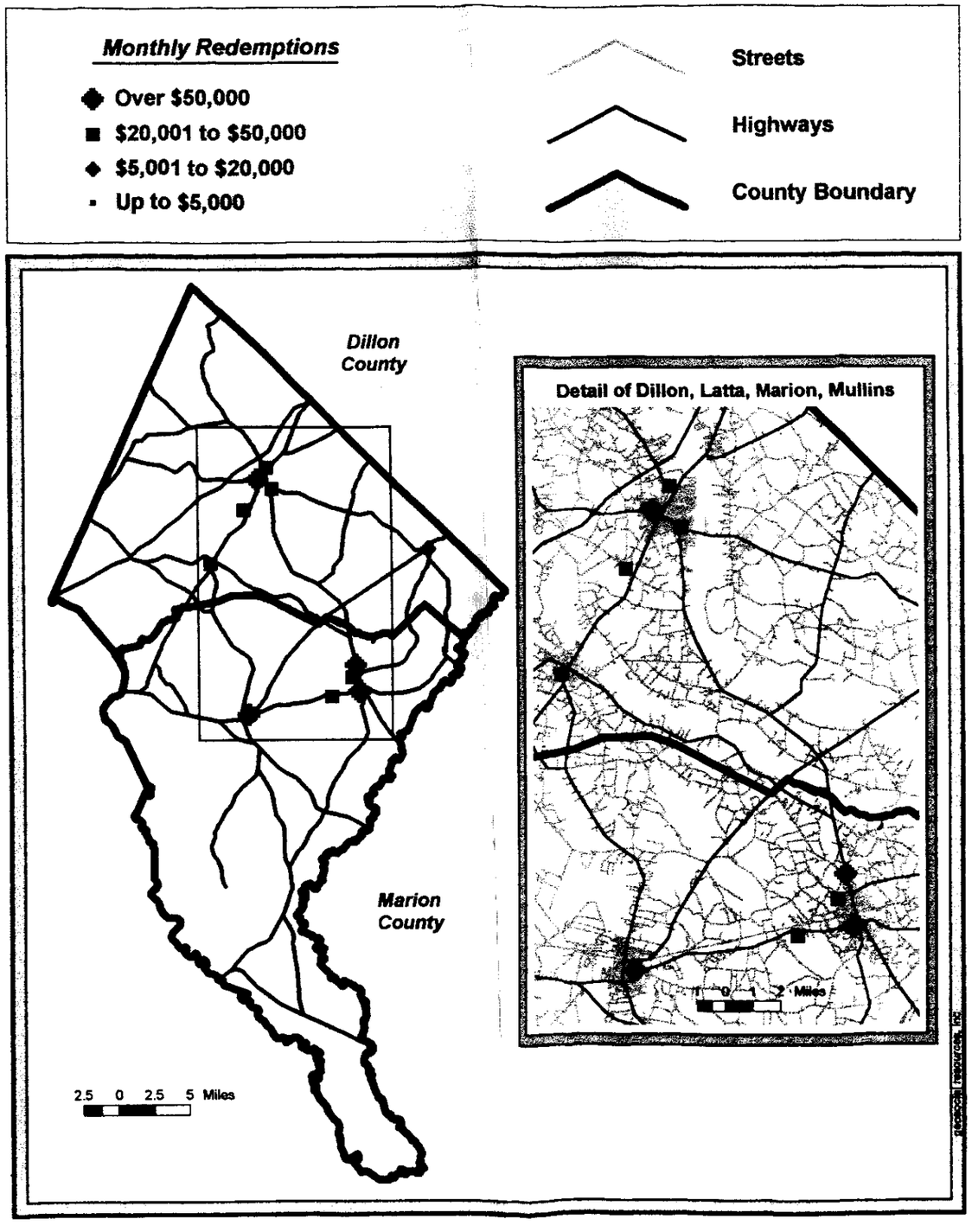
*South Carolina Study Area*






## Monthly FS Redemptions: SM/GS With Annual Sales Over $500,000

*South Carolina Study Area*



## Proximity of FSP Participants to Retailers

Exhibit IV-8 indicates results of the access study in the entire two-county area, and Exhibits IV-9 and IV-10 present results for the communities of Dillon and Marion, respectively. Across the full study area, more than 60 percent of the recipient households were within one quarter-mile of some authorized retailer, and only one in 20 recipient households was more than one half-mile from some authorized retailer. The latter figure seems to be driven primarily by the availability of convenience stores. As seen in Exhibit IV-8, more than 70 percent of recipient households are within one half-mile of a convenience store.

Almost half of recipient households (44 percent) are located less than one half-mile from a larger supermarket or grocery, and about 84 percent are located within one mile of such a retailer. Only one in 12 recipient households is located more than five miles from an authorized supermarket or large grocery.

Comparing the cities of Dillon (Exhibit IV-9) and Marion (Exhibit IV-10), we find similar proximity to an authorized retailer. About 96 percent of recipient households in each city are within one half-mile of an authorized retailer. However, we find that households are closer to larger retailers in Marion than in Dillon. In these exhibits, the data suggest that 36 percent of the Dillon households and 60 percent of the Marion households are within one half-mile of larger supermarkets and groceries.

Exhibit IV-11 indicates that there are only a few households that are not within one mile of an authorized retailer. Most of these households lie outside of the core area. This pattern is maintained when the coverage is reduced to one-half mile (Exhibit IV-12). A few households at the outskirts of Marion, Dillon, and Latta appear to be outside one-half mile coverage. Largely, most individuals live within one half-mile of an authorized retailer.

When supermarkets and large groceries are considered, households that are not within one mile of these stores are located largely outside of the core area (Exhibit IV-13). There are clusters of households in Marion, Mullins, and Dillon that are outside of this limit. When one-half mile proximity is considered, there are notable households in Dillon, Marion, Mullins, and Latta that are more than this distance from a large store (Exhibit IV-14). The map confirms the data provided in Exhibit IV-8 that indicates most households are located at least one half-mile from authorized large retailers. This map also helps us interpret the results found in Exhibits IV-9 and IV-10 on half-mile proximity to these supermarkets and larger stores in the cities of Dillon and Marion. As indicated in the last section, it would appear that 60 percent of the Marion households and 36 percent of the Dillon households are within one half-mile of large supermarkets and groceries. However, comparing Exhibit IV-9 with Exhibit IV-10, we find that the generalized locations corresponding to more than 100 households in Marion fall within the half-mile radius of one of these retailers, while the location for the generalized geocoding in Dillon falls just outside that radius. Because these locations are an approximation of the true location of recipients, the apparent difference in half-mile access is somewhat artifactual.

**Exhibit IV-8**

**Proximity of Food Stamp Participating Retailers to Recipients**
**South Carolina Study Area**

| FSP Retailer Type: | Total Recipients | Under .25 mile | Under .5 mile | Under 1 mile | Under 2 miles | Under 5 miles | Median Distance | Mean Distance |
|---|---|---|---|---|---|---|---|---|
| Supermarket | [4987] | 571 | 1720 | 3606 | 4046 | 4302 | | |
| | *% of total* | *11.45* | *34.49* | *72.31* | *81.13* | *86.26* | *0.80* | *2.10* |
| Large Grocery | [4987] | 245 | 483 | 1254 | 1632 | 1689 | | |
| | *% of total* | *4.91* | *9.69* | *25.15* | *32.73* | *33.87* | *6.33* | *7.27* |
| Small Grocery | [4987] | 1514 | 2671 | 3716 | 4552 | 4841 | | |
| | *% of total* | *30.36* | *53.56* | *74.51* | *91.28* | *97.07* | *0.43* | *0.83* |
| Convenience Store | [4987] | 1753 | 3546 | 4441 | 4759 | 4797 | | |
| | *% of total* | *35.15* | *71.10* | *89.05* | *95.43* | *96.19* | *0.35* | *0.72* |
| Specialty Food Store | [4987] | 782 | 2268 | 4256 | 4401 | 4633 | | |
| | *% of total* | *15.68* | *45.48* | *85.34* | *88.25* | *92.90* | *0.51* | *1.11* |
| Gas/Grocery Combination | [4987] | 158 | 522 | 1134 | 1978 | 2832 | | |
| | *% of total* | *3.17* | *10.47* | *22.74* | *39.66* | *56.79* | *2.48* | *3.40* |
| All Others | [4987] | 719 | 1600 | 2470 | 4152 | 4713 | | |
| | *% of total* | *14.42* | *32.08* | *49.53* | *83.26* | *94.51* | *1.01* | *1.76* |
| **Supermarket or Large Grocery** | **[4987]** | **816** | **2203** | **4203** | **4342** | **4598** | | |
| | ***% of total*** | ***16.36*** | ***44.17*** | ***84.28*** | ***87.07*** | ***92.20*** | ***0.54*** | ***1.51*** |
| All Retailers | [4987] | 3175 | 4737 | 4861 | 4987 | 4987 | | |
| | *% of total* | *63.67* | *94.99* | *97.47* | *100.0* | *100.0* | *0.19* | *0.24* |

Source: Geo Social Resources Inc. and Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

**Exhibit IV-9**

**Proximity of Food Stamp Participating Retailers to Recipients**
**Dillon Component**
**(South Carolina Study Area)**

| FSP Retailer Type: | Total Recipients | Under .25 mile | Under .5 mile | Under 1 mile | Under 2 miles | Under 5 miles | Median Distance | Mean Distance |
|---|---|---|---|---|---|---|---|---|
| Supermarket | [1393] | 94 | 299 | 1075 | 1393 | 1393 | | |
| | *% of total* | *6.75* | *21.46* | *77.17* | *100.0* | *100.0* | *0.80* | *0.84* |
| Large Grocery | [1393] | 73 | 201 | 958 | 1336 | 1393 | | |
| | *% of total* | *5.24* | *14.43* | *68.77* | *95.91* | *100.0* | *0.54* | *0.80* |
| Small Grocery | [1393] | 531 | 637 | 1169 | 1393 | 1393 | | |
| | *% of total* | *38.12* | *45.73* | *83.92* | *100.0* | *100.0* | *0.57* | *0.52* |
| Convenience Store | [1393] | 802 | 1250 | 1393 | 1393 | 1393 | | |
| | *% of total* | *57.57* | *8973* | *100.0* | *100.0* | *100.0* | *0.17* | *0.22* |
| Specialty Food Store | [1393] | 127 | 947 | 1311 | 1393 | 1393 | | |
| | *% of total* | *9.12* | *6798* | *94.11* | *100.0* | *100.0* | *0.41* | *0.49* |
| Gas/Grocery Combination | [1393] | 0 | 0 | 0 | 0 | 4 | | |
| | *% of total* | *0.00* | *0.00* | *0.00* | *0.00* | *0.29* | *6.14* | *6.14* |
| All Others | [1393] | 139 | 231 | 426 | 1393 | 1393 | | |
| | *% of total* | *9.98* | *16.58* | *30.58* | *100.0* | *100.0* | *1.07* | *0.94* |
| **Supermarket or Large Grocery** | **[1393]** | **167** | **500** | **1376** | **1393** | **1393** | | |
| | ***% of total*** | ***11.99*** | ***35.89*** | ***98.78*** | ***100.0*** | ***100.0*** | ***0.54*** | ***0.50*** |
| All Retailers | [1393] | 1031 | 1334 | 1393 | 1393 | 1393 | | |
| | *% of total* | *74.01* | *95.76* | *100.0* | *100.0* | *100.0* | *0.08* | *0.16* |

Source: Geo Social Resources Inc. and Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

**Exhibit IV-10**

**Proximity of Food Stamp Participating Retailers to Recipients**
**Marion Component**
**(South Carolina Study Area)**

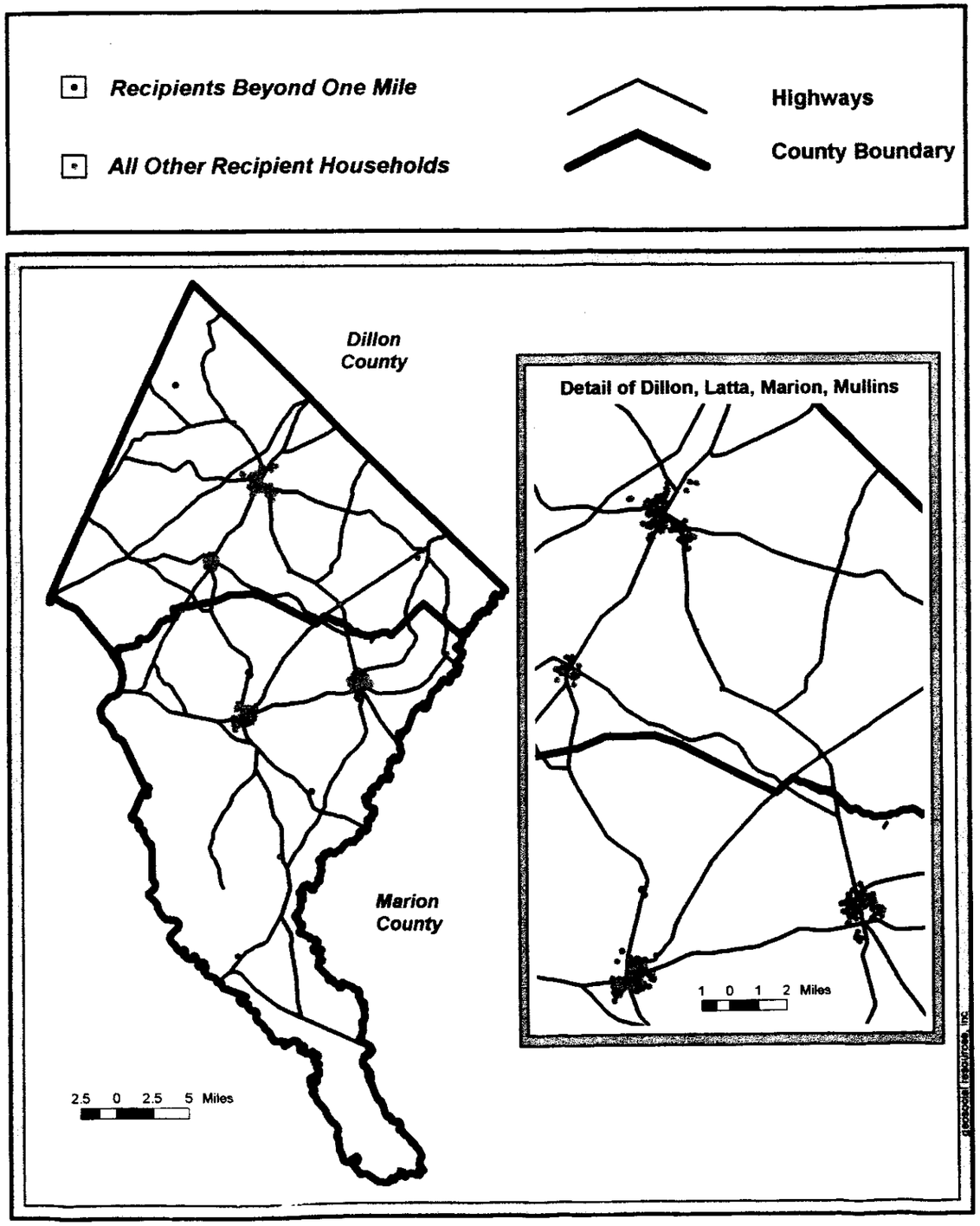
| FSP Retailer Type: | Total Recipients | Under .25 mile | Under .5 mile | Under 1 mile | Under 2 miles | Under 5 miles | Median Distance | Mean Distance |
|---|---|---|---|---|---|---|---|---|
| Supermarket | [1118] | 335 | 674 | 1062 | 1118 | 1118 | | |
| | *% of total* | *29.96* | *60.29* | *94.99* | *100.0* | *100.0* | *0.41* | *0.47* |
| Large Grocery | [1118] | 0 | 0 | 0 | 0 | 0 | | |
| | *% of total* | *0.00* | *0.00* | *0.00* | *0.000* | *100.0* | *14.60* | *14.72* |
| Small Grocery | [1118] | 546 | 715 | 1091 | 1118 | 1118 | | |
| | *% of total* | *48.84* | *63.95* | *97.58* | *100.0* | *100.0* | *0.26* | *0.39* |
| Convenience Store | [1118] | 493 | 944 | 1118 | 1118 | 1118 | | |
| | *% of total* | *44.10* | *84.44* | *100.0* | *100.0* | *100.0* | *0.34* | *0.34* |
| Specialty Food Store | [1118] | 76 | 322 | 1059 | 1118 | 1118 | | |
| | *% of total* | *6.80* | *28.80* | *94.72* | *100.0* | *100.0* | *0.51* | *0.54* |
| Gas/Grocery Combination | [1118] | 0 | 0 | 0 | 294 | 1118 | | |
| | *% of total* | *0.00* | *0.00* | *0.00* | *26.30* | *100.0* | *2.44* | *2.28* |
| All Others | [1118] | 52 | 153 | 547 | 1118 | 1118 | | |
| | *% of total* | *4.65* | *13.69* | *48.93* | *100.0* | *100.0* | *1.01* | *0.88* |
| **Supermarket or Large Grocery** | **[1118]** | **335** | **674** | **1062** | **1118** | **1118** | | |
| | ***% of total*** | ***29.96*** | ***60.29*** | ***94.99*** | ***100.0*** | ***100.0*** | ***0.41*** | ***0.47*** |
| All Retailers | [1118] | 763 | 1073 | 1118 | 1118 | 1118 | | |
| | *% of total* | *68.25* | *95.97* | *100.0* | *100.0* | *100.0* | *0.19* | *0.24* |

Source: Geo Social Resources Inc. and Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

## Exhibit IV-11

## One-Mile Access to Any FSP Participating Retailer

### South Carolina Study Area

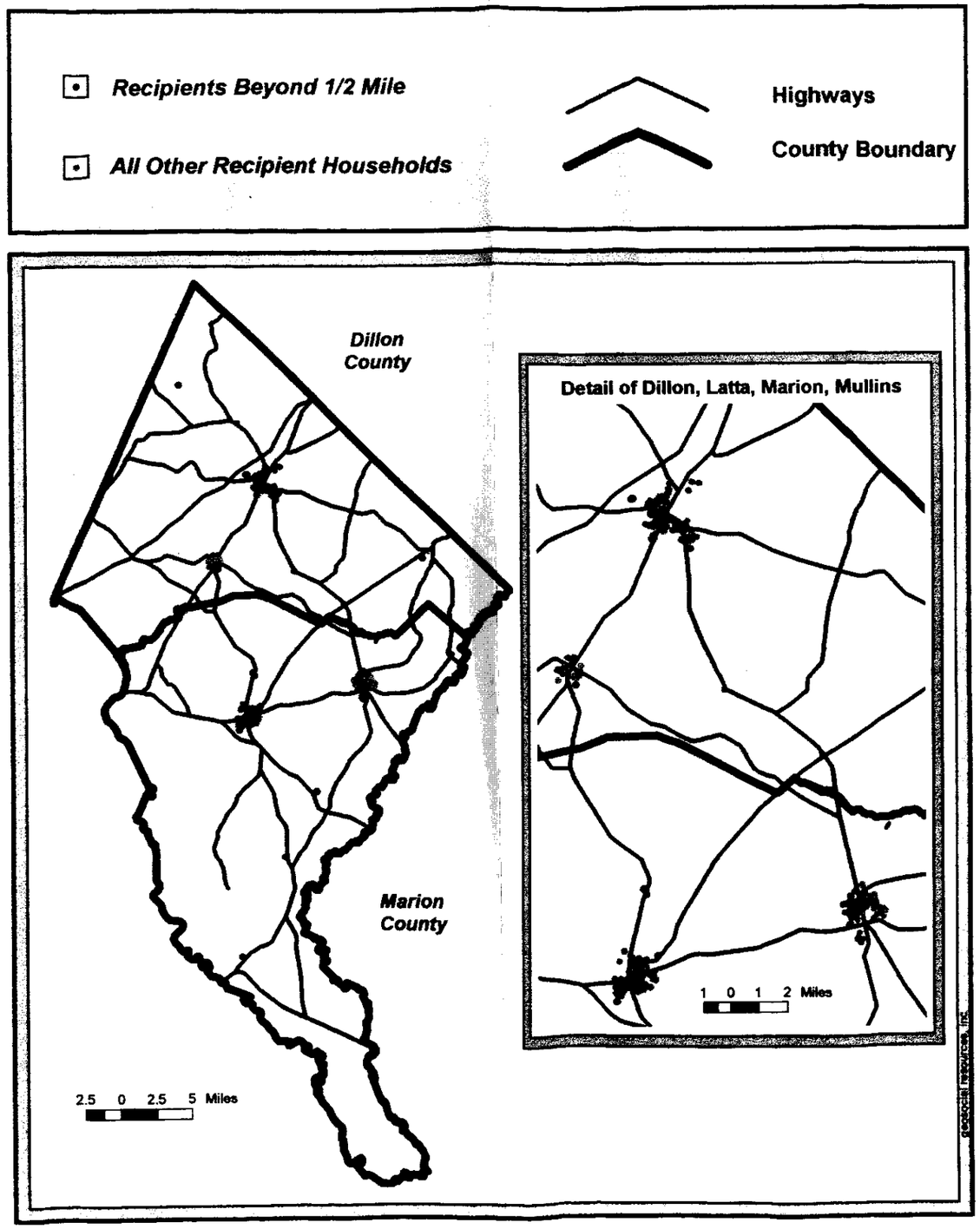





## Exhibit IV-12

## Half-Mile Access to Any FSP Participating Retailer

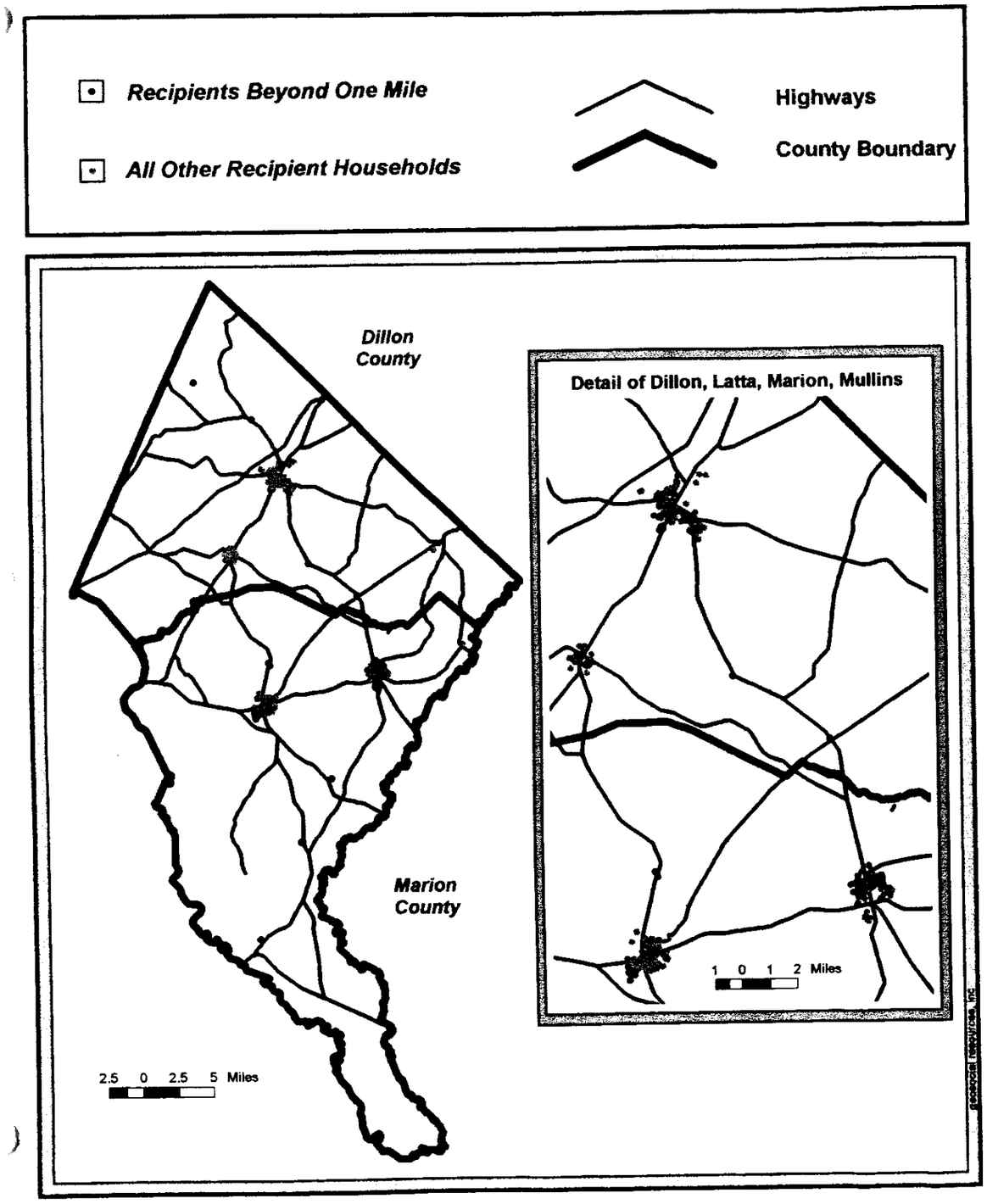
### South Carolina Study Area



## One-Mile Access to FSP SM/GS With Annual Sales Over $500,000

***Exhibit IV-13***

***South Carolina Study Area***

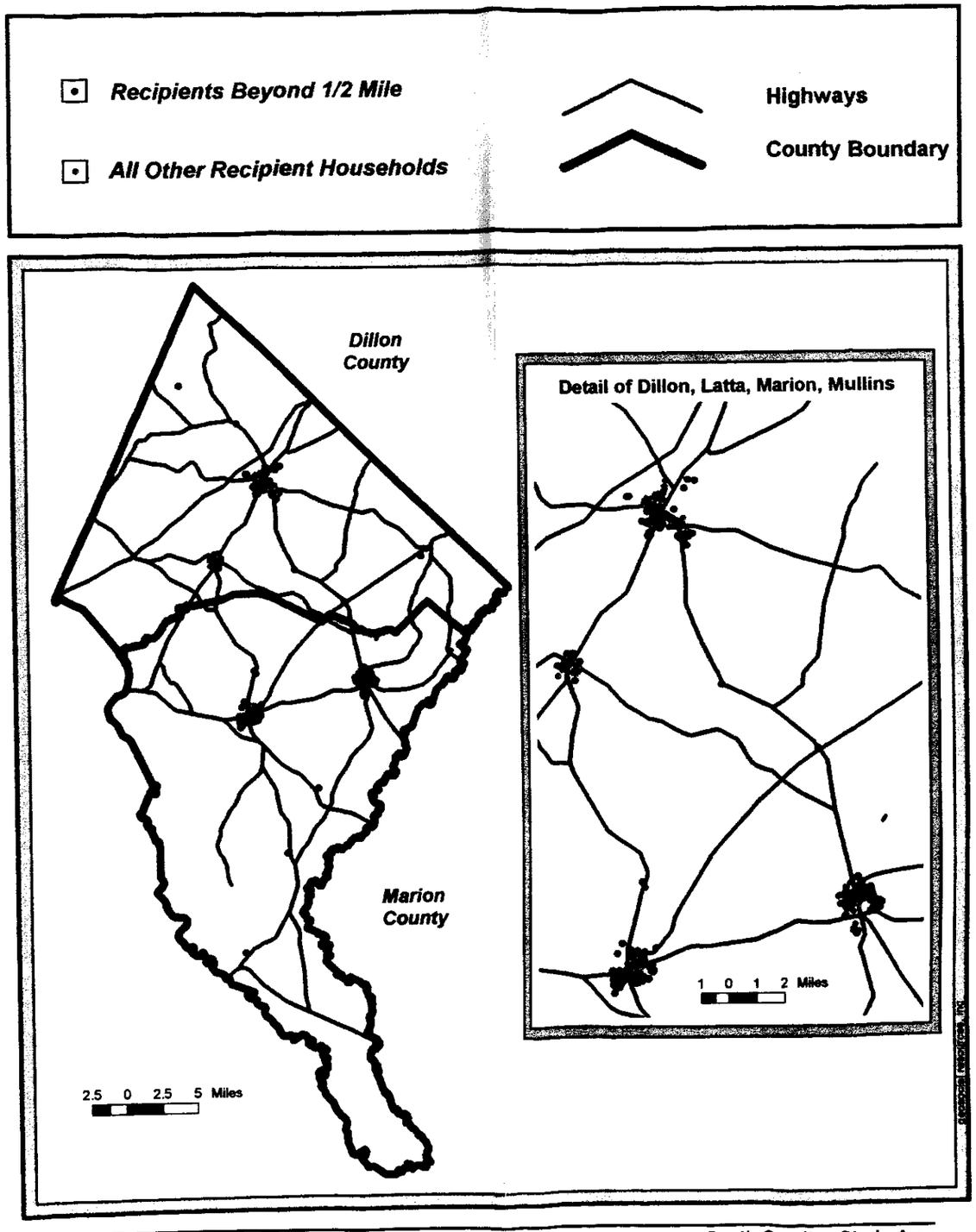





## Half-Mile Access to FSP SM/GS With Annual Sales Over $500,000

***Exhibit IV-14***

***South Carolina Study Area***



## Redemption Flows

Exhibit IV-15 provides further information on redemption patterns in the area by providing a measure of market adequacy. (As noted in an earlier section, a value of greater than 1 indicates that the stores in the area are redeeming more food stamps than are issued in the area, while a value of less than 1 indicates an outflow of food stamps.) The data indicate that retailers located in the four major population centers (i.e., Dillon, Mullins, Marion, and Fork), as well as Sellers and Nichols, experience an inflow of food stamps. All other areas experience an outflow of food stamps. Although it has no supermarkets or large groceries, Sellers has two retailers that retailers that redeem an average of $200,000 a year in food stamps, which constitutes more than one-half of redemptions in that township. Nichols, on the other hand, has 11 stores and one large store. However, the large store accounts for 20 percent of all redemptions in the area. Nichols is therefore a community that seems to meet food needs through smaller stores. On the outflow side, the area in south Marion County has relatively fewer redemptions. It can be assumed that most of the food stamps flow north to the core area.

**Exhibit IV-15**

**Redemption Flows in the South Carolina Study Area**

half in Mullins, are handled by one retailer in each of the communities, indicating that some stores are heavily used by the food stamp population.

## Discussion

Dillon and Marion Counties constitute a rural region focused around a central core of very small cities. Major conclusions from the analysis are:

- **The two-county area seems to be self-sustaining in terms of food access.** There seems to be little outflow of food stamps from the area, indicating that few individuals are shopping in the larger metropolitan areas to the north (North Carolina) and south (Florence) of the area.

- **The area defined by the communities of Dillon, Marion, Mullins, and Latta is dominant in terms of both access and food stamp transactions.** This area, which contains most of the population in the study area, also contains most of the retailers. Individuals living in other parts of the county who do not have such access to large retailers seem to be drawn to this core area.

- **Some parts of the county are unserved by larger stores.** The remote areas located in the northern end of Dillon County and the southern end of Marion County tend to have no full-range stores and to be "overserviced" by smaller stores. Food stamps issued to households in these areas seem to flow to the core area.

- **Supermarkets and large groceries in some areas seem to do a poorer job in attracting and servicing food stamp participants.** Redemption flow information in Lake View indicates that some of the food stamp business is occurring in other communities despite the presence of larger stores. This pattern may reflect: (1) the inability or lack of interest of stores to service local populations; (2) the placement of stores within that community may be distant from lower-income areas; or (3) the presence of stores in other communities draws food stamp participants. There is evidence from on-site interviews that some stores in Dillon orient themselves toward serving food stamp participants.

  Perceptions of industry and community leaders involved in food access in the area reinforced the lack of access in certain remote portions of the county. The general impression is that the core area defined by Dillon, Latta, Marion, and Mullins provides a full range of shopping options—several people commented that shoppers traveled from North Carolina to local stores. It was noted, and the analysis confirmed, that there was a concentration of food business in the hands of a few retailers. For instance, one retailer was identified as owning six convenience/gas stores within the county; another was identified as the primary provider for food stamp recipients in Dillon.

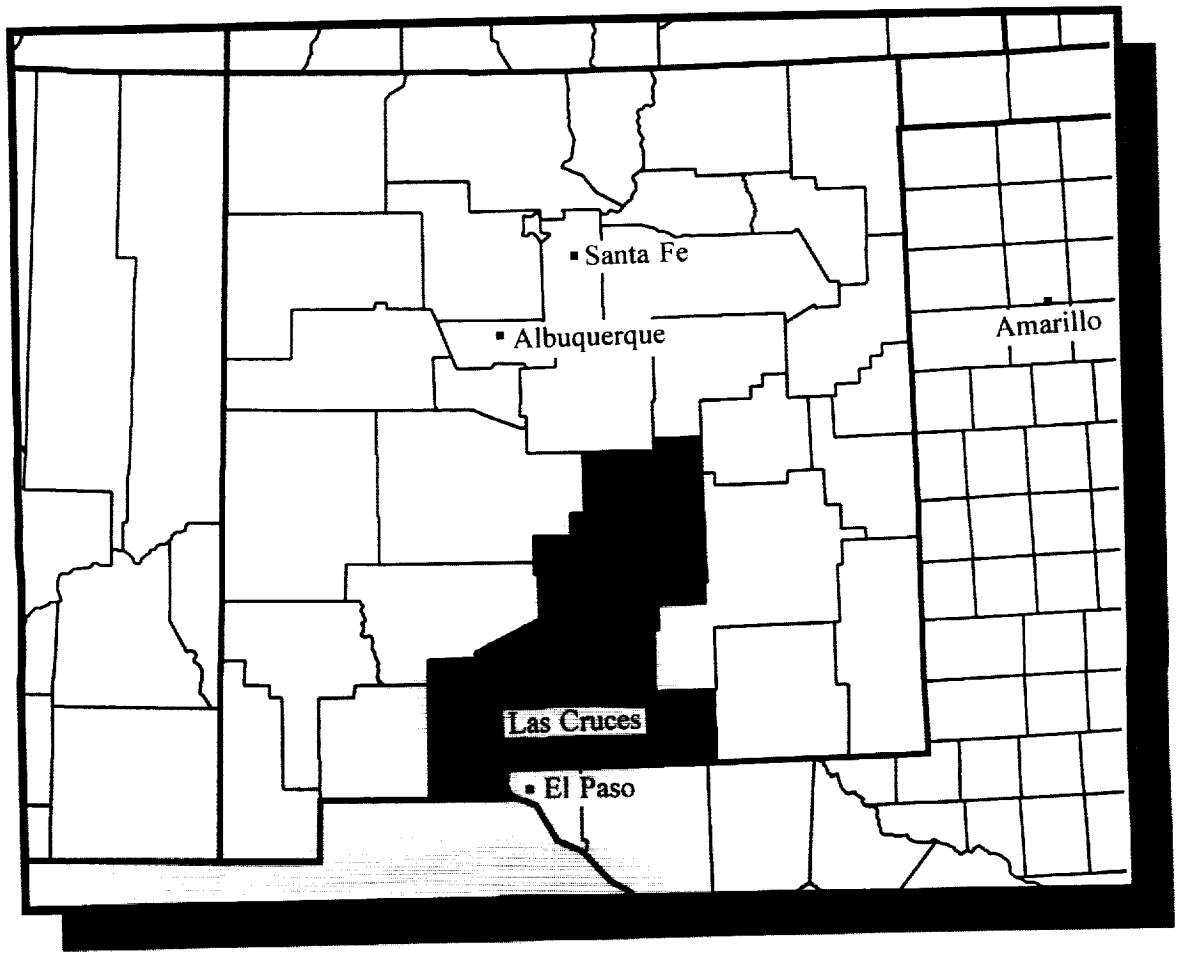
  In the more rural areas of the county, there is the perception that major shopping trips were done weekly to purchase staples and that some individuals would have to drive 15 miles to get to a full-line grocery store. In these rural areas, households supplemented their grocery needs from the "moms and pops." Some of the more rural, smaller stores increase the variety of foods sold during spring through fall due to the influx of migrant workers and travelers headed

for coastal communities during the summer months. In addition to these special instances of catering to certain populations, there was also a perception that certain retailers did a better job of stocking foods popular with minorities.

Table of Contents

# Section V

## South Central New Mexico Study Area



# Section V. South Central New Mexico Study Area

The focus of the fourth study area is a three-county area in south central New Mexico. The three counties—Dona Ana County, Otero County, and Lincoln County—are similar in terms of their geographic expanse and topography and by the inaccessibility that characterizes much of the area. They are dissimilar, however, in other aspects. Dona Ana contains one small city (Las Cruces) and a large Hispanic population. Otero County includes an Indian reservation, thus providing a perspective on issues related to retailer access for Native Americans. Lincoln County provides the perspective of a very sparsely populated area with few population centers. For our purposes, the focus will be on two areas: (1) Dona Ana County and (2) the upper half of Otero and lower half of Lincoln Counties. The following analysis explores how their differences affect availability and access to retailers.

## Dona Ana County

Dona Ana County is 3,819 square miles and has a population of 135,500, almost 74 percent of whom live in areas classified by the Census as urban. The major defining feature of the county is the Rio Grande River, which runs north to south to El Paso through the Mesilla Valley (Exhibit V-1). Most of the population is located along the river and the highways and secondary roads that parallel it. In the northwestern portion of the county, there are numerous small agricultural towns (e.g., Hatch, Rincon) spaced along the river and along Interstate 25. In the approximate center of the county is Las Cruces, which has a population of approximately 62,000. In the southeastern portion of the county are several population centers, most notably Sunland Park and Anthony. Sunland Park has easy access to Ciudad Juarez, Mexico, and El Paso, Texas. Anthony is a twin city of Anthony, Texas, and is also near El Paso. In all, the county contains 16 incorporated cities and numerous unincorporated ones. One of the features of the southern portion of Dona Ana County are the colonias. Colonias are rural, unincorporated, undeveloped subdivisions that lack the infrastructure to provide adequate living conditions.[1] Dona Ana has 33 designated colonias, which contain about 22 percent of the county's population.

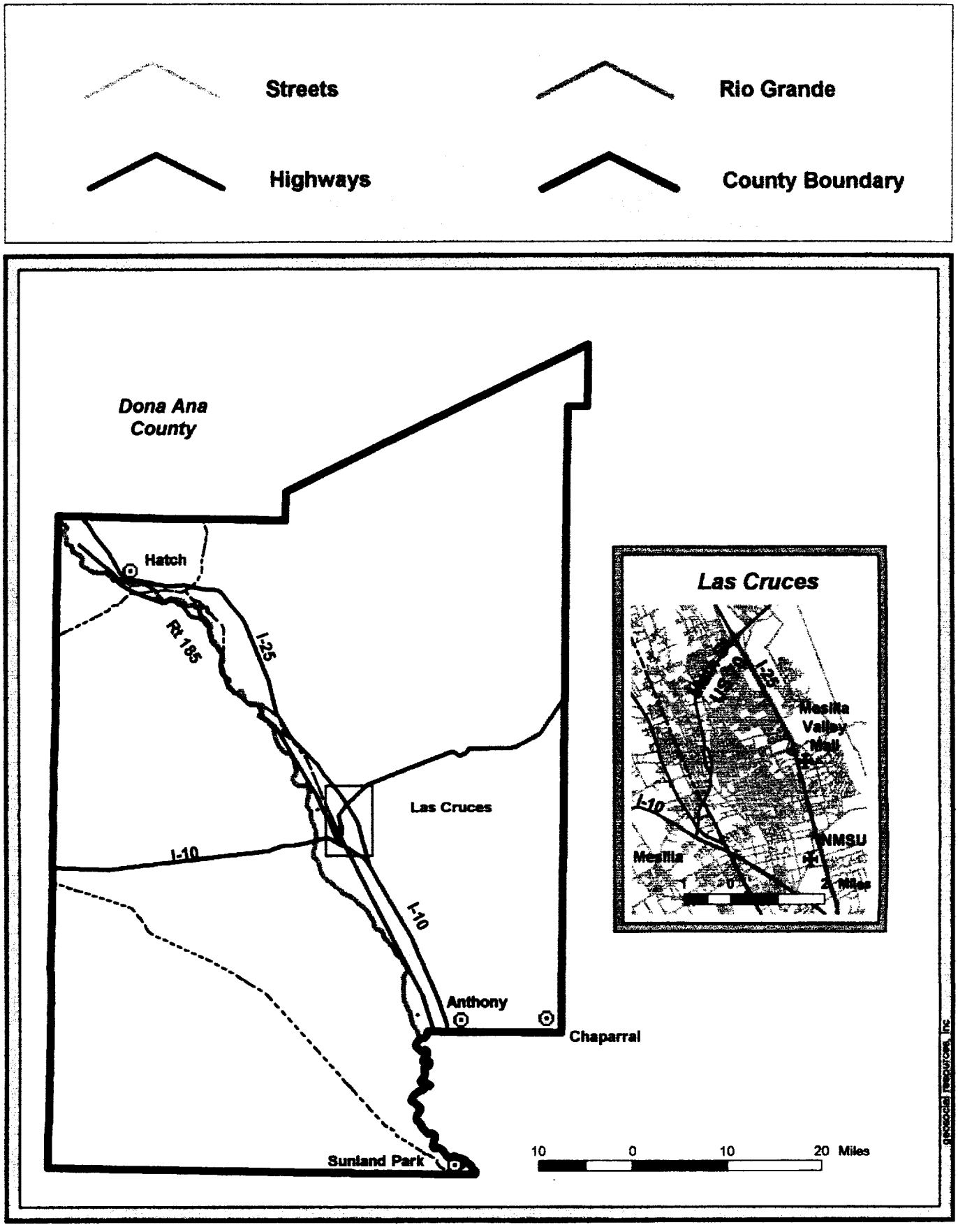
The majority of the population (55 percent) in the county is of Hispanic descent. In 1990, unemployment was 9.4 percent, and one quarter of the population was under the poverty line. Exhibit V-2 describes the level of poverty and near-poverty in the county. The northern part of the county (i.e., Hatch, Rincon) has the greatest proportion of low-income families, with the southern portion of the county a close second. Although it has relatively lower poverty rates, Las Cruces still demonstrates a near-poverty rate (125 percent of the poverty line) of 20 to 30 percent. With regard to older persons, the northern part of the county and Las Cruces have the highest proportions of older persons.

---

[1] Colonias are defined as subdivisions in which one or more of the following conditions exist: (1) lack of potable water supply or no water system, (2) lack of adequate wastewater system, (3) lack of decent, safe, and sanitary housing, (4) inadequate roads, and (5) inadequate drainage control structures.

# General Orientation Map

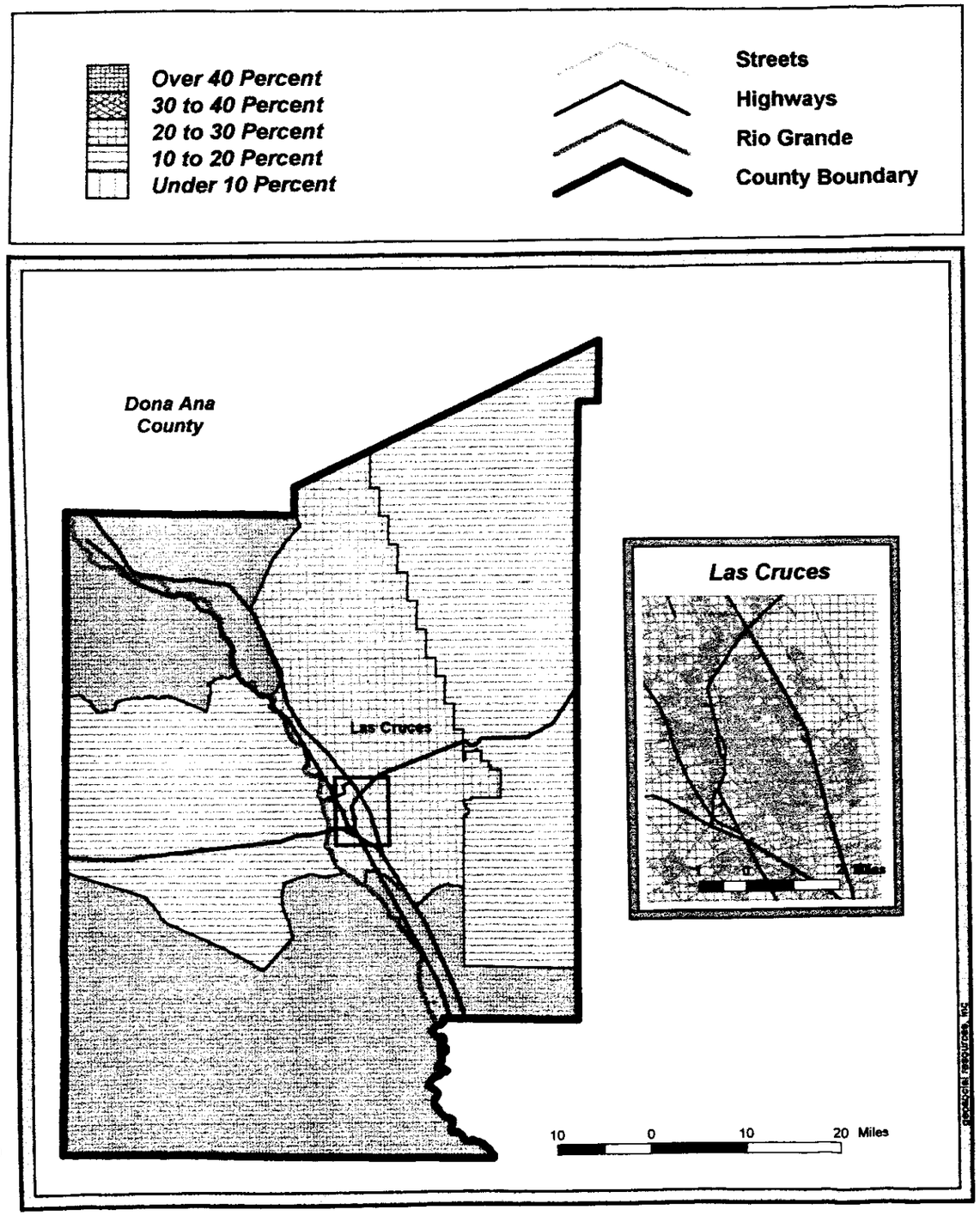
## *Dona Ana County New Mexico Study Area*



## Exhibit V-2

**Percentage Below 125% of Poverty Level: FSP Recipients and Non-Recipients**

*Dona Ana County*
*New Mexico Study Area*

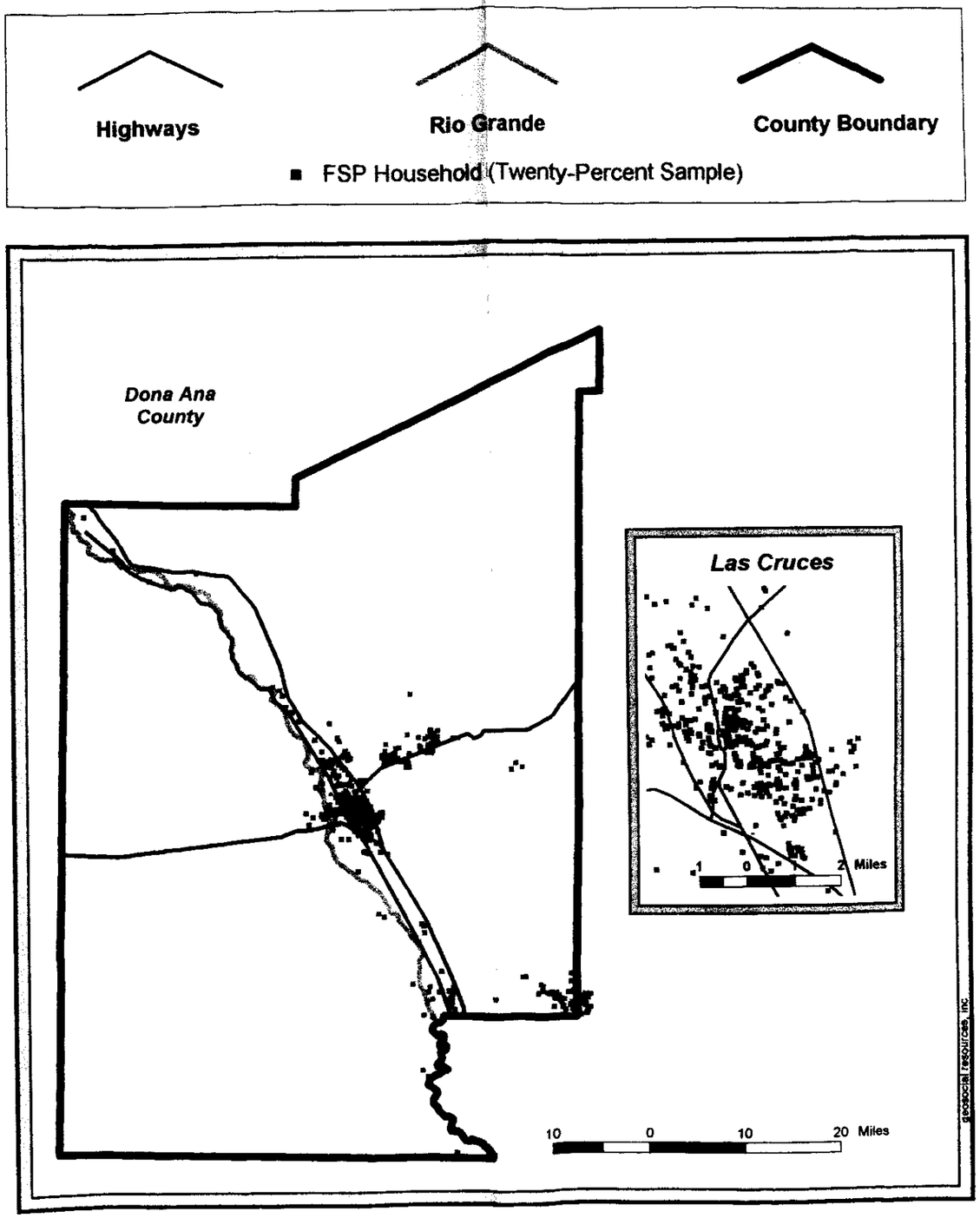





## Exhibit V-3

**Distribution of FSP Participating Households**

*Dona Ana County*
*New Mexico Study Area*



## *Geographic Barriers and Transportation*

Two geographic features may pose access problems for the population. First, the terrain outside Mesilla Valley, which contains the Rio Grande River, is extremely mountainous and, except for a few major roads, is not easily accessed. As a consequence, there are few population centers outside the Mesilla Valley. Although there are numerous bridges along its length, the Rio Grande poses a major barrier to access.

In addition to the geographic barriers, there is also the potential barrier of access for the population living along the border between Texas and New Mexico. Although this does not affect the flow of food stamps, it does affect the use of Women, Infants, and Children (WIC) Program vouchers. In addition, blue laws and other regulations generate different access patterns in the two States. One comment expressed during our site visits was that, until Texas repealed its blue laws, households on the border did their shopping at Las Cruces rather than in nearby stores across the border.

Population centers follow the route of the Rio Grande River north through the county. Parallel to the river, Interstate 25 is a major limited-access highway from Las Cruces to Hatch in the northern part of the county. This highway is supplemented by a network of secondary roads that directly access places along this north-south corridor. Interstate 10 proceeds from El Paso, Texas, to Las Cruces, then to Deming in Luna County. Finally, U.S. 70 proceeds east from Las Cruces to Alamogordo and provides access to Organ and the Fort Bliss Military Reservation. These interstates and the secondary roads provide strong access along the river and to the east. It is generally perceived that many rural residents of the county drive or are driven to Las Cruces for major shopping trips. General retail activity focuses both on the Mesilla Valley Mall and along the major arteries entering Las Cruces.

## *Food Stamp Participants*

During 1993, an average of 11,131 households per month received food stamps in Dona Ana County, over 25 percent of the households in the county. During that year, approximately $26 million in food stamps were issued. Exhibit V-3 presents the distribution of food stamp households across the county. There are five major clusters of recipients. At the southern portion of the county, there are clusters in Anthony (on the Rio Grande) and Chaparral (at the southeastern corner of the county). The remaining clusters exist in Las Cruces, in scattered areas along the Rio Grande to the north of Las Cruces, and in scattered areas along U.S. 70 to the east of Las Cruces. Older recipients are largely located in Las Cruces, although there are pockets in the population centers to the south.

## *Retailers*

Dona Ana County contains 101 retailers who redeemed $18.0 million in 1993. Fourteen of these retailers were supermarkets or large groceries with more than $500,000 in gross annual sales. Overall, there are 10 retailers per 1,000 persons.

As indicated in Exhibit V-4, there are large discrepancies among sub-areas within the county. First, most retailers are located in Las Cruces and the southern portion of the county, although the large majority of food redemptions (85 percent) occur in Las Cruces. In the southern portion of the county, food stamp purchases occur in smaller stores. In terms of overall availability, Las Cruces and the northern portion of the county seem to be best served by larger stores.

**Exhibit V-4**

**Authorized Retailer Presence in Dona Ana County**

| Geographic Component | Supermarkets and Large Groceries | | All Stores | | |
|---|---|---|---|---|---|
| | Percentage of All Stores in Geographic Component | Percentage of All Redemptions in Geographic Component | Number of Stores | Total Redemptions ($) | Stores per 1,000 FSP Households* |
| Southern Dona Ana | 5.3% | 38.7% | 38 | 2,070,930 | 8.94 |
| Las Cruces | 18.0% | 83.2% | 50 | 15,227,385 | 9.43 |
| Eastern Dona Ana | 0.0% | 0.0% | 3 | 32,237 | 46.88 |
| Northern Dona Ana | 30.0% | 75.8% | 10 | 639,989 | 18.87 |
| Study Area | 13.9% | 77.7% | 101 | 17,970,541 | 9.95 |

Source: Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

*Retailer density figures may exceed number of stores in areas where FSP households are few in number. We use the denominator of 1,000 to be consistent across all study sites.

Exhibits V-5 and V-6 demonstrate the geographic distribution of redemptions within the county by all authorized retailers and by large stores, respectively. Examining redemptions by all authorized retailers, there is, as would be expected, a concentration in Las Cruces. In addition, there are substantial redemptions in the Hatch area, along the river in the southern portion of the county along Interstate 10, and along the southern tier of the border. The inset map of Las Cruces demonstrates that redemptions are concentrated in the southern portion of the city. When the map of redemptions in larger stores is examined (Exhibit V-6), redemptions occur only: (1) at the extreme northern border of the county (Hatch); (2) in Las Cruces; and (3) at the extreme southern border of the county (Sunland Park). In the Las Cruces inset, it is notable that the large stores are located in the southern portion of the city.

Table of Contents

**Exhibit**

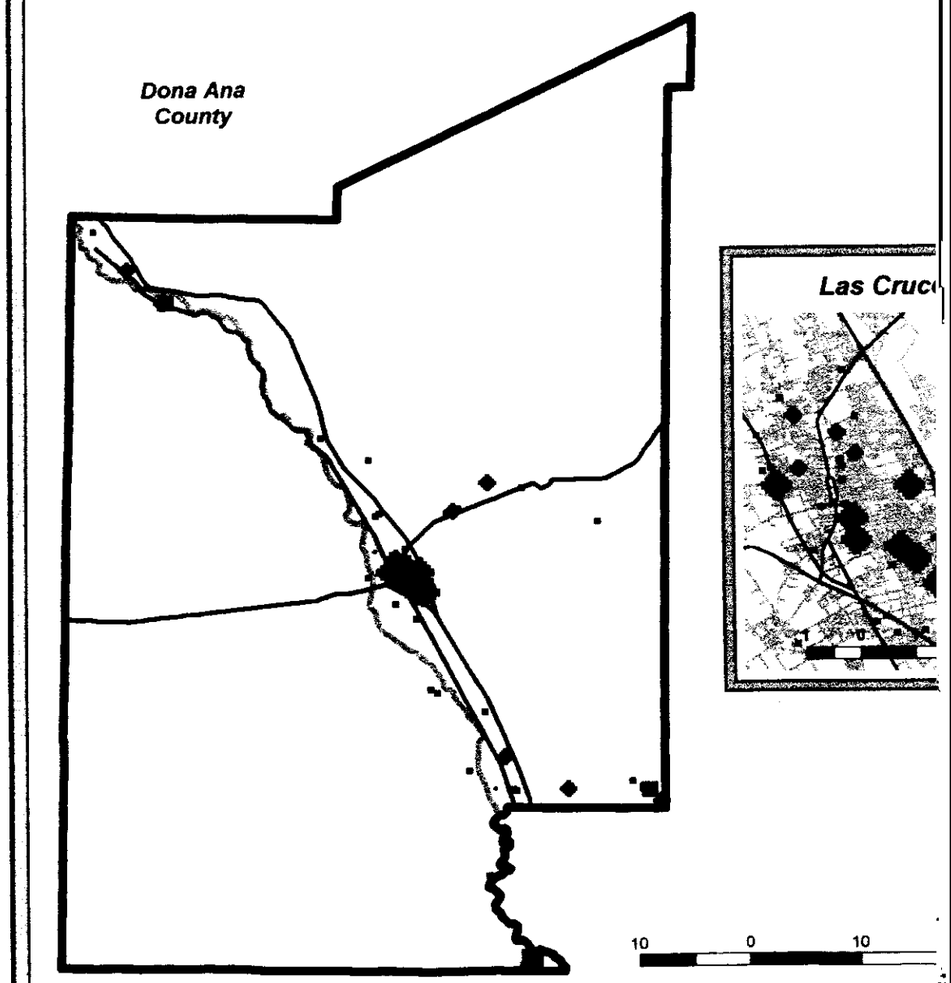
## Monthly FS Redemptions: All Participating Outlets

**Dona Ana**
**New Mexico Stu**

*Monthly Redemptions*

- Over $50,000
- $20,001 to $50,000
- $5,001 to $20,000
- Up to $5,000

Streets
Highwa
Rio Gra
County







South Central New Mexi

## *Proximity of FSP Participants to Retailers*

Exhibits V-7 and V-8 present distance statistics for Dona Ana County and for Las Cruces. With regard to Dona Ana County, the data show that 88 percent of the participant households are within one mile of an authorized retailer, and just over two-thirds are within one half-mile. The data, however, show that proximity to larger stores is more problematic. Less than two-thirds of the FSP households are within five miles of a larger store and less than half are within one mile. In examining the contribution of specific types of stores to coverage, it appears that the location and presence of convenience stores are critical to increasing coverage, especially at distances under one mile. Also notable is the importance of large grocery stores that supplement supermarkets thereby increasing coverage, particularly at 5 miles.

When Las Cruces is examined (Exhibit V-8), the data indicate that almost nine-tenths of the participant households are within one mile of a retailer and almost three-fifths are within one half-mile. Smaller stores, particularly convenience stores, have considerable influence on increasing coverage. It should be noted that half of the households are within one mile of a supermarket. Large grocery stores have no or limited effect on increasing coverage to large stores within Las Cruces itself. This would indicate that large groceries overlap supermarket locations and provide no additional coverage.

The data suggest a pattern whereby supermarkets and convenience stores are dominant in Las Cruces. In other parts of the county, large groceries and convenience stores are important in increasing coverage. It should be noted that retailers were not mapped in Texas, thus eliminating Texan food retailers from the distance estimates presented in this section. Households in the southern part of Dona Ana County would therefore appear to be farther from a retailer than they actually are. The attraction of Texan retailers to FSP participants living in southern Dona Ana is enhanced by the lack of a sales tax in that state.

Exhibit V-9 demonstrates the degree to which FSP households are within two miles of an authorized retailer and isolates those households that are not within that distance. In general, most FSP households are proximate to a retailer at this distance, primarily because of the concentration of FSP households in Las Cruces. Those that are within two miles are located in clusters along the New Mexico-Texas border and just north of Las Cruces and along U.S. 70 to the east. When 1-mile access is considered (Exhibit V-10), the number of households in these areas that are not within this distance increases notably. The area just north of Las Cruces (the township of Dona Ana) and the area to the east (Organ and Fort Bliss) are particularly affected.

With regard to 2-mile proximity to supermarkets and large grocery stores (Exhibit V-11), it is evident that only Las Cruces has households within this distance. When one-mile proximity to such stores is examined, it becomes apparent that even in Las Cruces, there are a few areas that are not within this distance of a large retailer (Exhibit V-12).

**Exhibit V-7**

**Proximity of Food Stamp Participating Retailers to Recipients**
**Dona Ana County Component**
**(New Mexico Study Area)**

| FSP Retailer Type: | Total Recipients | Under .25 mile | Under .5 mile | Under 1 mile | Under 2 miles | Under 5 miles | Median Distance | Mean Distance |
|---|---|---|---|---|---|---|---|---|
| Supermarket | [9843] | 188 | 763 | 2856 | 4171 | 4772 | | |
| | *% of total* | *1.91* | *7.75* | *29.02* | *42.38* | *48.48* | *5.46* | *12.08* |
| Large Grocery | [9843] | 173 | 639 | 2087 | 3976 | 6048 | | |
| | *% of total* | *1.76* | *6.49* | *21.20* | *40.39* | *61.44* | *2.88* | *6.30* |
| Small Grocery | [9843] | 2218 | 2607 | 4426 | 7103 | 8506 | | |
| | *% of total* | *22.53* | *26.49* | *44.97* | *72.16* | *86.42* | *1.19* | *2.25* |
| Convenience Store | [9843] | 1767 | 3229 | 6920 | 7867 | 9658 | | |
| | *% of total* | *17.95* | *32.81* | *70.30* | *79.92* | *98.12* | *0.68* | *1.37* |
| Specialty Food Store | [9843] | 432 | 1338 | 3341 | 5083 | 6404 | | |
| | *% of total* | *4.39* | *13.59* | *33.94* | *51.64* | *65.06* | *1.79* | *5.43* |
| Gas/Grocery Combination | [9843] | 6 | 6 | 14 | 17 | 17 | | |
| | *% of total* | *0.06* | *0.06* | *0.14* | *0.17* | *0.17* | *19.77* | *23.19* |
| All Others | [9843] | 1341 | 2148 | 3701 | 6411 | 9294 | | |
| | *% of total* | *13.62* | *21.82* | *37.60* | *65.13* | *94.42* | *1.34* | *2.14* |
| **Supermarket or Large Grocery** | **[9843]** | **302** | **1229** | **4333** | **5648** | **6269** | | |
| | ***% of total*** | ***3.07*** | ***12.49*** | ***44.02*** | ***57.38*** | ***63.69*** | ***1.23*** | ***5.52*** |
| All Retailers | [9843] | 4929 | 6720 | 8674 | 9600 | 9794 | | |
| | *% of total* | *50.08* | *68.27* | *88.12* | *97.53* | *99.50* | *0.25* | *0.42* |

Source: Geo Social Resources Inc. and Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

**Exhibit V-8**

**Proximity of Food Stamp Participating Retailers to Recipients**
**Las Cruces Component**
**(New Mexico Study Area)**

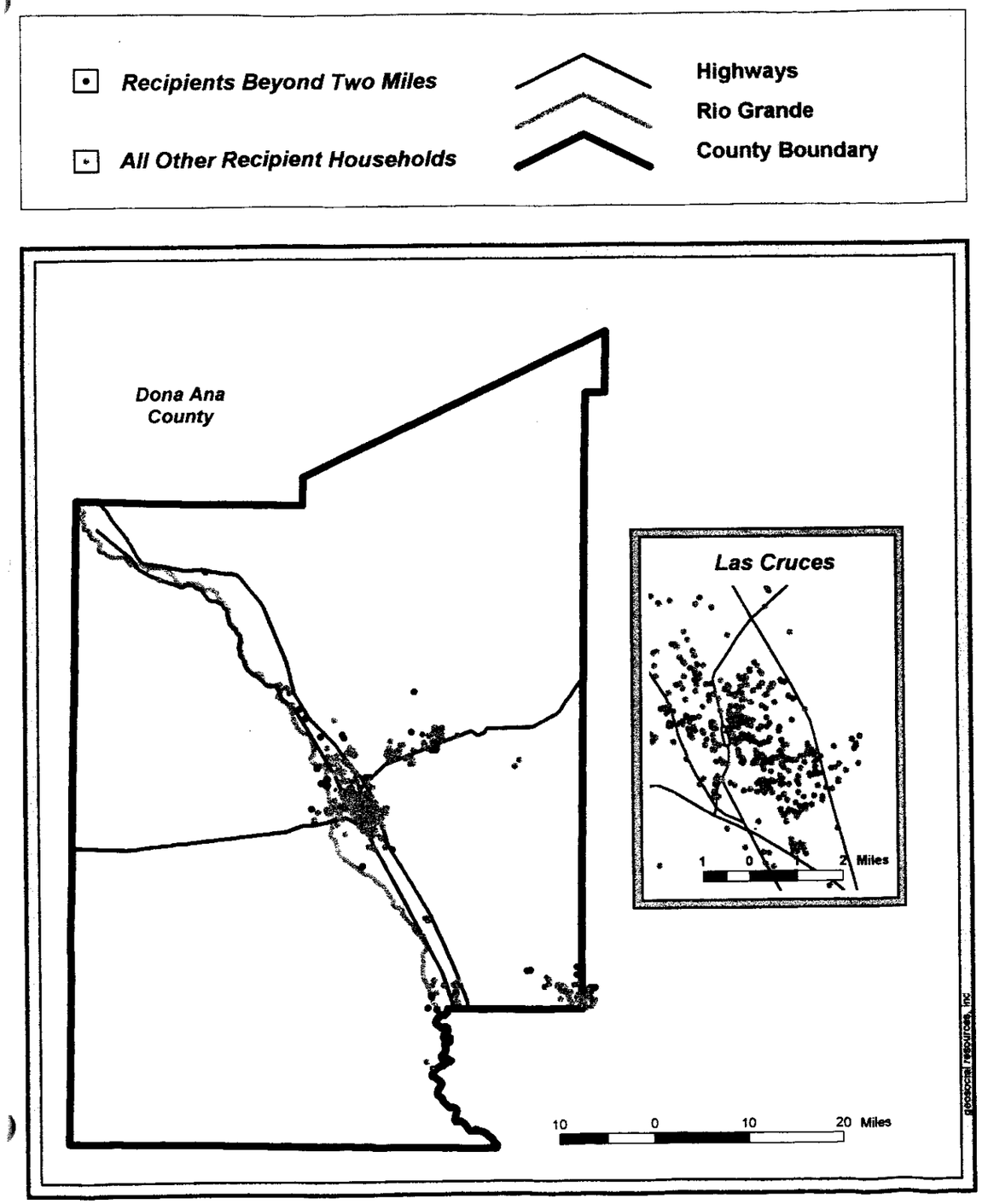
| FSP Retailer Type: | Total Recipients | Under .25 mile | Under .5 mile | Under 1 mile | Under 2 miles | Under 5 miles | Median Distance | Mean Distance |
|---|---|---|---|---|---|---|---|---|
| Supermarket | [5552] | 188 | 763 | 2856 | 4171 | 4772 | | |
| | *% of total* | *3.39* | *13.74* | *51.44* | *75.13* | *85.95* | *0.93* | *2.00* |
| Large Grocery | [5552] | 59 | 173 | 610 | 2499 | 4551 | | |
| | *% of total* | *1.06* | *3.12* | *10.99* | *45.01* | *81.97* | *2.28* | *3.28* |
| Small Grocery | [5552] | 449 | 830 | 1601 | 4118 | 4754 | | |
| | *% of total* | *8.09* | *14.95* | *28.84* | *74.17* | *85.63* | *1.57* | *2.33* |
| Convenience Store | [5552] | 1270 | 2637 | 4868 | 5428 | 5551 | | |
| | *% of total* | *22.87* | *47.50* | *87.68* | *97.77* | *99.98* | *0.53* | *0.60* |
| Specialty Food Store | [5552] | 427 | 1314 | 2270 | 3878 | 4969 | | |
| | *% of total* | *7.69* | *23.67* | *40.89* | *69.85* | *89.50* | *1.50* | *2.07* |
| Gas/Grocery Combination | [5552] | 0 | 0 | 0 | 0 | 0 | | |
| | *% of total* | *0.00* | *0.00* | *0.00* | *0.00* | *0.00* | *17.81* | *17.53* |
| All Others | [5552] | 210 | 818 | 1797 | 4300 | 5443 | | |
| | *% of total* | *3.78* | *14.73* | *32.37* | *77.45* | *98.04* | *1.34* | *1.65* |
| **Supermarket or Large Grocery** | **[5552]** | **188** | **763** | **2856** | **4171** | **4772** | | |
| | ***% of total*** | ***3.39*** | ***13.74*** | ***51.44*** | ***75.13*** | ***85.95*** | ***0.93*** | ***2.00*** |
| All Retailers | [5552] | 1864 | 3189 | 4880 | 5433 | 5552 | | |
| | *% of total* | *33.57* | *57.44* | *87.90* | *97.86* | *100.0* | *0.40* | *0.51* |

Source: Geo Social Resources Inc. and Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

## Exhibit V-9

## Two-Mile Access to Any FSP Participating Retailer

*Dona Ana County*
*New Mexico Study Area*

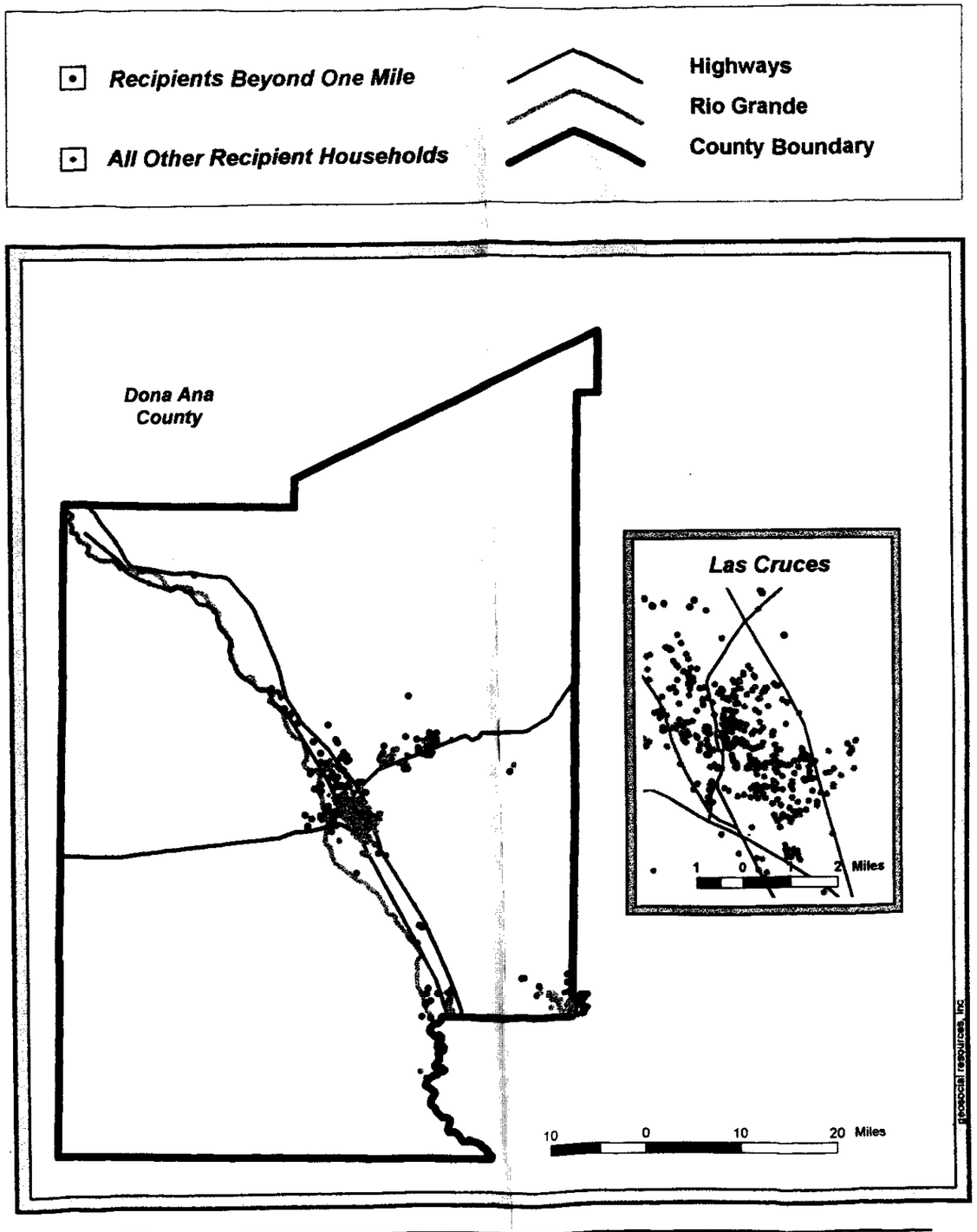





## Exhibit V-10

## One-Mile Access to Any FSP Participating Retailer

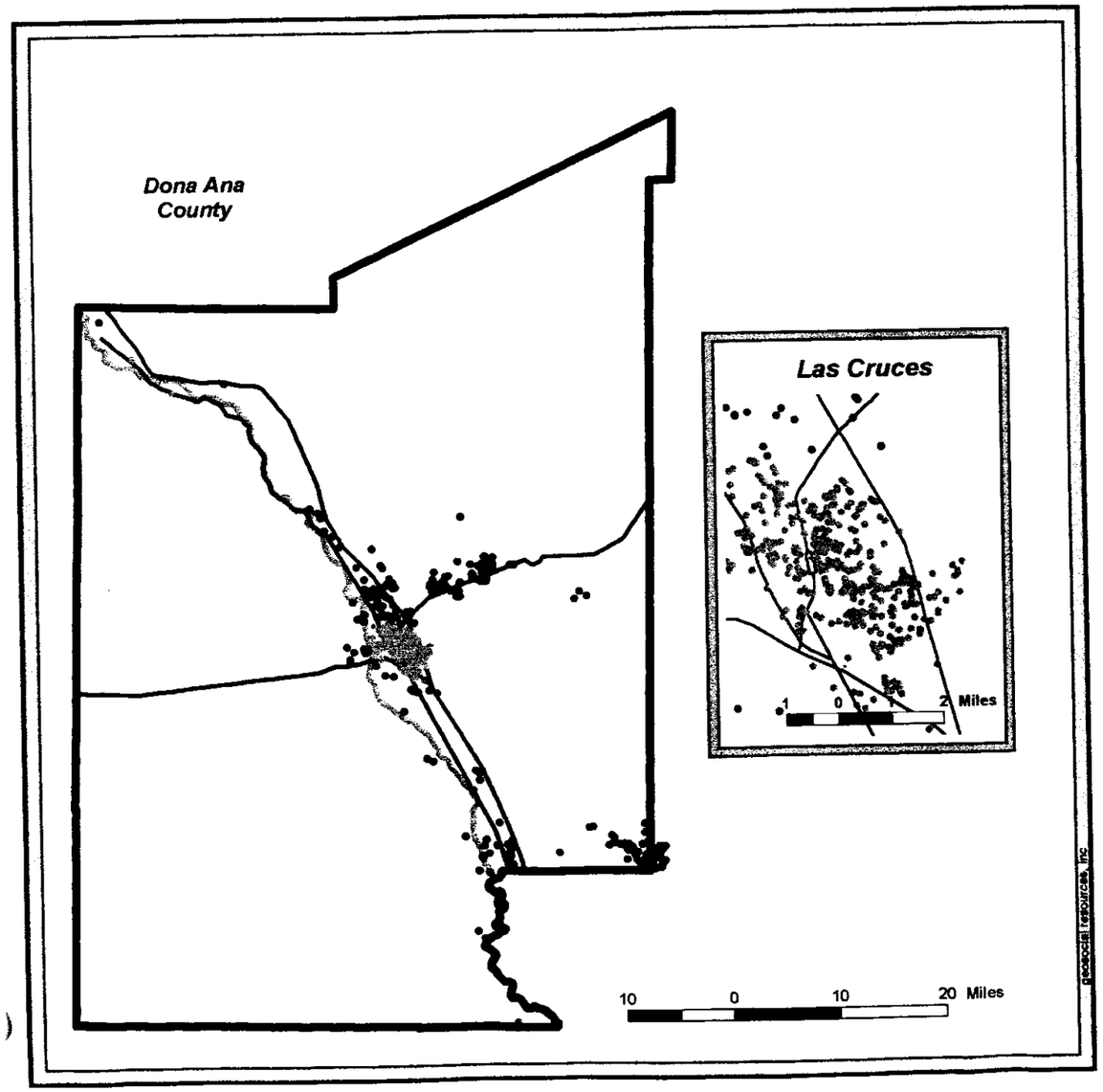
*Dona Ana County*
*New Mexico Study Area*



## Two-Mile Access to FSP SM/GS With Annual Sales Over $500,000

### Dona Ana County New Mexico Study Area

- Recipients Beyond Two Miles
- All Other Recipient Households
- Highways
- Rio Grande
- County Boundary



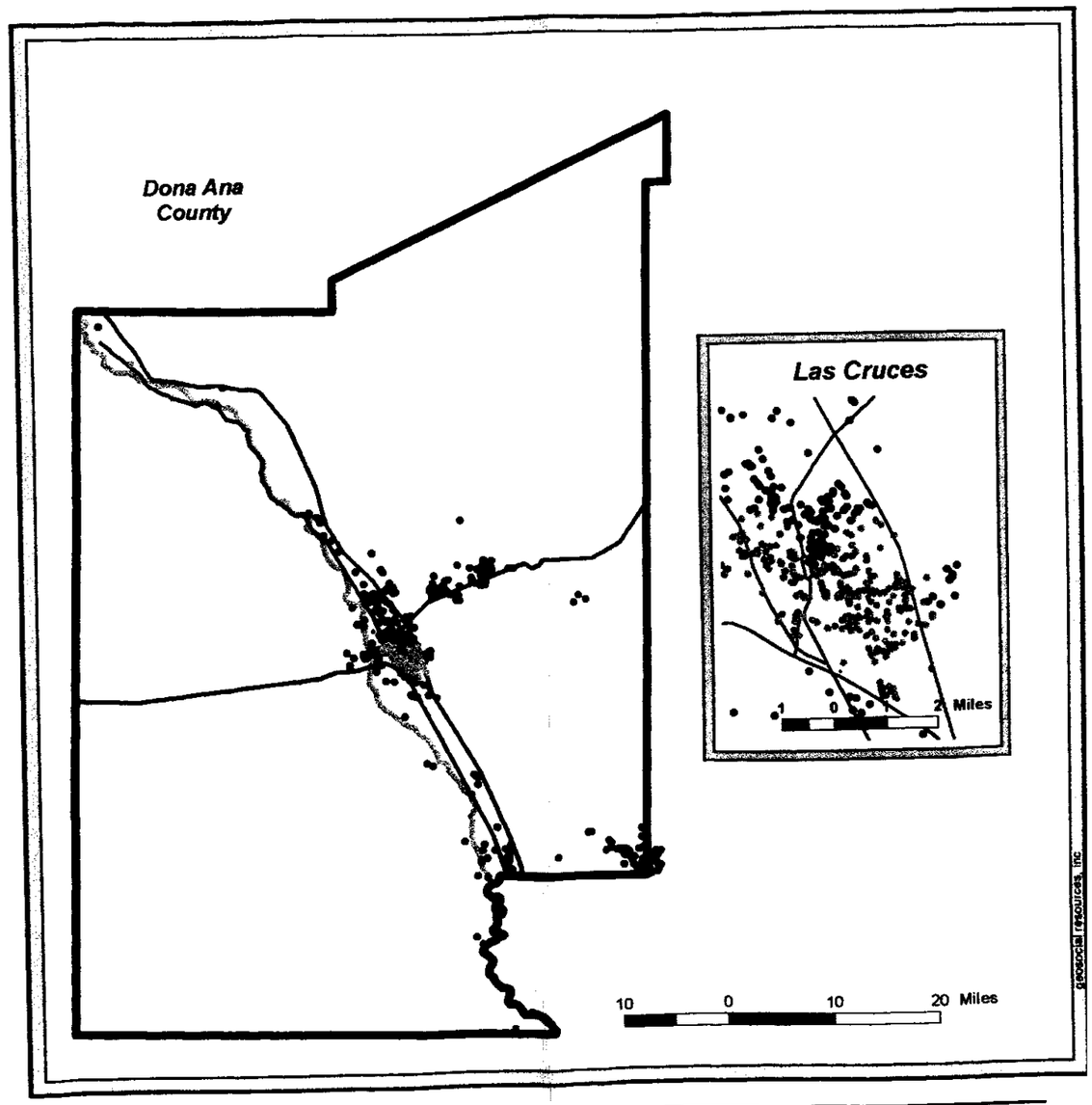





## One-Mile Access to FSP SM/GS With Annual Sales Over $500,000

### Dona Ana County New Mexico Study Area

- Recipients Beyond One Mile
- All Other Recipient Households
- Highways
- Rio Grande
- County Boundary



## *Redemption Flows*

Exhibit V-13 provides the redemption-to-issuances ratios for each of the sub-areas under study. It shows that Las Cruces has an inflow of food stamps, while the other areas have outflows. This seems to indicate that Las Cruces attracts shoppers from all over the county. It must be noted that the large discrepancy in food stamps redeemed and issued in the southern portion of the county may indicate that some households in that area travel into Texas to do their shopping.

**Exhibit V-13**

**Redemption Flows in Dona Ana County**

| Geographic Component | Ratio of Redemptions to Issuances |
|---|---|
| Southern Dona Ana | 0.19 |
| Las Cruces | 1.21 |
| Eastern Dona Ana | 0.22 |
| Northern Dona Ana | 0.43 |
| Study Area | 0.72 |

Source: Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

## *Discussion*

Dona Ana County, a small MSA, presents a case in which the urbanized population is located largely in one city, but with several other population centers growing at a rapid rate. Major conclusions are:

- **There seems to be access throughout most of the county, although the distance to stores varies considerably.** In general, most of the population has access to an authorized retailer within two miles. However, access to larger full-line stores is more limited, especially outside Las Cruces.

- **Access in Dona Ana County reflects the prominence of Las Cruces.** For persons in the northern county and in parts of the southern county, Las Cruces is less than an hour's drive on the interstate highways. Almost all of the larger stores in the area are located in and around the city, and redemption patterns seem to favor these stores over stores in other areas of the county.

- **Texas provides an option for those on the New Mexico-Texas border**. For the population in Anthony and other population centers along the southern tier of the county, few supermarkets or large groceries are available. The indication is that households in these areas either travel to Las Cruces or, more likely, into Texas. The IGA in Anthony, Texas, was identified as one store accessed by households in Anthony, New Mexico.

- **Colonias present unique situations relative to access**. These unincorporated and undeveloped areas generally cannot support retailers because of the lack of sanitary conditions, of roads, and of other infrastructures. Because 22 percent of the county's population lives in these settings, a substantial proportion seem to be disadvantaged relative to obtaining food from established retailers.

When interviewed, community leaders involved in food access issues recognized the lack of access and availability in the rural areas. Lack of adequate access is perceived to be particularly critical among those individuals living in the southern portion of the county. Texas seems to draw many New Mexico residents for food shopping purposes, and some residents in rural areas travel into Las Cruces at least weekly to do most of their shopping.

Interviews with industry representatives indicate that small rural stores have difficulties meeting the needs of local residents—particularly in stocking a variety of foods on a regular basis. Many small rural stores suffer due to an inability to obtain adequate deliveries. Larger delivery trucks tend not to provide services to these smaller stores because of the extensive distances and the relatively small orders. This leaves these rural retailers without an option except to purchase from resellers, which increases prices.

## Otero and Lincoln Counties

Otero and Lincoln Counties contain the second component of the South Central New Mexico area (Exhibit V-14). Otero County is due east of Dona Ana County and has a population of 52,000. The county is 6,625 square miles, with Fort Bliss Military Reservation occupying a large portion of the land area. Lincoln County is north of Otero County and covers an area of 4,832 square miles. It has a population of 12,200, most of whom are located close to the Otero County border. The major feature of these counties is the Sacramento Mountain Range, which defines the eastern edge of Otero County and continues into Lincoln County. There are four specific sub-areas of interest with regard to these two counties.

- Alamogordo and Tularosa—Alamogordo is the county seat of Otero county and, with 27,600 residents, accounts for over half of the population in this county. Lying 70 miles from Las Cruces and El Paso, Texas, it is relatively isolated from other larger population centers. Tularosa is a smaller town (population 2,600) lying just 13 miles north of Alamogordo.

# General Orientation Map

## *Lincoln & Otero Counties New Mexico Study Area*

Streets

Rail Lines

Highways

County Boundary

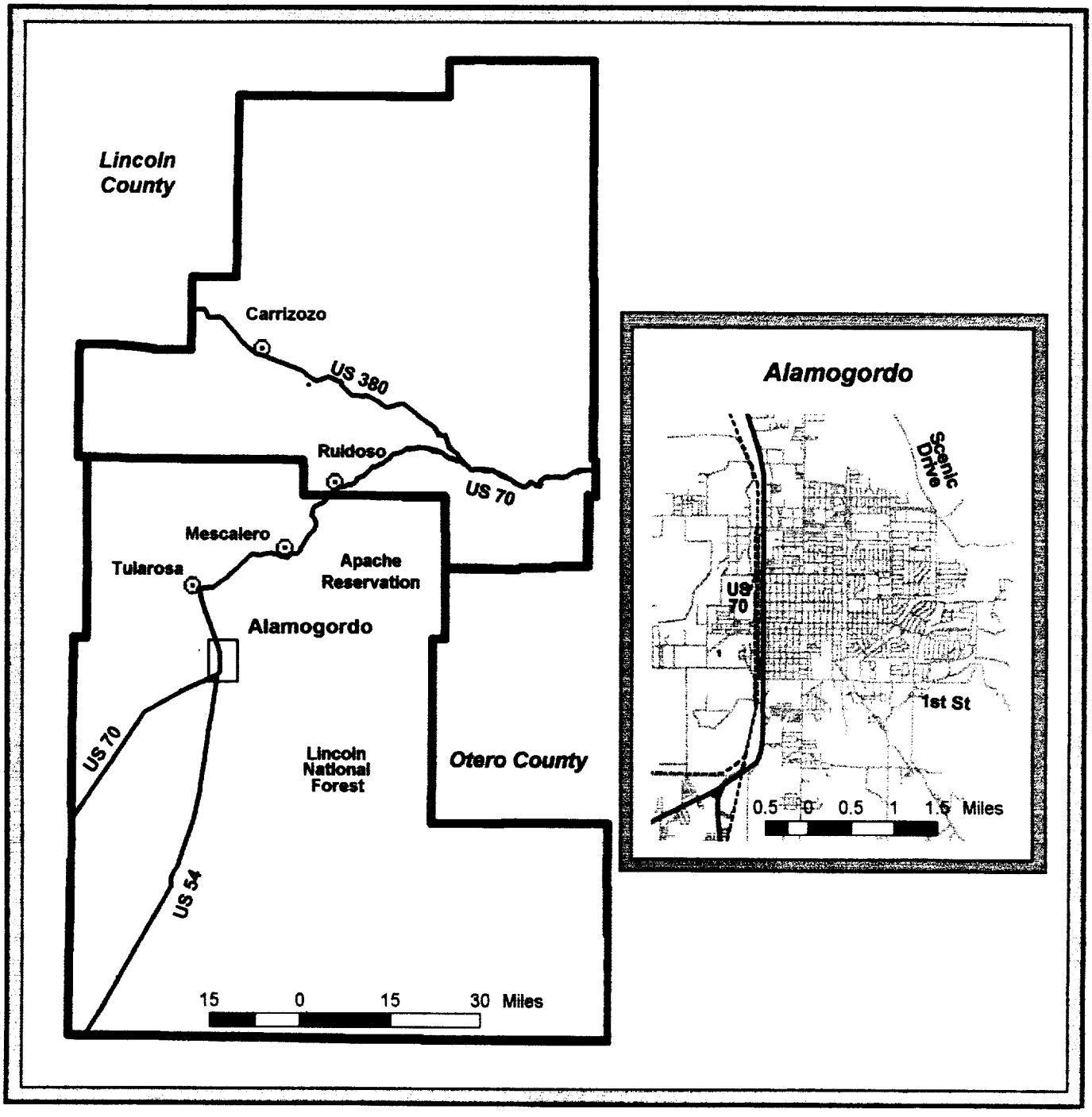
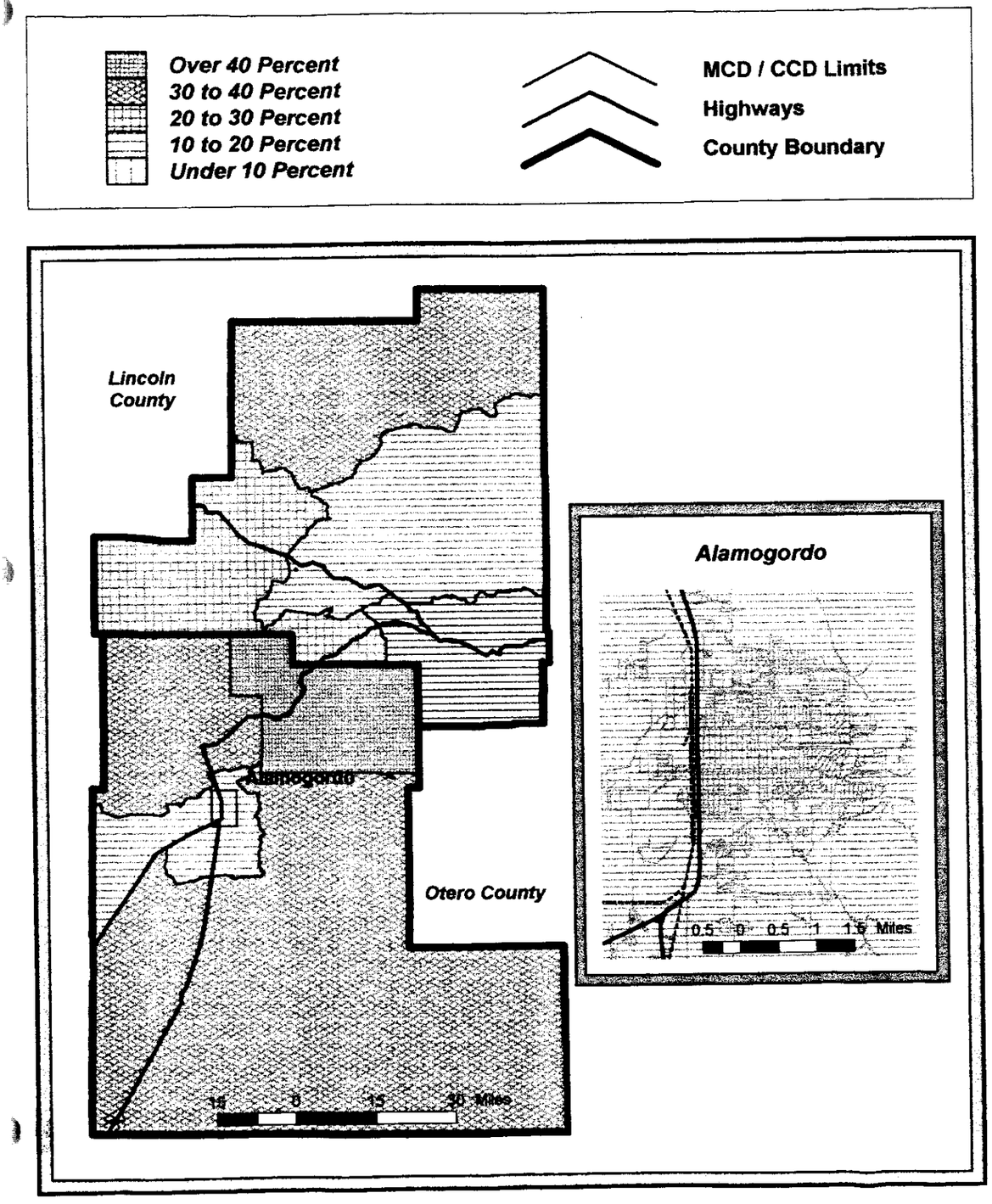


Table of Contents

**Exhibit V-15**

## Percentage Below 125% of Poverty Level: FSP Recipients and Non-Recipients

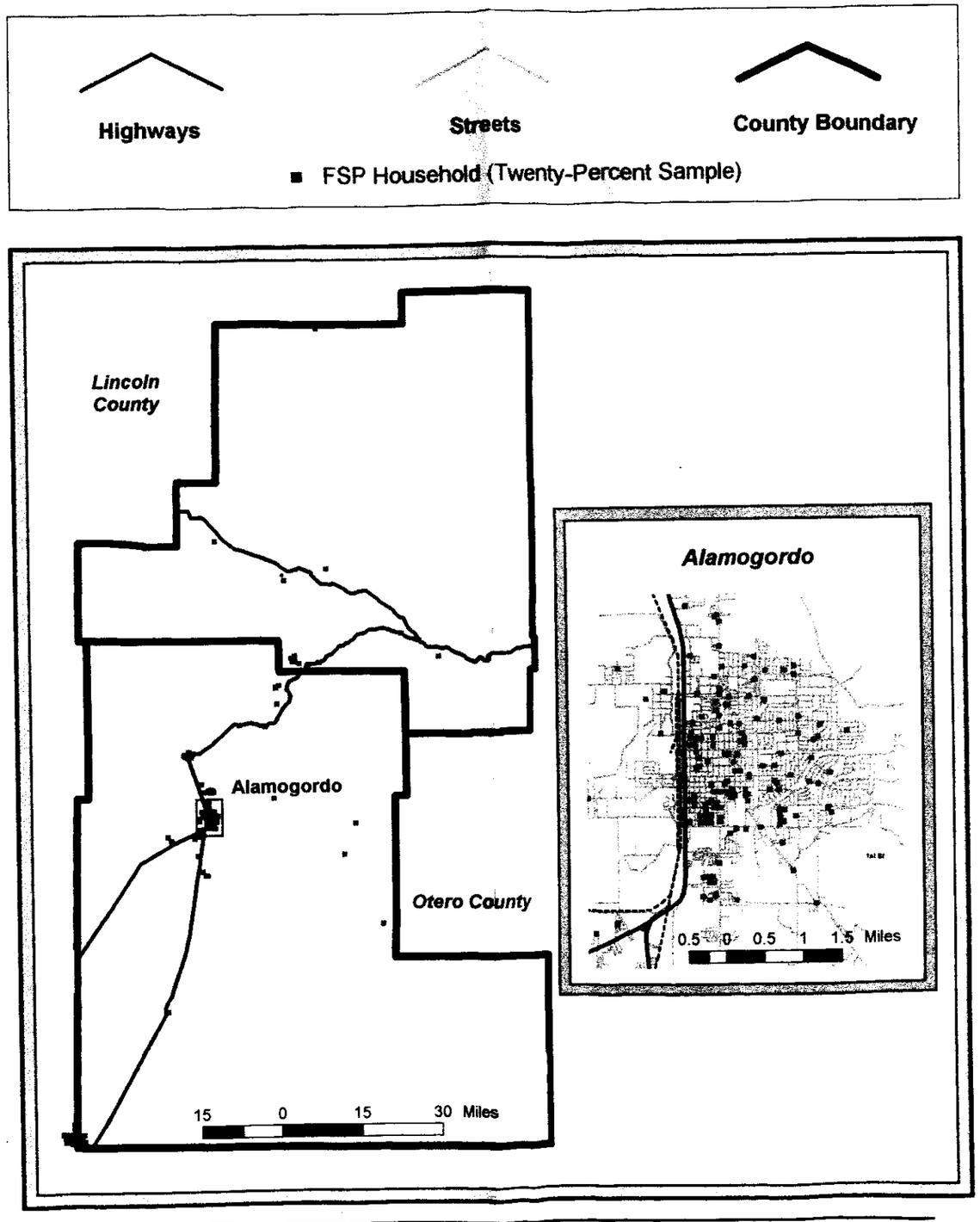
*Lincoln & Otero Counties*
*New Mexico Study Area*






## Distribution of FSP Participating Households

*Lincoln & Otero Counties*
*New Mexico Study Area*



winter, the area receives snow, and skiing and other winter tourist and recreational pursuits create an incentive to keep roads open.

Southern Otero County contains no population centers and is largely desolate. With few exceptions, roads in this area are largely unpaved. Northern Lincoln County lacks significant population centers and, with the exception of Route 54, lacks major roadways.

Public transportation is limited, and most individuals have access to automobiles. In the total study area, about 90 percent of the households have access to a vehicle. On the Indian Reservation, this proportion declines to 75 percent. Given that an automobile is a necessity, even this high percentage is low in terms of need.

## *Food Stamp Recipients*

In Otero County, 2,300 households constituting 6,780 participants were enrolled in the Food Stamp Program in February 1993. In total, $5.1 million in food stamps were issued for that year. The proportion of households participating in the FSP is 13 percent, with 40 percent of those living on the Indian reservation receiving food stamp benefits. In Lincoln County, only 750 households (or 17 percent of all households) containing 2,000 individuals, received benefits.

Exhibit V-16 presents the distribution of FSP participant households throughout the area. FSP households are largely clustered in Alamogordo and Tularosa and between Mescalero and Rudioso. There is a secondary cluster at Holloman AFB and in the southern Lincoln Forest area, and another cluster toward the southwestern border of the county.

## *Retailers*

In this study area, authorized retailers redeemed $6.3 million in food stamps in 1993. In Otero County, there are 32 authorized retailers, of which six are supermarkets or large grocers (Exhibit V-17). In Lincoln County there are 12 retailers of which seven are large stores. About 80 percent of the redemptions occur in stores located in the Alamogordo and Tularosa areas, with Rudioso accounting for almost all of the rest. In these two places, supermarkets and large groceries account for over 90 percent of the redemptions. There are two stores on the Mescalero Indian Reservation, one of which is a privately-owned convenience store on the reservation and the other a large grocery operated by the tribe.

Exhibit V-18 shows the distribution of redemptions of all authorized stores in the Otero-Lincoln study area. The densest concentration of redemptions occurs in Alamogordo. Secondary concentrations occur in Tularosa and Rudioso. There are still smaller concentrations in Mescalero and Carrizozo, and scattered redemptions in the southern Lincoln Forest region. For stores with more than $500,000 dollars in gross sales, redemptions are located

primarily in Alamogordo, Tularosa, and Rudioso (Exhibit V-19). The area that seems to be affected most by the lack of full-range stores is the southern Lincoln Forest region. Although the high level of redemptions is understandable in Alamogordo, the concentration in Tularosa and Rudioso seems to indicate that these places attract food stamps from persons living on the reservation.

**Exhibit V-17**

**Authorized Retailer Presence in the Otero/Lincoln Counties Study Area**

| Geographic Component | Supermarkets and Large Groceries | | All Stores | | Stores per 1,000 FSP Households* |
|---|---|---|---|---|---|
| | Percent of All Stores in Geographic Component | Percent of All Redemptions in Geographic Component | Number of Stores | Total Redemptions ($) | |
| Alamogordo/ Tularosa | 20.8% | 91.8% | 24 | 4,824,864 | 12.81 |
| Southern Lincoln Forest | 0.0% | 0.0% | 6 | 17,803 | 95.23 |
| Mescalero Indian Reservation | 50.0% | 61.4% | 2 | 35,819 | 9.70 |
| Southern Tier Lincoln County | 33.3% | 93.3% | 12 | 1,407,495 | 22.43 |
| Study Area | 22.7% | 91.7% | 44 | 6,285,981 | 16.44 |
| Other Lincoln County Areas | 33.3% | 64.3% | 6 | 144,646 | 40.27 |
| Otero and Lincoln Counties | 24.0% | 91.7% | 50 | 6,430,627 | 17.69 |

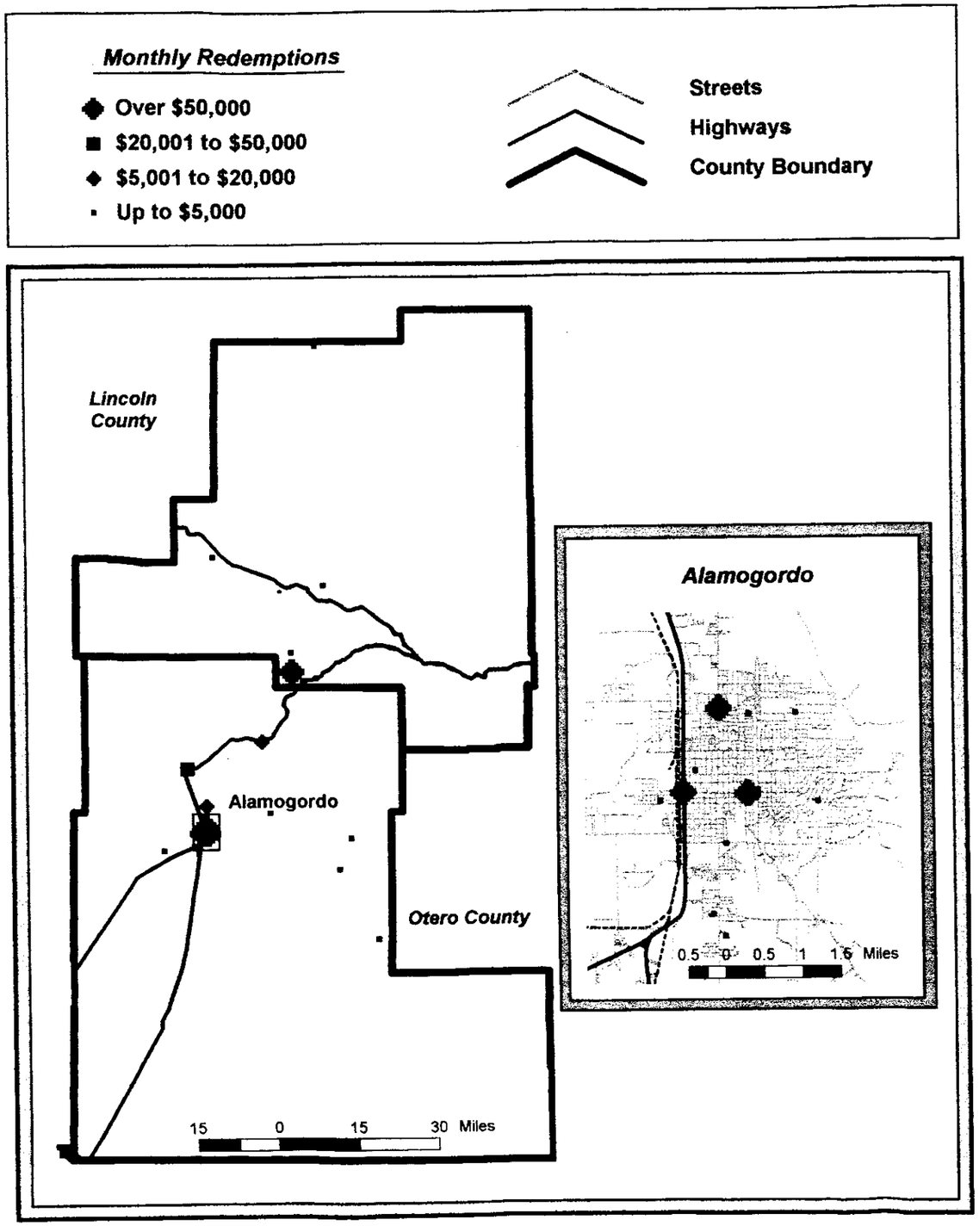
Source: Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

*Retailer density figures may exceed the number of stores in areas where FSP households are few in number. We use the denominator of 1,000 to be consistent across all study sites.

**Exhibit V-18**

## Monthly FS Redemptions: All Participating Outlets

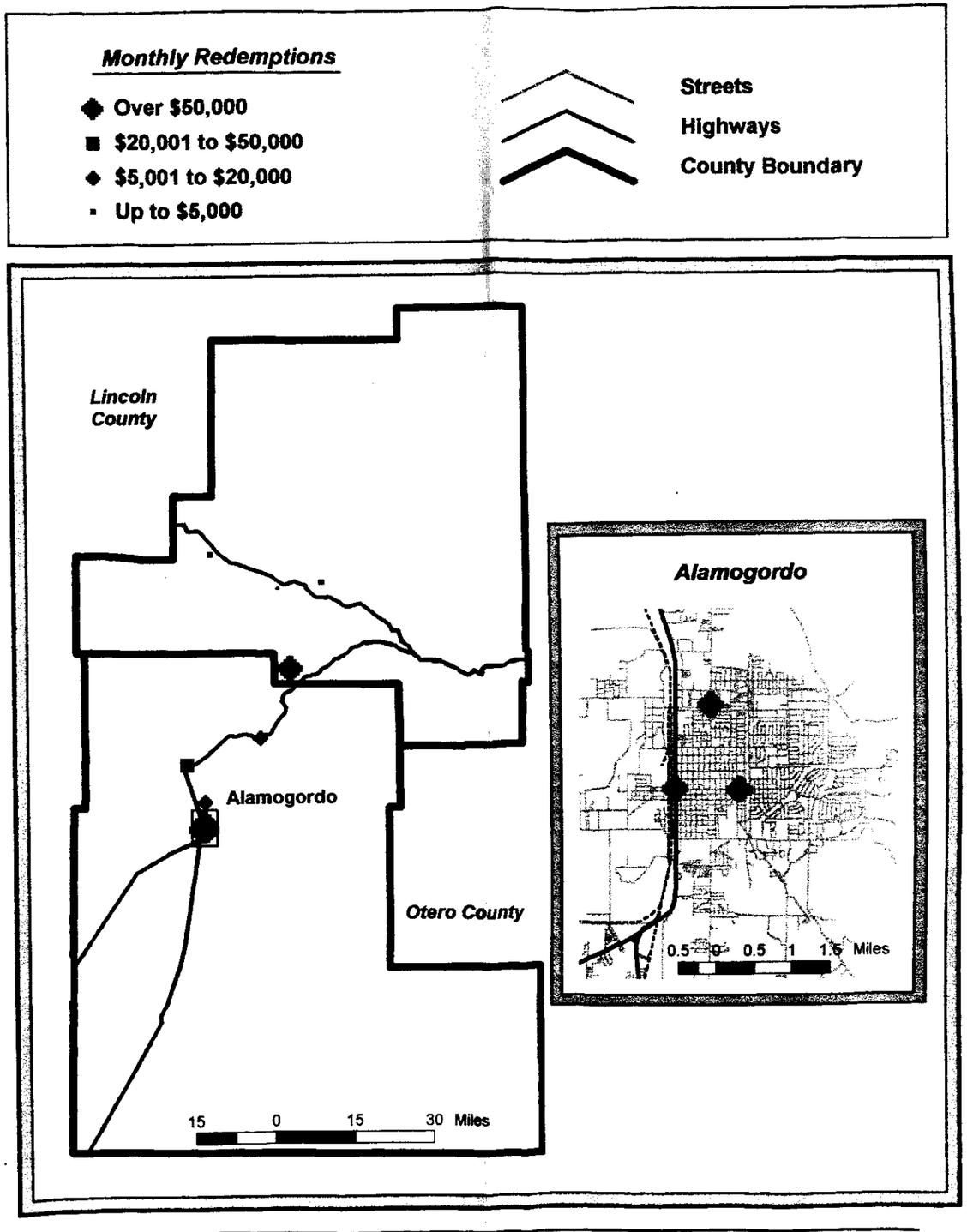
*Lincoln & Otero Counties New Mexico Study Area*






## Monthly FS Redemptions: SM/GS With Annual Sales Over $500,000

*Lincoln & Otero Counties New Mexico Study Area*



## *Proximity of FSP Participants to Retailers*

Exhibit V-20 provides information on access within the two-county area. The data indicate that almost 93 percent of FSP households are within one mile of an authorized retailer, and just over three-quarters are within one half-mile. With regard to supermarkets or large groceries, almost 71 percent of FSP households are within one mile. Although convenience stores have a large influence on these statistics, the presence of large stores, and supermarkets, in particular, also exerts considerable influence in increasing coverage. For instance, 71 percent of the population are within one mile of a large store, but 85 percent are within one mile of a convenience store.

Proximity to retailers in Alamogordo is relatively good within a 1-mile distance. The data (Exhibit V-21) indicate that 96 percent of the FSP households are within one mile of an authorized retailer and 75 percent are within one half-mile of a retailer. As in other areas, convenience stores account in large measure for the overall access to authorized retailers. When large stores are considered, over 70 percent of the FSP households are within one mile of a supermarket and 88 percent are within two miles.

The geographic dispersion of households within two miles of an authorized retailer is illustrated in Exhibit V-22. The map indicates that the lack of retailers providing service is the major access problem to those on the Mescalero Indian Reservation, in the northeast portion of Otero County. Other isolated instances where recipient households are not within two miles occur to the south of Alamogordo. When one-mile proximity is considered, the two clusters previously described increase in size (Exhibit V-23). In addition, there are some households in Alamogordo that are not within two miles of an authorized retailer.

When large stores are analyzed relative to serving FSP households within a two-mile limit, the map indicates that only Alamogordo, Tularosa, and Rudioso provide such coverage. It becomes apparent that certain areas east of Alamogordo are not within two miles (Exhibit V-24). Most of the population outside Alamogordo fails to achieve access of less than two miles (Exhibit V-25). The inset of Alamogordo indicates that large stores are generally unavailable for food stamp recipients living on the outskirts of town. However, although the map identifies FSP recipients who are one mile distant from a large store, it is important to note the number of FSP households that are within this distance.

## *Redemption Flows*

In general, the data in Exhibit V-26 show that Alamogordo and the southern tier of Lincoln County (Rudioso) attract food stamp recipients. FSP households in the southern Lincoln Forest region and the Mescalero Apache Indian Reservation do not seem to use all their food stamps in local stores. The inability of the stores on the reservation to provide services to FSP recipients is noteworthy. Site-visit information indicated that members of the tribe

**Exhibit V-20**

**Proximity of Food Stamp Participating Retailers to Recipients**
**Otero and Lincoln Counties Component**
**(New Mexico Study Area)**

| FSP Retailer Type: | Total Recipients | Under .25 mile | Under .5 mile | Under 1 mile | Under 2 miles | Under 5 miles | Median Distance | Mean Distance |
|---|---|---|---|---|---|---|---|---|
| Supermarket | [3009] | 486 | 1033 | 1697 | 1970 | 2438 | | |
| | *% of total* | *16.15* | *34.33* | *56.40* | *65.47* | *81.02* | *0.73* | *4.40* |
| Large Grocery | [3009] | 356 | 437 | 442 | 459 | 893 | | |
| | *% of total* | *11.83* | *14.52* | *14.69* | *15.25* | *29.68* | *5.85* | *7.44* |
| Small Grocery | [3009] | 52 | 56 | 57 | 70 | 549 | | |
| | *% of total* | *1.73* | *1.86* | *1.89* | *2.33* | *18.25* | *12.65* | *12.25* |
| Convenience Store | [3009] | 1254 | 2057 | 2569 | 2659 | 2836 | | |
| | *% of total* | *41.67* | *68.36* | *85.38* | *88.37* | *94.25* | *0.28* | *1.32* |
| Specialty Food Store | [3009] | 141 | 449 | 979 | 1427 | 1724 | | |
| | *% of total* | *4.69* | *14.92* | *32.54* | *47.42* | *57.29* | *2.12* | *11.55* |
| Gas/Grocery Combination | [3009] | 291 | 303 | 313 | 330 | 515 | | |
| | *% of total* | *9.67* | *10.07* | *10.40* | *10.97* | *17.12* | *33.26* | *25.87* |
| All Others | [3009] | 192 | 302 | 789 | 1415 | 1632 | | |
| | *% of total* | *6.38* | *10.04* | *26.22* | *47.03* | *54.24* | *2.85* | *10.31* |
| **Supermarket or Large Grocery** | **[3009]** | **840** | **1468** | **2137** | **2427** | **2797** | | |
| | ***% of total*** | ***27.92*** | ***48.79*** | ***71.02*** | ***80.66*** | ***92.95*** | ***0.52*** | ***2.06*** |
| All Retailers | [3009] | 1493 | 2352 | 2794 | 2878 | 2943 | | |
| | *% of total* | *49.62* | *78.17* | *92.85* | *95.65* | *97.91* | *0.25* | *0.49* |

Source: Geo Social Resources Inc. and Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

**Exhibit V-21**

**Proximity of Food Stamp Participating Retailers to Recipients**
**Iamogordo Component**
**(New Mexico Study Area)**

| FSP Retailer Type: | Total Recipients | Under .25 mile | Under .5 mile | Under 1 mile | Under 2 miles | Under 5 miles | Median Distance | Mean Distance |
|---|---|---|---|---|---|---|---|---|
| Supermarket | [1455] | 118 | 595 | 1049 | 1280 | 1451 | | |
| | *% of total* | *8.11* | *40.89* | *72.10* | *87.97* | *99.73* | *0.59* | *0.95* |
| Large Grocery | [1455] | 0 | 0 | 0 | 2 | 419 | | |
| | *% of total* | *0.00* | *0.00* | *0.00* | *0.14* | *28.80* | *5.64* | *5.67* |
| Small Grocery | [1455] | 0 | 0 | 0 | 0 | 0 | | |
| | *% of total* | *0.00* | *0.00* | *0.00* | *0.00* | *0.00* | *12.50* | *12.90* |
| Convenience Store | [1455] | 400 | 1054 | 1376 | 1444 | 1455 | | |
| | *% of total* | *27.49* | *72.44* | *94.57* | *99.24* | *100.0* | *0.31* | *0.42* |
| Specialty Food Store | [1455] | 49 | 357 | 826 | 1261 | 1451 | | |
| | *% of total* | *3.37* | *24.54* | *56.77* | *86.67* | *99.73* | *0.90* | *1.25* |
| Gas/Grocery Combination | [1455] | 0 | 0 | 0 | 0 | 0 | | |
| | *% of total* | *0.00* | *0.00* | *0.00* | *0.00* | *0.00* | *34.89* | *35.03* |
| All Others | [1455] | 27 | 137 | 624 | 1242 | 1451 | | |
| | *% of total* | *1.86* | *9.42* | *42.89* | *85.36* | *99.73* | *1.16* | *1.33* |
| **Supermarket or Large Grocery** | **[1455]** | **118** | **595** | **1049** | **1282** | **1451** | | |
| | ***% of total*** | ***8.11*** | ***40.89*** | ***72.10*** | ***88.11*** | ***99.73*** | ***0.59*** | ***0.95*** |
| All Retailers | [1455] | 428 | 1095 | 1393 | 1450 | 1455 | | |
| | *% of total* | *29.42* | *75.26* | *95.74* | *99.66* | *100.0* | *0.30* | *0.39* |

Source: Geo Social Resources Inc. and Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

*Exhibit V-22*

## Two-Mile Access to Any FSP Participating Retailer

### *Lincoln & Otero Counties New Mexico Study Area*

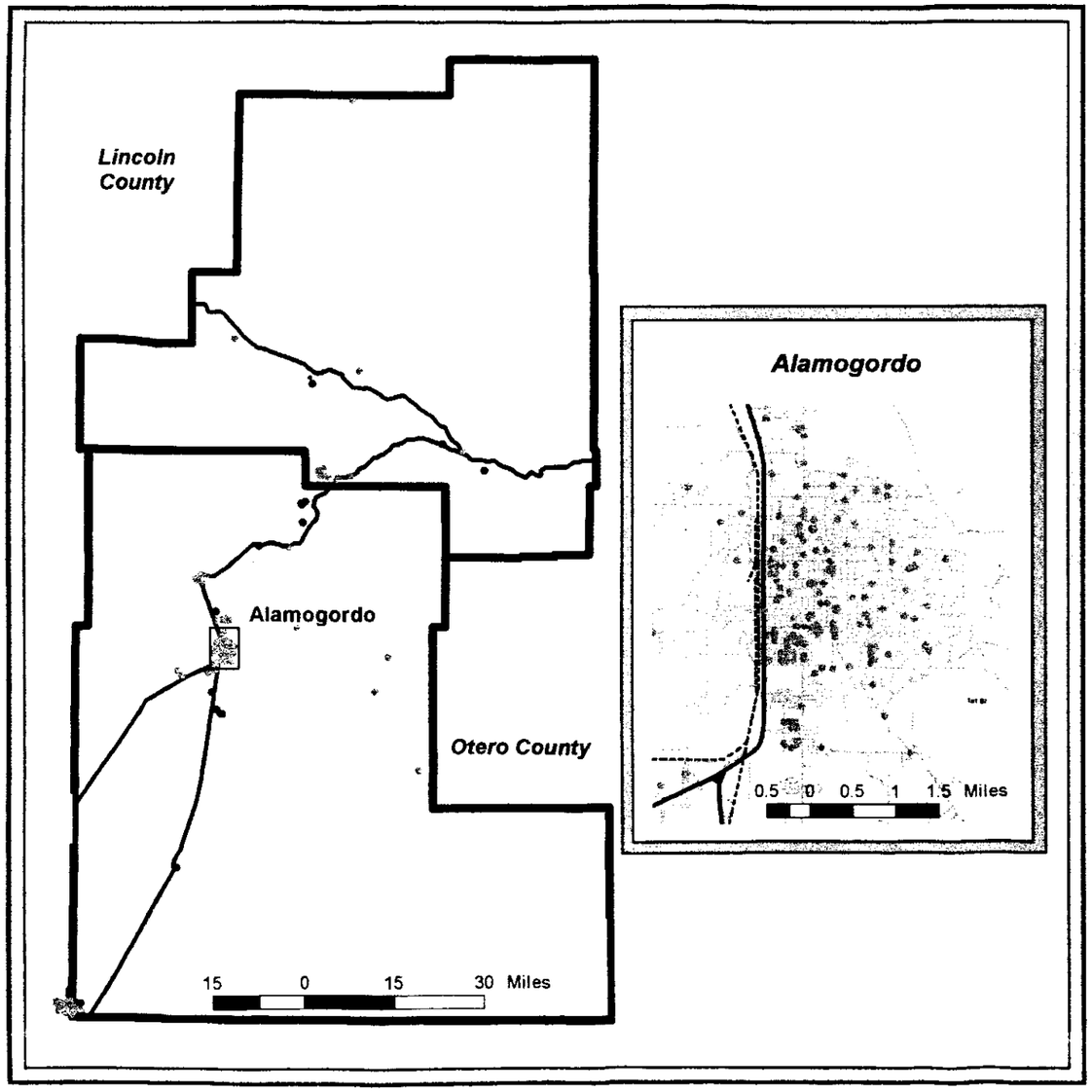
*Recipients Beyond Two Miles*

*All Other Recipient Households*

Highways

Streets

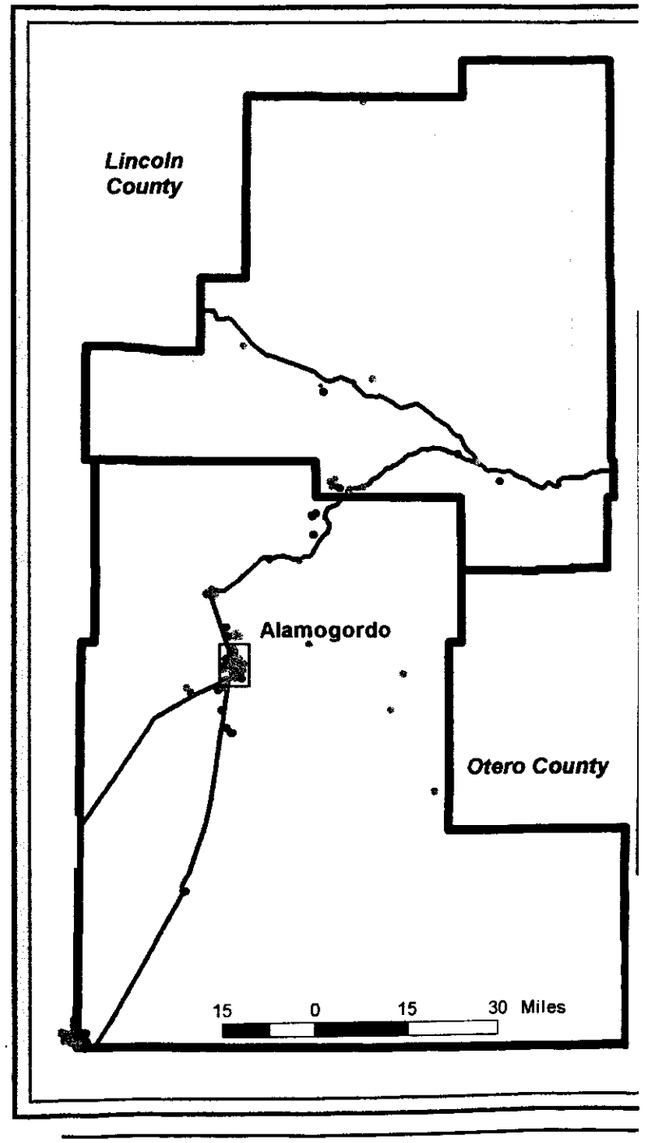
County Boundary




## One-Mile Access to Any FSP Participating Retailer

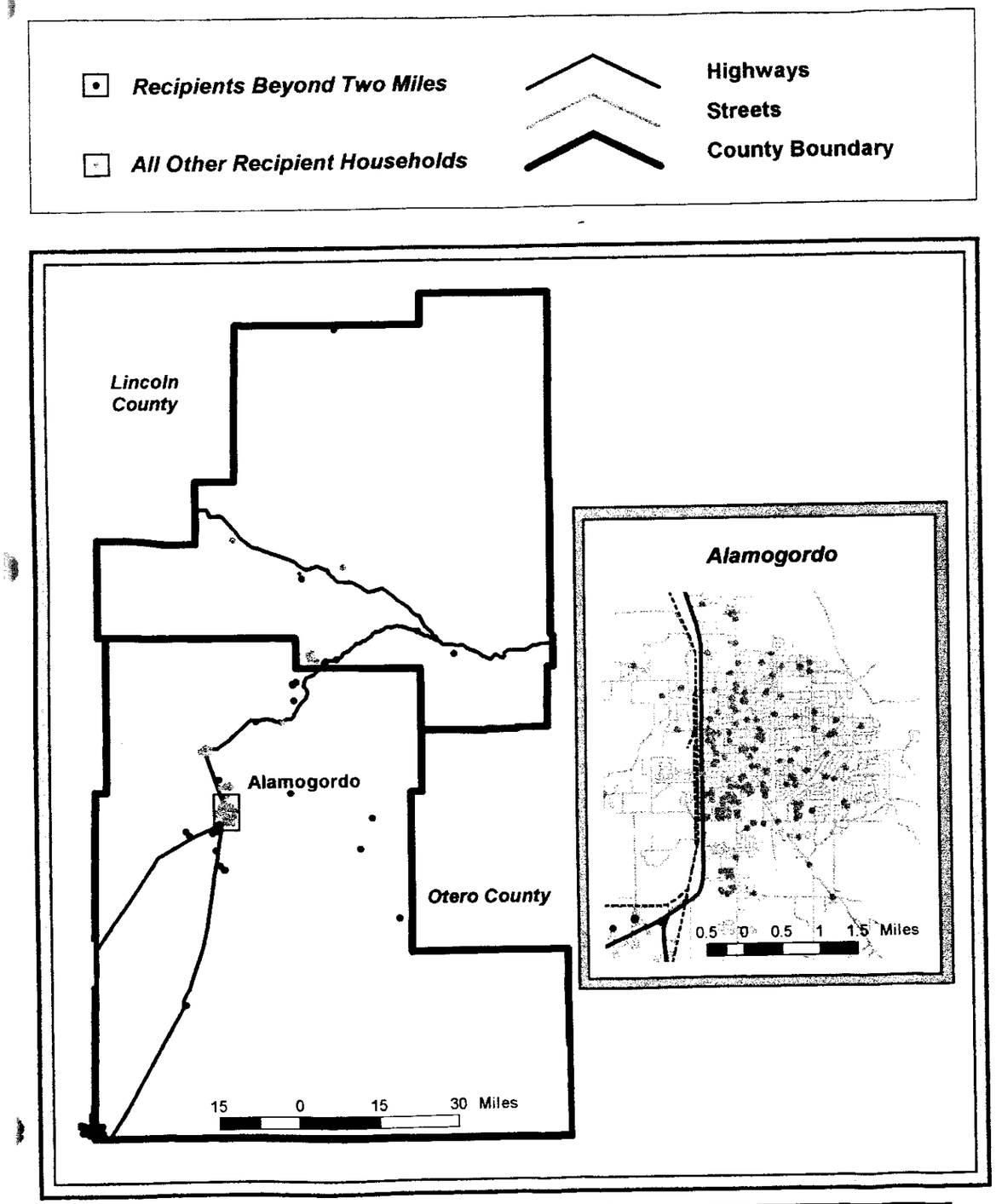
*Recipients Beyond One Mile*

*All Other Recipient Households*



## Two-Mile Access to FSP SM/GS With Annual Sales Over $500,000

*Lincoln & Otero Counties New Mexico Study Area*

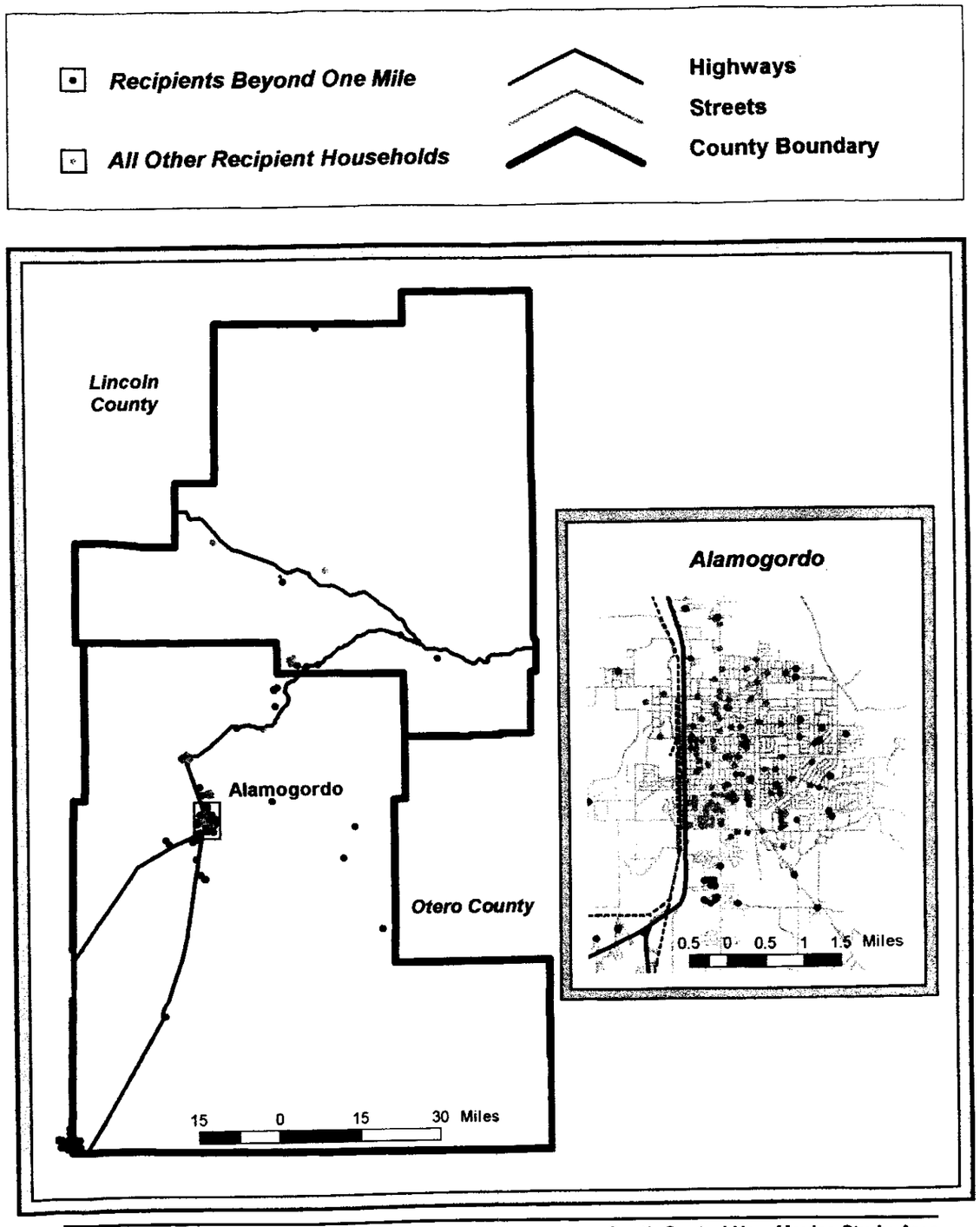







## One-Mile Access to FSP SM/GS With Annual Sales Over $500,000

*Lincoln & Otero Counties New Mexico Study Area*



travel to the IGA in Tularosa and the Big 8 store in Alamogordo to shop, or sometimes to Las Cruces.

**Exhibit V-26**
**Redemption Flows in Otero and Lincoln Counties**

| Geographic Component | Ratio of Redemptions to Issuances |
|---|---|
| Alamogordo/Tularosa | 1.14 |
| Southern Lincoln Forest | 0.11 |
| Mescalero Indian Reservation | 0.70 |
| Southern Tier Lincoln County | 1.18 |
| Study Area | 1.01 |
| Other Lincoln County Areas | 0.52 |
| Otero and Lincoln Counties | 1.03 |

Source: Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

## *Discussion*

Otero and Lincoln Counties are large, sparsely settled areas with most of the population residing in Alamogordo and Rudioso. The major features of this area are the Sacramento Mountain Range and the Mescalero Indian Reservation. The following can be concluded from our analysis.

- **Alamogordo and Rudioso play an important role in providing for food needs in the area.** Most of the redemption activity occurs in these two population centers. In addition to serving their own populations, they also seem to draw FSP households from outlying areas. These two areas also have most of the major supermarkets and large groceries.

- **Participants on the Mescalero Indian Reservation use stores in other areas.** The evidence from redemption information is that reservation households, although using the two retailers located on the reservation, tend also to travel to Alamogordo or Rudioso to do their shopping.

- **The Southern Lincoln Forest area has few large stores.** Although there are few stores in the area and travel through this mountainous area in bad weather can be

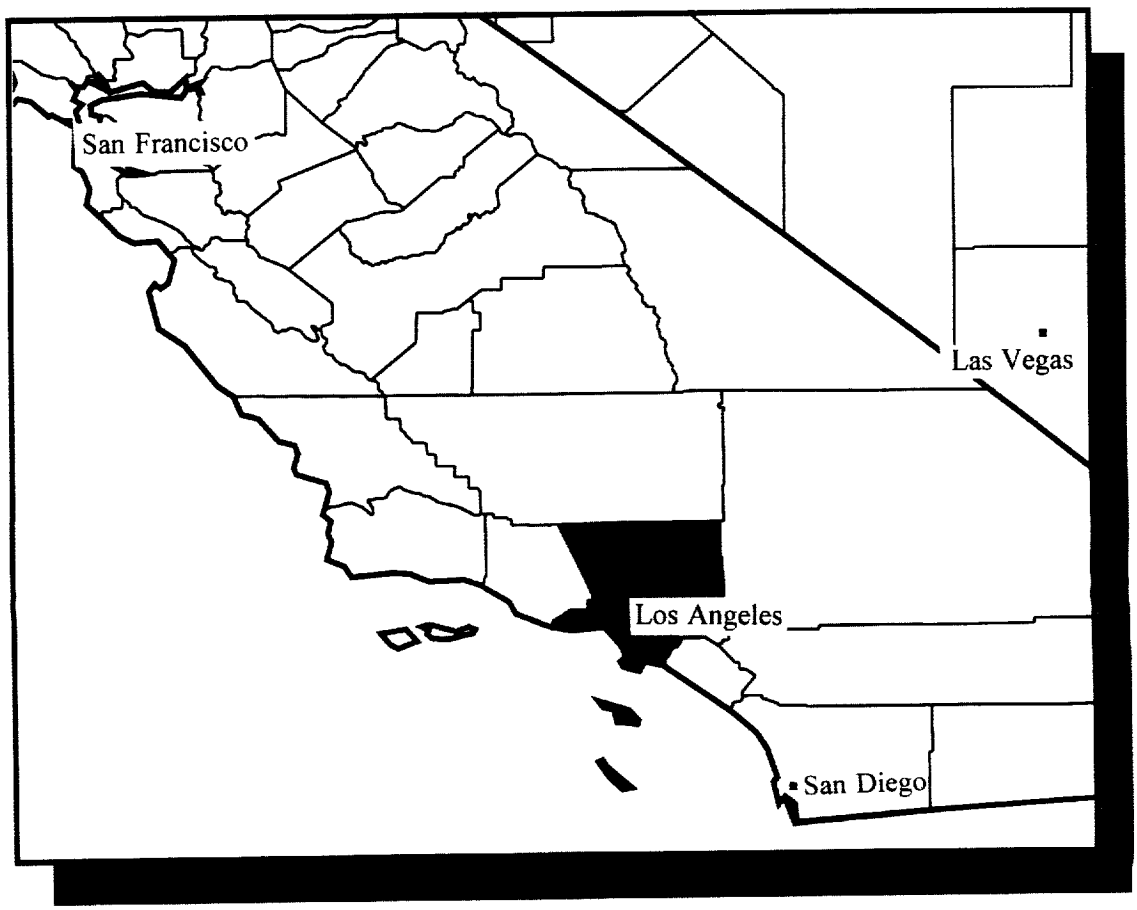
hazardous, the absence of many participant households in this area seems to indicate that, although access is somewhat of a problem for those living there, it is probably not a problem that has a notable impact on access throughout the county.

Perceptions of individuals involved in food access issues focused largely on access by households on the Mescalero Indian Reservation. Despite having two stores on the reservation, there was the perception that households did their shopping in Alamogordo and Rudioso.

Table of Contents

# Section VI

## Los Angeles County Study Area



# Section VI. Los Angeles County Study Area

Los Angeles County is the most populous county in the United States, with 9.2 million residents spread over 4,060 square miles. The county contains 88 distinct incorporated areas and about as many unincorporated areas. The largest incorporated area in the county is Los Angeles City, which has 3.6 million residents spread over 470 square miles. The other extreme is represented by Antelope Valley, a largely rural area north of the San Gabriel Mountains. Although very different, these and other communities are part of the same social service, transportation, and food retailer systems and therefore would be expected to display certain similarities relative to availability of and access to food stores.

Because of the size of the county and its diverse nature, we selected three relatively limited areas to study. The first area is located in Antelope Valley and focuses on Palmdale and the area to the south and southeast of the city. The second area is located in Pasadena, which is an incorporated city of approximately 134,000 lying in the center of the county. The third area is Southeast Los Angeles. This area, located in Los Angeles City, represents a true inner-city environment and has been the subject of several studies on food retailer access in recent years.

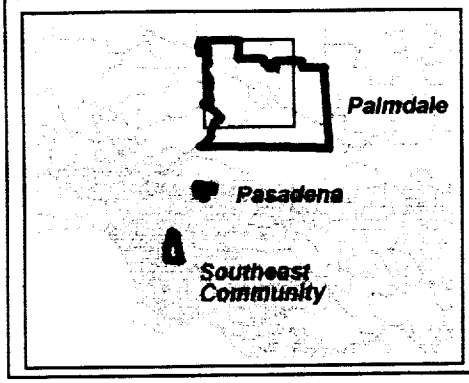
## Antelope Valley and the Palmdale Study Area

Antelope Valley lies between the San Gabriel and Tehachapi Mountains, extending to the Mojave Desert outside Los Angeles County. The area is largely arid and is noted for extremes in temperature and weather. The valley contains two major cities, Lancaster and Palmdale, which border on each other. However, both cities contain substantial undeveloped land, leaving the population centers in the two cities 6 to 10 miles apart. Lancaster, the northernmost city, had an estimated 1993 population of 107,000, while Palmdale is slightly smaller, with an estimated population of 90,000. The focus of this analysis is on parts of the city of Palmdale east of the downtown area and on the areas directly south and southeast of Palmdale (Exhibit VI-1).

Palmdale encompasses about 100 square miles, and has been one of the fastest growing cities in California over the last decade. From 1980 to 1990, the population grew from 12,277 to 68,842. Unincorporated outlying communities to the south southeast to east of Palmdale on Route 138 (which heads east and skirts the northern edge of the San Gabriel Mountains) include Littlerock, Pearblossom, and Llano. Littlerock, just south of Palmdale, contains approximately 10,000 residents, Pearblossom has approximately 800 residents, and Llano has 2,000 residents. The area is characterized by tract housing and ranches and farms. Many ranches and farms were established during the latter part of the last century as immigrant farm communities. As described by the individuals interviewed, the older communities, by choice, are somewhat isolated.

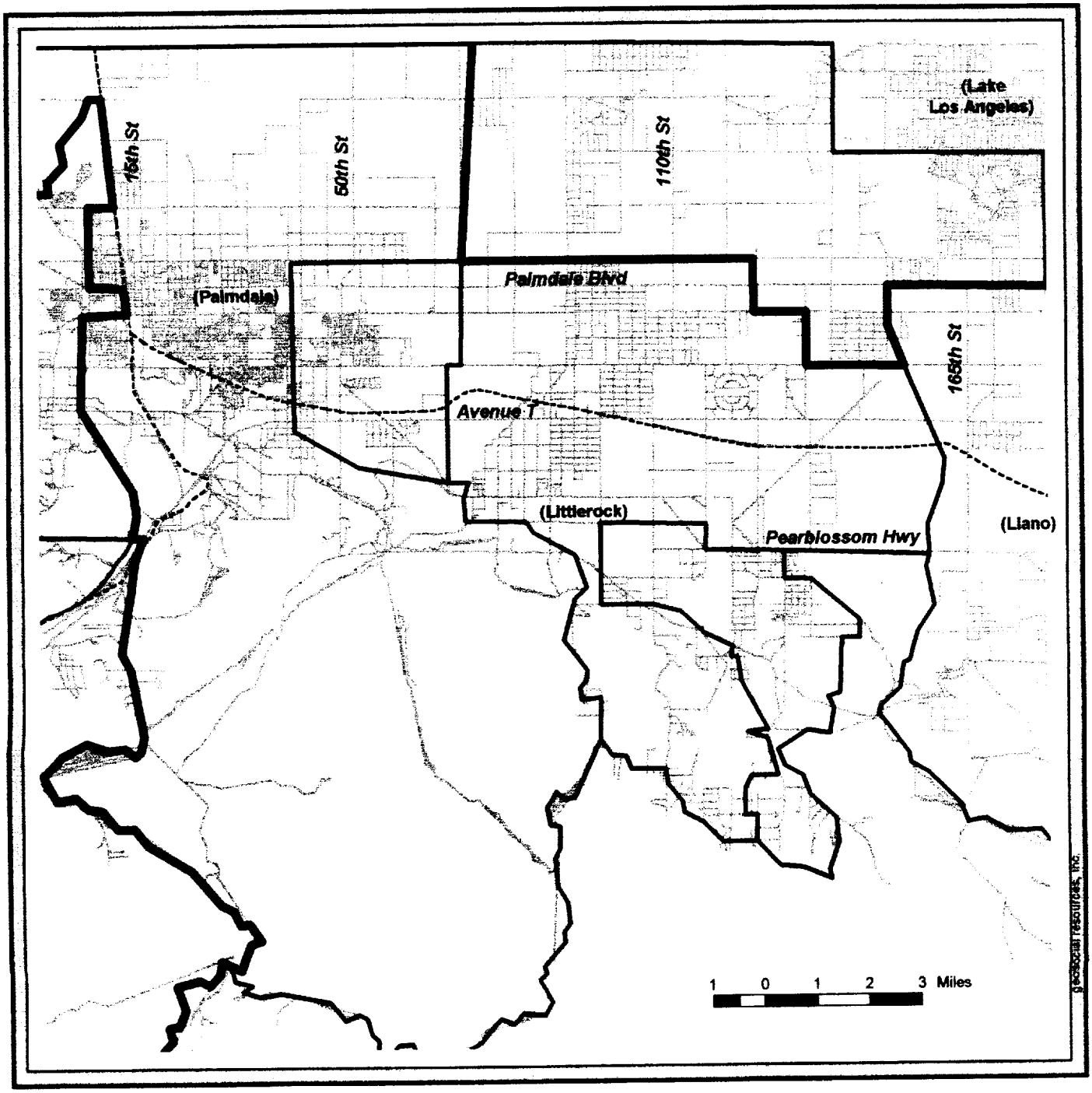
# General Orientation Map

## *Los Angeles Study Area*




The location of the Palmdale component of the Los Angeles Study Area is shown in this ZIP Code map.

ZIP Codes
Highways
Streets
Railroads
Study Area



As indicated previously, Antelope Valley is undergoing rapid growth, which has been reflected in its demographic profile. Almost one-quarter of its population is represented by racial minorities; 23 percent are of Hispanic origin. The overall household poverty rate is below 10 percent with the proportion of households under 125 percent of the poverty rate ranging from 40 to 50 percent in Palmdale to under 15 percent in the southwest part of the study area (Exhibit IV-2). Those areas in the southeastern portion of the Palmdale study area contain a higher proportion of individuals 65 years or older.

## *Geographic Barriers and Transportation*

This component of the Los Angeles study area includes the valley and the northern foothills of the San Gabriel Mountains. Although no natural barriers limit access, the desert terrain and climate can sometimes be harsh. Roads in the area have been known to close because of snow during the winter months.

The local public transportation system in Palmdale consists of two bus routes and Dial-A-Ride access. The bus routes, which tie Lancaster and Palmdale together, venture as far south as Littlerock. There are, however, areas of Palmdale that are not served by scheduled bus routes.

Transportation outside Palmdale is less adequate because the population is spread over a very large area. Dial-A-Ride services operate in three zones, affording transportation to individuals outside Palmdale. Individuals in rural locations depend mainly on automobiles.

## *Food Stamp Participants*

In October 1993, there were approximately 14,500 food stamp households totaling 37,400 persons, in Antelope Valley. This figure is the total for the Lancaster Office, which covers the entire Los Angeles portion of Antelope Valley. The Palmdale study region contained 4,798 food stamp households (in February 1994), approximately three-fourths of which were located in the city of Palmdale. As Exhibit VI-3 indicates, the population of food stamp households tends to be clustered in the city of Palmdale (in the northwest portion of the study area) and, to a lesser extent, in an unincorporated area farther east. There are scattered households toward the east and southeast of Palmdale in the various towns and outlying areas that run along Route 138.

**Exhibit VI-2**

## Percentage Below 125% of Poverty Level (FSP Recipients and Non-Recipients)

*Palmdale*
*Los Angeles Study Area*

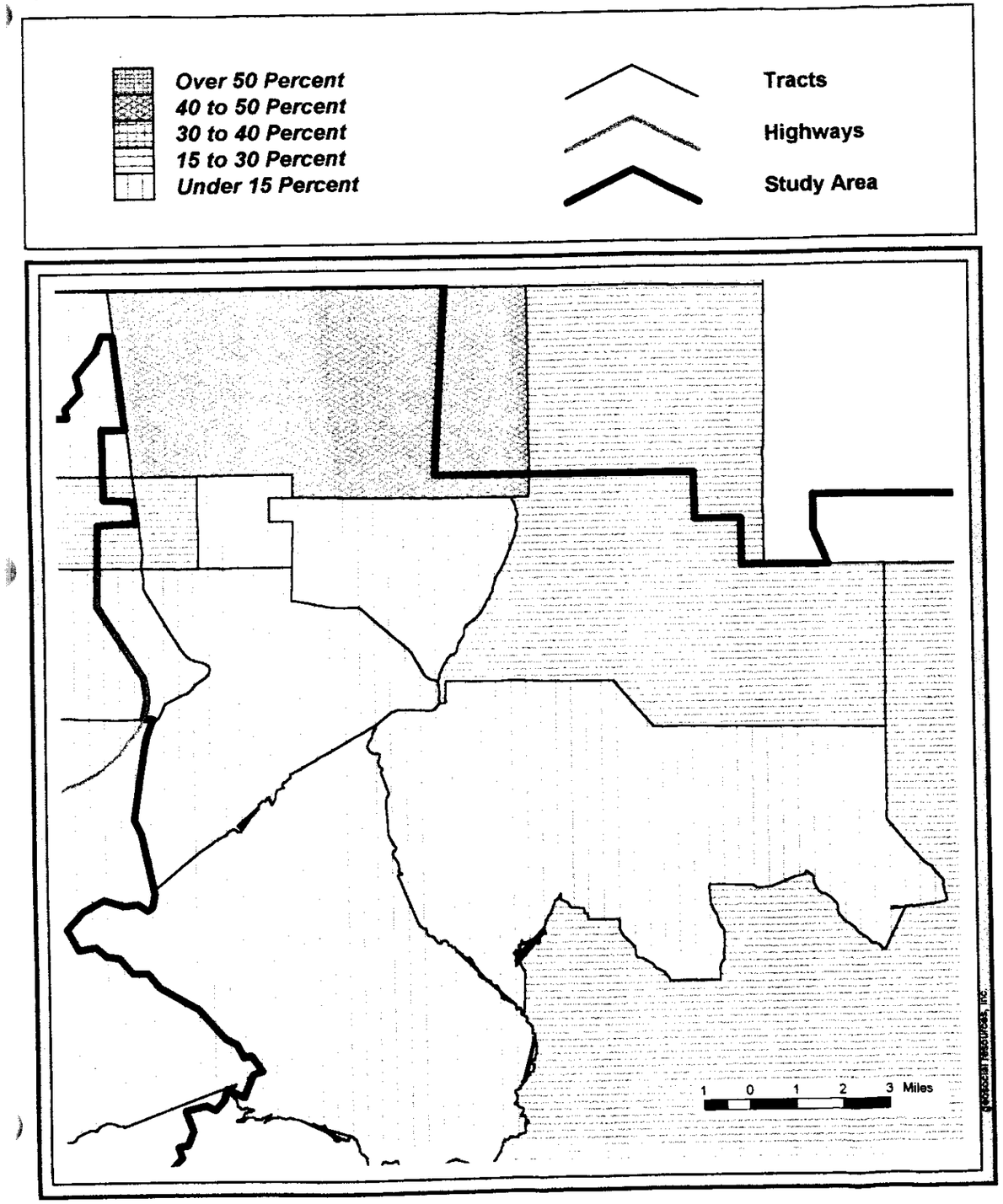
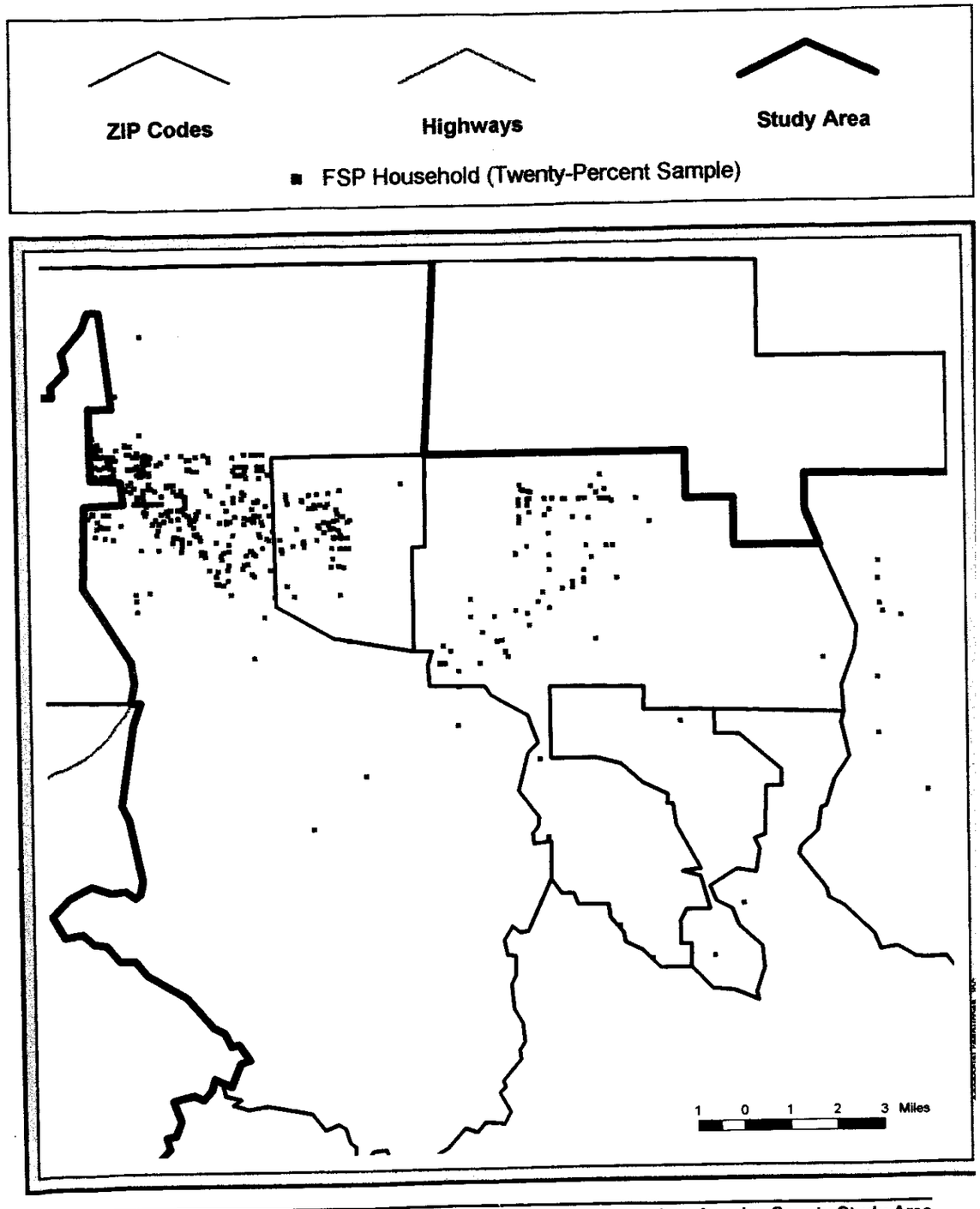





**Exhibit VI-3**

## Distribution of FSP Participant Households

*Palmdale*
*Los Angeles Study Area*



## *Retailers*

In total, there are 36 retailers located in Palmdale and eight in the outlying areas. Of the $7 million in food stamp redemptions in 1993, Palmdale stores account for almost 97 percent of the redemptions in the study area (Exhibit VI-4). The percentage of stores identified as supermarkets in Palmdale and the study region approximates 36 percent, which is much higher than the national average and accounts for 94 percent of redemptions.

Several major chains (Albertson's, Lucky Food Centers, Ralph's, and Von's) are represented in Palmdale and Lancaster. East of the city, there are mostly medium-sized grocers, convenience stores, and "mom and pop" stores. While they perceived prices to be higher and quality generally tended to be lower, some individuals interviewed at these sites reported that owners of smaller stores tended to be more service-oriented than the major chain stores and that the stores carried a greater diversity of ethnic, and sometimes fresher, foods.

Exhibits VI-5 and VI-6 present details on the redemptions by all authorized outlets and by supermarkets and grocery stores with gross annual sales of more than $500,000. The two maps are similar in that they show a concentration of redemptions in the northwest portion of the study area. The maps are consistent with the data presented in Exhibit VI-4, which show a heavy concentration of redemptions in large stores in Palmdale and the absence of stores in the southeastern portion of the Palmdale study area.

**Exhibit VI-4**

**Authorized Retailer Presence in the Palmdale Study Area**

| Geographic Component | Supermarkets and Large Groceries | | All Stores | | |
|---|---|---|---|---|---|
| | Percentage of All Stores in Geographic Component | Percentage of All Redemptions in Geographic Component | Number of Stores | Total Redemptions ($) | Stores per 1,000 FSP Households* |
| Palmdale | 38.9% | 94.2% | 36 | 6,855,592 | 8.70 |
| Littlerock | 40.0% | 80.1% | 5 | 163,598 | 9.70 |
| Pearlblossom | 0.0% | 0.0% | 3 | 30,872 | 26.70 |
| Study Area | 36.4% | 93.5% | 44 | 7,050,062 | 9.10 |

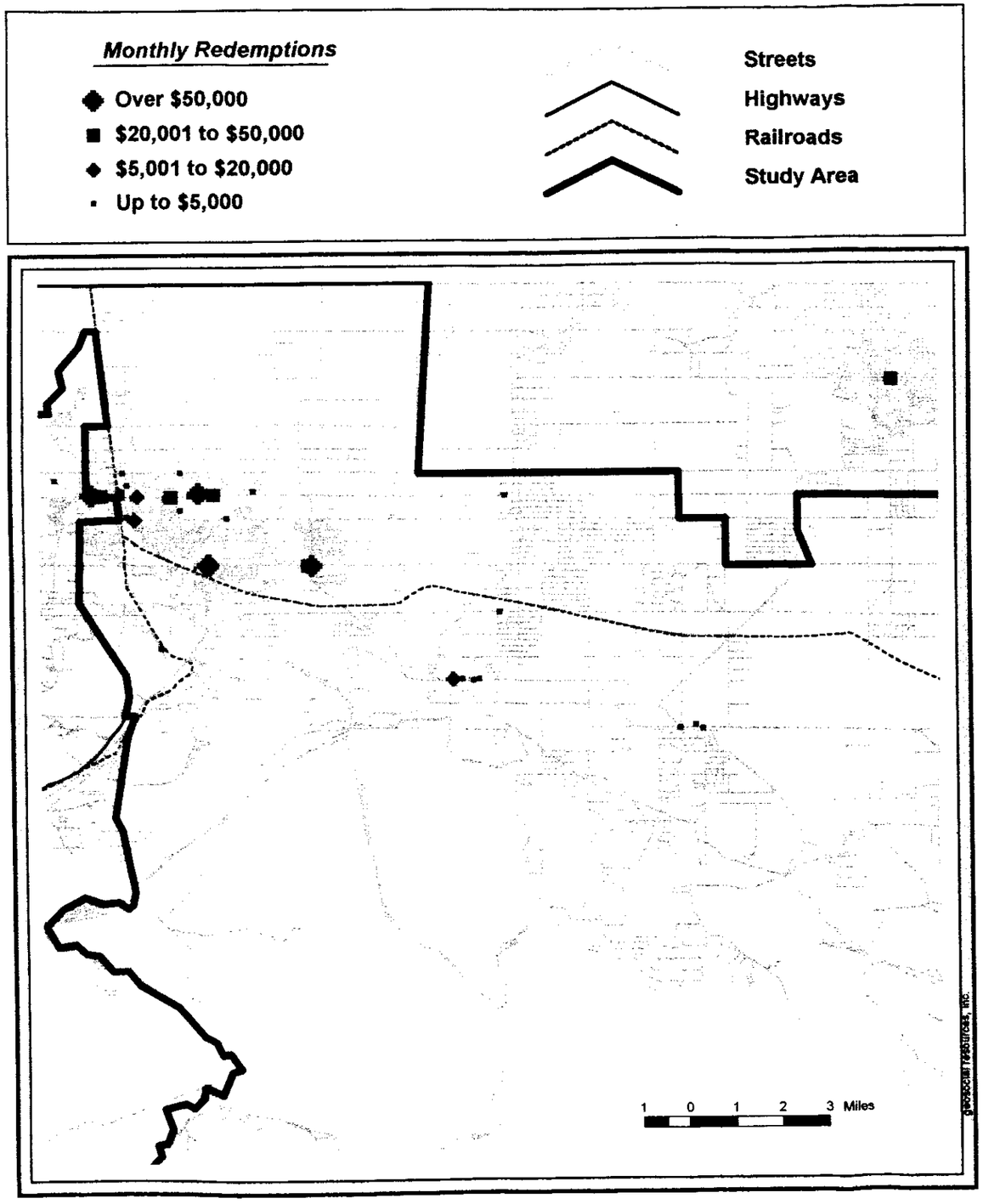
Source: Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

*Retailer density figures may exceed the number of stores in area when FSP households are few in number. We use the denominator of 1,000 to be consistent across all study sites.

## Exhibit VI-5

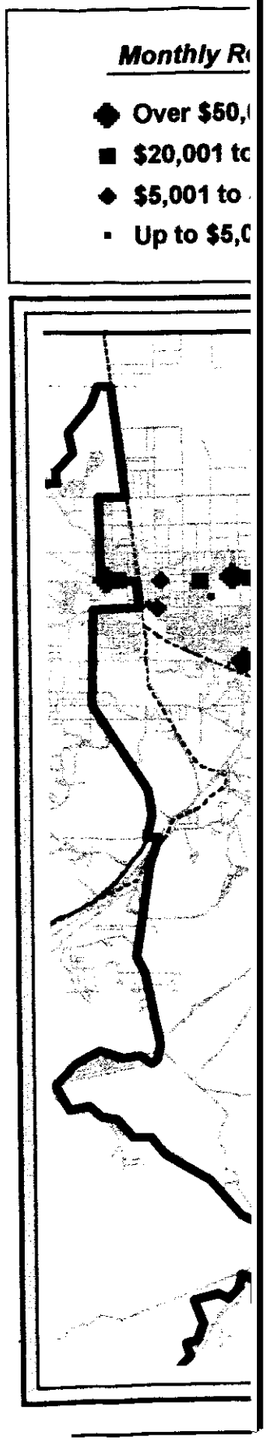
## Monthly FS Redemptions: All Participating Outlets

*Palmdale*
*Los Angeles Study Area*




Los Angeles County Study Area
VI-7

## Monthly FS R
## With Annual



## *Proximity of FSP Participants to Retailers*

The geographic expanse of the Palmdale area is reflected in larger average distances to retailers. Approximately 56 percent of recipients in the Palmdale study area were within one half-mile from any authorized retailer, and just over four-fifths of the recipients were within one mile of an authorized store (Exhibit VI-7). With regard to proximity to supermarkets or large grocery stores, nearly 40 percent of FSP recipients are within one half-mile of an authorized store, and three-quarters are within one mile. The median distance to a supermarket or large grocery was just over one half-mile. About 5 percent of the FSP households were five miles or more from a large store, indicating that a small proportion of FSP recipient households lived in these isolated areas.

One of the most notable results is that the proportion of households within one mile of a supermarket (72 percent) is equivalent to the proportion of those within one mile of a convenience store (70 percent). Yet, the median distance of participants to convenience stores (.59 mile) is less than for supermarkets (.80 miles). This finding is explained by the concentration of supermarkets in the northwest, where a large number of food stamp households are located, and by the relative spread of convenience stores across the whole area. In other words, convenience stores are located to serve smaller population concentrations as well as those concentrations served primarily by supermarkets.

Exhibit VI-8 displays the distribution of recipient households that are over one half-mile from an authorized retailer. The data indicate that, except for stores in the northwest portion of the study area, proximity to an authorized food store at this distance is a problem for many households in the area. When stores that have at least $500,000 in gross sales are considered (Exhibit VI-9), the map indicates little change. In general, the data suggest that some households in the northwest area and a few in the second major cluster to the east are proximate to a store other than a supermarket or a large grocery.

## *Redemption Flows*

Exhibit VI-10 provides information on redemption flows (i.e., the ratio of redemptions to issuances) of access across the different sites within the study area. The data indicate that there is a notable outflow of food stamps from Pearlblossom and Littlerock and, surprisingly, a smaller but notable outflow from Palmdale. Although the information presented thus far indicates that Palmdale is a major shopping area, the retailers may be losing some food stamp market share to Lancaster. One recent study of the region indicated that the stores in the Palmdale area tend to be twice as large as those in other parts of Los Angeles County.[1] The study also indicated that there was an inflow of purchases, which indicated that the city is a draw relative to the county as a whole. It should be noted, however, that Lancaster was calculated to have a larger inflow. It seems likely that food stamp business may be diverted to Lancaster.

[1] Alfred Gobar Associates. Antelope Valley Labor Market Study. Prepared for the Lancaster Economic Development Corporation. June, 1993.

**Exhibit VI-7**

**Proximity of Food Stamp Participating Retailers to Recipients**
**Palmdale Component**
**(Los Angeles Study Area)**

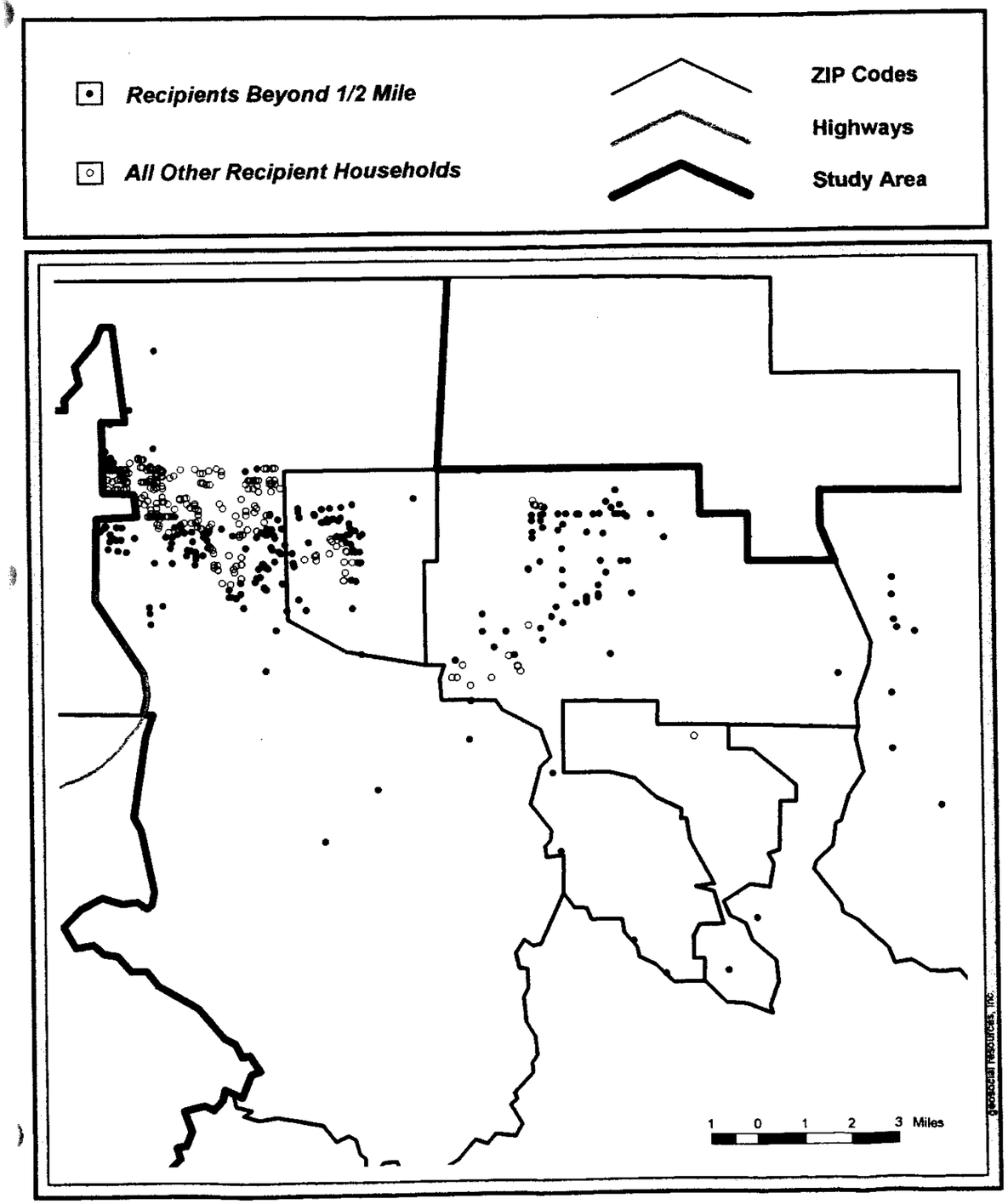
| FSP Retailer Type: | Total Recipients | Under .25 mile | Under .5 mile | Under 1 mile | Under 2 miles | Under 5 miles | Median Distance | Mean Distance |
|---|---|---|---|---|---|---|---|---|
| Supermarket | [4325] | 188 | 827 | 3116 | 3679 | 4126 | | |
| | *% of total* | *4.35* | *19.12* | *72.05* | *85.06* | *95.40* | *0.80* | *1.34* |
| Large Grocery | [4325] | 555 | 1040 | 1908 | 2601 | 4121 | | |
| | *% of total* | *12.83* | *24.05* | *44.12* | *60.14* | *95.28* | *1.22* | *1.89* |
| Small Grocery | [4325] | 203 | 1098 | 2171 | 3186 | 4078 | | |
| | *% of total* | *4.69* | *25.39* | *50.20* | *73.66* | *94.29* | *0.98* | *1.74* |
| Convenience Store | [4325] | 575 | 1754 | 3019 | 3852 | 4251 | | |
| | *% of total* | *13.29* | *40.55* | *69.80* | *89.06* | *98.29* | *0.59* | *0.99* |
| Specialty Food Store | [4325] | 0 | 0 | 0 | 0 | 126 | | |
| | *% of total* | *0.00* | *0.00* | *0.00* | *0.00* | *2.91* | *6.85* | *8.38* |
| Gas/Grocery Combination | [4325] | 277 | 902 | 1727 | 2406 | 3980 | | |
| | *% of total* | *6.40* | *20.86* | *39.93* | *55.63* | *92.02* | *1.66* | *2.12* |
| All Others | [4325] | 100 | 883 | 2137 | 3238 | 4243 | | |
| | *% of total* | *2.31* | *20.42* | *49.41* | *74.87* | *98.10* | *1.02* | *1.52* |
| **Supermarket or Large Grocery** | **[4325]** | **731** | **1657** | **3274** | **3704** | **4139** | | |
| | ***% of total*** | ***16.90*** | ***38.31*** | ***75.70*** | ***85.64*** | ***95.70*** | ***0.57*** | ***1.16*** |
| All Retailers | [4325] | 1325 | 2407 | 3624 | 3985 | 4286 | | |
| | *% of total* | *30.64* | *55.65* | *83.79* | *92.14* | *99.10* | *0.45* | *0.75* |

Source: Geo Social Resources Inc. and Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

**Exhibit VI-8**

## Half-Mile Access to Any FSP Participating Retailer

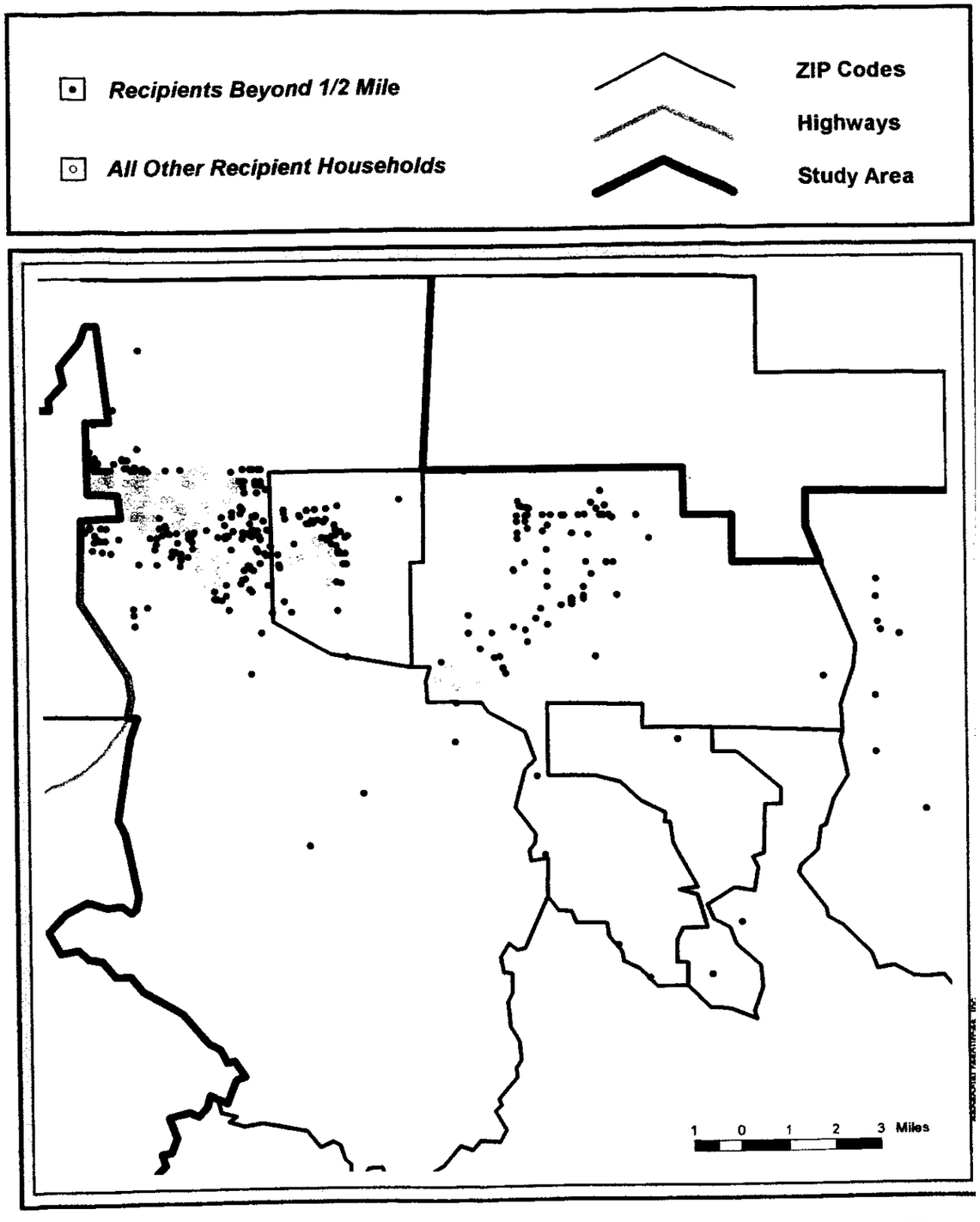
*Palmdale*
*Los Angeles Study Area*




Los Angeles County Study Area
VI-11

## Half-Mile Access to FSP SM/GS With Annual Sales Over $500,000

*Palmdale*
*Los Angeles Study Area*




Los Angeles County Study Area
VI-12

**Exhibit VI-10**

**Redemption Flows in the Palmdale Study Area**

| Geographic Component | Ratio of Redemptions to Issuances |
|---|---|
| Palmdale | 0.88 |
| Littlerock | 0.17 |
| Pearlblossom | 0.09 |
| Study Area | 0.74 |

Source: Macro International Inc,. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

## *Discussion*

The Antelope Valley is a largely rural area with two small cities, Palmdale and Lancaster. The focus of our attention, Palmdale and the areas south and southeast of the city, has grown over 500 percent in the last 10 years. The increase in population and response to retailers within this fast growth context may have an affect on the types and numbers of retailers, and thus on the market and access. Major findings indicate that

- **Authorized retailer density is low within the study area.** This may reflect the rather low participation rate in the area (12 percent). Or, perhaps, food retailers have not expanded to match the rapid population growth in this area. Whatever the cause, it appears that Palmdale residents may be shopping in nearby Lancaster, based on the redemptions and issuance data, as well as on local reports. This pattern would reflect the overall attraction of outside markets to residents of the study area.

- **Most participants are fairly close to an authorized retailer.** Although the study area encompasses a large territory, the population is concentrated in Palmdale itself. This helps to explain the fact that most participants in the area are within one half-mile of some authorized retailer and three-fourths are within one mile of a larger supermarket or grocery store.

- **Retailer choices outside the city are much more limited.** Participants living in the sparsely populated region south and east of Palmdale have little choice of retailers. Although these households constitute a minority of the FSP population within the study area, they represent a recognizable enclave that may experience problems satisfying food requirements close to their homes. The ratio of redemptions-to-issuance suggests that they travel outside their communities for some food items.

Palmdale is an interesting example when thinking about access in rural areas as "half-full" or "half-empty." Because rural areas are sparsely populated territories requiring considerable travel to population centers, we might perceive that retailer proximity there would be quite poor. But if we recognize that many rural areas involve population clusters (settlements) that address common needs, we may anticipate a more complex picture of "access" in rural areas. As seen in the Palmdale area, a relatively sparse collection of retailers clustered in a population center can provide retailer proximity for most of the population of the territory. Outside such population centers, in the remote stretches that render this a "rural" area, access may require considerable travel and a severely limited choice among proximate retailers. For participants living in these remote confines, any discussion of the median travel distance, the percentage of the study area within one half-mile of a retailer, or any other aggregate measure is irrelevant, because such measures are shaped by conditions quite different from their own. On the other hand, it is always possible to find some participants who live quite a distance from authorized retailers—or from churches, schools, hospitals, and other establishments. Thus, it is something of a challenge to assess "retailer access" in terms that simultaneously reflect the conditions of most people and the predicament of some people. Palmdale demonstrates that, even in rural areas, most FSP participants live surprisingly close to authorized retailers. But it also demonstrates that certain communities may be isolated from the network of retailers the majority of participants enjoy.

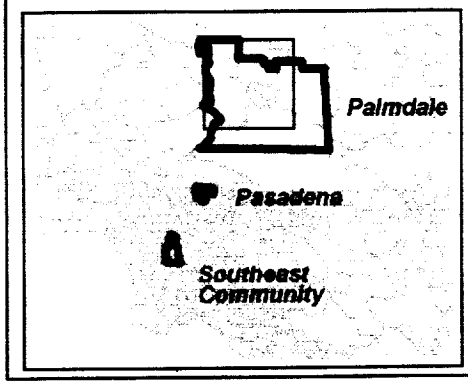
When interviewed, local persons involved with food access issues drew attention to these isolated enclaves, noting their need to travel into Palmdale for food and other goods. The perception is that some FSP participants must travel into Palmdale (and Lancaster) to find a supermarket, others do so for price and quality considerations, and still others do so as part of general shopping trips to the city. These perceptions remind us of the complex interactions governing consumer behavior and the difficulties involved in describing access based solely on geographic proximity to various types of retailers.

## Pasadena

Pasadena, a city of 23 square miles with a population of 131,591, is located at the southern foot of the San Gabriel Mountains, approximately 15 minutes by automobile from downtown Los Angeles (Exhibit VI-11). Most of the area is occupied by single-family homes, although approximately one-third of the area is zoned for multi-family dwellings. The city as a whole is diverse, with some relatively affluent areas (toward the eastern end of the city) and some low-income areas. Exhibit VI-12 demonstrates this variation, and indicates that the percentage of individuals below 125 percent of poverty ranges from under 15 percent to over 50 percent. The focus of our analysis in Pasadena was on an area northwest and north of downtown Pasadena. The total population for this area is 80,685, with no one race notably dominant. About one of five households is below the poverty line and, in the northwest areas, approximately 40 to 50 percent of the population is below 125 percent of the poverty rate. The highest percentage of elderly persons live toward the eastern portions of the city.

# General Orientation Map

## Los Angeles Study Area




The location of the Pasadena component of the Los Angeles Study Area is shown in this ZIP Code map.

ZIP Codes
Highways
Streets
Railroads
Study Area

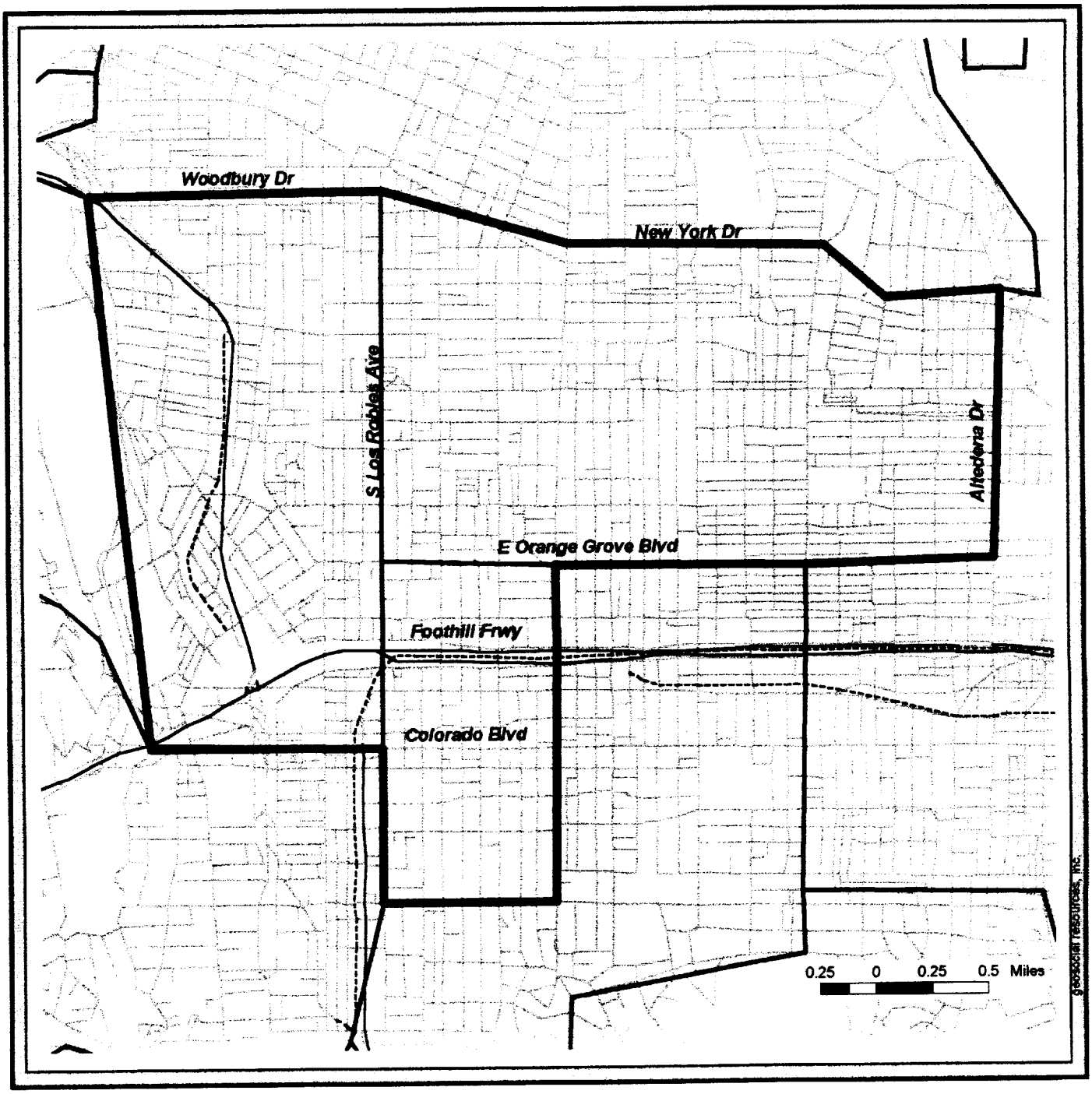
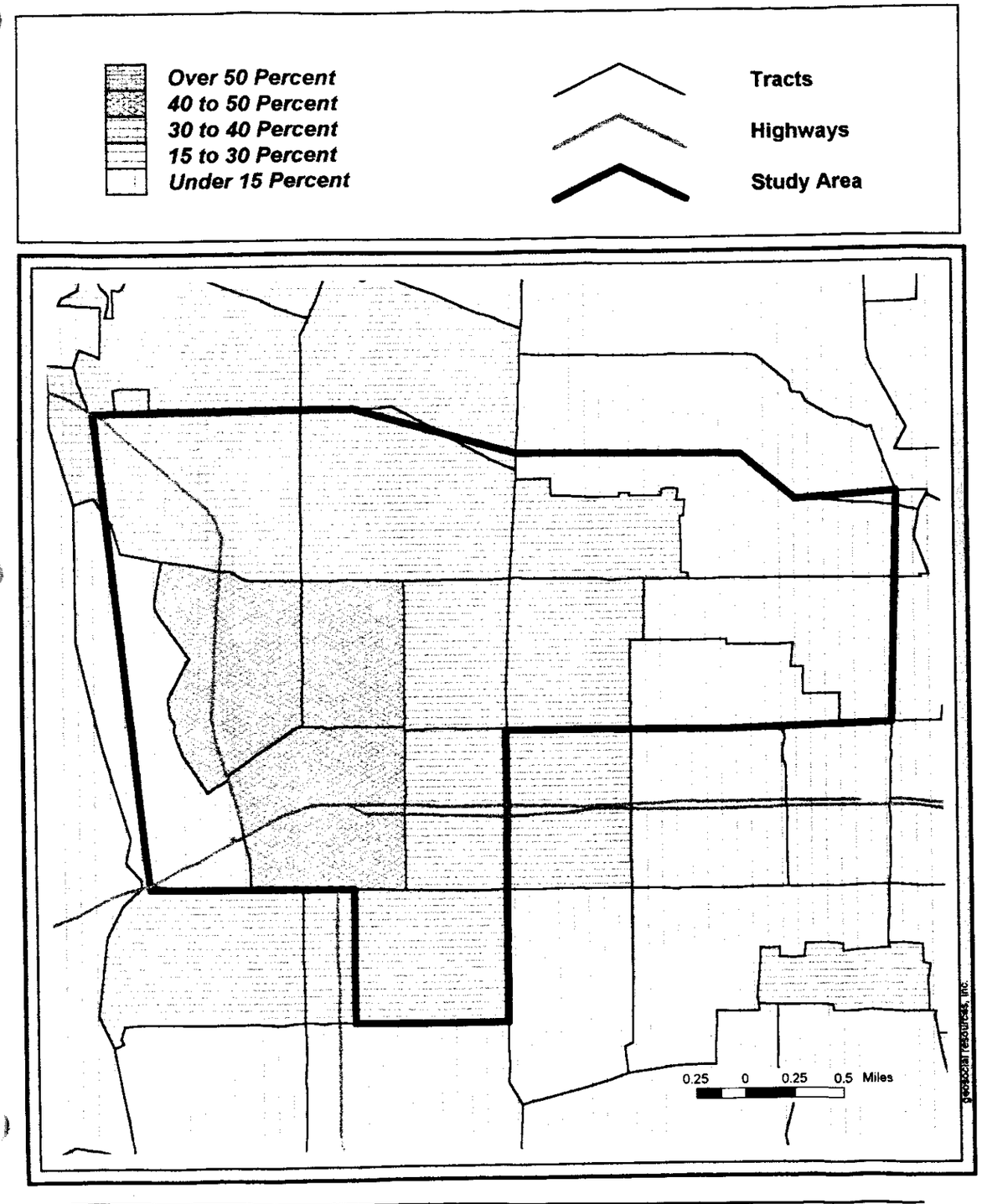


**Exhibit VI-12**
*Pasadena*
*Los Angeles Study Area*

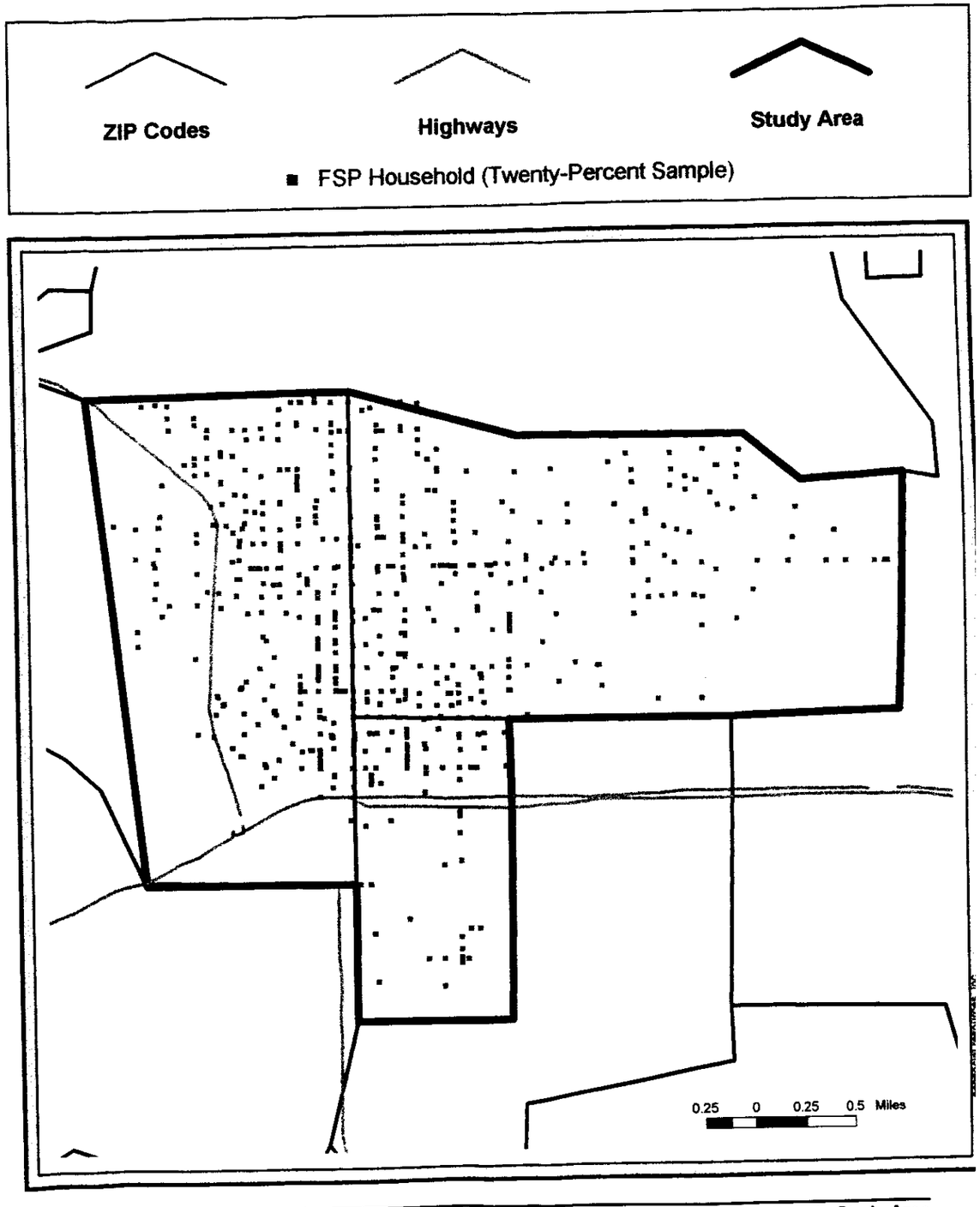
## Percentage Below 125% of Poverty Level (FSP Recipients and Non-Recipients)






## Distribution of FSP Participant Households

*Pasadena*
*Los Angeles Study Area*



Pasadena was selected as an urban community that presents a mix of low-income and affluent areas. This mix, it was thought, would allow us to investigate retailer availability in an urban area where low-income persons are not predominant.

## *Geographic Barriers and Transportation*

Pasadena is a completely urban area with a rectangular block pattern. The area that was selected for study is east of Brookside Park, and contains the Rose Bowl. Major obstacles in the area are the major freeway (Foothill Freeway) that runs through the study area. Although there are some major streets crossing the freeway, depending on where they live in relation to the freeway, some people need to travel farther than others to shop. Bus service is extensive throughout the area. Some community contacts indicate that safety is a concern in certain areas. The 1996 census data shows that only 15 percent of the households do not have access to a vehicle.

## *Food Stamp Recipients*

In December 1994, the caseload of FSP recipients was 6,483 households in the study area, representing approximately one-fourth of the total households in the city. The total number of issuances for that month was $870,000, which translates to approximately $10 million annually. As Exhibit VI-13 demonstrates, food stamp households are largely concentrated on the borders of the three adjacent ZIP Code areas, which we have termed northwest, north, and central, corresponding to their location in Pasadena. The density of the food stamp households is far less on the western, southern, and eastern borders of the study area. In the context of Pasadena as a whole, the areas surrounding these three ZIP Code areas are notably more affluent, possibly offering services not available in the areas under study.

## *Retailers*

Pasadena has a number of large chain grocery stores, although none of them are located in the lower-income northwest areas. Major chains servicing the area include Alpha-Beta, Von's, Ralph's, and Hughes, and a grocery-warehouse type firm (Food 4 Less). In total, there are 52 retailers of all types in the area redeeming $9.8 million in 1993 (Exhibit VI-14). Approximately 60 percent of the stores are located in the northern Pasadena area. These stores redeem more than 70 percent of the redemptions of the stores in the study area—with more than 90 percent of the redemptions in this area occurring in supermarkets. Central Pasadena contains only five stores, but almost all FSP redemptions occur at the four supermarkets. The northwest area has a lower number of stores per FSP household, lower redemptions, and a significantly lower proportion of redemptions occurring in supermarkets than the other areas.

## Section VI. Los Angeles County Study Area

Exhibit VI-14

*Exhibit VI-15*

## Monthly FS Redemptions: All Participating Outlets

*Pasadena*
*Los Angeles Study Area*

*Monthly Redemptions*

- Over $50,000
- $20,001 to $50,000
- $5,001 to $20,000
- Up to $5,000

Streets
Highways
Railroads
Study Area

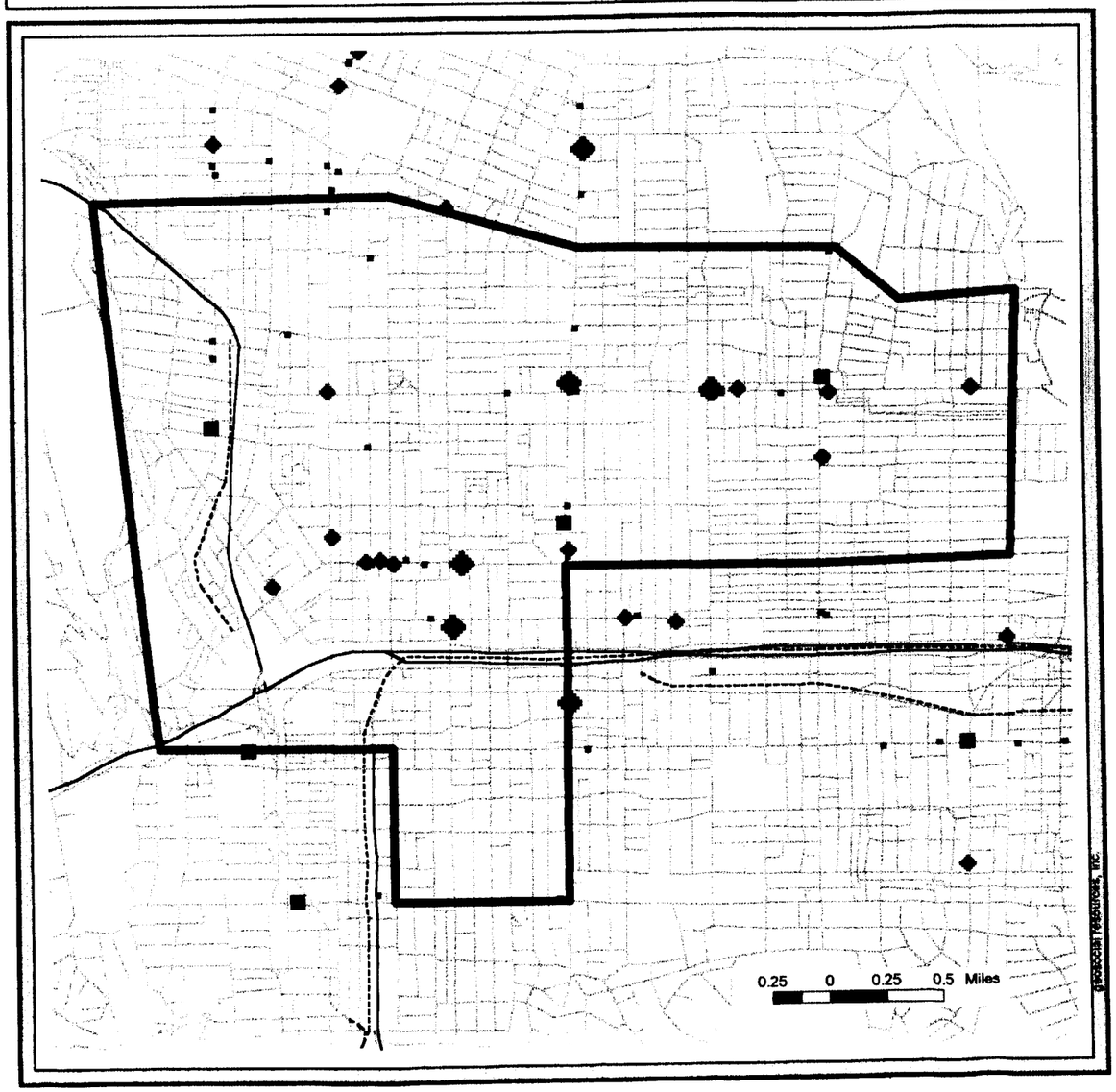





*Exhibit VI-16*

## Monthly FS Redemptions: SM/GS With Annual Sales Over $500,000

*Pasadena*
*Los Angeles Study Area*

*Monthly Redemptions*

- Over $50,000
- $20,001 to $50,000
- $5,001 to $20,000
- Up to $5,000

Streets
Highways
Railroads
Study Area

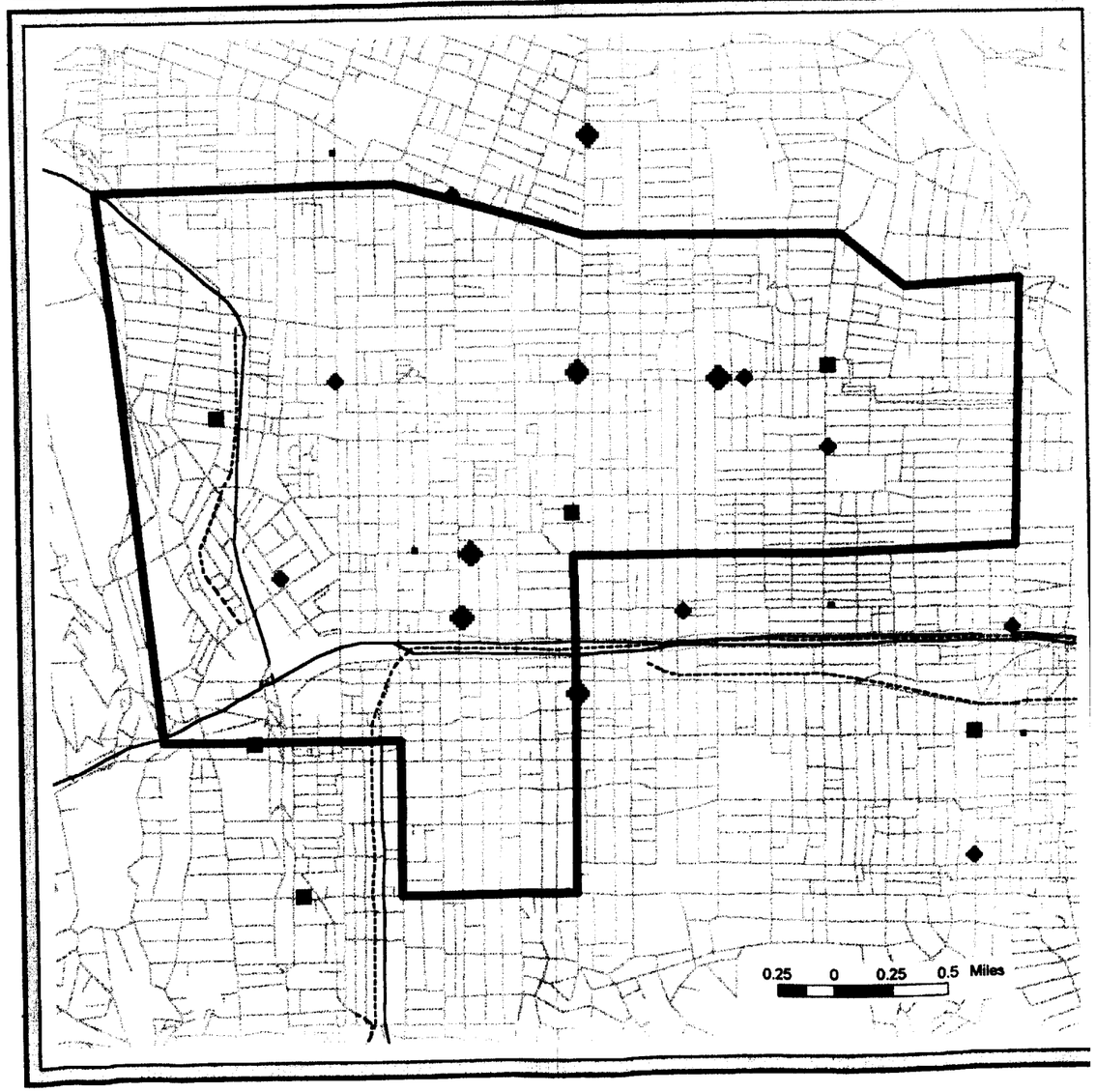


**Exhibit VI-17**

**Proximity of Food Stamp Participating Retailers to Recipients**
**Pasadena Component**
**(Los Angeles Study Area)**

| FSP Retailer Type: | Total Recipients | Under .25 mile | Under .5 mile | Under 1 mile | Under 2 miles | Under 5 miles | Median Distance | Mean Distance |
|---|---|---|---|---|---|---|---|---|
| Supermarket | [6324] | 1890 | 3415 | 5167 | 6323 | 6324 | | |
| | *% of total* | *29.89* | *54.00* | *81.70* | *99.98* | *100.0* | *0.45* | *0.56* |
| Large Grocery | [6324] | 1721 | 4180 | 6205 | 6324 | 6324 | | |
| | *% of total* | *27.21* | *66.10* | *98.12* | *100.0* | *100.0* | *0.38* | *0.43* |
| Small Grocery | [6324] | 3245 | 5756 | 6205 | 6324 | 6324 | | |
| | *% of total* | *51.31* | *91.02* | *98.12* | *100.0* | *100.0* | *0.25* | *0.29* |
| Convenience Store | [6324] | 2809 | 5213 | 6082 | 6324 | 6324 | | |
| | *% of total* | *44.42* | *82.43* | *96.17* | *100.0* | *100.0* | *0.28* | *0.34* |
| Specialty Food Store | [6324] | 1747 | 3224 | 5015 | 6324 | 6324 | | |
| | *% of total* | *27.62* | *50.98* | *79.30* | *100.0* | *100.0* | *0.49* | *0.58* |
| Gas/Grocery Combination | [6324] | 0 | 0 | 0 | 0 | 0 | | |
| | *% of total* | *0.00* | *0.00* | *0.00* | *0.00* | *0.00* | *13.18* | *13.22* |
| All Others | [6324] | 2257 | 3749 | 5695 | 6324 | 6324 | | |
| | *% of total* | *35.69* | *59.28* | *90.05* | *100.0* | *100.0* | *0.37* | *0.48* |
| **Supermarket or Large Grocery** | **[6324]** | **3304** | **5878** | **6323** | **6324** | **6324** | | |
| | ***% of total*** | ***52.25*** | ***92.95*** | ***99.98*** | ***100.0*** | ***100.0*** | ***0.24*** | ***0.26*** |
| All Retailers | [6324] | 5029 | 6268 | 6324 | 6324 | 6324 | | |
| | *% of total* | *79.52* | *99.11* | *100.0* | *100.0* | *100.0* | *0.16* | *0.16* |

Source: Geo Social Resources Inc. and Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

is slightly less than one half-mile (.45 mile). About two-thirds of the households are within one half-mile of large grocery. The most available types of retailer are small groceries and convenience stores, which are located within one half-mile for over four-fifths of the residents.

Exhibit VI-18 displays the locations of households farther than one half-mile from a participating retailer. The presence of households shows only two very small areas that are more than one half-mile from an authorized retailer. When quarter-mile proximity is considered, the map shows a number of areas containing households outside this distance (Exhibit VI-19).

Exhibit VI-20 displays information on half-mile access to large stores (a supermarket or large grocery). Households farther than one half-mile from a large retailer are located in four clusters, with the largest in the far northwest and the northeast corners of the study area. When we examine proximity relative to whether the household is within one quarter-mile of a large store, we find larger numbers of households affected (Exhibit VI-21). Since large stores are scattered throughout the area, areas not served under the quarter-mile coverage criterion are largely in the areas between two stores.

## *Redemption Flows*

Exhibit VI-22 provides further information on redemption flows. The data indicate that redemptions exceed issuances in north Pasadena and central Pasadena. Thus, there seems to be an outflow of food stamps in northwest Pasadena toward the other two areas or outside the study area. This seems to reflect the lower presence of large retailers in the area.

## *Discussion*

Pasadena is a mid-sized urban area, within the context of a larger very urbanized area (the San Gabriel Valley), containing pockets of low-income households in proximity to relatively affluent areas. The results of our analysis indicate that:

- **A large proportion of the FSP population has access to larger stores.** More than 90 percent of households have access to a supermarket at one half-mile and more than 50 percent have access at one quarter-mile.

- **The northwestern part of the city is relatively underserved.** In particular, residents of the northwest part of the city, although it contains both large and small stores, show a tendency to use their food stamps mainly in other areas of the city; those food stamps they do use in the northwest are used to make purchases at small retailers.

**Exhibit VI-18**

## Half-Mile Access to Any FSP Participating Retailer

*Pasadena*
*Los Angeles Study Area*

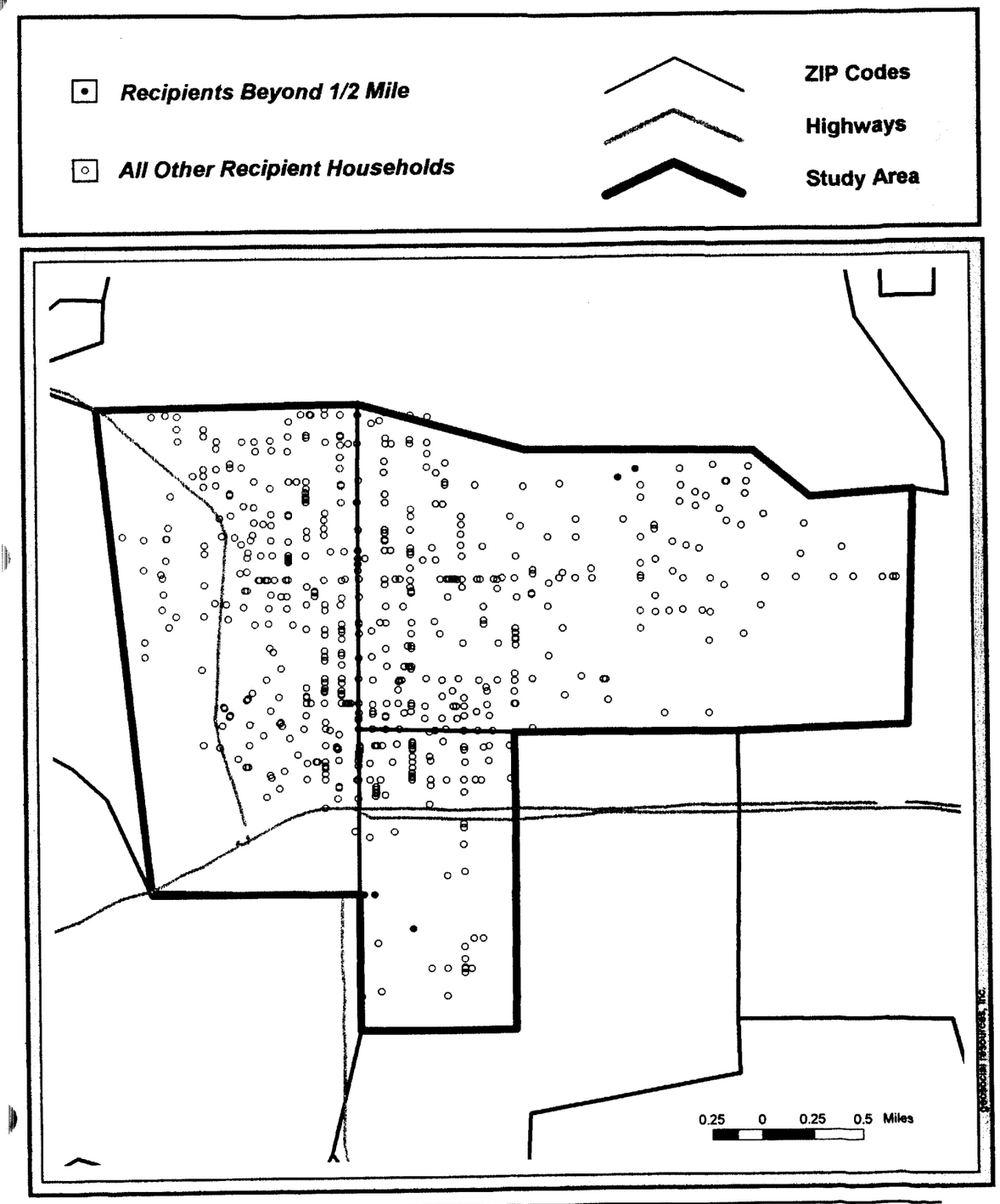





**Exhibit VI-19**

## Quarter-Mile Access to Any FSP Participating Retailer

*Pasadena*
*Los Angeles Study Area*

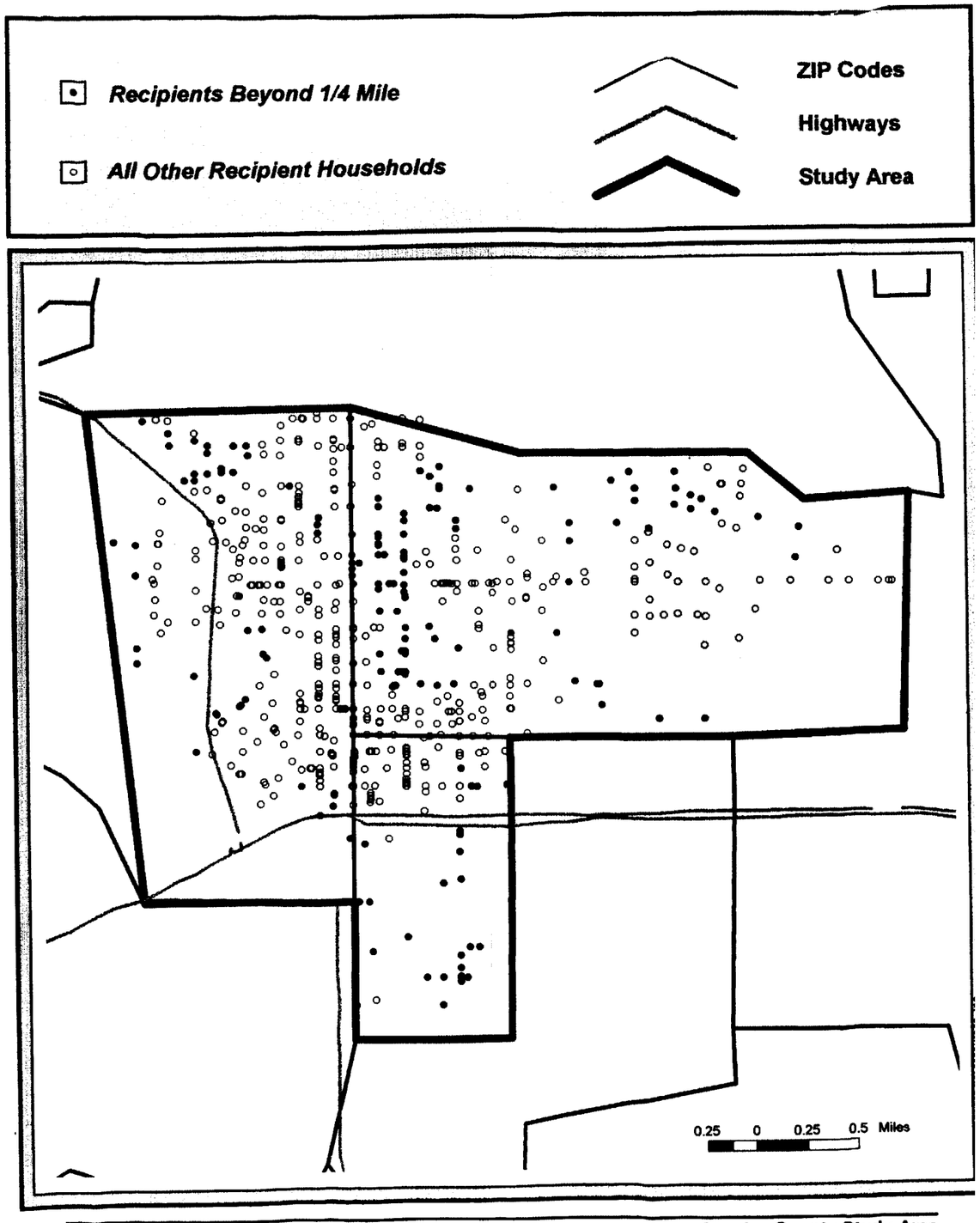
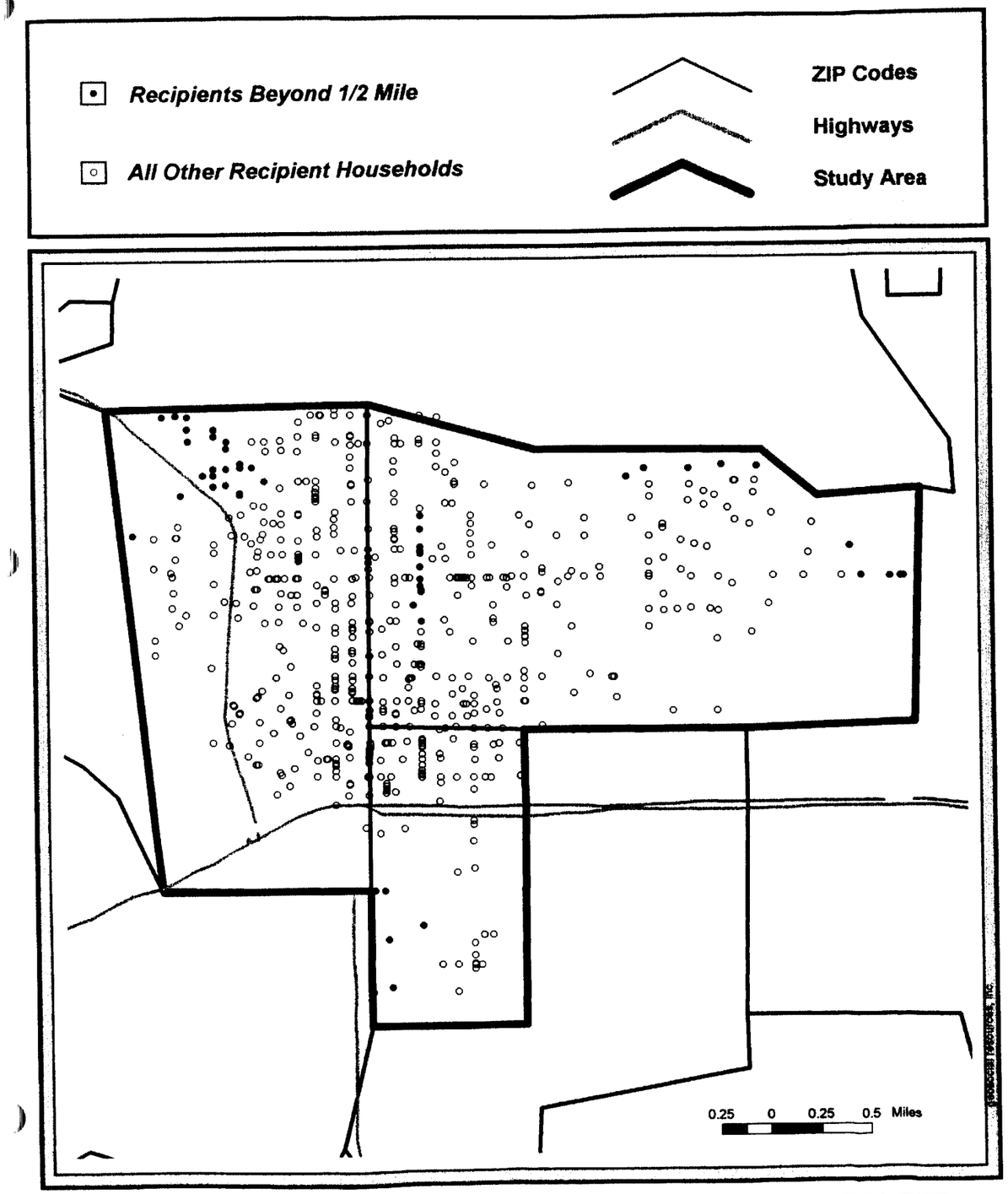


**Exhibit VI-20**
*Pasadena*
*Los Angeles Study Area*

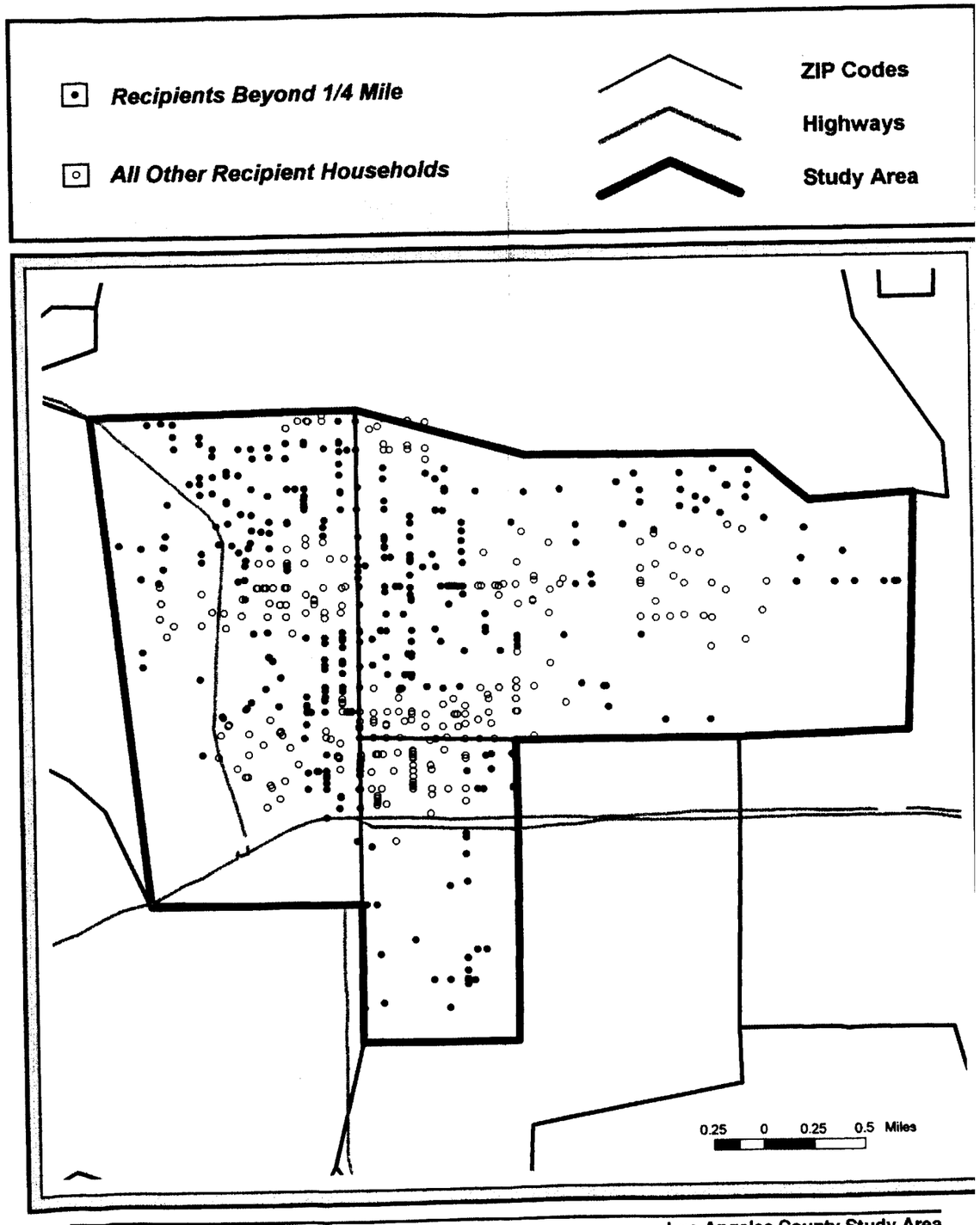
## Half-Mile Access to FSP SM/GS With Annual Sales Over $500,000




Los Angeles County Study Area
VI-26

**Exhibit VI-21**
*Pasadena*
*Los Angeles Study Area*

## Quarter-Mile Access to FSP SM/GS With Annual Sales Over $500,000




Los Angeles County Study Area
VI-27

**Exhibit VI-22**

**Redemption Flows in the Pasadena Study Area**

| Geographic Component | Ratio of Redemptions to Issuances |
|---|---|
| Northwest Pasadena | 0.23 |
| Central Pasadena | 1.38 |
| North Pasadena | 1.55 |
| Study Area | 0.94 |

Source: Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

Perceptions of those involved in food access issues in the area confirm that a major access problem lies in the northwest area of the city. There are no major chains in the area, and most recipients there travel to other areas of the city to shop. The stores in this area were described as largely consisting of small groceries that stocked ethnic items, and convenience-type stores, including some that provided a very limited assortment of foods.

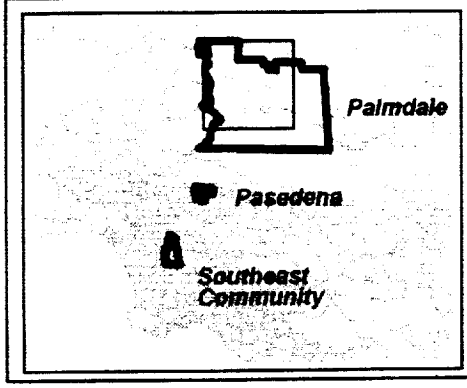
## Southeast Los Angeles

The third Los Angeles County study area investigated is defined by a four-ZIP Code area that is south of downtown Los Angeles, contains the sections of Florence and Watts in the east, and is bordered by the Harbor Freeway on the west and by 108th Street on the south (Exhibit VI-23). It covers an area approximately 3 miles wide and 6 miles long. This area was selected for two reasons. First, it is low-income and has inner-city characteristics. Second, it is surrounded by areas with similar or higher rates of poverty, except to the southeast. Unlike Pasadena, there are no well-off areas nearby. Thus, residents of the area have no recourse but to shop within the area or in similar areas unless they are willing to travel long distances.

The study area has a population of 240,444, of whom 60 percent are Hispanics. African-Americans, who used to constitute most of the population in this area, now account for about half of the population in the southern portion of the area. In most neighborhoods, the range of persons living at under 125 percent of the poverty line is 40 percent to over 50 percent (Exhibit VI-24). The higher-income areas are in the southeast portion of the study area, which is roughly the area defined as Florence. Watts, in the far southeast corner, has a very high level of near-poverty, as does the area in the north. The northern part of the study area is made up of other areas in which the poverty rate is as high or higher. In general, there are few areas in which the elderly make up more than 10 percent of the population, and these are located in the southern part of the study area.

# General Orientation Map

## Southeast Community
## Los Angeles Study Area




The location of the Southeast Community component of the Los Angeles Study Area is shown in this ZIP Code map.

ZIP Codes
Highways
Streets
Railroads
Study Area

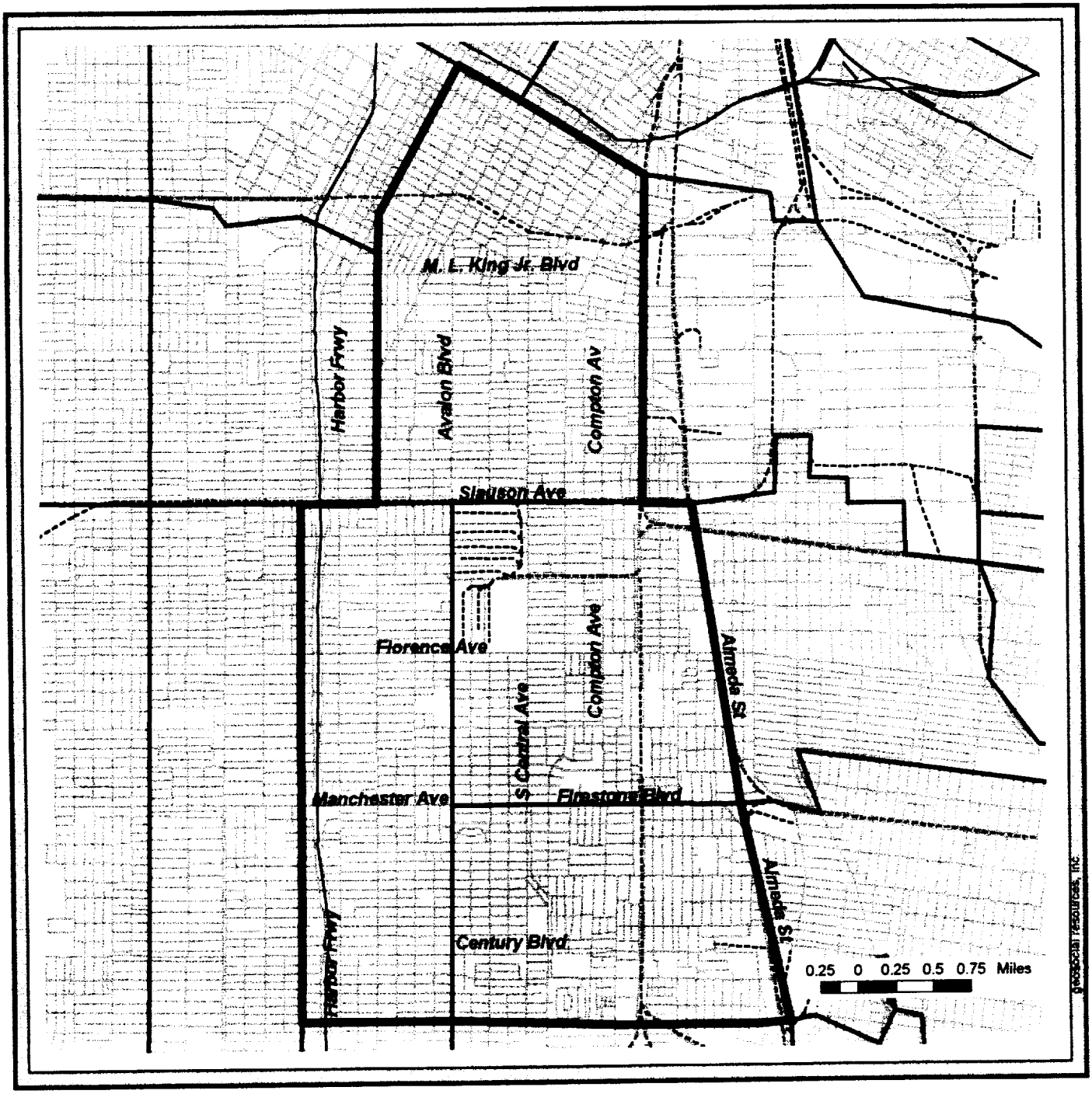
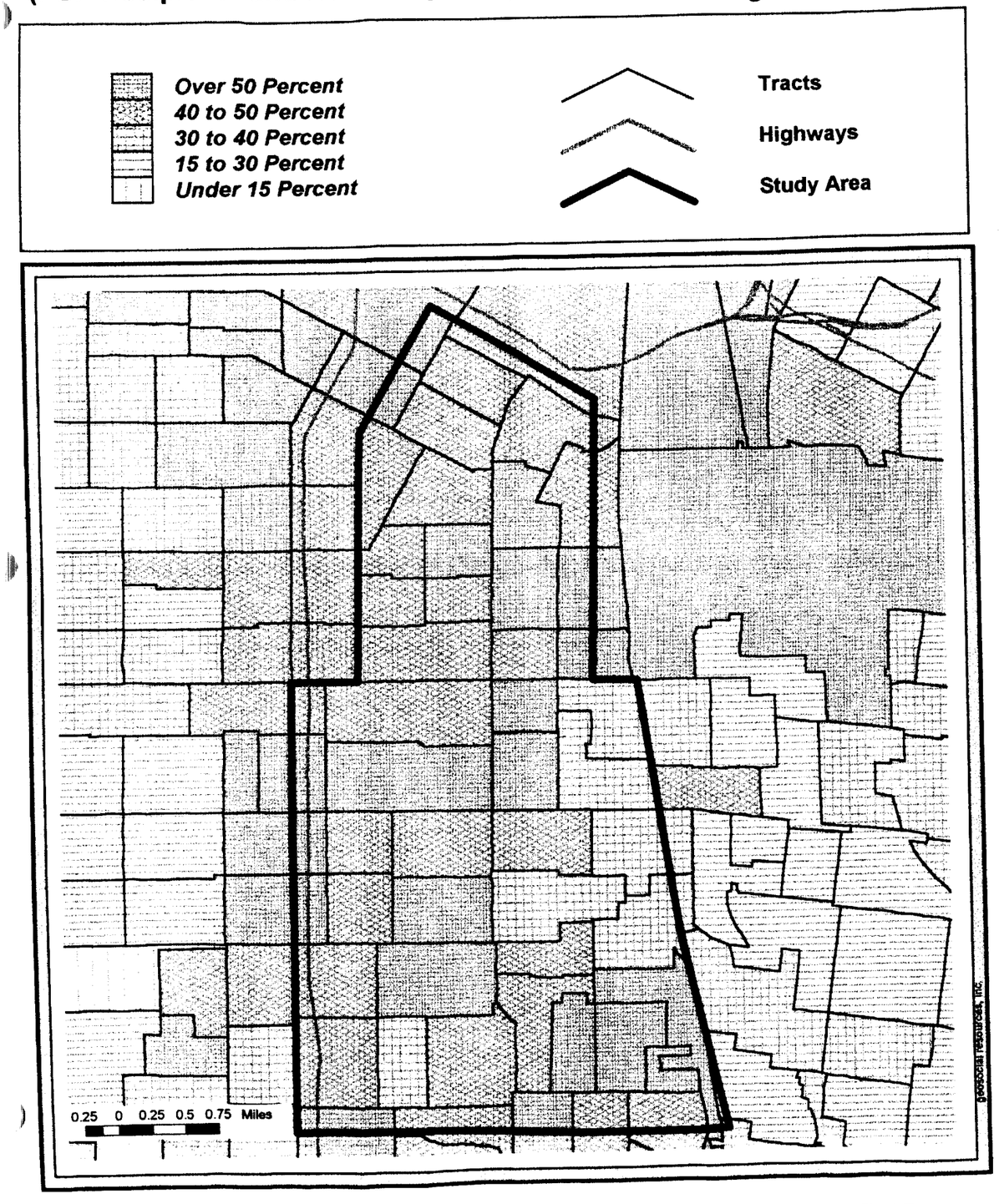


**Exhibit VI-24**

## Percentage Below 125% of Poverty Level (FSP Recipients and Non-Recipients)

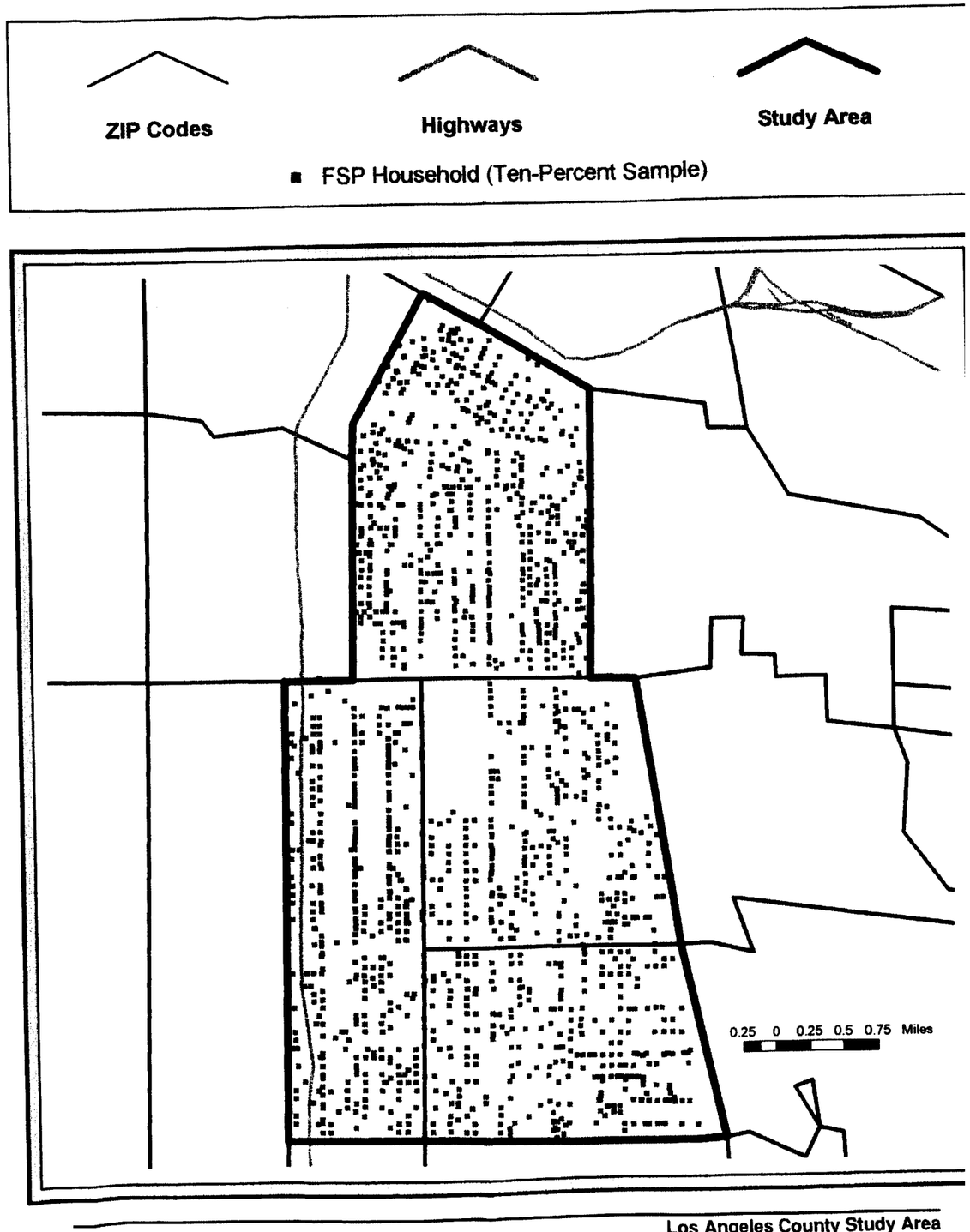
*Southeast Community*
*Los Angeles Study Area*






## Distribution of FSP Participant Households

*Southeast Community*
*Los Angeles Study Area*



## *Geographic Barriers and Transportation*

There are no natural barriers to access. The bus system is extensive in this area and a transit subway stop exists on the eastern edge of the area. The major problem is that public transportation tends not to run directly to major stores and requires that riders transfer. The 1990 Census indicates that one quarter to one third of the population in these areas have no access to a car.

## *Food Stamp Recipients*

From information received from the Los Angeles County Department of Social Services, we estimate the number of food stamp households and issuances to equal 28,584 and $4.5 million dollars for February 1994 (which translates to approximately $54 million annually). This number represents over half of the households in the area. As Exhibit VI-25 indicates, the food stamp population is scattered fairly evenly throughout the study area. Although the southeastern boundary area seems to have less density of food stamp recipient households than other areas. There is one large area in which there are no food stamp households in the central portion of the study area. This area contains rail yards and light industry.

## *Food Retailers*

In total, there are 297 stores in the study area redeeming almost $48 million in food stamps (Exhibit VI-26). In the community as a whole, 15 percent of authorized retailers are supermarkets or large groceries but approximately 76 percent of redemptions take place in such stores. When the various subareas are considered, the data indicate differences in the numbers and density factors. The South Park area demonstrates a large presence of stores, while the area just south (Watts) shows a low level of availability. Florence/Walnut park has the highest density of retailers and the most redemptions, and relatively fewer large stores. The South Park area, which is the northern part of the study area, has the greatest number of stores, including larger stores, but tends not to redeem as many food stamps as other areas. It is clear that retailers in the Florence/Walnut Park area are very active in redeeming food stamps.

The geographic distribution of redemptions (Exhibit VI-27), indicates no particular pattern or concentration throughout the area. Stores lying just outside the area provide additional options. However, when we focus on stores with annual gross sales of more than $500,000, some areas lack evidence of redemption activity. This is particularly so in the southern part of the study area (Exhibit VI-28). Redemptions in large stores seem to be located in the northern end and eastern rim of the study area, with the exception of Watts.

Table of Contents

*Exhibit VI-27*

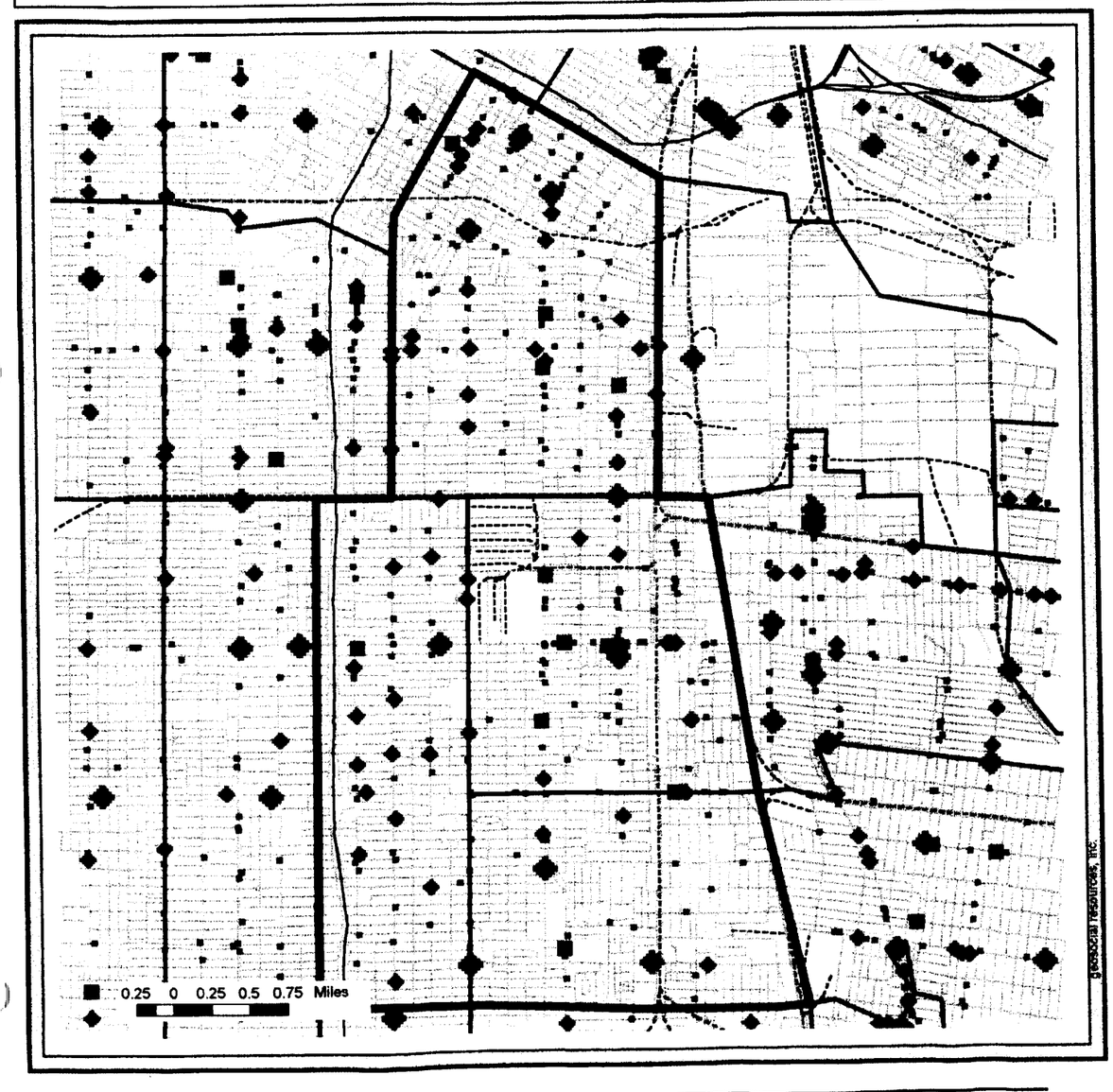
## Monthly FS Redemptions: All Participating Outlets

*Southeast Community*
*Los Angeles Study Area*

*Monthly Redemptions*

- Over $50,000
- $20,001 to $50,000
- $5,001 to $20,000
- Up to $5,000

Streets
Highways
Railroads
Study Area






## Monthly FS Redemptions: SM/GS With Annual Sales Over $500,000

*Southeast Community*
*Los Angeles Study Area*

*Monthly Redemptions*

- Over $50,000
- $20,001 to $50,000
- $5,001 to $20,000
- Up to $5,000

Streets
Highways
Railroads
Study Area

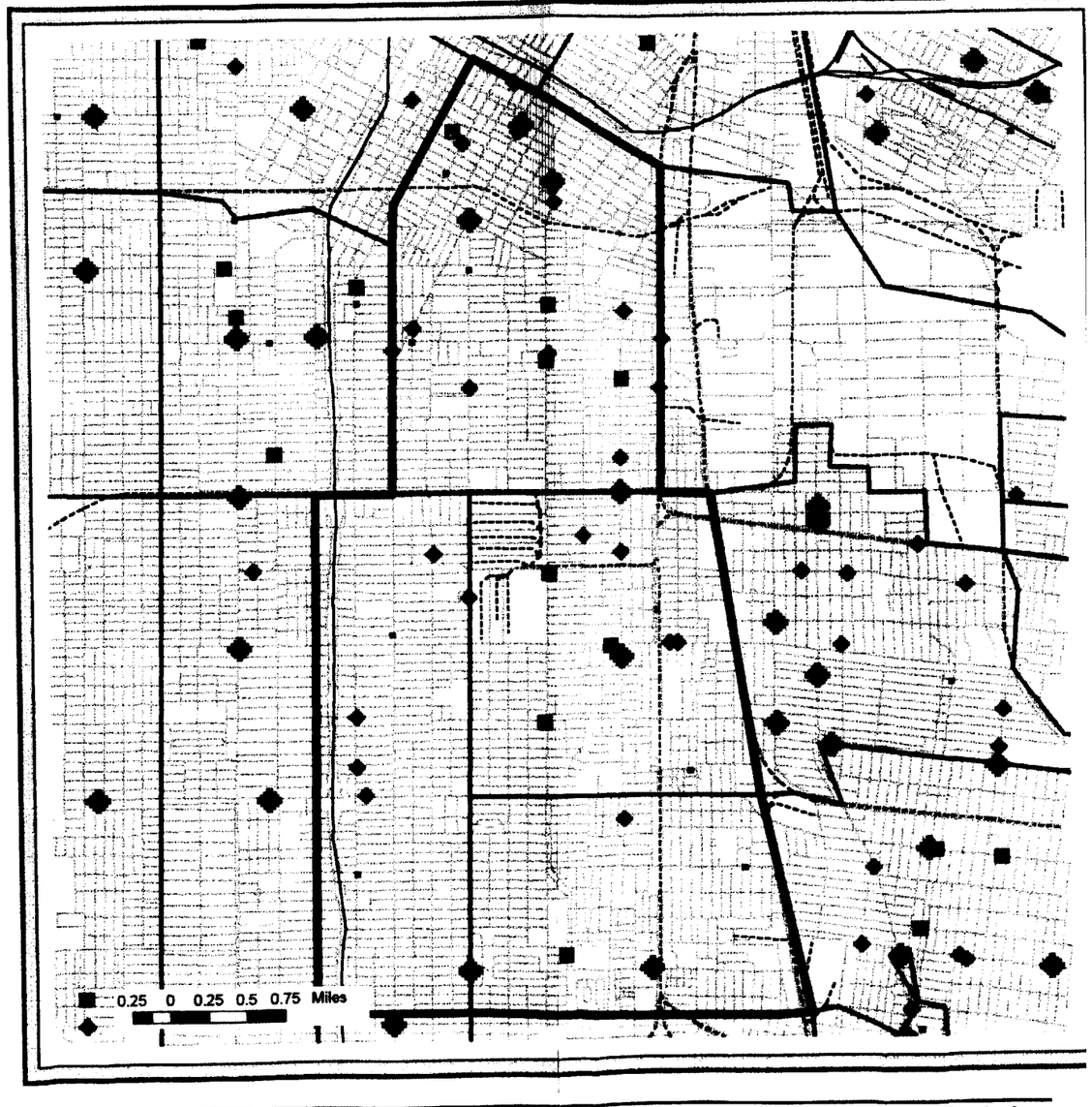


**Exhibit VI-29**

**Proximity of Food Stamp Participating Retailers to Recipients**
**South Central Los Angeles Component**
**(Los Angeles Study Area)**

| FSP Retailer Type: | Total Recipients | Under .25 mile | Under .5 mile | Under 1 mile | Under 2 miles | Under 5 miles | Median Distance | Mean Distance |
|---|---|---|---|---|---|---|---|---|
| Supermarket | [28319] | 5083 | 15539 | 27602 | 28319 | 28319 | | |
| | *% of total* | *17.95* | *54.87* | *97.47* | *100.0* | *100.0* | *0.46* | *0.48* |
| Large Grocery | [28319] | 11286 | 23162 | 28319 | 28319 | 28319 | | |
| | *% of total* | *39.85* | *81.79* | *100.0* | *100.0* | *100.0* | *0.29* | *0.32* |
| Small Grocery | [28319] | 22746 | 28102 | 28319 | 28319 | 28319 | | |
| | *% of total* | *80.32* | *99.23* | *100.0* | *100.0* | *100.0* | *0.14* | *0.16* |
| Convenience Store | [28319] | 17177 | 27898 | 28319 | 28319 | 28319 | | |
| | *% of total* | *60.66* | *98.51* | *100.0* | *100.0* | *100.0* | *0.22* | *0.22* |
| Specialty Food Store | [28319] | 5567 | 15038 | 26993 | 28319 | 28319 | | |
| | *% of total* | *19.66* | *53.10* | *95.32* | *100.0* | *100.0* | *0.47* | *0.51* |
| Gas/Grocery Combination | [28319] | 9 | 279 | 1851 | 10063 | 28319 | | |
| | *% of total* | *0.03* | *0.99* | *6.54* | *35.53* | *100.0* | *2.37* | *2.39* |
| All Others | [28319] | 7119 | 20916 | 28319 | 28319 | 28319 | | |
| | *% of total* | *25.14* | *73.86* | *100.0* | *100.0* | *100.0* | *0.38* | *0.38* |
| **Supermarket or Large Grocery** | **[28319]** | **13395** | **256.13** | **28319** | **28319** | **28319** | | |
| | ***% of total*** | ***47.30*** | ***90.44*** | ***100.0*** | ***100.0*** | ***100.0*** | ***0.26*** | ***0.28*** |
| All Retailers | [28319] | 27166 | 28319 | 28319 | 28319 | 28319 | | |
| | *% of total* | *95.93* | *100.0* | *100.0* | *100.0* | *100.0* | *0.09* | *0.11* |

Source: Geo Social Resources Inc. and Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

**Exhibit VI-30**

## Half-Mile Access to Any FSP Participating Retailer

*Southeast Community*
*Los Angeles Study Area*

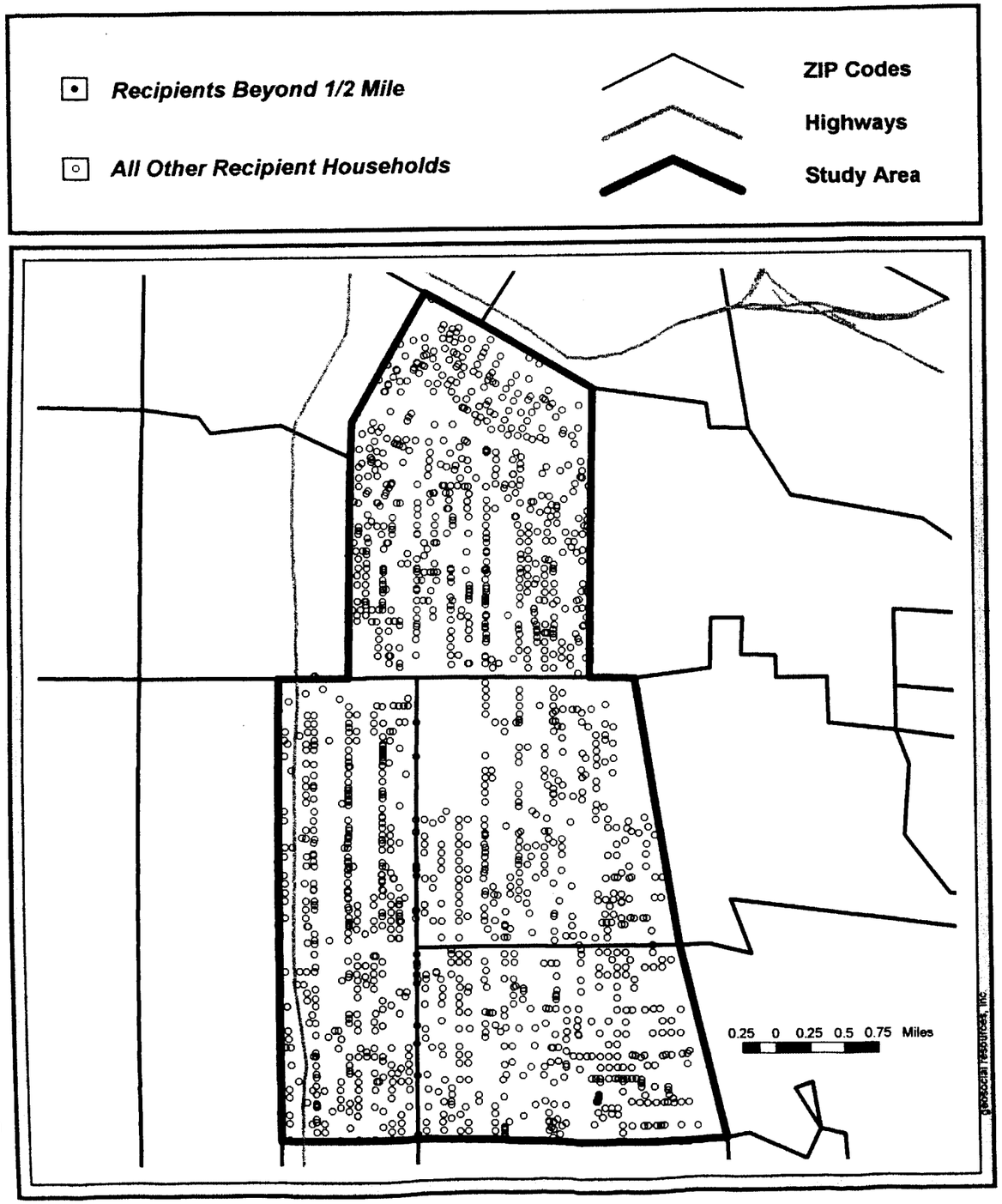
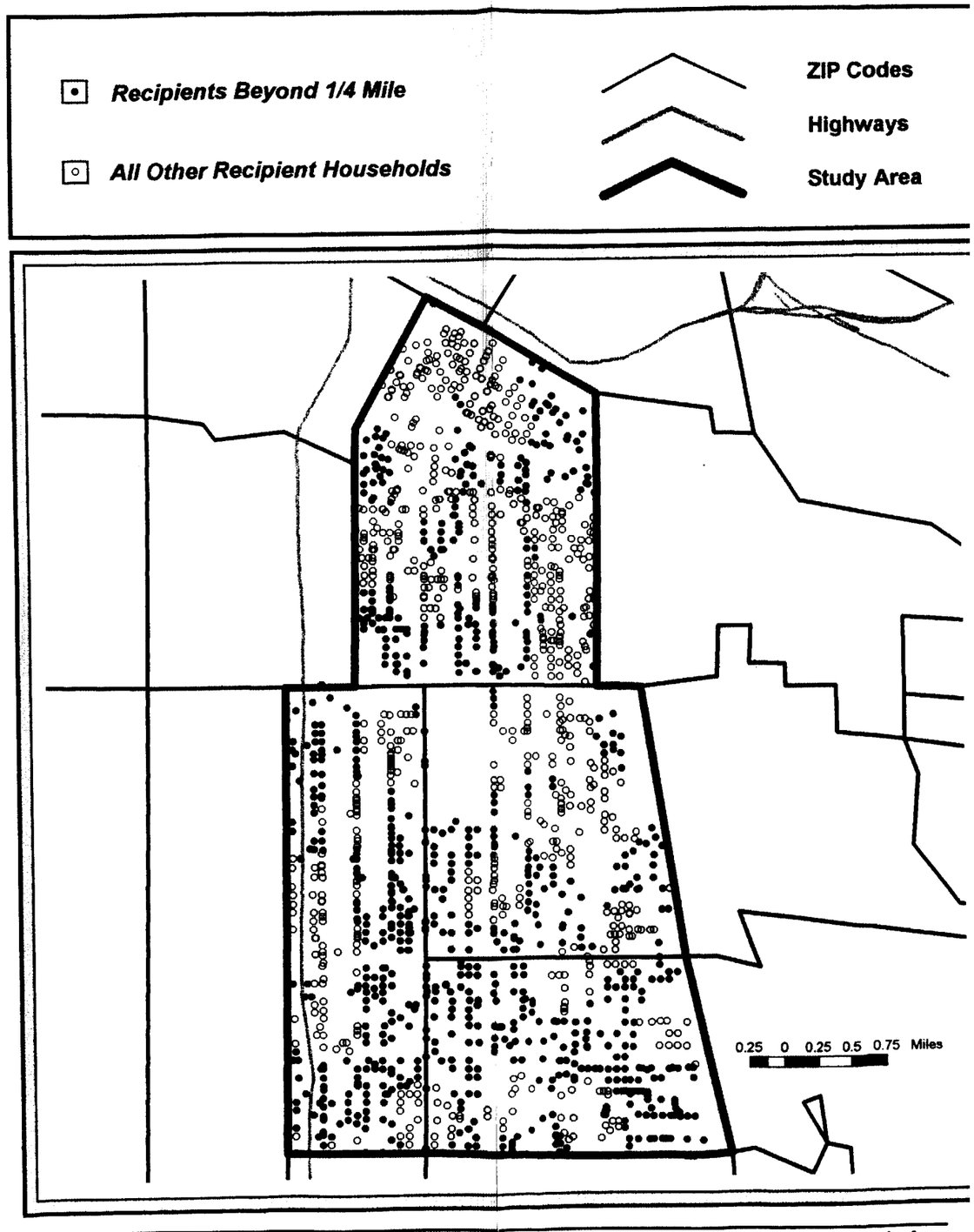





**Exhibit VI-3**

## Quarter-Mile Access to FSP SM/GS With Annual Sales Over $500,000

*Southeast Community*
*Los Angeles Study Area*



## *Redemption Flows*

Comparing redemptions to issuances, the area as a whole is indicated as experiencing an outflow of stamps (Exhibit VI-32). However, within the area, we can identify areas that are relatively over- and underserved. Relative to issuances, the eastern portion of the intensive site (including Florence) seems to attract a greater number of food stamps than other areas, whereas the area just south of downtown Los Angeles and Watts tends to attract relatively fewer food stamps customers.

**Exhibit VI-32**
**Redemption Flows in the Southeast LA Study Area**

| Geographic Component | Ratio of Redemptions to Issuances |
|---|---|
| South Park | 0.54 |
| Florence | 1.68 |
| Watts | 0.72 |
| Avalon/Harbor Freeway | 1.11 |
| Study Area | 0.93 |

Source: Macro International Inc. The *Authorized Food Retailer Characteristics Study*. Contract No. 53-3198-3-007. USDA/Food and Consumer Service, Office of Analysis and Evaluation, 1994.

## *Discussion*

The third Los Angeles County area examined is Southeast Los Angeles—a low-income, central city highly urbanized area. The area has been identified by several studies previously cited as one that provides residents with poorer levels of food retailer service than other, more affluent areas. Major findings include:

- **Households are relatively close to retailers throughout the area.** The analysis suggests that 95 percent of the population is within one quarter-mile of an authorized retailer, and 90 percent are within one half-mile of a large full-range store.

- **Supermarkets and large groceries play a large role in redemption activity.** In general, supermarkets and large groceries redeem about three-quarters of the total food stamps redeemed in the area. Food stamp participants seem to do their major shopping at large stores.

- **Redemption activity varies considerably within the Southeast area.** The pattern of redemptions within the area shows that food stamps are flowing from some areas to others. For instance, the Florence area demonstrates a greater redemption-to-issuance ratio than other areas in the city. These results persists after retailer density and the presence of larger stores have been considered.

Individuals interviewed focused on the lack of chain supermarkets in the area. Many of the supermarkets in the area closed after the Watt riots in the 1960s. The existing large food markets tend to be viewed as providing fewer purchasing options at higher prices.

There is the general perception that food stores tend to resemble convenience stores more than full-line groceries, with domination by small corner stores that sell liquor and "junk" food. The quality of fresh foods is seen to be lower than in larger chain stores located in other parts of the city. Some of the stores are viewed as operating in dirty and unsanitary locations. In examining the data on particular larger stores, we found a notable number of stores with the designation of "liquor" in their name. We infer that some of these large stores therefore consider the sale of liquor to be a very important aspect of their business.

Grocery trucks and small ad-hoc stands or carts that sell produce and hot foods are viewed as important in creating better access, although some of these are unregulated.

A major issue relates to language, particularly in stores managed by Koreans. In many cases, the residents cannot communicate effectively with the store employees, which causes misunderstandings. Such barriers tend to lead individuals to shop in areas and stores in which they feel culturally comfortable, but they pay higher prices for doing so.

Although the public transportation system is extensive in this area, it is perceived as unsafe and difficult to use. The general perception is that the automobile is critical for gaining access to food retailers.

In conclusion, the data support many of these perceptions, despite the high level of access in the area. In examining specific stores within the study area, most notable are the lack of major chains in the study area and the prevalence of larger stores that seem to be liquor retailers.

# Section VII

# Conclusions

## Section VII. Conclusions

In this study, our goal was to assess the degree to which food stamp recipients have access to food retailers. Specifically, we sought to clarify whether food retailers are located where food stamp participants live, and if so, the degree to which nearby food retailers stock foods that support a nutritious diet. We address these concerns by examining the proximity of larger food retailers (such as supermarkets and groceries with over $500,000 dollars in gross sales) to food stamp participants. Larger retailers, in general, should be able to fill the market basket of most households.

The investigation covers several different communities which provides information on areas ranging from central city areas to sparsely populated rural areas. The results will be presented in three clusters, including:

- The Southeast area of Los Angeles City; Baltimore, Maryland; and Pasadena, California providing information on proximity within central city areas.

- Kanawha County, West Virginia; Dona Ana County, New Mexico; and Antelope Valley, California providing information on areas within Metropolitan Statistical Areas (MSAs) with small central cities surrounded by rural areas.

- Boone County, West Virginia; Dillon and Marion Counties in South Carolina; and Otero and Lincoln Counties in New Mexico providing information on sparsely populated rural areas.

**Food stamp households are proximate to authorized retailers in central city areas.** The information shows that, in general, Food Stamp Program (FSP) recipients have access to authorized retailers in the three central city areas examined. The results are:

- In Baltimore, almost 100 percent of the participant households were within one quarter-mile of a retailer, and 96 percent were within one half-mile of a large retailer. In addition, 89 percent were within one half-mile of a supermarket.

- In Pasadena, 80 percent of the participant households were within one quarter-mile of a retailer, and 93 percent were within one half-mile of a large retailer. Fifty-four percent were within one half-mile of a supermarket.

- In Southeast Los Angeles, 96 percent of the participant households were within one quarter-mile of a retailer, and 90 percent were within one half-mile of a large retailer. Fifty-five percent were within one half-mile of a supermarket.

Despite similarities in access, the three areas showed very different retailer market structures. In Baltimore, despite the presence of supermarkets, a large proportion of the redemptions occurred in

proportion of the population. In Southeast Los Angeles, there is a notable lack of chains and larger supermarkets, and about 15 percent of the large groceries feature liquor sales.

On-site interviews with individuals involved in food distribution and access emphasized the lack of chain stores in proximity to low-income populations and the substandard services provided by smaller stores. Although we found some chain stores in the Baltimore study area and in parts of the Pasadena study area, larger regional chains were generally not available. However, there were larger full-line stores in close proximity to the population in all three areas. The data also implied, through the analysis of redemptions and issuances, that individuals did not always patronize the stores in their area. This indicates that either the stores in the areas lacked sufficient variety, quality, or competitive pricing to attract shoppers or that stores in other areas met these shopping needs more effectively. In Baltimore, it seems that Lexington Market attracts shoppers from all parts of the study area. In Southeast Los Angeles, Hispanic grocers may draw certain customers who are willing to shop outside their immediate areas. Thus, it would appear that shoppers exercise options that are not always determined by location alone.

**In MSAs with significant rural areas, retailer proximity is present for most FSP households.** Areas studied as examples of mixed areas are defined as those with medium-sized central cities with populations of more than 50,000. Three instances were investigated.

In Kanawha County in West Virginia, we found that most households were proximate to large retailers in Charleston and in the Kanawha River Valley. Proximity, particularly to larger stores, was a greater problem for those living in the less urbanized parts of the county. However, overall proximity was adequate throughout the county, because supermarkets or larger grocery stores were dispersed in most of the major population centers.

In Dona Ana County, supermarkets and large grocery stores were available largely in Las Cruces, where most FSP households were also located. There seemed to be a tendency for persons living north and south of Las Cruces to travel into Las Cruces to shop or to cross the border into Texas. Smaller stores, as in Charleston, served as "fillers" to provide convenience shopping.

Finally, in the Palmdale area, most FSP households were located within the city and in proximity to a supermarket. The information provided in this area suggests that individuals living in the more rural areas travel to town to do major shopping.

In these three areas, the major issue was transportation for those persons living in rural areas outside of the major population centers. The areas examined varied in the extent of their public transportation system, but in no area was it sufficient to facilitate travel from the more rural areas.

In Dona Ana, the growth of the Colonias in the southern portion of the county poses serious problems for FSP participants in terms of locating stores with sanitary conditions. In Palmdale, the phenomenal population growth of the city is likely to result in growing pains that will result in areas lacking adequate retailer access.

## Section VII. Conclusions

In rural areas, access to full-range stores is usually provided by a small population center or centers. In the three study areas that can be characterized as largely rural areas outside of an MSA, there are several small population centers with supermarkets or large stores.

**FSP households have mixed access to stores in sparsely-populated rural areas.** There were three rural sites that fell outside a Metropolitan Statistical Area.

In Boone County, West Virginia, the communities of Madison and Danville, with a combined population of 5,000, have supermarkets and seem to draw food coupons from the county. In addition, there are other stores that "fill-in" throughout the county.

In Dillon and Marion Counties in South Carolina, there is a central core area of small communities that provide service to the population. Again, smaller stores are available to supplement supermarkets and larger grocers located in this area.

In Otero and Lincoln counties, the communities of Alamogordo and Rudioso provide supermarket and large grocery services to the populations within these cities and to those in outlying areas. Transportation for individuals living in remote areas is an issue, reflecting the conditions of the roads and increased distances rather than lack of access to an automobile.

In summary, these analyses have indicated that a large majority of low-income populations are in proximity to supermarkets and large grocery stores. There is evidence, as expected, that individuals in rural areas are relatively far from large food retailers. Even in these areas, most of the potential FSP population live in smaller towns or urbanized areas.

There is also evidence that, even when food stores are present, they may not to be utilized to the extent expected. We found that food stamp recipients, in some areas, use their coupons in areas other than those in which they lived. This was particularly true for rural areas, where food stamps were used in the larger population centers in which larger retailers were located. This was also true in the inner city areas examined. Although some evidence was provided that inner city residents traveled to more affluent areas to shop, there was also evidence that low-income individuals traveled within the inner city to specific "market areas." This was particularly evident in Baltimore, where a system of multi-stall markets provided one-stop shopping for a large range of foods.

Table of Contents

# Appendix A

## Methodology for Geocoding Retailers and FSP Participants

# Introduction to Access Analysis

Access to Food Stamp Program retailers was examined in five "intensive study" areas:

- parts of Los Angeles, California
- a center-city area of Baltimore, Maryland
- Kanawha and Boone Counties, West Virginia
- Dillon and Marion Counties, South Carolina
- Dona Ana, Lincoln, and Otero Counties, New Mexico

In these areas, the geographic location of authorized Food Stamp Program retailers and recipients was determined using U.S. Census Bureau and U.S. Postal Service data. This geographic information was then used to map the locations of retailers and participants and to determine the distance between recipients and retailers of various types. The following sections describe the method employed.

# Method

The study of access in these five areas involved the following steps. First, and electronic map was created for each of the study areas, using the technology of Geographic Information Systems (GIS), a specialized form of computing software that converts numerical and textual data into spatial or geographic data that can be represented in maps or used for locational analyses. Using this information and additional specialized software for address matching, the locations of authorized Food Stamp Program retailers were converted to real-world coordinates (latitude and longitude). In a similar fashion, the locations of recipients in the Food Stamp Program were converted to real-world coordinates. This locational information on retailers and recipients was then used to create paper maps of their distribution by various characteristics. The geographic database was also used to determine the distance from recipients to various types of retailers.

## *Preparing the Electronic Mapping Base*

The Census Bureau's TIGER[1] Line files were used to develop a basemap of each area. These files contain the geographic coordinates (latitude and longitude) for the beginning and ending points of lines that can be drawn on a map. The lines represent physical features such as streets, highways, rivers, and railroads, as well as non-physical features such as political boundaries or census tracts. The files can be used by specialized computing software (geographic information systems) to create electronic maps. The geographic information system (GIS) software can render the electronic maps in a tangible form such as paper copies or screen imagery. In addition, the geographic or spatial information implicit in a map can be used by this software, for example, to calculate distances between various locations on the map.

## *Address Matching (Geocoding)*

The TIGER system also includes information that can be used to convert street addresses into real-world locations for mapping and analysis. Each line segment in the TIGER file is linked to a record in an associated database, which provides information regarding the line: for example, the fact that it is a city street. For line segments that represent streets, the database often includes information such as the street name and the range of addresses on each side of the street. For example, the TIGER database might show that a given line segment is part of East 42nd Street and that the left side of the line includes addresses from 101 to 195 along that street.

The process of assigning locations to street addresses is called "geocoding"' and the TIGER files can be used to accomplish this transformation. The Census Bureau has revised and expanded the information in the TIGER files several times since their original release (prior to the 1990 Census), with each release improving their utility for geocoding. However, even the most recent files, released in 1994, are missing address information for some locales, especially those in rural areas. Therefore, geocoding against the TIGER files results in different matching rates usually requires additional efforts to locate addresses that cannot be found by using the TIGER files.

Sometimes, the addresses can be edited to increase the matching rate, and sometimes the GIS software allows an interactive search of potential matches from the TIGER-file basemap. Another alternative is to locate the unmatched records on a paper map and using

---

[1] TIGER stands for Topographically Integrated Geographic Encoding and Referencing system.

GIS software to manually enter them into the geographic database by pointing to their location on a computer screen (using a mouse or other device).

Because these manual interventions can be quite time-consuming, geocoding approaches often need to consider a trade-off between accuracy and effort. An attractive trade-off can often be found by using the U.S. Postal Service's ZIP + 4 system ZIP + 4 is national refinement of the ZIP code system that divides ZIP codes into much smaller geographical areas. In urban areas, the ZIP + 4 code is usually unique to one side of one block: for example, the odd-numbered side of East 42nd Street from 101 to 199. The ZIP + 4 system can be used, therefore to associate street addresses with approximate locations in the real-world.

Commercial database and software firms have worked with the U.S. Postal Service to create systems for determining the ZIP + 4 code for street addresses and files associating ZIP + 4 codes with real-world coordinates (latitude and longitude). The file of real-world coordinates usually associates this ZIP + 4 code with a point midway along the line of that part of the street. (Sometimes, the location is associated with one or the other end-points of the street.) This approximate location is often accurate enough to provide an alternative to geocoding based on the address ranges in the TIGER files.

However, use of the ZIP + 4 data for geocoding can encounter problems. For example, if the address involves a postal box number, the location usually will correspond to the post office that has the box number. Rural delivery routes and their associated ZIP + 4 codes present a similar problem, since the location does not represent the actual location of the corresponding household along the rural delivery route. Sometimes, the level of geographic detail available for ZIP + 4 codes, especially in rural areas, is sufficient only to locate the address at a point among the ZIP + 4 codes that share the same first two digits (a "ZIP + 2", as it were). And, sometimes, it is only possible to locate an address at a point corresponding to a central location for the five-digit ZIP code within which it falls. (These addresses are often given a ZIP + 4 extension of "9999".)

When several addresses fall within the same block, all will be geocoded to the same latitude and longitude: the one for that ZIP + 4. This can present a problem when the locations need to be displayed on a map. Sometimes, we need to indicate to the user of the map that some symbols may represent more cases, households or people than other symbols. This problem is magnified, of course, whenever we need to us a "ZIP + 2" to locate addresses, when we place locate post office box numbers at the post office, or when we need to use a central location within a five-digit ZIP code as a proxy location for addresses that cannot be matched to ZIP + 4 locations.

In addition to these limitations of the ZIP + 4 system itself, sometimes the database that *links* addresses to ZIP + 4 codes is missing detailed street information, as the Postal Service revises ZIP codes and amends its database for each quarterly update. And, the techniques

applied by commercial database vendors to translate ZIP + 4 codes into latitude and latitude sometimes generate additional errors. Some of these problems can be overcome or mitigated by employing manual editing of addresses or intervention in the ZIP + 4 process.

## *Geocoding FSP Retailers*

Macro staff extracted data on FSP retailers in the intensive study areas[2], including street address, gross sales, food stamp redemptions, and store type (for example, supermarket, grocery, convenience store, etc.). These 4,443 records were geocoded using a number of techniques, which varied across the five intensive study areas. In the two urban areas (Los Angeles and Baltimore), the TIGER files figured prominently in the geocoding effort. In the remaining three areas, ZIP + 4 geocoding and manual location of the stores were the dominant approaches employed.

As shown in the accompanying table, about three-fifths of the stores (2,703) were located through the TIGER files. About one-sixth of the stores (824) were located through ZIP + 4 geocoding. About a tenth of the stores (424) required manual editing to be successfully geocoded and another one-tenth (427) were manually located on maps to complete the geocoding.

| Site (Total) | Tiger | +4 | Zip 5 | Edit | Manual | N/A |
|---|---|---|---|---|---|---|
| Los Angeles (2,640) | 1,830 | 543 | 0 | 202 | 59 | 6 |
| Baltimore (1,220) | 826 | 0 | 0 | 174 | 190 | 30 |
| West Virginia (276) | 47 | 50 | 59 | 48 | 69 | 3 |
| South Carolina (156) | 0 | 48 | 0 | 0 | 83 | 25 |
| New Mexico | 0 | 82 | 42 | 0 | 26 | 1 |
| *TOTAL* (4,443) | *2,703* (61%) | *723* (16%) | *101* (2%) | *424* (10%) | *427* (10%) | *65* (1%) |

The objective in this phase of the geocoding was to locate 10 percent of the retailers. This standard was substantially achieved; we were unable to locate only 65 stores through the combined TIGER, ZIP + 4, and manual geocoding efforts. That number included 27 stores in the Baltimore data set that were outside of the city limits. The other unlocated stores

[2] In Log Angeles and Baltimore, stores in areas adjacent to the study area were included, to minimize any "edge" limitations in the geographic analysis. In the three multi-county study areas, geocoding was confined to the involved counties.

included retailers with disconnected telephone numbers and a few instances where language or cooperation problems prevented us from obtaining useful directions to the store.

The TIGER-based geocoding and manual placement were conducted using *PC ARC/INFO*, a popular desktop GIS software package. The ZIP + 4 geocoding used *Mailer's + 4*, a mail list processing package, to determine the ZIP + 4 code for addresses. This package has been certified by the U.S. Postal Service as meeting its CASS (Coding Accuracy Support System) standard. This standard, which is required for discount mail rates, allows no more than a two-percent error rate in assigning ZIP + 4 codes to addresses. The ZIP + 4 codes were translated into latitude and longitude using a companion product. *Mailer's Geocode*. This software provides the latitude and longitude for ZIP + 4 codes, or for the "ZIP + 2" grouping when a ZIP + 4 match cannot be made. (As noted above, some ZIP + 4 locations revert to a simple five-digit ZIP code location: for example, when the ZIP + 4 corresponds to a post office box number or rural delivery route.)

## *Geocoding FSP Recipients*

In this phase of the study, we geocoded nearly 115,000 food stamp recipient households, using data supplied by state food stamp agencies.[3] Given our experience using the TIGER files to geocode retailers, we decided to use the ZIP + 4 approach in geocoding recipient households. This decision was based upon the fact that TIGER-based geocoding was not possible in all five areas, and the manual interventions employed with the retailers could not be entertained in geocoding a data set some twenty-five times that size.

Geocoding records from administrative databases on program recipients is much more difficult than geocoding retail locations. Such databases contain post office boxes, rural delivery routes, and imprecise or incomplete addresses, such as "State Highway 85 North". In addition, some recipients are identified only as "homeless" or their recorded address is not codable by automated systems (for example, "lives under the bridge at Main street"). These and other problems result in a fairly large percentage of addresses that cannot be linked to a specific location through the two steps of deriving a ZIP + 4 for the address and deriving real-world coordinates for the ZIP + 4. Addresses that are unmatched in this process can be assigned to the ZIP + 4 code for "General Delivery" in their five-digit ZIP code area: a ZIP + 4 code of "9999".

---

[3] This number represents the universe of recipients in these areas. In Baltimore, data were provided for the entire city: roughly 84,000 households. We sampled half of them for the geocoding effort, and separated those in the intensive study area from those found elsewhere in the City.

## *Efforts to Improve the Household Geocoding Results*

We undertook special efforts to reduce the use of this (the "9999" ZIP + 4 coding), because it reduces the accuracy of locating such households, and it places multiple households at the same real-world coordinates, which complicates the visual presentation of information in maps. We focused on specific types of problems that varied somewhat across the five areas.

For example, in the Los Angeles study area, we discovered that many failed matches were attributable to the "direction prefix" portion of the address. Sometimes, the direction was incorrect. For example, if the address listed for the household is "501 *W* Main" in ZIP Code 54321, and there is no 500 block of *West* Main, but there is a 500 block of *East* Main in that ZIP code. In this example, if we found that there is a 500 block of *East* Main and a 500 block of *North* Main, we still could not correct the erroneous *West* Main address.

Sometimes, the household's address was missing a direction prefix, and it did not match the official Postal Service database used by ZIP + 4 software. At other times, the address prefix was not really incorrect, but local practice differs from the official designation used by the Postal Service and captured in the ZIP + 4 software. For example, a portion of a street may be official known as *South* Main Street when it runs in Community A (which has a North Main street as well), but it may be officially known simply as Main Street when it crosses into Community . Nonetheless, people living on both sides of the community boundary may refer to it as South Main Street. To match the official records, we may need to remove the direction prefix: *South.*

One approach we took to minimize the number of households coded "9999" (that is, to the general five-digit ZIP code) was to substitute all possible entries for the direction prefix. For example, in Los Angeles, about 5,300 (of about 40,300) households initially were geocoded to "9999". For those, we first changed the direction prefix to "East" and processed them through the software that associates a ZIP + 4 with addresses. Then we substituted "West" for the direction prefix, and on subsequent iterations, we substituted "North", "South", and a blank for the direction prefix. The results of these five passes were combined in a database, so we could identify those addresses that were successfully matched to a ZIP + 4 code on only <u>one</u> of the five substitutions. We accepted that ZIP + 4 as a correct match for the address. If more than one of the substitutions resulted in a ZIP + 4 code being assigned to the address, there was some uncertainty about the correct direction prefix for the address, and we could not identify the correct ZIP + 4.[4]

In some areas, we manually edited address records for selected locales to improve the matching rate. In the Palmdale portion of the Los Angeles study area, we encountered an

---

[4] Sometimes, in smaller communities, two direction prefixes might produce the very same ZIP + 4 code: for example, 15 East Main and 15 West Main have the code 54321-6789. When this happened, we accepted this ZIP + 4.

address a convention that required special intervention. Address-matching software usually includes a routine to "parse" the addresses; that is, to divide them into components such as the number, direction prefix, street name, and street type. Those routines are written to accommodate the usual address conventions. For example, the parsing routine can usually handle "Avenue B" as well as "Bluestone Avenue". However, the software we used could not correctly parse a street like "Avenue B-1". It parsed that street as "Avenue B", which was indistinguishable from Avenue B-2 or Avenue B-3 addresses. The solution to this problem was to write our own parsing routine to process these records.

Using these various methods, we were able to reduce the proportion of recipient addresses geocoded to the general five-digit ZIP code (that is, the "9999" ZIP + 4 designation). In Los Angeles, for example, these effort "recovered" nearly 2,300 addresses from the "9999" pool, leaving only about three percent of the Los Angeles food stamp households as "9999" ZIP + 4's. In South Carolina, we focused our efforts on apartment buildings in the four most populous communities (Dillon, Latta, Marion, and Mullins). Through manual editing and telephone calls, we recovered about one-fourth of the "9999" households, leaving about 18 percent of the records geocoded to "9999". The same percentage (18%) of households remained coded "9999" in the West Virginia study area, after an effort focused on Charleston (where we recovered about one-third of the original "9999" households). In New Mexico, the direction substitution approach and manual editing in Las Cruces and Alamogordo recovered about one-sixth of the original "9999" cases, but still left some 42 percent of the New Mexico households geocoded to the five-digit ZIP-code level.[5] Finally, in Baltimore, about eleven percent of the food stamp households in the Citywide data set could not be associated with a specific ZIP + 4. Instead of placing these at the post office (as "9999" cases), we removed them from the Baltimore data set. We believe the remaining records describe the geographic distribution of recipients in the food stamp program within Baltimore.

Overall, about seven-eights of the recipient households were geocoded to a ZIP + 4 other than "9999". Considering the proportion of households with imprecise addresses, and the fact that three of the study areas are quite rural, this result exceeded our expectations.

[5] Almost half of those cases (about 2,150) were in Sunland Park and Anthony. The other communities with more than 200 households coded as "9999" were Las Cruces, Hatch, and Ruidoso.

## *Creating the Spatial Database*

Using *PC ARC/INFO*, we created geographic databases of retailers and recipients for each of the study areas. First, the latitude and longitude or all retailers and recipient households were transformed (projected) into coordinate system more suitable for mapping.[6] Using the retailer's database, we constructed nine distinct "coverages" for each study area: that is, nine collections of retailers based on store type and gross sales volume, each of which can be