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Market opportunities identification model for retail and service industries in selected Michigan cities

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MARKET OPPORTUNITIES IDENTIFICATION MODEL FOR RETAIL AND SERVICE INDUSTRIES IN SELECTED MICHIGAN CITIES

By

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ABSTRACT

MARKET OPPORTUNITIES IDENTIFICATION MODEL
FOR RETAIL AND SERVICE INDUSTRIES
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This study is concerned with developing a prediction model using six independent variables and the multiple regression technique to identify possible business opportunities based on the level of supply of retail and service functions in selected Michigan cities. Eighty Michigan cities with populations of 10,000 to 100,000 were studied.

The multiple regression technique utilized city population, per capita income, unemployment, proximity to a major city, level of distress, and county per capita income, to predict level of supply of retail and service functions per 10,000 persons for the 80 cities.

The dependent variable was the actual number of retail and service establishments in each of the 80 cities. The difference between the actual and the predicted number of establishments was used as a measure of level of supply. A high, negative difference between the actual and predicted number of establishments

indicated that a particular function was under supplied. The acceptable level of statistical significance for all tests was .05.

Major findings were: (1) the model significantly predicted supply levels for the ten retail and ten service functions; (2) the model results correlated with estimates by local officials in 50 percent of retail and 70 percent of service functions; and (3) proximity was significant in predicting retail and service supply levels. County per capita income and city per capita were significant in predicting service supply levels.

Limitations of the study included: (1) a large number of cities is required to apply the model and (2) the use of units as a measure of supply levels ignores the effects of shopping malls or large multiple stores located within city limits or periphery. Despite the limitations, the model is reliable for identifying under-served retail and service sectors, and a valuable tool for economic development professionals seeking economic development based on home-grown businesses.

Recommendations: Further study is necessary to determine the effects of race, crime rate, local tax rates, economic and fiscal policies on a city's retail and service supply levels. Only cities similar to Michigan cities studied may be able to apply the model.

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CHAPTER I

INTRODUCTION

This chapter presents an overview of historical trends in the changing structure of the economic base of the United States and the state of Michigan from the 1900s to the later part of the 1980s. It also examines major public policy responses to the structural changes and their economic consequences for Michigan cities. Other issues addressed in this chapter include the purpose of the study, conceptualization of the problem, the theoretical relevance of the location and central place theories, and other related theories as a basis for understanding retail trade and service industry activities in the economic development of cities and communities.

Overview

The National Economy

Prior to the mid-1900s, the economy of the United States was primarily agrarian and predominantly rural. However, by the end of the 1950s, the nation had witnessed the rapid social transformation of a rural, agrarian society into a nation of rapidly expanding urban

centers. The economies of these urban centers became progressively dependent on the manufacture of durable goods and service industries (Haber, 1959).

The nation's longest period of economic growth (1940 to the early 1970s) was based on technological leadership and domination of global trade. World War II created a period of economic expansion and rapid manufacturing growth, as the United States became the major source of defense products and supplies. At the end of the war (1945), the United States emerged with its factories, elaborate infrastructures (roads and railways) and ports intact and operational. Its sophisticated technology, skilled labor, and vast natural resources provided motivation for globalization of the nation's economy. The economy became the supplier of technology, equipment, and personnel for the reconstruction of war-ravaged Western Europe. By the 1950s, the United States' economy had established a dominant share of the global economy, accounting for 40 percent of the world's goods and services, and controlling more than 70 percent of the world's gold reserves. It supplied most of the world's high-technology products, and its industries generated 50 percent of the world's wealth (Kurtzman, 1988, p. 49).

Present Economic Trends

Unlike the post-World War II period, when economic growth and prosperity were spread among states/regions, the phenomenon since 1971 has been one of uneven and fluctuating pockets of economic prosperity across the country.

The economic decline in one state/region (e.g., the Frostbelt) has been offset by the prosperity in other states/regions (e.g., Houston, Texas, and the Silicon Valley, California). Similarly, gains made in one or more sectors (e.g., growth in service sector employment) have been offset by decline in other sectors (e.g., production/manufacturing and petroleum industries) (Kurtzman, 1988, pp. 102-104).

The Decline of Manufacturing Economy

Changes in the structure of the economies of the nation and individual states were inevitable in view of: (1) major changes in the foundation and structure of the global economy, (2) increasing product output with reduced labor costs, (3) greater use of cost-efficient technology and disengagement of a primary product economy from an industrial economy, and (4) the inability of the U.S. manufacturing industries and products to compete effectively in a global market. The decline in the manufacturing sectors was underscored by the erosion in

its share of total employment. The manufacturing share of nonfarm employment in the private sector fell from 37 percent in 1960 to 24 percent in 1985. In 1953, manufacturing generated one out of every three nonfarm jobs, but accounted for only one in five in the 1980s. Manufacturing's share of the Gross National product (GNP) also fell from 30 percent in 1930 to 21 percent in 1985 (Kamer, 1988, pp. 3-4).

The Nonmanufacturing Industries

Service-producing industries. Apart from moderate employment growth in construction and manufacturing, the service-producing industries have become areas of rapid employment growth. Nonfarm employment increased by approximately 19 million jobs as of November, 1988. The service-producing industries accounted for 89 percent of the total employment growth or a growth of more than 42 million net jobs between 1960 and 1986; 70 percent of it in private nonfarm jobs, with one of the service-producing industries accounting for 63.5 percent of the private, nonfarm personal income (Kamer, 1988, p. 4; Kutscher, 1988; Economic Report of the President, 1989). However, unlike the high labor wage of the manufacturing sector, a great number of the fast-growing, service-producing industries require labor with little or no job skills and offer low wages. These

factors (unskilled labor and low wages) have, and may continue to have, serious implications for the future standard of living and equity in income distribution, particularly in large population centers.

Perhaps the most significant legacy of the restructuring efforts, and consequent losses in manufacturing jobs, has been the fragmentation of the U.S. economy into subeconomies. These subeconomies are sometimes defined geographically or regionally in terms of "old line industry"--energy, high technology, agriculture and services (Kamer, 1988, p. 2). As will be discussed in a later part of this study, the current disparity in the economic conditions of the nation's regions/cities is closely linked to the conditions of their subeconomies.

The Michigan Economy 1900-1970s

The economic base of Michigan, prior to 1900, depended on agriculture, mining, and lumber. The rapid transformation of its economic base from agriculture to manufacturing was, in a large part, due to the success of the lumber and transportation industries, along with the capacity of the state to successfully harness and channel its natural, human, and technological resources into a highly productive economy. The early impact of the lumber industry was in the construction and expansion of

railroads for the movement of agricultural products to eastern and western regional markets. Subsequently, the success achieved by the railroad industry led to the diversification of its investments through the promotion of recreation and tourism (e.g., financing large resort hotels) in the Upper and Northern Lower peninsulas and along the inland coastal lakes of Michigan (Jackson, 1988, pp. 91-92).

The early spin-offs in new industries from the lumber industry included tourism and recreation, salt production, chemical manufacturing, and transportation manufacturing (ships, railroad cars, and carriages). In addition, the transportation industry contributed significantly to the production of a skilled workforce (manufacturing and management), the promotion of heavy, manufacturing industries, and the development and perfection of the internal gasoline combustion engine. These factors formed the bedrock for heavy industrial growth and have had a dominant impact on the manufacturing economies of Michigan and the nation. In 1896, Michigan produced its first gas-powered cars; by 1914, the State' automobile industry produced 78 percent of the nation's total automobile output (Jackson, 1988, pp. 92-96).

By the end of the first half of the 1900s, the transformation of Michigan's economy from agrarian to

manufacturing was complete. The expanding capacity of the state's industrial sector (automobile, furniture, household appliances, industrial machines, rail cars, engines, etc.) and its agglomeration economies (elaborate network infrastructures, highly productive skilled labor force) provided incentives for migration of other industries to the state. The upsurge in manufacturing activities led to the growth of other secondary and tertiary industries. The automobile, as the lead industry in the economy, became the major determinant of the structure of the state's base industry, social and demographic development trends (Haber, 1959, pp. 82-83).

The prosperity and economic growth in Michigan was epitomized by the lowest level of unemployment (less than 3 percent) in 1953. Economic prosperity attracted a large influx of people from other parts of the nation who were in search of employment opportunities and an improved quality of life. Between 1949 and 1957, 82 percent to 85 percent of the manufacturing production was in durable goods. Conversely, there was a corresponding decline in the state's net agricultural employment. Ironically, the manufacturing sector, especially those heavy industries which were the "bedrock" of Michigan's economic prosperity, also rendered the state's economy most vulnerable to "business cycles" (Haber, 1959, pp. 81-82).

Decline of Manufacturing Sector and Growth of Service Sector

Three major factors--(1) World War II (1943-1945), (2) Korean war material production (1953), and (3) the automobile industry (1914-1955)--accounted for periods of an expanding manufacturing economy. During the war period (1943-1945), one-fifth of the state's civilian population worked in factories. At the height of the Korean conflict (1953), 18 percent of the state's population worked in manufacturing; similarly, 16 percent of the state's population had factory jobs during the peak auto years of 1955 (Haber, 1959). Understandably, stagnation or decline in the growth of any or all of these employment sources could be expected to have a significant implication for Michigan's economy.

The 1954 nationwide recession and the decline of Korean War material orders resulted in the loss of 180,000 factory jobs, and about 150,000 defense jobs. A second national recession in 1958 resulted in 13.5 percent unemployment or a loss of 406,000 jobs in the state. Hardest hit were the automobile and equipment industries where an additional 102,000 jobs were lost (Haber, 1959).

The loss in defense procurement, largely due to the shift in defense production from wheeled vehicles--Michigan's greatest strength--to aircraft, electronics,

and missiles--Michigan's weakest--led to further losses in existing and potential defense jobs. The new generation of defense requirements became the fastest growing employment sector, accounting for more than 800,000 new jobs in 1954 with less than 20,000 of such jobs in Michigan (Haber, 1959, pp. 65-66). An additional factor in manufacturing decline was the gradual decentralization of the automobile industry, reflecting shifts in the geographical markets. As a result of this decentralization, Michigan's share of the total national automobile employment dropped from 60 percent in the 1930s to 47 percent in 1958. At the state level, employment in the auto industry (motor vehicle and equipment) dropped from 503,000 in 1953 to 293,000 in 1958 and from 29.16 percent in 1979 to 22.91 percent in 1986 (Haber, 1959, pp. 87-98; Haas, 1988).

Of great significance concerning the period of the 1950s was that, while it was the peak of the state's economic prosperity largely due to the expansion of a strong manufacturing sector, i.e., auto and equipment industries, this period also marked the beginning of the decline for that same sector and the "seed" of future economic problems for state and local economies. It was also a decade when the nonmanufacturing and nonagricultural sectors of the state's economy began to receive serious attention from private and public

sectors. Between 1953 and 1957, when manufacturing was on the decline, the nonmanufacturing sectors (service and retail) experienced job gains of 9.1 percent or 49,000 jobs (Haber, 1959, pp. 87-96).

Most employment growth between 1950 and the 1970s was in the nonmanufacturing sector. Between 1965 and 1975, total nonmanufacturing jobs increased by 369,000 or 31 percent. The fastest growth in the nonmanufacturing industry was in the service industries (wholesale and retail trade, finance, real estate, insurance, business and personal services), which increased by 40.2 percent between 1965 and 1976 (Michigan Economic Action Council 1976, p. 11).

The lopsided concentration of manufacturing plants in a few areas, primarily Detroit, Flint, Grand Rapids, Lansing, Saginaw, Jackson, Kalamazoo, Muskegon, Ann Arbor, and Bay City, not only skewed the bulk of the state's employment opportunities to these areas, but also laid the foundation for future pockets of poverty and serious economic problems as the economic base of the state and the nation shifted from manufacturing to a nonmanufacturing economy (Haber, 1959, pp. 85-86).

Michigan's Economy in 1980s

The decline of the manufacturing industry, although a national trend, had a severe impact on

Michigan whose economy had depended on heavy manufacturing for more than half a century. The effects of manufacturing decline, such as a large loss in high-salaried manufacturing jobs and a lowering of the quality of life, were particularly severe in the late 1970s and early 1980s. Manufacturing jobs had declined from 29.16 percent in 1979 to 22.91 percent in 1986 (Haas, 1988). This situation was aggravated by the nationwide recession and the shock of high energy prices in early 1970s. Today, the prospects of future growth for the automobile industry, the "bedrock" of Michigan's economy, is doubtful because of strong foreign competition and the successful inroads into the manufacturing industries (automobile, machine tools, and primary metals) by foreign manufacturers, along with the widely held perception of Michigan's "poor business climate," in Michigan (Kurtzman, 1988, pp. 25-26; Jackson, 1988 pp. 91-93).

A major feature of this perception relates to the high cost of doing business in Michigan, with such factors as worker compensation, unemployment insurance, and high energy costs. These factors had led to emigration of manufacturing and other businesses to southern states and Third World Countries where business conditions (i.e., low labor and other production costs) are more favorable. Most significant in the "wind" of

economic change was the loss of Michigan's traditional advantage in basic industries. A shift-share analysis of growth trends in each of the nation's manufacturing industries for the period of 1969 to 1979 showed a decline in growth in 13 of the 20 core manufacturing industries in Michigan. Most prominent of the declining industries were the nonelectrical, machinery, motor vehicles, and fabricated and primary metal which had been the mainstay of Michigan's economy (Jackson, 1988).

In the midst of general decline in manufacturing, some industries (e.g., machine tooling) did show signs of recovery and expansion by generating 5,000 new jobs between 1978 and 1984. However, the gains in new jobs were neither enough to offset the job losses in the largest manufacturing industries nor sufficient to restore Michigan's traditional advantage in the basic industries. This development (manufacturing decline) across the country was evidence of a permanent change in the structure of the economic base of Michigan and the nation (Jackson, 1988, pp. 97-99).

Growth Trends in Michigan Nonmanufacturing Industry

At the end of the national recession in December, 1982, Michigan unemployment was at 750,000 with a unemployment rate of 17.3 percent. However, the next five years (1982-1987) were marked by rapid economic

recovery and a significant shift in sectoral employment from manufacturing to nonmanufacturing. A total of more than 4.2 million people were employed by the Michigan economy in 1987. Of this figure, 542,700 jobs were generated between 1982 and 1987. About 90 percent of these later jobs were in nonmanufacturing industries (service, retail, and wholesale trade) as shown in Tables 1 and 2.

The state's fastest growing service industry areas between 1982 and 1986 were in business services, such as temporary help services (177.7 percent), computer programming and software (100.8 percent), data processing (142.5 percent), and management and public relations (67.6 percent), all of which accounted for 20.9 of the service sector employment in 1986. Other services included research and development (49.2 percent) and engineering and architecture (36.9 percent), which accounted for only 0.7 percent of the state's service industry employment. Ironically, the health service sector had the lowest growth rate (9.9 percent) from 1982 to 1986. Its share of the state's employment also declined from 36.4 percent in 1982 to 31.5 percent in 1987 (Davis 1989, p. 4), as shown in Table 1.3.

While the fastest employment growth occurred in business services and related areas of light and medium

Table 1.1. Michigan Employment Trends Annual Average Employment (000's)

Year	Annual Average	Percent Change
1972	3,438	--
1977	3,777	+9.86
1982	3,616	-4.26
1987	4,159	+15.02

Sources: Michigan Statistical Abstract, Bureau of Business Research, School of Business Administration, Wayne State University, Detroit, Table V-I, 1986-87: 99.

Haas, Michigan Department of Commerce, 1988.

Table 1.2. Michigan: Average Annual Employment Trends: Manufacturing and Selected Nonmanufacturing (000s)

	1972	1977	1982	1987	1972/77	1977/82	1982/87
Service	455	581	650	826	27.7	11.9	27.1
Manufacturing	1,097	1,128	877	973	2.8	-22.3	10.9
Retail Trade	479	557	543	673	16.3	-2.5	23.9

Sources: Michigan Statistical Abstract, Bureau of Business Research, School of Business Administration, Wayne State University, Detroit, Tables XV-1 (368), XXI-1 (516) XXIII-1 (582) 1986-87, Michigan Department of Commerce, 1989.

manufacturing industries (rubber and plastics, furniture, lumber, and wood construction), the largest growth areas were in the retail trade business, other services, and manufacturing. Retail trade was the third largest employment sector (673,000 jobs) with manufacturing (998,300) and services (826,000 jobs) as first and second largest employers, respectively, in 1987.

Rapid decline in the state's unemployment from an annual average of 15.5 percent to 8.2 percent between 1982 and 1987 has been largely due to aggressive diversification of employment into nonmanufacturing sectors (Haas, 1987; Giltman, 1987).

Although dependency on auto industry employment declined by less than 11 percent in 1982, and less than 35 percent in 1978, Michigan still has the highest concentration of auto employment in the nation. The fastest manufacturing growth area was manufacturing construction. Michigan manufacturers invested a total of $3 billion in the construction of manufacturing plants between 1983 and 1987, making Michigan second to California in manufacturing construction investment (Haas, 1988). Despite the decline in manufacturing growth (8 percent) between 1982 and 1987, it still accounted for 25.9 percent of the state's total employment and 35.7 percent of total (state) earnings. The service industry grew by 32.2 percent during the same

Table 1.3. Selected Fast Growth Service Industries: Michigan

Service Type	1972	1977	1982	1986	Percent Change 1972/77	Percent Change 1977/82	Percent Change 1982/86
Temporary Help Supply (Office and nonoffice workers)	6,016	12,674	13,504	37,500	110.7	6.5	177.7
Computer Programming and Software	331	730	2,898	5,818	120.5	297.0	100.8
Data Processing Service	3,457	5,890	8,861	21,486	70.4	50.4	142.5
Research and Development	986	2,168	3,049	4,549	119.9	40.6	49.2
Management and Public Relation	3,451	5,812	9,974	16,715	68.4	71.6	67.6
Health Services	--	--	249,291	273,934	--	--	9.9

Sources: Michigan Statistical Abstract, Bureau of Business Research, School of Business Administration, Wayne State Univesity, Detroit, Tables XXII-2(974/75), 1976; XXII-3 (586/87), 1986-87.

Davis, Michigan Department of Commerce, 1989.

period, but accounted for only 22.3 percent of the state's employment and 20.9 percent of total earnings. Retail trade is the third largest employer in Michigan after manufacturing and services. Between 1976 and 1986 retail jobs increased from 531,000 to 637,000. Annual average earnings for retail trade in 1984 were $10,257 as compared to $20,826 for overall state employment.

In 1987, retail trade accounted for 20 percent of the state's employment, but only 10 percent of its total income (Giltman, 1987; Michigan Employment Security Commission, February 1986). The tourism and recreation industry continues to experience strong employment growth. Travel-related employment rose to 184,000 in 1988. This was an increase of 49,000 new jobs from 1982. Travel and tourism related expenditures in Michigan were estimated at $14.1 billion in 1987. This was a 43.9 percent growth between 1982 and 1987 (Haas, 1988). There is no doubt that Michigan's economy has experienced significant growth since the start of the national economic recovery in late 1982. If current economic indicators, such as declining unemployment, continued growth in new business incorporation (24,882 in 1988), improved productivity, sectoral growth, and declining inflation rates hold, Michigan may again reestablish its national economic leadership lost in the late 1950. The strength of the state's rapid economic recovery has in

large part been due to its progressive diversification of the economy from single industry (auto) to a mixed industry economy (e.g., business services and other services, such as high-technology, retail trade, tourism and recreation, manufacturing construction, etc.).

Between 1982 and 1987, Michigan's economy outpaced the national averages in many economic sectors, (e.g., 39 percent growth in per capita income compared to 35 percent nationally and a lower annual inflation rate). Michigan businesses generated 86,000 more jobs than their national competitors and had a faster average employment growth of 17 percent compared to the national average of 15.5 percent (Haas, 1988). Areas of strongest performance were in the service industries. See Table 1.3.

Current economic trends show the nonmanufacturing sector (business services, retail trade, manufacturing construction, transportation, utilities, communication, etc.) as the direction for future economic growth in Michigan. This sector's rate of consolidated growth and significant contribution to the state's rapid economic recovery underscores the permanent shift in the state's basic economic structure from a manufacturing economy to an increasingly dominant nonmanufacturing economy. The steady, upward growth in the nonmanufacturing sector began in 1985 was expected to continue and was projected

as the main source for the state's future employment (Davis, 1989).

Economies of Michigan Cities

The strong performance of Michigan's economy, however, may be misleading. This rosy picture shrouds the seriousness of deteriorating economic conditions that a great number of Michigan cities are experiencing. While, in the aggregate, the state's economy has enjoyed five years of strong economic recovery and growth and has outperformed national averages in many sectors, the economies of many Michigan cities, particularly old industrial cities, are either stagnant or in distress.

The contradictions of Michigan's present economic growth was best illustrated in a recent study of Michigan metropolitan areas' economic performance by The University of Michigan (cited in the Michigan Department of Commerce Business Report, 1989). The study showed employment growth in all Michigan's 12 major metropolitan areas between 1982 and 1988. The employment growth ranged from a low 4.5 percent in Upper Peninsula Metropolitan Statistical Area (MSA) to a high of 24.7 percent (largest growth increase) in Benton Harbor MSA. All 12 metropolitan areas also showed increases in personal income ranging from a low of 21.9 percent for Battle Creek to a high of 38.9 percent for Ann Arbor.

Detroit MSA had a 36.3 percent increase (Haas, 1988). However, the economic reality of most cities, particularly the industrial ones is dismal. For example, the cities of Benton Harbor, Detroit, Flint, Jackson, Kalamazoo, Muskegon, and Battle Creek are among the Michigan cities currently designated as economically distressed by the State of Michigan and by the U.S. Housing and Urban Development Departments (U.S. Department of Housing and Urban Development, October 14, 1987).

A logical inference from the above study is that economic growth in the metropolitan area is occurring mostly in the suburban or peripheral areas of the cities, and not in the inner cities. Most of these cities have yet to find stable economic sources of income and employment to replace those which manufacturing had provided prior to the 1970's. It may be accurate, however, to conclude that Michigan has, on the aggregate, enjoyed unprecedented economic growth in the last five years, and has the potential for continued growth if current favorable conditions continue. However, a great number of Michigan cities, especially the older manufacturing cities, have yet to experience any significant economic recovery and/or growth. Extending the economic recovery and growth to all Michigan cities experiencing stagnating or distressed economies is a

major task confronting state and local government policymakers and economic development professionals in Michigan.

Public Policy and Structural Implications

In January, 1981, a new Republican administration arrived in Washington confronted with a nation in the throes of economic decline. Most economic indicators were bleak--unemployment was 9.2 percent, national inflation was 9.4 percent, and the Gross National Product (GNP) and manufacturing productivity were at an annual growth rate of 2.2 percent and 1.5 percent, respectively (Economic Report of the President, 1989). Exports were also on the decline, and the unstable value of the dollar in the international market aggravated a global economy already in chaos (Kurtzman, 1988, pp. 56-57).

The U.S. had been outpaced by foreign competition at home and in the global markets, and unemployment skyrocketed as a great number of manufacturing plants and nonfarm businesses either closed or migrated overseas where business costs (low wage, minimal regulations, etc.) were more favorable. The new President, Ronald Reagan, came into office with the resolve, and a political mandate, to: (1) reduce the role and influence of the federal government in state and local governments, (2) restore economic prosperity by ending escalating

inflation and reducing absolute inflation, and (3) forge international peace and influence by improving and strengthening U.S. national security. The items on the Reagan agenda were not new, except for the radical and dedicated dispatch with which they were implemented and the wide scope of their socioeconomic consequences (Hutten and Sawhill, 1984, pp. 1-7; Mehtabdin, 1984, pp. 4, 15).

Measures for reducing the role and influence of government included transfer of federal government responsibilities in the areas of domestic policy (e.g., elementary and high school education and social services), major income programs (Assistance to Families with Dependent Children--AFDC), and other decision-making authority to state and local governments. Efforts at restoring U.S. economic prosperity included 25 percent personal and corporate tax cuts across the board and spread over three years. The tax cuts were designed to encourage personal savings and to increase the creation of capital formation.

The strengthening of national security was characterized by a massive defense arms buildup, twice as large as the tax cuts, which tripled the national debt. The arms buildup was the largest in the history of the nation. The real defense budget rose 7 percent annually. Total defense program budgets rose from 26 percent in

1981 to 32 percent in 1985 (Palmer and Sawmill, 1984; Shafroth, 1989).

Socioeconomic Implications for the State and Local Government

Reduction and consolidation of the few social programs that were not eliminated became the responsibility of state and local governments. Grant programs had been reduced from 361 in 1981 to 259 in 1983, thus compelling states to raise local taxes to continue to provide the desperately needed social programs. Between 1980 and 1983 state and local taxes were raised in 22 of the 27 major cities (Palmer and Sawmill, 1984).

The large deficit in the national account, due largely to massive defense expenditures, large tax cuts with substantial revenue implications, and the deep recession of the early 1980s led to rising debts and interest rates. Consequently, federal government transfer funds (the largest single revenue source for cities) fell to 31.2 percent in 1985 against 40 percent in 1975. Property taxes also declined to 20.5 percent in the fiscal year 1984/85 from 25.6 percent in 1975. Similarly, the rapid change in the nation's economic base from manufacturing to service-producing industries resulted in the loss of manufacturing jobs and in huge structural unemployment (from 33.7 percent in 1950 to

19.9 percent in 1985) (The Municipal Yearbook, 1988; Waite 1988, pp. 1-14).

Most affected by these developments are the older industrial cities of the manufacturing belt, particularly cities in the Midwest. The bulk of existing revenue sources (user fees and miscellaneous revenues) are unstable and often too inadequate to support the cities' institutional infrastructures and other conditions essential for sustained economic development and growth (The Municipal Yearbook, 1988). While Reagan's defense policy of massive expenditures may have given an immediate boost to the economies of states/cities with concentrations of defense industries (e.g., California, Texas, Florida, New York, Missouri, and Connecticut), it may also have further impoverished those states/cities with little or no defense industry contracts. From a macro socioeconomic perspective, the Reagan agenda succeeded in consolidating the fragmentation of the nation's economy into subeconomies created by earlier restructuring of the manufacturing sector (Kamer, 1988; OhUallachain, 1987). Those benefiting the least from Reagan's massive defense expenditures are a great number of the small, mid-sized, and large old industrial cities whose economies are either stagnated or in decline/distress. After almost seven years of national economic recovery, a number of cities in Michigan are

still struggling with the costly realities of permanent change in the basic structure of the national/state economy.

Problem Statement

The primary concerns expressed in the final report of the National Governor's convention in 1986, and reiterated in their follow-up report in 1987, related to the serious condition of their states' economies. The governors warned that:

> Thirty-seven of the nation's fifty states were and continue to be in the middle of a recession, with food, raw materials, and manufacturing heartland of the country affected most severely. This heartland is now suffering from unemployment rates far in excess of the national average and from declining urban and rural prosperity and land values (Kurtzman, 1988, p. 102).

The governors' concerns still prevail in Michigan and other manufacturing heartland states and in cities that have lost large proportions of transfer revenues. Federal government transfer payments represented the largest single revenue source for cities, and these payments have declined from 40 percent in 1975 to 31.2 percent in 1985. The payments (direct grant assistance) have declined at an annual rate of 5.3 percent between 1980 and 1987. The fiscal position of the cities has been further weakened by the 1986 Tax Reform Act which eliminated deductible municipal sales tax. The introduction of corporate taxes and the imposition of

other conditions made a city's traditional source (public purpose exempt-bond) of raising funds more expensive. The reduction of federal government's investment in discretionary local program by $124 billion between 1981 and 1988 has adversely affected the most needed local government related programs (education, health, job training, medicaid, transportation, general revenue sharing, etc.) (Shafroth, 1989; Manson and Howland, 1984, p. 111).

There has been reluctance on the part of the city governments to increase property tax, the second largest source of city revenues, because of the negative political implications even though property taxes have also declined from 25.6 percent in 1975 to 20.5 percent in the fiscal year 1984/85 (The Municipal Yearbook, 1989). These developments had led to significant shifts by city governments from dependence on federal government transfer payments to more emphasis on generating local revenues from nonproperty taxes (user fees and miscellaneous revenues).

However, the current fiscal environment, especially in older, industrial cities of the Midwest, continues to be fragile because existing local revenue sources are unstable and often inadequate to support the institutional infrastructures and other conditions essential for sustained economic development and growth.

The major task confronting a great number of cities and economic development professionals is the ongoing search for a comprehensive and effective economic development strategy that can identify: (1) major sources essential for a city's income growth, (2) possible economic activities (commerce, manufacturing, services) that have the potential for employment opportunities and profitable growth, and (3) a contingent strategy for taking advantage of changes occurring in the city's trade environment (Hustede et al., 1984).

The Purpose of This Study

The purpose of this study is to analyze the economic conditions of selected Michigan cities based on the level of supply of retail and service functions. Specifically, this study cover the broad areas of inquiry based on the following objectives:

Primary Objectives

Objective 1: To explore the possibility of developing an appropriate model for identifying potential business opportunities based on the levels of supply of retail and service functions.

Objective 2: To determine whether supply levels of retail and service functions can be predicted using a set of socioeconomic variables (city population, unemployment, per capita income, proximity to a major city, level of distress, and county per capita income).

Objective 3: To discover if there are any significant variations in the levels of retail and service functions as perceived by city officials and the levels of supply of retail and

service functions generated by the statistical model developed from this study.

Secondary Objective

Secondary Objective 1: To determine if there were any statistically significant relationship between level of resource (staff and budget) allocations and a city's economic condition (level of distress).

Assumptions of This Study

This study is based on a set of assumptions concerning similar patterns of economic growth among cities sharing similar demographic and industry characteristics. In the context of this study, the assumptions are:

Assumption 1: That cities with similar socioeconomic characteristics are most likely to manifest similar patterns of economic development and growth.

Assumption 2: That given the rapid transformation of the nation's economic base from manufacturing to predominantly retail and service industries, these industries are logical targets for economic development and growth for cities, especially small and midsize cities, and/or old industrial cities either in the throes of economic distress or economic stagnation.

Assumption 3: That the level of supply of retail and service functions may be reliable indicators of business opportunities in the city.

Definition of Terminologies

The following operational definitions have been used in this study for the purpose of clarity and consistency:

Business Opportunities: Consumer-business needs (goods and/or services) that are to be met through market mechanisms.

Economic Development: Activities involving the use of resources (local and nonlocal) for greater productivity, creation of wealth through new business start-ups, expansion of existing businesses, increase in employment opportunities, increase in personal and corporate incomes, increase in city's tax base, and other activities that provide opportunity choices for consumers and producers (Shafer, 1989).

Economic Development Targets: Objects for economic development efforts in terms of: geographical targets (e.g., central city development, enterprise zone); entrepreneurial targets (e.g., various start-up enterprises); occupational targets (e.g., employment opportunities and labor); social targets (e.g., community cooperative unions); and business targets (flow and retention of businesses) (Bowman, 1987).

Economic Growth: A continued increase in new jobs, expansion of old businesses, new business start-ups, and increase in personal and corporate incomes.

Distressed City: A city whose economy suffers comparative disadvantage in terms of population growth (1960-1984), level of poverty, age of housing, per capita income growth (1969-1983), job lag in retail and

manufacturing sectors (1977-1982), unemployment rate, and degree of labor surplus (1984-1985) (U.S. Department of Housing and Urban Development, 1987).

A Central Function: Any establishment of retail or service business that services a population (Shaffer, 1989). In this study a function and central functions are used interchangeably.

Economic Function: Any type of economic activity within an industry that provides valuable information and a tool for city policymakers, planners, business and commercial developers in their investment decisions (Shaffer, 1989).

Economic Development Tool: Any public policy, regulation, or program/project employed to influence types of economic activities (Bowman, 1987).

Undersupplied Function: A predicted higher need for a particular type of good or service (e.g., prescription drug store, laundry) than actually exists.

Equilibrium Function: The nondifference between actual and predicted number of goods and service businesses available.

Oversupplied Function: The excess in the number of a business function (good or service) over the expected/predicted market demand.

Trade Area Capture: The estimated number of customers (local and nonlocal) who buy from a community

(Shaffer, 1989). The Trade Area Capture may also be defined in terms of estimated number of people purchasing a category of product (good or service) from a community.

Pull Factor: The ratio of trade area capture to community's population.

Significance of Study

The significance of this study is its academic and empirical contributions toward a better understanding of economic development issues, especially as manifested by the levels of supply of retail and service functions.

Previous studies on the economic development of cities were either macroscopic in their coverage (e.g., 322 U.S. cities of all sizes, Bowman, 1987) or restricted to one or few cities (e.g., Five City Studies, Hausner, 1987). The final data results from the study are specific in their focus, and therefore, are more likely to be an accurate knowledge base in formulating effective economic development policies and programs relevant to these and similar cities.

The information provided by this study and the model developed thereof are uniquely valuable for application in cities and places (other than Michigan or the United States of America) which have similar socioeconomic and demographic profiles. In addition, the final data and model from this study are expected to

provide valuable information as well as a tool for city policymakers and planners in target policy formulation and implementation. Business investment decisions, especially in retail and service industries, are expected to benefit significantly from the data and model developed thereof.

Limitations

The data used in the study and the development of the model were based on the years for which official data were available. The only official sources providing data for major retail trade and selected service industries in places with a population of 2,500 and more are the censuses for retail trade and selected service industries which are published every five years. The study has focused only on double digit levels of the Standard Industrial Classification (SIC) code because this is the only level for which corresponding data are available for places with populations of 2,500 or more. Basing the study of levels of supply of retail and services on a two-digit SIC gives information only on the major class of functions. Predicted supply level of functions based on the major group functions may not reflect accurate supply levels of the subgroup functions. Thus, while predicted supply level of the major group functions may reflect an oversupply, functions at the subgroup may

actually be undersupply or at equilibrium level, e.g., a predicted level of supply of a major group function--automotive repair, services, and parking--may be oversupply, even though any or more of the subfunctions, such as passenger car rental, parking lots, automotive transmission repairs, body and upholstery repair shops and paint shops could actually be undersupply. The above limitation (two digit SIC) not withstanding, the result and the model developed from this study will provide policymakers and economic development professionals a valuable information base in policy formulation and efficient allocation of local resources in the economic development and growth of a city.

Methodology

The study was conducted in two phases. The first phase covered the collection and analysis of actual number and sales of retail and service functions from 80 Michigan cities with population of 10,000 to 100,000. The study population comprised of cities at different phases of economic development. Please see Table 1.4.

The second phase of the study was an opinion survey of economic development officials in the 80 Michigan cities. The data collected from the first and second phases were used to conduct an in-depth analysis of the trends (levels) of retail and service functions

Table 1.4. Sample Cities by Population Size and Economic Conditions

Population Size	High % Distress Points: (7-5)	Moderate % Distress (4-2)	Least % Distress (-1, 0, 1)		Total
10,000 - 49,000	17 (26.2)	25 (38.4)	23 (35.4)	=	65
50,000 - 100.000	4 (26.7)	6 (40.0)	5 (33.3)	=	15
	21 (26.3)	31 (38.7)	28 (35.0)	=	80

and to develop a model that could identify market opportunities based on these levels.

This procedure has allowed the use of the most reliable data on: (1) the actual size of retail and service industries in the cities, (2) the expert opinions of economic development officials about the levels of retail and service functions in the cities studied, and (3) comparative analysis of data of actual state and city official perceptions of retail and service industries and the model developed thereof.

The finding and final conclusions from this study were based on the summary of the data collected. Descriptive and inferential statistics were used to analyze, interpret, and summarize findings with regard to the following areas of inquiry:

1. Whether a set of socioeconomic variables (city population, unemployment, per capita income, proximity to a major city, level of distress, and county per capita income) can be used to predict levels of retail and service central functions in the city.

2. Whether a model can be developed to identify a city's business opportunities based on the levels of supply of functions in retail and service industries.

3. Whether there were any statistically significant relationships between the levels of retail and service functions as perceived by the city's economic

development officials and the levels of retail and service functions as generated by the prediction model.

Theoretical Framework

The city as an economic decision-making unit always seeks, in theory, to maximize returns on its resources. Because such returns and expected growth are contingent on the level of market demand and supply of local goods and services, economic decisions and actions with regard to maximization of returns are dictated by the two market factors of demand and supply (Shaffer, 1989, pp. 12-13).

The focus of this study is the economic development of cities manifested by the levels of function of retail and service industries. The lack of consensus among community economic development actors (public and private) has created a vacuum in the knowledge base essential for developing a falsifiable general theory for community economic development. The selection of a theoretical foundation for this study was based on theories that are relevant in the development of effective local policy initiatives for economic development (Shaffer, 1989, p. 41). Each of the economic development theories briefly reviewed in the following is a "building block" in the theoretical foundation of this study.

Supply-Oriented Development Theory

Using the production function concept, the city's economic condition (output and growth potentials) is evaluated on its level of capital accumulation, population trends, the size and quality of its labor force (skilled and unskilled), and its technological sophistication.

As an economic unit operating in a free market economy, the city is in competition with other cities and communities for local and nonlocal resources (capital, labor, and technology) and potential business opportunities. Therefore, given the competitive environment, a city wishing to maximize its output and/or growth potential, must not only be able to put more of its resources to efficient and productive use by eliminating bureaucratic "bottlenecks" and adopting efficient technologies, but also must create a suitable environment for the mobility of capital and/or labor to sectors of more productive use within the city's economy (Shaffer, 1989, pp. 13-23).

Demand-Oriented Development Theory

As previously discussed, the output of an economy is a function of the level of capital accumulation, labor, and technology. Output, however, is only one of

two indispensable functions (demand and supply) of any economy. The economic activities of demand and supply are the "driving engine" that jointly determines the performance and level of economic condition.

The demand component of the economy comprises the basic (export) sector and nonbasic sector. A city or community's economic condition and potential for growth are dependent on the level of internal and external demands for goods and services produced locally. Understanding the forces that influence the demands, and how they can be transformed into incomes and employment opportunities, is, therefore, essential in formulating policies and programs for local economic development (Shaffer, 1989).

Export-Based Theory

This theory examines the critical role of the export sector as in-flow source of cash and other resources to boost the local economy. The export market is particularly vital for cities/ communities whose economies are largely dependent on the export market, or cities previously dependent on a nonexport market, but whose economies are either in decline or distressed.

However, for a nonself-sufficient economy, the crucial factor for economic development/growth is not only the level of its resources (capital, labor, and

technology), but the scope and intensity of its export market. It is also important for cities to be aware that, while promotion of an export market may be a primary focus in economic development, attention to the nonexport sector is also important. This is particularly true when allocating resources that allow the nonexport sector to provide those support services essential for the success of the export sector. For a local economy to derive maximum returns from its basic and nonbasic sectors, efficient internal infrastructures (forward and backward linkages) within the city are essential to efficiently channel accruing returns into the local economy (Coffey and Polese, 1984, pp. 1-11; Shaffer, 1989, pp. 28-35).

Location Theory

The city/community is a physical environment where economic participants (investors, producers, suppliers, and consumers) exchange capital, labor, output, and raw materials. Understanding these participants and their economic activities is important for economic development/growth of a city or community (Shaffer, 1989, pp. 46-47).

The Location Theory, as a concept, seeks to understand the spatial relationship between economic activities, markets, and the infrastructures. Location

Theory not only tries to provide an explanation for the location decision process and reasons why businesses operate where they are, but also examines the political power enjoyed by a city/community that has a good knowledge of business location needs. Such knowledge, according to location theory, allows the city/community to provide valuable location information that could influence business location decisions in favor of the city's economic development agenda (Shaffer 1989, pp. 69-70).

The theory also provides analytical methods for delineating different location factors (economic and behavioral) and the basic assumptions that influence business in its choice of a site. The following are synopses of theoretical location tools that have relevance for this study:

1. Demand maximization principle assumes widely dispersed markets, raw materials and labor with each business vigorously engaged in price competition (low pricing) for greater control of the market. This principle ignores location of labor and resources as important in maximizing demand. But ignoring these two factors is the major flaw of this principle. The relevance of demand maximization, sometimes referred to as "Locational Interdependence," is its utility in outlining the spatial characteristics (size and shape) of

a community/city retail trade area (Shaffer, 1989, pp. 56-58).

2. The least cost approach operates on the basic assumption that market demand is not affected by business location. The overriding consideration in location decision is the total minimum cost of transportation (primary concern), labor, and agglomeration costs that allow for maximum profits. A major flaw of the least cost method, however, is that location with the least cost may not necessarily guarantee profit maximization (Shaffer, 1989, p. 47). The knowledge of this factor (minimization of business cost) is essential, particularly for communities/cities formulating economic development policies, and developing cost reduction packages as incentives for attracting new businesses and retaining existing ones.

3. The behavioral aspect of location theory focuses on the problem of obtaining vital location information needed by business to select a site that will maximize its profits. Business, when making location decisions, may often be handicapped by the quality and volume of available information on a location, its future market potential, level of competition, and other future economic conditions in the city. A city can, therefore, facilitate its economic development by providing needed location information and the conducive environment to

expedite the business location decision process (Shaffer, 1989, p. 66; Nelson, 1958).

Central Place Theory

Market opportunities are unserved consumer needs and may also be an indication of an imperfect market environment due to limited market information, institutional barriers, monopoly, and other related factors. Market opportunities as unserved consumer needs, are a likely source of economic activity for generating potential revenue and employment opportunities. But converting market opportunities into economic activities depends on the cooperation of businesses and their willingness to invest in the under-served areas (Shaffer, 1989, pp. 125-126).

Central Place theory, as a concept, therefore, seeks to address (among others) these factors as a basis for understanding uneven distribution of goods and services among place. The theory is primarily a consumer-oriented concept operating under two basic spatial and behavioral assumptions of homogeneity of independent businesses spread uniformly across the community with the desire to: (1) maximize profits by minimizing costs (transportation of production costs) and (2) expansion of greater control over the market they serve. Similarly, consumers also try to minimize the distance traveled to

make purchases (Christaller, 1966; Losch, 1954, pp. 105-114; Berry, 1967, pp. 59-71).

The theory also provides greater understanding of the interdependence among communities/cities and their hierarchies in terms of the rank-order goods and services they provide. Based on the concept of hierarchical structure, cities/communities of higher-order provide specialized goods and services, while those of the lower-order provide generalized or convenient goods and services (King, 1984, pp. 28-43; Berry and Garrison, 1958, pp. 107-121).

The utility of this theory is in analyzing the economies of cities, particularly the study of trade and service sectors. It also provides greater insight into the importance of the relationship between the range of goods and/or services and the demand thresholds as they relate to the economic condition of an area. Other significant contributions of the theory include provision of valuable analytical tools (e.g., Gravity Model, the Pull Factor, Location Quotient, the Trade Area Capture, Shift Share, etc.) for market analyses, estimating employment potentials, and area sales potentials (domestic and export) of a community/city (Hustede et al., 1984; Shaffer, 1989, pp. 144-157).

Dissertation Organization

This chapter has provided an overview of the changing phases of economic structure of the nation and the state of Michigan as a framework for addressing the problem of this study. Other areas covered in this chapter included a statement of the research problem, set of assumptions, definition of terms, establishing the theoretical and conceptual foundations, outlining the significance and limitations of the study, and the research questions to be addressed by this study.

A review of relevant literature, based on the theoretical and conceptual framework established in Chapter I, is covered in Chapter II. Chapter III discusses the model, selected variables, statement of the hypotheses, description of research design and procedures, and statistical tools to be used in the study. Chapter IV covers data analyses and presentation of findings of the research. Chapter V covers the summary, conclusion, and recommendations based on the research findings.

CHAPTER II

REVIEW OF LITERATURE

Introduction

The logic of economic relations between the consumer and producer, and the inherent interests of the parties, determine the intensity and scope of economic activity and the ultimate condition of the economy of the community. Of special interest in consumer-producer economic relations, are the spatial characteristics of economic activities, the behavior of the consumer and the producer, public policy and government regulations, and the effects these factors have on the organization, structure, size, and growth of retail and service industries in the local economy.

This chapter reviews previous academic and empirical studies that have contributed to the understanding of the geography and economics of retail trade and service industries in the economic development of a community. The review also attempts to establish a problem area framework, which in the opinion of this author, has not been addressed by previous studies. Namely, a predictive model for identifying business

opportunities based on the levels of retail and service functions in community economic development. Although the review is by no means exhaustive of all theoretical and empirical studies in the area of study, it has attempted to ensure inclusion of the most current studies on retail and service industries in urban economics and community economic development.

Organization of the Literature Review

The review of previous studies on the two economic sectors (retail and service) is organized into three categories. The first category covers the theoretical knowledge base on spatial attributes (human and natural resources, markets and communication infrastructural systems, etc.), and the tripartite interdependence of entrepreneur, consumer, and the community in the business location decision process.

The second category covers descriptive studies on the elements and influence of settlement patterns, the socioeconomic structure, and public policy (government regulations). The third category covers empirical works on the application of relevant location and central place models as tools of analysis, prediction, business, and regional economic planning.

Central Places Theory

Centrality of Place and Its Economic Functions

The spatial dimension is a major factor in understanding both the activities of the consumer and producer and the trends of retail and service distribution. Critical to the development and scope of these economic activities (retail and service) are the centrality of the location, the size and spatial distribution (settlements) of the population served, availability of variety of functions, consumer accessibility, and the impact of the other environmental factors (competition, transportation system, public policy and governmental regulation, etc.).

Christaller's (1966) pioneering work in the theoretical understanding of centrality of place focussed on three locational characteristics: (1) the functional interdependence between the central place and its trade areas, (2) the economics of demand and supply within the subconcepts of "range" and "threshold" values of central place functions, and (3) density and distribution of the population. The centrality of a location may, therefore, be determined by the economic interrelationships (supply of goods and services) between trade areas, the maximum distance a consumer is willing to travel to make a purchase (range), and the minimum level of demands

(threshold) required by the entrepreneur/producer to supply goods and services at a profit. For the entrepreneur, an important determinant of the threshold is the size and distribution of the trade area population (Christaller, 1966; Dalrymple and Thompson, 1969; King, 1984).

In other words the designation of the centrality of a place, be it a city or town, is the basic role in providing needed goods and services to the surrounding trade areas. The services and goods so provided are central functions, while the center (towns or cities) providing them are central places. Among various measurement (qualitative and quantitative) which have been used to determine the centrality of a place/city are a place's predominant type(s) of employment activities, the size of the surrounding trade area, the amount of merchandise wholesale space, and the types and status of its economic and noneconomic institutions (i.e., Banks, etc.) (Dickinson, 1934; King, 1984, pp. 21-29; Scott, 1970, pp. 155-159). However, a more sophisticated measure of the centrality of place is the use of indices derived from wholesale-retail trade ratios (employment, sales) based on a study of 56 U.S. standard metropolitan areas (Siddnall, 1961, pp. 124-126).

Shaffer (1989) applied the basic theoretical concept of centrality of place to explain the economic

activities within and among communities by analyzing the economic interdependence between business entrepreneurs and their communities, along with the socioeconomic location factors that determine the types and amount of goods and services that businesses would market in a community. The concept of centrality also epitomizes the broad concept of city classification in terms of their function and demographic importance.

Hierarchy of Central Places

The hierarchy concept is essentially based on the premise that most activities are carried out in central place areas of towns or cities. The status of the centrality of trade areas (urban center, town, or village) is determined by a consumer orientation (shopping behavior), the density and distribution of population settlements within the trade area, and the type and variety of central goods and/or services the center offers (Garner, 1966, pp. 25-26; Heilbrun, 1981, p. 93; Davis, 1984, p. 26).

As the size and income of a place increase, its number and order levels (lower and higher orders) of economic functions increase. The hierarchy of central places may thus be defined in terms of the specialty functions they perform. Berry (1967) embarked on an in-depth study of consumers' behavioral impact on the

classification of centrality of a place based on the historical trends of farmers' shopping habits in parts of Iowa (i.e., Council Bluffs, Omaha, Red Oak, Des Moines, Atlantic). The primary focus of the study was how shopping behavior of the farmers determined centrality and hierarchy of a trade area. A major part of the study methodology was the development of maps for the succession of market areas whose status of centrality was ranked from low to high. The ranking of centrality was based on the type of goods or services, frequency or volume of purchase, and the distance a consumer (resident) was willing to travel to make purchases. The result of the above study was collaborated by Frankchowiak's (1978) study of consumers in Toledo, Ohio, which found that consumers' perception of hierarchy of central place shopping was based on the type of commodities, services provided, and the size of the place.

Christaller (1933), cited by King in a separate study to determine the hierarchy of central places in southern Germany, used a simple mathematical model (based on total number of telephone connections and population in a region), to develop an index to measure the actual and potential number of telephone connections in a region. The index was then used to identify level and importance of a central place within the hierarchy of

central places. Based on the results of the study Christaller concluded that the spatial distribution of central places was predominantly influenced by marketing principles, and that any deviations from the expected configuration could be explained by economic and/or noneconomic factors (King, 1984, pp. 29-49).

A similar study in the United States analyzed a number of long distance telephone calls from smaller centers to the larger cities of Flint, Detroit, Lansing, Saginaw, and Bay City. The study also found a positive correlation between the size of a city and its sphere of influence. Other studies of centrality of a center included measures of a town's newspaper area circulation, extent of its bus service, payroll addresses, number of professional services, resident population, and surveys of consumers shopping preferences and the trading areas of the centers (King, 1984, p. 52; Godlund, 1956, p. 184; Siddnall, 1961, pp. 124-32).

Central City Systems and Commercial Hierarchies

Cities served as locations for business and industry as well as other economic activities. As markets for local and/or regional goods and services, cities often share some degree of economic, cultural, and social interdependence between and among other cities and their peripheral places (towns, village) (King, 1984, pp.

20-21). The status of a city within the hierarchy of cities is dependent on the number and types of goods and services available to its internal and surrounding trade areas. However, a clear delimitation of hierarchy within the city becomes difficult as the city grows in size with continuous mobility of the city's population and dispersion of economic activities (Garner, 1966, p. 26).

Viewed from the central systems perspectives, the levels of these cities often manifest a hierarchy in the central cities system. The level of cities in the hierarchy may be determined by any, or a combination of, the following factors: physical or population size, the order-level of goods (lower- or higher-order), and the level of economic condition (distress or sound economy). Central cities at each level of the hierarchy also have their defined market areas.

Shaffer's (1989) analysis of Faust and de Souza's study of market area wholesale-retail centers in Wisconsin showed that central cities at each level of the hierarchy system serve defined and often smaller trade areas (smaller towns, villages) and populations. Similarly, central cities at the lower level of the hierarchy also serve smaller trade areas. However, while lower level central cities have their defined trade areas, they also serve as market areas for central cities at higher level of the hierarchy. The larger the market

areas and population served, the higher the order of goods and services provided. Increases in higher order goods and services by central cities at each level is explained by the degree of economies of scale made possible by the wider market areas and density of population served.

In other words, the levels of cities in the central place hierarchy are measured by the number of their economic functions. The number and order of functions are based on the size and density of the population of the cities and the trade areas served (Parr, 1987, pp. 222-23; Shaffer, 1989).

Centrality and Location of Retail and Service Functions

Centrality of retail and service functions is measured in relation to their spatial concentration. The higher the center level, the more the concentration of functions (Garner, 1966, pp. 98-99). Berry (1967) in a major study of market centers and retail distributions in the Midwest found that the central place theory is not only a theory of location, size, nature, and spacing of clusters of activities, but a theoretical base for most patterns of spatial distributions of urban centers and retail and service business.

Retail and services are the final outcome of a production and distribution network, as well as the start

of the consumption process. Therefore, they are major foundations for the central place economic activities of the central place system. As central place goods, retail and service functions are very heavily consumer-oriented (Parr, 1987). It is logical that establishments engaging in retail and service functions often have sought to locate at convenient centers to reach the largest possible population and potential customers (Johnson, 1964).

The application of the central place theory to spatial distribution of retail and service functions, historically, evolved from entrepreneurs' attempts to reach rural farming populations who converge in convenient, central places (e.g., local post office, rail station, public administrative center, etc.) for social, cultural, and political interactions. These places provided entrepreneurs the opportunity to sell consumers a variety of goods and services (Berry, 1967; Scott, 1970, pp. 155-159).

Location Theory

Location Theory and Retail and Service Functions

Location theory often attempts to provide explanations for why economic activities occur where they do. Economic activities, however, are known to result largely from the attributes of a location. Location

theory tends to be seen as more producer/supplier-oriented because of its emphasis on such pull factors as the markets, location resources, transportation systems, etc.; although in practice, the choice of business location evolved primarily around customers and the attributes of the market environment (Shaffer, 1989). Retail and service activities are strongly consumer-oriented in actuality, and their spatial distribution has always reflected patterns of population and income distribution (Berry, 1965, pp. 150-54; Garner, 1966, pp. 98-99; Shaffer, 1989, p. 46-47).

Location Approaches

Retail and service functions are not only the start of the consumption process, but continue to serve as the crucial linkage between production and consumption. The location of retail/service functions is, therefore, dependent on geographic distribution of population and income manifested by the patterns of consumer markets (Shaffer, 1989; Hoover, 1963, p. 4).

Shaffer's (1989) discussion of location theory and community economic development examined major classical location approaches, but more relevant to this study are the demand maximization/locational inter-dependence, profit maximization, and behavioral aspects which have provided a traditional guide in business

location decisions. However, the degree of emphasis given to these approaches in location decision depends on whether the target market is concentrated (manufacturing) or dispersed (retail business) (Shaffer, 1989, pp. 69-70). The approaches included the following.

Demand maximization approach. This approach is the situation of hexagonal market, where the market is spatially dispersed, with open competition, no transportation cost advantages, and with customers uniformly distributed spatially. Under this approach, business would traditionally opt for a location that would generate optimum value of sales and lower delivery prices than the competition offers (Shaffer, 1989, pp. 56-57).

Profit maximization. However, if profit maximization is the goal of business, its choice would focus on a location that has potentials for generating maximum return (profit). This decision approach (profit maximization) analyzes total revenues (demand maximization) and the total costs in relation to profit potentials of the location (Shaffer, 1989, pp. 63-64).

Behavioral approach. Since location decisions are not based solely on profit maximization, an emerging location decision approach is the behavioral approach

which essentially focuses on nonmonetary factors (objective functions) as the primary consideration in location decision. For a business whose primary consideration is not profit maximization, any location which satisfies minimum profit potentials and the desired objective criteria (e.g., owner's hometown, expansion of market share/penetration, etc.) is a likely choice (Shaffer, 1989, pp. 49-69).

Shaffer did, however, caution that the classical, theoretical approaches were originally only applied to situations of "single-product and single-plant companies with simple organizations." But as business and the environment become more complex in terms of "multi-product and multi-business establishments, large scale, and mass production operations," a combination of the approaches may be required in the location decision process (1989, p. 68).

Location Decision Process

The choice of a business location is made within the geographical context of a community. The community, as the decision-making environment, has significant influence on how and what location decision is made and the implication for other local actors (business, consumer, and the government). Although the ultimate location decision is made by business, the decision

process has to recognize the interdependence of the main actors (business, consumer, community, and government). The economic and noneconomic interests and behaviors of these actors need to be integrated into the decision process (Shaffer, 1989).

Shaffer recognized these conditions in the discussion of five, key, input elements and three major steps that a business goes through in making location decision. According to Shaffer, the location decision process of a business traditionally starts with trying to identify, evaluate, and compare a site and its communities in terms of potential short- and long-term business goals (Blair and Premus, 1989, pp. 74-75; Shaffer, 1989, pp. 70-72). Gruen and Smith in their discussion of location decision also stressed the need for analysis of a location's economic resources, i.e., population growth potentials, income level, consumer's purchasing power, accessibility, and competitive factors, which may determine the success or failure of locating a business (1965, pp. 30-37).

Hamilton (1974), in his study of business motivation for assessing new locations, found that businesses, under increasing pressure from economic and environmental forces, such as resource depletion, production obsolescence, need for new product introduction, and limited physical expansion facilities,

are often compelled to seek suitable, new business locations. Barring any serious disasters (earthquake, nuclear accidents, etc.), the location decision process often occurs in a phased process. Blair and Premus (1987) classified the process of location decision as a three-phased sequence: (1) identification of the geographic area in relation to the marketing or management strategy of the business, (2) comparative analysis of prospective locations and/or the communities in terms of compatibility with business objective functions (e.g., a location's proximity to an interstate highway, railroad, or adequate public utilities), and (3) the selection of the appropriate location that satisfies business requirement (Blair and Premus, 1987, pp. 72-85).

The complementary and synergistic nature of potential economic benefits envisaged by business location (profit maximization) and the community (economic development/growth) encourage cooperation and elicit community input, especially during the early phases of the location decision process. By providing prospective information that facilitates location decisions, a community has the opportunity to attract and influence new businesses to locate in their community/city (Shaffer, 1989).

Retail and Service Location Factors

Retail and service functions are dependent on the two crucial factors of demand and supply. It is only the growth and expansion of demand that guarantee the survival of the functions, thus underscoring the importance of the interdependence of consumer-producer economic and psychological behaviors. Economic interdependence operates within the conceptual framework of demand threshold and the range. Both concepts (demand threshold and range) are essential considerations in determining the type(s) of products (goods and services) and the location (where producers decide to market goods and services), and consumer's purchasing behavior.

Scott (1970) and Shaffer (1989) define demand threshold as the minimum purchasing power necessary to support the supply of a particular type of good or service in a place and its potential to generate reasonable profits. This definition collaborates that of Christaller (range), Berry, and King in different studies of retail activities and location patterns based on central place theory. The concept of range is an expression of the rational principle of consumer-producer economic behavior. To the consumer, the range is the maximum spatial distance a consumer is willing to travel to make a particular purchase. But to the producer/ supplier, the range is the spatial distance that allows

efficient distribution costs and maximization of business profits (Griffith, 1982, p. 178; Christaller, 1966; Berry, 1967, p. 14; King, 1970, p. 24).

However, there is a consensus among Shepard and Thomas (1989) and Parr and Denike (1970) that maximum travelling distance (range) for the consumer or producer/supplier is influenced by purchase frequency, available technology, modes of transportation, shopping facilities, and consumer socioeconomic profiles. The location of either retail or service functions must, therefore, take into consideration, within the context of range, the characteristics and economic interests of the business, the consumer, the nature of goods or services, and the market competition.

Scott's (1970) study of retail sites in Great Britain, the United States, and Australia, found that retailers' selection and value of location sites depended on: (1) the potential for the location to maximize profits and provide access to the greatest number of possible customers, (2) the structure of the market, (3) the physical attractions, reputation, and competitive nature of the market environment, and (4) the retailer's ability to engage in successful competition (product marketing and location rent bidding). These factors collaborate with Nelson's (1958, pp. 45-55) eight principles used in the selection of retail location.

The service function, like the retail function, is consumer oriented, and thus seeks to locate in places easily accessible to sources of final demand (Daniels, 1982). Its location adheres to the same principles of central place theory. In addition to satisfying the retail requirement of minimum consumer travel distance and profit maximization for the supplier/producer, Daniels also detailed other factors which influence the location of a service function such as the type of service function and the access cost and modes of travel. However, Daniels cautioned that while population distribution, density, and level of purchasing power are very important influences. Other variables also have a great deal of influence on the location of retail or service businesses, including: access to information; transportation; communication; availability of labor (skilled and unskilled); type of city institutional factors (government regulations, zoning laws, etc.); and the behavior/decision of property owners, landowners, and development organizations (1982, pp. 30-32).

The market size of the service function is dependent on the level of economies of scale achieved in the production and in the volume of demand for service. Similarly, the volume of demand is a function of not only price, but more importantly, of population size and level of income (Heilbrun, 1981, p. 93). This collaborates

earlier findings by Hoffer (1935) in Michigan and Hassinger (1957) in Minnesota. Both found that the type of service functions in a place reflects its population characteristics, relationship between population changes, changes in the types and volume of retail services. Heilbrun (1981) pointed out, however, that while increased economies of scale lead to a wider market area, allowing large business to mass produce at lower prices, the situation also tends to eliminate the small competitors (Hoffer, 1935, p. 12; Hassinger, 1957, pp. 235-40).

Retail and Service Market Structure

A retail market may be defined in terms of spatial distribution of supply and demand of a particular good or service. As the last link in the production/distribution/consumption process, a retail market essentially caters to the final source of demand by providing goods and services for personal or household consumption. Convenience and accessibility are major attributes influencing the behavior of producer/suppliers and consumers in the development and growth of the retail market (Nelson, 1958, p. 3).

The heterogeneous nature of the level of final demand (i.e., frequency, size of purchase, convenience, product types, etc.) along with the small business

capital outlay, allows easy entry of potential suppliers/producers and the growth of a fierce competitive market environment. This ultimately leads to multiplicity of retail outlets and a wide range of shop sizes (Scott, 1970). The retail market is a volatile environment with as many business turnovers as there are new entrants. The diversity of the retail market influences the size of retail outlets and the level of returns on investments. Ironically, the heterogeneous composition of the retail and service markets create an imperfect, competitive environment, thus constraining most retail and service establishments from attaining the optimum size essential for maximizing returns on investments (Scott, 1970, pp. 85-88; King, 1984, p. 59).

Retail and Service Entrepreneurs

Because the focus here is on the geography of economic exchange between producers/suppliers and consumers, the central place concepts of demand theshold, range of product (goods or services), and trade area, it is important to analyze and understand the types and scope of retail and service markets and related patterns of population distribution.

The retail entrepreneur's decision to provide goods or services is contingent on the minimum demand threshold for the good or service and the potential for

future profits. An investment decision is, therefore, based on: (1) evidence of a reliable, minimum market as measured by size of population and profit growth potential, (2) ability of producer/supplier to achieve internal economies of scale and thus engage in competitive product pricing, and (3) a measure of reliability in predicting consumer purchasing behavior (King, 1984, p. 22).

In estimating the minimum acceptable market level for a product, such an estimate should be based on the range of the products (good or service) to be supplied. In other words, the supplier should estimate the maximum distance the consumer will be willing to travel to make a purchase, since this distance depends on the level of hierarchy and the number of various types of retail and service business functions provided. Because market threshold is sensitive to income and population changes, size of population and income level are essential factors in estimating the size of market threshold (Berry and Garrison, 1958, pp. 304-311; Kenyon, 1967; Shaffer, 1989, pp. 113 and 143).

Shaffer's review of an earlier study estimating thresholds for various retail functions in Wisconsin based on Faust and Picket's study, showed variations in the minimum population size required to support each type of the 32 selected retail functions. Results showed,

among other things, that a population of 77 people was required to support a tavern, 528 people for a grocery store, 186 people for a gas station, 375 for an auto repair shop, 712 for a shoe store, etc. The range of each product is different, so also is the product's market threshold, depending on the order (low or high) of the product and the socioeconomic characteristics of the population. Berry's study in Iowa of trade area size and population served also found strong positive correlation (0.95) between the number of businesses offered in trade areas and the population they serve (Berry, 1967, p. 35; Shaffer, 1989, p. 137).

Determinant of Range of a Product

The range of a product is the geographical scope of the demand for a product. Christaller defines the real range of a product as "the boundary which a consumer would be supplied by a competitor or producer" (1966, p. 54). Similarly, in a free market economy, the individual supplier's market range is hexagonal in shape as suppliers try to minimize consumer travel time, they ultimately tend to locate at a common center. Thus, the clustering of suppliers and goods and services in one location attracts population concentration and more often leads to increased efficiency in the provision of goods

and services (King, 1984, pp. 29-31; Parr and Denike, 1970; Shaffer, 1989, pp. 126-29).

Product range in terms of the geographic market trade area is determined not only by distance, affordable travel time and cost, but also by the intensity of market competition, quality of modes of transportation, available physical infrastructures, level of technology, frequency of product purchase, and the socioeconomic profiles of consumers (Shaffer, 1989, p. 133; Shepard and Thomas, 1989, pp. 44-45; Berry and Garrison, 1958).

Trade Area

The trade Areas, as a geographical expression, integrate the concepts of demand threshold and the range of the product. It represents a defined geographic area from where the supplier or producer draws most of the sale (Shaffer, 1989, p. 143). Defined from a central place theoretical perspective, the location of the supplier represents the central locus attracting consumers from primary and secondary (peripheral) environments, depending of course on product class (low or high order), income level, size of population, and consume behavior. Each product (good or service) has its trade area. Trade areas expand as population density decreases (Tarver, 1957; Berry, 1967, p. 349).

Although trade area has been defined as: (1) the center of the most accessible point (Thorpe and Nader, 1967), (2) the percentage of customer attraction--85 percent, (Gruen and Smith, 1965, pp. 30-37), and (3) as the area most important for the supply of specialist goods and services, all of the definitions are based on the concept of hierarchy of the central place system. The concepts of range, demand threshold, and trade area provide the essential basis for analyzing the development, organization, and structure of retail and service markets.

Market Development

Retail and Service Development Factors

In the development of a retail or service market, each central function has its defined market area, and the growth of each market area is influenced by: (1) the distance consumers are willing to travel and the frequency of purchases from the trade area, (2) concentration of a variety of central functions, (3) available modes of transportation (public and private), (4) types of market area (urban or rural), and (5) the distribution and density of a trade area population. The following is a brief overview of a few major factors considered essential for the development of retail and service functions?

Consumer Behavior

The consumer is the prime target of retail and service activities. His/her behavior is, therefore, critical to the rate and scope in development of retail and service markets. The size and number of retail and service central functions in any particular location are dependent on the size of the consumer population, their income level, and the level of competition (Lakshmanan, 1965). Given the importance of the consumer, choice and travel behaviors are crucial factors in the growth, expansion, and innovation of retail and service businesses. Underscoring consumer choice and travel behavior are the consumer's perception of costs (product/ service prices), travel distance, purchase time, and the pleasure of shopping (Spohn and Allen, 1978, p. 106; Ingene, 1984, p. 72).

In a study of consumer habits in Greensboro, North Carolina, Scott (1970) found that the greatest distance customers were willing to travel varied (from 12.3 miles to a department store to 6.1 miles to a furniture store), depending on the types and order of business functions. There is substantial collaborative evidence that the number of multipurpose shopping trips are: (1) likely to be reduced where there is concentration of retail outlets offering a variety of functions, (2) when the consumer owns a car he/she is

likely to make more frequent long distance shopping trips, especially, for shopping goods, and (3) likely to make fewer multipurpose buying trips to a large trade area with a hierarchy (low- and high-order) of trade functions. While these seem to reflect the general pattern of consumer behavior, a study of consumer behaviors in nine Australian cities by Johnson and Rimmer (1967) did not seem to find a strong relationship between consumer behavior and the hierarchical structure of the cities. Johnson and Rimmer, however, caution the generalization of their finding because of the small sample size and the inconsistencies in the types and services among the nine cities studied (Johnson and Rimmer, 1967, pp. 161-66; Scott, 1970, p. 60).

Market Structure/Socioeconomic

The modern structure of the retail market has been the response to changes in the market environment. The last decades witnessed significant positive changes in the socioeconomic structure of the society (e.g., increase in disposable income, more women in the labor market, development of interstate highways, growth of suburban settlements, increase in urban-suburban population migration, consumer lifestyles, etc.).

These developments led to the restructuring of retail markets (goods and services) and their functional

and spatial hierarchies to satisfy changes in the channel of distribution and the demand structure. Associated with these socioeconomic changes were population migration, high ratio of car ownership, and customers' changing image of retail stores (Scott, 1970, pp. 46-49; King, 1984). Berry's study of business patterns in metropolitan Chicago in 1958 found that suburban centers where professionals (lawyers, accountants, doctors, etc.) lived had more diverse and speciality functions.

Demographic Factors

Pattern of population distribution and density and modes of transportation have had great influence on the types and sizes of central functions and the development of market areas. The larger the population of an area, the faster the rate of growth in business outlets, the greater the variety of central functions, and the greater the attraction of larger stores to the area of population. The structure of the market is influenced not only by levels of business functions, but also by ever-changing demographic characteristics (Berry, 1967, pp. 90-93; Stabler, 1987, p. 227).

As previous studies have shown, population and income levels determine the size and location of retail and service functions. But at a microlevel, age, sex, and income--individually or collectively--have also had

a significant influence on the type, structure, and spatial distribution of retail and service activities.

Age Structure

Studies of consumer behavior and attitude in Houston, Seattle, and Columbus found that consumers in older age groups (50-64 years) were more oriented toward shopping in center city than younger age groups. This was attributed to older age groups being traditionally more loyal, with little or no domestic commitment (empty nest), and possessing higher income levels (Jonassen, 1955, p. 82). It is, however, not known if Jonassen's findings still hold and can be generalized with any validity. Scott's (1970) study of consumer demographic behaviors in England found that older people in northern England and younger housewives with children often preferred to shop locally, while working women tended to shop outside the community.

A market analysis study of the grocery sector by Bird, cited by Scott (1970), found that: (1) the market share of cooperative stores increased with the age of client housewives and declined with lowering social status, (2) there was a positive correlation between increase in the market share of multiple stores and youthfulness and middle class housewives, and (3) independent stores appealed more to young and old upper-

income groups than the middle aged group (Scott, 1970, pp. 64-66).

Consumer Income

While population and types of central functions have been found to influence the size and structure of the retail market, later studies also show that the levels of spatial income distribution have greater influence on the types and structure of shopping centers than population and types of functions (Jonassen, 1955).

Hayes and Schul's (1965) study of the effects of income on market structure in Greensboro, North Carolina, cited by Scott (1970), found that shopping centers in high income areas not only drew most of their sales from these areas, but also that the markets were more symmetrical in shape. Similarly, studies of selected U.S. cities by Boyce and Clark (1963) found that retail sales in most metropolitan areas were influenced by the "center of gravity income" rather than the size of the city or population density, thus collaborating similar findings by Jonassen (1955).

A study of upscale department stores in Cheshire, England, by Stone (1964) reported by Scott, 1970, also showed that even though the stores were located in a low-income neighborhood, most of its clients came from wealthy areas outside of the community. A similar

pattern of income effect was found for the lower-income areas. A study of consumer income on shopping centers in Middleton (low income area) and Street Lane (high income area) in England by Davis (1968) found that: (1) while shopping stores in low-income areas were few, they were more diversified and generally offered lower-quality merchandise than the stores in the high-income areas, and (2) more speciality and high-priced establishments were located in the high-income area than in the low-income area.

Cultural Factors

There have been numerous studies on the influence of culture on consumer shopping behaviors, including studies of blacks in the residential neighborhoods in many large U.S. cities and the contrasting shopping habits between the older, conservative Mennonites (local shoppers) and the "modern" Mennonites (urban central city shoppers) of southwestern Canada (Murdie, 1965; Ray, 1967; King, 1984).

Infrastructures

Market areas and structure also tend to expand where there are adequate facilities (physical infrastructures, public services, social institutions) and greater use of private transportation than public

transportation (Godlund, 1956; Stabler, 1987, pp. 225-241).

Competition

The competitive nature of retail and service activities has influenced the rate of growth, dispersion, and sometimes the failure of a number of these establishments. Competition has also significantly influenced the development, organization, and structure of the retail and service markets. However, while competition may have benefited the consumer in terms of variety of product selection, competitive prices, and convenient shopping facilities, it has also led to the contraction of trade areas and the failure of a number of small retail and service businesses. It has, in a number of places, created an imperfect environment which compelled a large number of retail businesses to operate with underutilized capacity, and were thus unable to maximize returns on investments (Lewis, 1945; Scott, 1970, pp. 78-89; Heibrun, 1981, p. 107).

Market Organization

Emerging from the competitive environment is the phenomenon of allocation of greater resources to the reorganization, restructuring and rationalization of retail and service activities and their physical establishments. Innovations in management, new

technology, lower delivery costs, and improved customer service and satisfaction have all led to market expansion, improved economies of scale, and profit growth for many of the large retail and service businesses. An analysis of economic activities of farming communities in Wisconsin by Shaffer showed that although some farmers could achieve higher agricultural output through efficiency, size and degree of monopoly of the market could be constrained by the economies of size, transportation costs, competition, and the level of market price consumers are willing to pay. Market competition is important because it improves the efficiency of the market system by mopping up excess profit area by creating what Shaffer termed a "regular hexagonal market area" (1989, pp. 125-26).

Retail and Service Market Organization

Organization of the retail market has experienced significant changes since the middle of the twentieth century. Changes in spatial population demographics, consumer mobility, and the socioeconomic characteristics of trade area population, have all influenced size, structure, and organization of the retail and service industries. Changes in consumer behavior, from single purpose to multipurpose shopping, were also reflected by

the hierarchical changes in central place population (Mulligan, 1984, pp. 53-54).

Retail and service outlets have evolved from small, single, specialized function units (i.e., drug stores, tailor, candle makers, etc.) serving sparsely dispersed rural population to concentrated medium to large multi-function supermarkets, discount stores, and retail chain stores in mid to large urban metropolitan cities (Hartley, 1975, pp. 22-26).

Most of the organization of modern retail establishment has occurred as the result of improved technology in retailing, service delivery, changing economic base of the national economy, increase in consumer disposable income and lifestyle, growth in population concentration in urban-suburban axes, and improved modes of inter- and intra-metropolitan transportation. Efforts by retailer to take advantage of the changing opportunities demanded organizational restructuring of the retail establishments into larger operations of optimum size to achieve economies of scale and maximize return on investment. The modern retail market is one that has emphasized planned shopping centers located close to highway intersections with adequate parking lots and also close to the urban market (Berry, 1967, p. 56; Stabler, 1987).

There seems to be a consensus in the literature that the broad classification of retail organizations can be broken down into three major categories: (1) the consumer cooperative stores, (2) the multiple/chain stores, and (3) the interdependent stores (Dawson, 1979, pp. 150-51; Hartley, 1975, p. 28). Scott's study of retail activities in Europe and the United States found that the retail categories were defined differently on each continent.

Consumer cooperative stores are relatively limited in scope in the United States as compared to other industrialized nations. Multiple stores (comprised of many retail stores) are a common phenomena of the capitalist economies. The independent retail stores form the largest, single establishment of retail organizations, often small in scale, and most often managed directly by the owner(s) of the establishment(s). A great number of these independents are specialized goods stores (Dawson, 1979, p. 152).

Although efforts to achieve economies of scale have been the primary motivation for reorganization (rationalization and integration) of retail establishments into major categories, not all operations in these categories have achieved economies of scale. Multiple store organizations, however, have been most

successful in achieving economies of scale because of (1) centralized, large-scale buying and decentralized, standard selling systems, and (2) stocking specialized functions based on vertical and horizontal integration of retail outlets and strategic business locations (Scott, 1970, p. 47; Hartley, 1975, pp. 28-32). Ironically, the study by Mueller and Garoian, reported by Scott (1970) found that most of the growth by multiple stores has been in the slowest-growing cities in the U.S. (p. 82).

Department Stores

Most department stores have enjoyed economies of scale due to horizontal and vertical integration of their store's operations, thus enabling them to engage in large-scale selling and small-scale buying. These integration measures have helped the growth of these stores into department store chains (Scott, 1970).

Independent Stores

As predominantly grocery outlets, most have not had as much success (as other categories) because members have not been very homogeneous. The independent organizations that achieved economies of scale through integration did so either by establishing close network relations (engage in special discount purchases and support services with wholesalers) or by merging into voluntary chains (Scott, 1970).

Multiple Stores

The organization and structure of multiple stores vary depending on the location and level of the center in the hierarchy of places and the order of functions (low or high), it provides its customers. For example, in large, urban centers, multiple stores are known primarily for nonfood merchandise, especially clothing, shoes, and related materials, as main product lines. But in nonurban areas, they (multiple) concentrate more on grocery merchandise. Multiple stores also tend to locate in areas with heavy pedestrian traffic (Scott, 1970, p. 46). A Baltimore study, cited by Scott, also found that while multiple stores more often locate in places of moderately dense population, independent stores tend to locate in both densely and sparsely populated areas. In spite of the diversity among these categories of stores, their development, organization, and location have reflected spatial population distributions. The need for proximity to both the city and suburban population has led to their location at urban peripheries or convenient central centers that provide adequate customer shopping convenience and facilities (Scott, 1970).

City Size, Structure, and Functions

A city's size as defined by population density and type of market demands also influence the structure

of retail businesses. Retail, as a service function dependent on the trade area population and income level, does not tend to grow faster than the area population served (Nelson, 1958, pp. 5 and 7). A comparative study of trade types and town size cited by Scott (ref. Hall, Knapp, and Winsten, 1961) showed varying ratio correlations between the size of cities and special retail functions, i.e., an inverse relationship between large cities (500,000 people) and food trade--but the highest ratio correlations were found between clothing stores and medium-size cities. The study did conclude that speciality stores in the U.S. have a higher ratio in places of greater distance, lower population density, and high per capita income (Scott, 1970, pp. 47-49).

Traditionally, a city's functions have included the collection, distribution, and serving of internal or periphery areas (Siddnall, 1961, p. 124). A city of regional status has the dual responsibilities of providing retail and service functions to meet regional and local markets. The structure of such markets tend to reflect regional and local market demands. Proudfoot (1937) reviewing studies of urban land used for retail purposes in nine U.S. cities (Chicago, Philadelphia, Cleveland, Atlanta, Des Moines, Washington, New York, Baltimore, and Knoxville) came to the conclusion that most major U.S. cities in general have five forms of

retail functional structures: (1) the central business district (CBD) characterized by a concentration of shopping goods stores and the intra-city transportation network which make the central business district accessible to customers from all parts of the city, suburbs, and peripheries, (2) the outlying business center which, although similar in character to the central district, is more restricted to its immediate trade areas and has more convenience stores, (3) the principal business street which is characterized by a concentration of shopping and specialty stores (e.g., men's and women's clothing, furniture, jewelry), more large department stores, and some convenience stores, (4) the neighborhood business stores which are more often oriented toward their primary customers (neighborhood residential) and attracting customers from walking distance, frequently comprised grocery stores, meat markets, fruit and vegetable stores, convenience stores, shopping goods stores, etc., and (5) the isolated store cluster which is similar in structure and characteristics to the neighborhood stores in terms of product offerings, but is often located at the periphery of the city (Proudfoot, 1937, pp. 425-42).

A similar study of business patterns focused on a succession of land uses in Chicago as a regional center. The study showed how various land uses have influenced

the structure of retail functions within the hierarchy of Chicago's metropolis. The hierarchy manifested three major spatial features: (1) the core of the city provided the highest threshold central functions for regional and local needs, (2) the intermediate areas offered mixed regional and community level functions, while (3) the city fringe offered personal service stores for neighborhood needs (Berry, 1967, p. 51). This classification collaborated a similar classification of retail and service centers in Calgary, Canada, by Boal and Johnson (1965, pp. 156-68).

Public Policy

Often not given adequate attention in the discussion of spatial distribution patterns of retail and service functions is the enormous influence of government public policy/regulation. In a free market economy, there is always the tendency to underestimate the direct and indirect ways in which economic activities (retail and service inclusive) have been shaped by local and nonlocal government policies and regulations. Government regulations such as zoning laws, building permits, and fiscal and nonfiscal economic development policies (i.e., cost reductions, capacity improvement, etc.) are some of the public tools used by city government to regulate the

number, size, type(s) and location of retail and service businesses (Scott, 1970, Bowman, 1987, pp. 54-55).

Changing Patterns of Retail Market Environment

Changes in the pattern of retail markets came with the postwar developments. Construction of inter-state highways, government loans for single family housing, and a high ratio of automobile ownership, have facilitated the growth of suburban settlements and population movement from the city to the suburbs. With the shift of large, wealthy, urban population to the suburbs, there was also a movement and restructuring of retail markets to where the wealth is (Mitchelson and Fisher, 1987, p. 51). The changing market environment is confirmed by Berry's study of business areas in Iowa which found that: (1) as one moves from county level to city level, business structure becomes more complex, and (2) regional cities tend to have larger and more complex highway-oriented shops, business ribbon development, and other types of specialized consumer areas (Berry, 1967).

Competition

Competition has perhaps been the most potent factor influencing the patterns of the retail market. Easy entry into the retail market has led to the growth of new retail and service functions and the flurries of innovation in retail and service technology. The need to

stay ahead of competition has resulted in the growth of specialized, retail and service functions (e.g., discount stores, mail order services, credit exclusion services, automatic vending machines, etc.). Competition has either forced retail outlets to disperse in search of profitable trade areas, or to cluster into locations where they share the same trade areas and try to maximize the benefits of economies of scale along with the agglomeration economies provided by the environment. But the ultimate choice of location of a retail/service establishment is contingent on the type of trade, ownership, and nature of the market (Scott, 1970; Dawson, 1979, p. 152; Applebaum and Cohen, 1961).

The proximity between cities of the same or higher order of functions intensifies competition, thus resulting in the loss of share of sales by either of them. A study by Boyce and Clark found that the amount of sales in the central business district of Baltimore was affected by its proximity to Philadelphia and Washington, D.C. (1963, p. 193). Proximity influences not only sales, but as Hodge's study of trade centers of Saskatchewan (the Great Plains) found, the population density of small trade areas also tends to decrease with increasing proximity to larger trade centers (Hodge, 1965, pp. 97-100; Boyce and Clark, 1963, p. 193).

Consumer Mobility

As a retail market tends to seek consumers, so also consumer mobility influences the type and patterns of retail markets since consumer behavior varies with the type of retail function and levels of central place hierarchy. From these discussions and studies, it is evident that the development and distribution of modern organizational structure of retail and service market environments have been influenced by changes in the socioeconomic structure of the society, rising levels in personal, disposable income, changes in consumer tastes and lifestyle, increasing consumer mobility, increased automobile ownership ratio, changing age structure, competition, entry of more women in the labor force, and the outward shift of population from inner-urban centers to the suburbs (Scott, 1970, pp. 80-83; Bowman, 1987).

Application Models in Retail Markets

Population, income, and competition, as was previously discussed, are among the primary forces that not only motivate development and growth of retail activities, but also determine the function type, location, pattern, and scope of retail activities. The central place theory pioneered by Christaller (1966), Losch (1940), Galpin (1915) and subsequently advanced by Berry et al. (1958) has provided an explanatory basis for

understanding spatial interdependence and patterns of consumer distribution and retail activities.

Application models associated with analyses of retail and service markets have directly or indirectly relied on central place and location theories as is evident in the following key models.

Retail Gravitation Model

The development of early gravitation models was in response to two areas of need: (1) town planners who were engaged in establishment of new shopping centers and shopping facilities, and (2) social scientists in search of a verifiable theoretical base for understanding the fundamental relationships within urban structures (Scott, 1970, p. 168).

Developing a model for analyzing the retail market and its spatial requirements demands a sound knowledge of spatial distribution of consumers and their shopping behaviors. The retail and service gravitation models were, therefore, expected to provide the analytical tool for understanding the geography of retail and service markets and consumer distribution patterns. The gravitation models are essentially based on measures of how factors of population, employment, income, total sales, retail space, and distance (miles, time, and travel costs) influence consumer purchasing behavior or

interactions (Carruthers, 1962, pp. 3-27; Shepard and Thomas, 1980, pp. 20-30; Shaffer, 1989, pp. 143-46).

The models operate on the broader thesis that: (1) interactions between two population centers vary directly as functions of population size and distance between two centers, (2) there is a positive correlation between large population centers, (3) there is an inverse relationship between distance and level of attraction by centers, and (4) at breaking point where there is competition between two trade centers, attractions of customers by both is expected to be the same. Essentially, the gravitation models deal with the reaction of customers to size and accessibility of shopping centers. The models also provide an inexpensive method of determining market areas based on population size, number of economic functions of the centers, and distance between centers (Huff, 1961, pp. 19-28; Scott, 1970; Wagner, 1974, pp. 30-34; Shaffer, 1989, pp. 144-49).

The gravitation formula is expressed as:

$$I_{ij} = K \frac{A_i^a A_j^b}{D_{ij}^c}$$

Where:

I = expected interaction between places i and j

Ai and Aj = size of places i and j

Dij = distance between i and j

K = constant

a, b, and c = estimated parameters for the gravity model and type of economic activities.

Source: Adopted from Shaffer, 1989, pp. 144-45.

Laws of Retail Gravitation

Although the law of retail gravitation was originally used for the study of population migration in the 1800s, Reilly (1931) was the first to apply it to the study of retail market areas. Reilly's law postulates that although people are attracted by large places, willingness to shop in such places is influenced by (1) travel distance (miles) and the cost consumers are willing to assume to travel to shop, and (2) the population size and number of central functions (attractions) in each place and the distance between places.

Reilly's application of the model to study market areas involved the analysis of 255 cases of various city and town networks in Texas. A review of these market

areas by Scott (1970) showed that "the exponent of the population as the first power, and the exponent of the inverse distance is nearer the second power than to any other power" (p. 169).

Reilly's second study was developing a "Breaking Point" equation to delineated total market areas for the towns of Atlantic and Red Oak based on functions and city hierarchy. Reilly, however, cautioned that although the "Breaking Point" equation is more appropriate to cities and large regional centers, it may also be applied to rural areas (Berry, 1967).

The "Breaking Point" Formula

$$\text{Consumer's travel distance between shopping places D and E} = \frac{\text{Distance (miles) between D and E}}{1+\sqrt{\frac{\text{Population of D (large community}}{\text{Population of E (smaller community)}}}}$$

Sources: Berry, 1967, pp. 40-41; Hustede et al., 1984, pp. 24-25.

Reilly's model, however, has been criticized because of its emphasis on exponent and restriction to exponent values of population and distance, especially when exponent of distance may not be positively related to population size and distance. It assumes homogeneity of two communities, except for size, and also does not seem to provide for the effects of differences in

patterns of consumer demands. Reilly's gravitation model has also been criticized for its limited theoretical content and its inability to provide persuasive explanations for the regularities observed. Isard (1960), one of the strong proponents of Reilly's gravitation model, also criticized the model as not providing a valid basis for projection (Isard, 1956; Scott, 1970, pp. 169-71; Shaffer, 1989, pp. 147-148). Illeris' study, cited by Scott (1970), using the gravity model to study the trade areas of central places of different hierarchies and distances in Denmark, has, however, found that good or improved roads can reduce the size of the distance exponent. Wagner (1974), in an attempt to validate Reilly's law and to effectively determine trade areas using the Breaking Point formula, studied trade areas in Springfield and Columbus, Ohio. The study found that Reilly's law neither accurately delineated trade area of both centers nor did the break point show a difference in the number of customers attracted to both competing trade centers (Wagner, 1974, pp. 32-33).

Physical Planning

Shopping Centers

Reilly's model has also been applied to the establishment of planned shopping centers in suburban

areas. The development of traditional and new suburban centers was based on estimates of center population trends and profiles (i.e., purchasing power income structure, expenditure by central functions), accessibility to stores in terms of competition, customer behavior, and quality of highway networks, store location characteristics, and mixed stores concentration. The incorporation of these dimensions into planned shopping centers is expected to maximize external economies of scale (Scott, 1970, p. 172).

Modification of Reilly's Model

In an attempt to bridge the gap between Reilly's gravitation model and consumer behavior, Huff (1964) developed a modified gravitation model based on the cognizance that the amount of increased sales generated by the attractiveness of a place could be limited by family size, income, etc., even when there are increased retail facilities or shorter distances. Huff's modified model was, therefore, to estimate the fixed total sales or market share that a place can control based on the probability of a consumer traveling from his/her place to another location to shop given a number of other shopping centers. Establishing such a probability has made it possible to generate an estimate for a fixed number of customers (sales) from a defined range of potential

customers. In short, the model gives more emphasis to distance rather than the attraction of a place (Huff, 1964, pp. 36-37; Shaffer, 1989, pp. 145-46).

(a) Estimating Market Share

$$P_{ab} = \frac{\frac{S_b}{D_{ab}}}{\sum_{i=1}^{n} \frac{S_b^e}{D_{ab}^e}}$$

(b) Estimating Fixed Number of Customers

$$Eij = PijCi$$

Where:

(a) P_{ab} = the probability of consumer at place a and shopping in place b

S_b = size of shopping area and number of available goods and services

D_{ab} = travel distance or time from place a to place b

n = opportunities to alternative shopping places

e = factor measuring the influence of distance/ travel time on different function (goods and services) levels

(b) Eij = expected number of potential customers from place a to shopping center b

Ci = number of potential customers

Sources: (a) Berry, 1967, p. 42.
(b) Shaffer, 1989, pp. 146.

The Haydock Model

The Haydock model, developed at the University of Manchester in 1964, used a complex analysis of the shopping center system and the experience of Reilly's law to develop a proposal for an out-of-town regional shopping center in Haydock, England. The model used 21 major retail and service functions to classify centers into three groups based on retail sales instead of population and travel time. The result of the study revealed significant cash flow expenditure patterns for the three groups and provided information on the hierarchy and structure of the centers. Although the Haydock model made major contributions to new approaches in retail location analysis along with the identification of shopping center systems, the major weaknesses are its basic assumptions of: (1) closed system of shopping center networks, (2) subjective categorization of the shopping centers, and (3) strict application of the hierarchy principle and the use of inadequate statistical data (Scott, 1970, pp. 174-77).

Other studies cited by Scott which drew on the gravitation model are: (1) the South Bedfordshire study (1967) which used store floor-space as factors of attraction, travel time as a distance factor, and allocation of expenditure by convenience and durable goods; (2) Black's model (1966) was used to study

shopping systems around Oxford by using variables of total sales and straight-line distance to predict land use and traffic flow. The basic assumption of Black's study was that the maximum distance consumers are willing to travel to a shopping center is 25 kilometers (15 miles); (3) Lewis and Trail (1968) also looked at opportunities (e.g., parking and other shopping facilities) as attraction factors for consumers to shop in a particular center. Lewis and Trial have argued that the opportunities to attract customers will depend on the volume of opportunities, the distance of travel, and the intensity of competition among consumers; (4) the Harris Equilibrium model based on the concept of intervening opportunities was used to study the Penn-Jersey transportation project. The model was based on the assumptions that: (a) shopping trips and shopping opportunities are influenced by different behavioral factors, and (b) that these factors also vary by spatial distribution of opportunities, consumer behavior, population thresholds, and economies of scale of shopping centers (Scott, 1970, pp. 178-81).

Other Models

Market Potential Model

Drawing on the experience of Huff's model, Lakshmanan and Hansen (1965) developed the market

potential model to study market centers in Baltimore. The model was predicated on the thesis that in a metropolitan region with many zones, competition of each zone for consumer expenditures is directly proportional to the size of the center, amount of space for shopping goods, consumer travel time, and the number of competing amenities in each zone.

The utility of the model is its applicability to situations with more than two market centers, adequacy for analyzing overlapping market areas; and in evaluating alternative strategies (Scott, 1970, pp. 175-80).

Sales Potential Retail Model

The Sales Potential Retail Model computes potential local sales based on estimated state average and per capita sales adjusted by the ratio of local-state per capital income (Shaffer, 1989).

Trade Area Capture (AC) Model

The Trade Area Capture Model analyzes the proportion of the population shopping locally, In estimating the size of the retail market, calculation is based on the number of people for whom the purchase is made (e.g., a purchase of either father/mother of a household). All members of the household are counted individually. The TAC model is another way of estimating

potential retail sales by measuring total purchases made by local and nonlocal residents.

A basic assumption in the application of the TAC model is that local consumer tastes and preferences are the same across the state. The formula for applying the trade area capture is:

$$TAC_{jk} = \frac{AS_{jk}}{(ASsj/Ps)\ (Yc/Ys)}.$$

Source: Shaffer, 1989, p. 152; Hustedde et al. 1984, p. 56.

Where

TAC_{jk} = Trade Area Capture for a central function j measured in terms of customers in city k

AS_{jk} = Annual retail sales for a central function j in city k

AS_{sj} = Annual retail sales for a central function j in the state

P_s = Total state population

Y_c = County per capita income

Y_s = State per capita income

The TAC model uses Reilly's gravitation formula to calculate sales area capture. If the value of the Trade Area Capture is greater than the trade area population, either the city is attracting outside clientele or the pattern of local residents' spending is, on the average, higher than the state spending average.

Conversely, if the trade area capture is less, either the local residents' spending levels are less than the state average, or the city is losing its potential customers (Shaffer, 1989; Hustedde et al., 56-57).

Among the major strengths of the model is its appropriateness for estimating trade area capture for retail and service functions. Considered a major weakness of the TAC model, however, is that unlike most trade area models expressed as function of population and distance, the trade area capture incorporates income and expenditure but not distance factors (Shaffer, 1989).

Pull Factor

Augmenting the capability of the TAC model is the pull factor. The pull factor calculates the proportion/ratio of the TAC to the city's population. It also measures the degree to which a city attracts nonlocal customers. The pull factor has the advantage of being able to neutralize the influence of changes in a city's population with regard to the city's power of attraction. The TAC and the pull factor, however, provide a valuable measure for estimating the number of nonlocal residents shopping locally, and the different trends of local demand (Shaffer, 1989; Hustedde et al., 1984).

The use of the trade area capture and pull factor is, however, constrained by: (1) the difficulty of obtaining up-to-date data. Most available data are restricted to the U.S. census of retail trade and service industries published every five years, (2) the relevant market data in most cases are available for small, mid- and large-metropolitan places but not for populations of less than 2,500, (3) the basic assumption of uniform consumer tastes and preferences and uniformity of buying behavior across the state, and (4) the availability of fixed types of goods and services with varying quantity (Shaffer, 1989, pp. 152-56).

Location Quotient Model

While all of the previous models focus primarily on internal markets (retained sales and potential retail sales) in the city or community, the location quotient looks beyond the city trade area at those nonlocal functions that are patronized locally. In other words, the location quotient analyzes goods and services currently purchased from outside the community/city by local residents which could possibly be provided locally (import substitution).

The location quotient uses local-national employment ratios of an economic sector as indicators of potential for import substitution. However, the use of

location quotient to determine import substitution potential must examine local and accessible sources of supply to ensure that there is viable market locally for the particular good or service (Shaffer, 1989).

Two different studies by Isserman (1977) (estimates of regional economic impact) used location quotients to measure the ratio of local employment to national employment in a particular sector.

Location quotient is expressed in the following formula:

$$LQ = \frac{\%\ \text{Local employment in sector X}}{\%\ \text{National employment X}}.$$

Sources: Shaffer, 1989, p. 154; Hustedde et al., 1984.

A value of 1 is an indication of a community's self-sufficiency in the supply of a particular good or service. But a measure of less than 1, and if other close cities/communities have at least a value of 1, would mean that a place has less employment in that particular sector than the national average, thus an indication of potential market for the particular good or service.

In a related approach to the location quotient model, Murray and Harris (1978), in their study on commercial development of the Turtle Mountain Indian

Reservation, used population-employment ratios to identify potential import substitution trade functions for the Reservation.

Population-Employment Ratio Model

Unlike location quotients, population-employment ratios for a city are interpreted in comparison to other neighboring cities/communities. A high population-employment ratio means that there are more people to each worker in a particular industry than the average, thus an indication of potential for increased employment opportunities. The advantages of the population-employment ratio are: (1) its reliance on local data which are more relevant to the local situation, (2) it avoids the computational subjectivity of the location quotient which may often distort the actual situation especially in a city where there are few dominant employers, (3) the use of the entire population, rather than only the employed, as more reliable, particularly in a city that has a larger younger and/or older population (Shaffer, 1989).

A comparative estimate by Shaffer (1989) of import substitution for furniture retailing in five cities found that location quotient (LQ) and population-employment ratio (PE) can be used independently to identify import substitution for a particular

good/service in a city. Both can also be used to reinforce import substitution estimates for goods and/or services in a city. For example, a location quotient of less than 1 and high population-employment ratio for a particular good or service in a city confirm strong import substitution potential for the city (Shaffer, 1989, pp. 155-560.

Retail Compatibility Model

A major contribution to the theory and practice of scientific retail location was Nelson's (1958) Retail Compatibility Model. The model has had significant influence on retail location decisions that seek to achieve greater volume of business and develop stable patterns of retail business that will benefit the entrepreneur and the community.

Nelson defines compatibility as the degree to which two businesses interchange customers. His principle of retail compatibility stipulates:

> Two compatible businesses located in close proximity will show an increase in business volume directly proportionate to the incidence of total customer interchange between them, inversely proportionate to the ratio of the business volume of larger stores to that of the smaller store, and directly proportionate to the sum of the ratios of purpose (visit to store as major purpose of shopping trip) to total purchasing in each of the two stores (1958, p. 66).

In testing the compatibility relationship, he used the following formula:

$$V = I\ (Vl + Vs) \times \frac{Vs}{Vl} \times \left(\frac{Pl}{Vi} + \frac{Ps}{Vs}\right)$$

Where

V = increase in total volume of two stores

Vl = volume of larger store (total purchasing)

Pl = purposeful purchasing in large store

Vs = Volume of small store (total purchasing)

Ps = purposeful purchasing in smaller stores

l = degree of interchange

Source: Adopted form Nelson, 1958, p. 67.

Using this formula to analyze a large number of business districts and shopping centers (and more than 10,000 individual shopping trips), Nelson found that: (1) there is a direct relationship between the rate of interchange between two businesses and their volume of business, (2) that the high degree of compatibility between two adjacent businesses leads to a greater volume of business than if they were located in separate locations, and (3) that the complementary nature of business, or the competitive product lines which they carry may result in their cumulative attraction to customers and thus account for the high compatibility.

In addition to the advantages (stable retail pattern, increased business volume, etc.), Nelson's model facilitates the achievement of efficient interchange of business and grouping of compatible functions. By demonstrating the advantages of locating compatible functions together, the model has become the basis for municipal zoning of retail districts (Nelson, 1958, p. vii).

Regression Analysis Model

The regression analysis model has been widely used in measuring relationships and estimating population thresholds and identifying hierarchical levels of urban center and functions.

Berry and Garrison (1958) used regression analysis to estimate population thresholds for retail functions and established hierarchies of central places and functions. In a study of establishments of central function in small towns of Washington, Berry and Garrison analyzed 52 functions in six towns by first measuring the relationship between population size of a central place and the number of its functional units using the following equation:

$$P = A\ (B^N)$$

Where

P = population size of a place

N = number of establishments for a function

A and B = coefficients to be calculated from available information

Source: Adopted from King, 1984, p. 57.

Based on the population size and number of establishments for each of the 52 functions, this equation was used to calculate the regression coefficients for A and B. Coefficients with a value of 1 were used to calculate the expected value for P (population of a place). The population estimates obtained were then taken as the threshold or average level of population required to support one functional establishment. The values of the threshold were then used to rank functions and statistically determine hierarchical levels (King, 1984, pp. 54-57, cited source, Berry and Garrison, 1958).

Recent Empirical Studies

Recent empirical studies and ongoing economic development efforts in some U.S. cities by the Council for Economic Action Inc. (CEA), Boston, have focused on the development of a method (Urban Business Identification Model (UBI) for identifying levels (equilibrium, over- or under-supply) of business functions in targeted urban

areas. The Urban Business Identification (UBI) Model was developed on the principle of central place theory and predicated on the basic assumption that levels of retail, wholesale and service activities are similar in cities of similar characteristics.

Identification Methodology usually starts by selecting seven cities (including the city of specific study) of similar profiles (population and income). The total number of establishments in each business industry for each of the cities is obtained. An average figure is derived by dividing the total number of establishments in each industry by the number of cities (7). The average comparison area figure obtained is then taken as the standard or expected level of business function for each of the cities. If the actual number of business functions (establishments) in a city is higher than the expected (or average comparison area figure), then the function is oversupplied. Similarly, if the actual number of business functions is less than the expected number of functions, then that function is considered to be undersupplied.

While the Identification Model (UBI) appears to have significant success in identifying levels of business functions in targeted cities, its major drawbacks are: (1) the selection of cities for comparative analysis lacks a scientific base, (2) the identification of the level of business function based on simple averages could be

misleading because it (method) does not account for the effects of extremely large or small numbers of establishments on the final data (average comparison average), (3) theoretically, UBI is supposed to incorporate relevant endogenous and exogeneous factors in the identification process, but no information of what or how exogeneous factors have been or should be incorporated in the process was addressed, and (4) while population and income are very important threshold factors, equal consideration should be given to characteristics and effects of function type (basic and nonbasic) and government regulations (e.g., zoning laws, building permits).

However, while the UBI model may not have made any significant contribution to the advancement of theory, thus far, it seems to succeed in the identification of small business development areas, generation of employment opportunities, and wealth creation in the targeted urban areas and where the model has been applied (Council for Economic Action, Inc.).

Summary

In summary, studies reviewed in this chapter show the importance of central place and location theories as a primary base for understanding the geography of market centers, the distribution patterns of retail and service

activities, and the economic behaviors of producers/ suppliers and consumers. The central place theory has traditionally been used to classify a place in relation to its role as a collection, production, and distribution center of retail and service functions within the community and its tributary areas. Location theory is essentially an integrative component of the central place theory, given that centrality of a location in relation to the market is a primary consideration in the location of any business.

Underscoring the central place and location theories are the concepts of "threshold" and "range." Both are determinant factors in the type(s) and level of supply and demand of retail and service functions in a community. The review also examines the evolutionary development of retail and service industries from the rural, single purpose, specialized shops in sparsely populated farm settlements, to multipurpose shopping centers in towns, densely populated cities, and metropolitan areas. Trends and developments in the two industries have been largely influenced by changes in consumer demographics and shopping behaviors, modernization of physical infrastructures (interstate highways, intra and interurban road networks, etc.), improved retail and service technology, and convenient and attractive shopping environments.

Most of the empirical studies reviewed showed a positive correlation between the type(s), order level, volume and location of retail and service functions to population size, income level, and consumer travel distance. It is, therefore, not surprising that most of the theoretical models have primarily focused on estimating potential sales (local and export and import substitution) for business functions and the community. Boston's Urban Business Identification (UBI) Model is currently being used to determine levels of business functions as part of community economic development efforts in distressed cities. Although the model provides a new approach to identifying business opportunities, it has neither been validated, nor has it gone far enough in contributing to the advancement of theory in community economic development. There is, therefore, a need to develop a reliable scientific model that identifies business opportunities by predicting levels of retail and service functions in the city of community.

A major limitation of the above theories is that none of them provide for the potential influence which race, crime rate, discriminatory lending practices, excessive insurance coverage costs, or local property tax may have on local investment decision. These factors could have significant negative effect on the patterns of consumer behavior, business location decisions, and

consequently, the level of retail and service functions in a city or community.

Chapter III focuses on the model, specifies the variables (predictor and response), formulation of hypotheses, methodology of data collection, and data analysis.

CHAPTER III

RESEARCH METHODOLOGY AND THE DESIGN OF THE STUDY

In this chapter the Market Opportunities Identification Model in retail and service industries is presented. The variables are defined, hypotheses stated, and data collection and data analysis presented.

The model used in this study is defined as the Market Opportunities Identification Model (MOIM). The model is an attempt to use a set of six socioeconomic measures as independent variables to predict the level of supply of 10 retail and 10 service functions in 80 Michigan cities. The model uses multiple regression analysis to generate residuals as measures of level of supply. The independent variables are city population, per capita income, unemployment, proximity to a major city, level of economic distress, and county per capital income. The dependent variable is the number of establishments of each retail and service functions within the city limits. The residual was computed as the difference between actual number and the predicted number of retail and service establishments in each of the

retail and service functions in each city. The residual is used as a measure of the supply level of each of the retail and service functions.

The Model: Market Opportunities Identification Model in Retail and Service Industries in Michigan

The model has attempted to predict levels of function supply for 80 cities in Michigan. The procedure used multiple regression to generate residuals for 10 retail functions and 10 service functions for each of the cities. In predicting levels of supply of retail and service functions stated in Hypotheses 1, 2, 3, and 4 (below) the method of investigation was multiple regression.

Multiple Regression Model

$$Y_i - \hat{Y}_i = B_0 + B_1x_{1i} + B_2x_{2i} + \cdots B_6x_{6i} + e_i$$

Where:

Y_i = actual level of retail or service function

$\hat{Y}_i$ = predicted level of retail or service function

$Y_i - \hat{Y}_i$ = residual level of a function

B_o = a constant common to all observations (cities)

x_{1i} = city per capita income

x_{2i} = population of the city

x_{3i} = unemployment level for the city

x_{4i} = level of economic distress

x_{5i} = proximity of the city to a major city

x_{6i} = county per capita income for the county where the city is located

B_j = for j = 1, 2, 3, 4, 5, and 6 is the regression coefficient for $x_1 \ldots x_6$, respectively

e_j = the random error term, where E_i $N(0, \sim\sigma_e^2)$.

Attempts to validate the model included:

1. correlation of scores generated by the model and the estimates of levels of supply of retail and service functions given by local government economic development officials.

2. correlation of scores generated by the model with scores of trade area capture and market area pull.

Hypotheses and Variables

The main objective of this study is to develop a model using six independent variables to predict level of supply of retail and service functions in 80 Michigan cities.

In pursuit of this objective, fourteen research hypotheses are tested. The hypotheses are intended to: (1) determine the possibility of developing a predictive model and validate it; (2) determine the type of relationship between (a) city's level of economic distress and (i) the level of supply of its retail and service functions, (ii) its staff and budget allocation to promote economic sectors, (iii) classification of economic development mission, and (iv) the ranking importance of sectors in achieving economic development mission; (b) relationship between a city's staff and budget allocation to promoting economic sector and the level of tax revenues and employment generated by that sector.

Based on the assumption that retail and service activities are fast becoming the primary sectors of the city economy, levels of retail and service functions will logically have direct impact (positive/negative) on the

economies of cities. The following hypotheses and the choice of variables were based on review of relevant literature, theories, and empirical models covered in Chapter II. The rationale for each hypothesis is also presented:

Hypothesis 1. The actual supply levels of retail functions can be predicted significantly by city population, unemployment, per capita income, county per capita income, proximity to a major city, and level of distress.

Hypothesis 2: The actual supply levels of service functions can be predicted significantly by city population, unemployment, per capita income, county per capita income, proximity to a major city, and level of distress.

The above hypotheses were based on the analysis of patterns of growth in the levels of retail and service functions. The hypotheses were, therefore, to determine whether or not the levels of retail and service functions can be significantly predicted from six independent variables (city population, unemployment, per capita income, county per capita income, proximity to a major city, and level of distress).

Hypothesis 3. There are statistically significant relationships between levels of supply of retail functions as perceived by the city's economic development officials and the residual levels of supply of retail functions generated by the model.

Hypothesis 4. There are statistically significant relationships between levels of supply of service functions as perceived by the city's economic development officials and the residual levels of supply of service functions generated by the model.

Hypothesis 5. There are statistically significant relationship between supply levels of retail functions and the level of economic distress of the city.

Hypothesis 6. There are statistically significant relationships between supply levels of service functions and the level of economic distress of the city.

Hypothesis 7. There are statistically significant relationships between level of staff allocation to economic sector promotions and a city's level of economic distress.

Hypothesis 8. There are statistically significant relationships between level of budget allocations to economic sector promotion and a city's level of economic distress.

Hypothesis 9. There are statistically significant relationships between size of sector staff allocation and the level of tax revenues generated by city's economic sectors.

Hypothesis 10. There are statistically significant relationships between sector budget allocation and the level of tax revenues generated by city's economic sectors.

Hypothesis 11. There are statistically significant relationships between level of staff allocations to promoting economic sectors and the levels of employment generated by the sectors.

Hypothesis 12. There are statistically significant relationships between level of budget allocations to promoting economic sectors and the levels of employment generated by the sectors.

Hypothesis 13. How a city classifies its economic development mission is statistically related to the city's level of economic distress.

Hypothesis 14. The type of economic sector a city ranks as important for achieving its economic development mission is significantly related to a city's level of economic distress.

The above hypotheses were based on the assumption that the perception of what retail and service functions are over- or undersupplied and a city's level of economic distress have significant influence on the allocation of the cities' economic development resources (staff and budget).

Measurement of Variables

The primary variables used in the study were defined as follows.

Level of Supply

The number of establishments per 10,000 population for each of the 10 retail and 10 service functions in a given city is the level of supply. The number of units, rather than the total dollar value of annual sales for each function, has been used to compute each of the retail and service functions because total dollar values were generally not available for some of the retail and service functions in smaller cities. The level of supply for each of the 10 retail functions and 10 service functions was measured in the following three ways:

1. Actual level of supply was defined as the number of establishments per 10,000 population in each retail and service area operating in the city. These

data were obtained from the Censuses of Retail Trade and Selected Service Industries in Michigan (1987).

2. Perceived level of supply was defined as the estimate of the levels of supply for each retail and service function given by local economic development officials.

3. Residual level of supply was defined as the difference between the actual number of establishments per 10,000 population and the number of establishments predicted for each city using multiple regression. A high positive difference between actual and the predicted number of establishments indicated that the function was oversupplied, and a high negative difference indicated that the function was undersupplied.

City Population

The population of a city was measured by the number of people living within the city limits. This measure was obtained from the County and City Data Book, 1987.

City Per Capita Income

City per capita income was measured by the gross income of the city divided by the city's population (County and City Data Book, 1987).

Proximity to a Major City

A dichotomous variable was created to indicate proximity to a major city. A major city was defined as any city of equal or greater size or higher per capita income. Proximity was given a value of 1 if a major city was within 15 miles and 0 if there was no major city within 15 miles.

City Unemployment Rate

The city unemployment rate was measured as the ratio of unemployed labor to total civilian labor force. Since the periods covered by this study were not census years, calculation of the unemployment ratio was based on the Census-share method of disaggregation based on 1970 and 1980 Censuses data (Bureau of Labor Statistics, July 1979).

County Per Capita Income

County per capita income was measured by the average income per county resident. These data were obtained from Michigan Statistical Abstract, 1987.

City's Level of Economic Distress

Distress was based on a measure developed by the U.S. Department of Housing and Urban Development. This measure assigned distress points to each city based on the following seven factors: (1) population growth

(lag/decline) between 1960 and 1984, (2) amount of poverty, (3) age of housing, (4) per capita income growth 1969-1983, (5) job lag in retail and manufacturing sectors 1977-1982, (6) rate of unemployment, and (7) the degree of labor surplus (U.S. Department of Housing and Urban Development, 1987; Bowman, 1987).

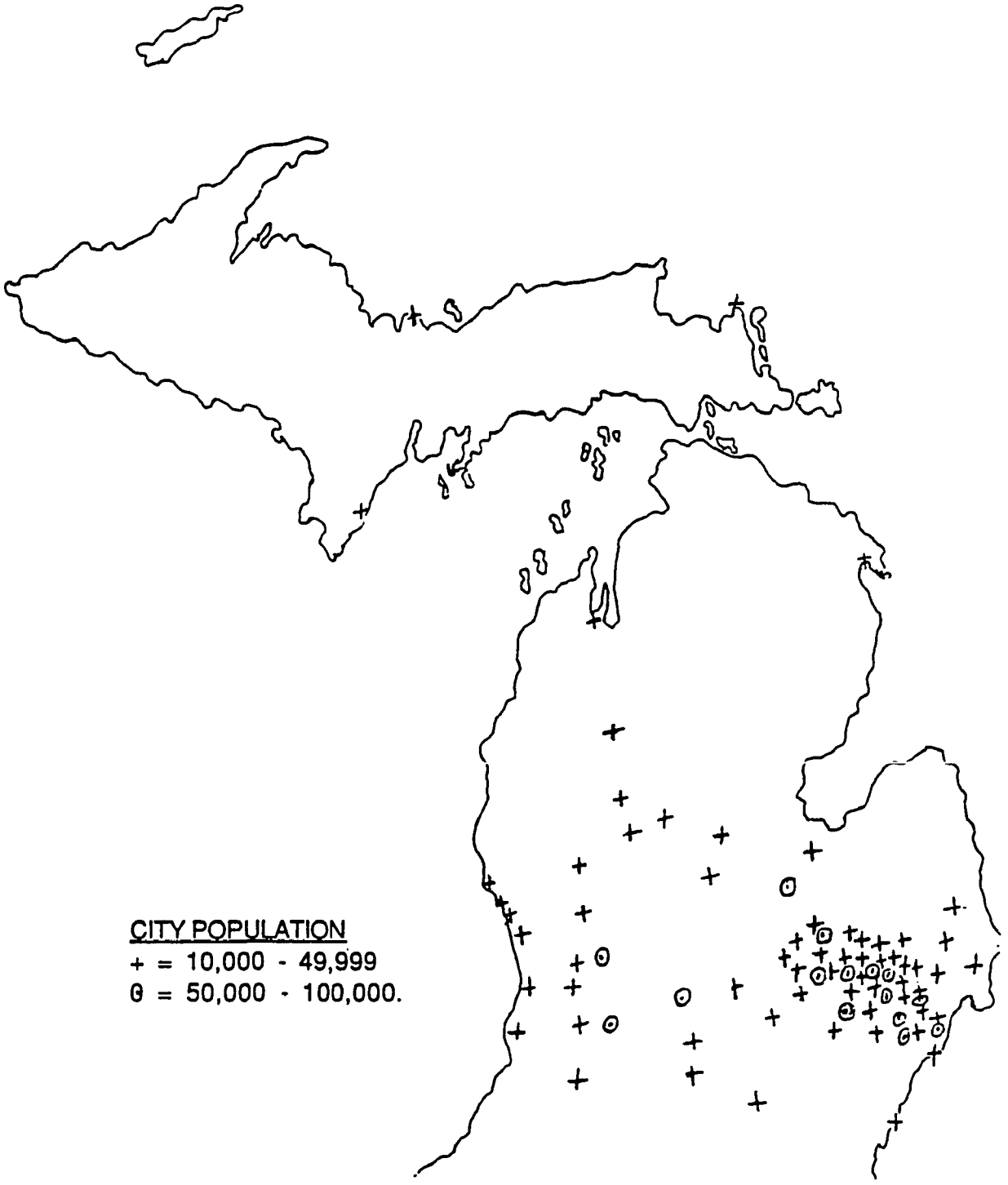
Population and Sample

The population for the study comprised 80 cities in Michigan with populations between 10,000 and 100,000 people. (See Figure 3.1 of Map of Michigan). The 80 cities had a population mean of 31,602 and a standard deviation of 21,074. The cities were chosen for the study for the following reasons: (1) previous studies have shown that the number of cities within the range of 10,000 to 100,000 population tend to grow rapidly, (2) they are generally more sensitive to economic fluctuations, and (3) they are often times more responsive to limited economic development efforts than larger cities. In view of the above considerations, it is, therefore, logical to expect that the number of cites within 10,000 and 100,000 populations will likely continue to increase.

The 80 cities were surveyed through self-administered questionnaires. Of the 80 cities surveyed, 41 responded to the mailed survey.

Figure 3.1

Michigan: Sample cities by size.



Instrumentation

The data for the second phase of the study were collected through a mailed survey instrument. The instrument was designed to survey city administrators involved in economic development in each city. The survey was primarily to find out whether there was any relationship between residual levels of retail and service functions statistically generated by the model and the supply levels of retail and service functions as perceived by the city officials surveyed.

The survey instrument contained 15 specific questions covering the following: (1) city officials' perceptions of level of retail and service functions in their cities, (2) the economic development mission of the city, (3) budget allocations for promotion of local industries, and (4) employment-tax shares of the economic sectors of the local economy.

Respondents were asked to provide information on: (1) their perceptions of levels of retail and service functions, (2) sectoral composition of the city's economic base, and (3) general comments/opinions on levels of retail and service functions not covered by the survey. A copy of the instrument is presented in Appendix A.

To ensure that the survey instrument collected the information for which it was designed, the

organization, structure, and clarity of contents of the survey instrument were pilot-tested among economic development officials, and survey experts at MSU (Center for Redeveloped Industrialized State, Technology Transfer Center, Resource Development), Wayne State University (Center for Urban Affairs), Michigan Department of Commerce (Strategic Fund Unit), Lansing Chamber of Commerce, and the city of Chelsea (Community Education).

Data Collection

The data that were used in the investigation were collected in two phases:

Phase One comprised secondary data on the dependent variables (retail and service establishments and dollar values) collected from U.S. Department of Commerce-Censuses of retail trade and selected services for 1987. Data for the predictor variables (city population, per capita income, unemployment, level of economic distress, proximity to a major city, and county per capita income) were collected from the County-City Data Book, 1987; Michigan Employment Security Commission (Labor market analysis, research and statistics division), 1987; Michigan Statistical Abstract 1987; U.S. Department of Housing and Urban Development, 1987; and Michigan State University Center for Redevelopment of

Industrialized States (CRIS). The data were gathered for all of the 80 cities studied.

Phase Two: data were gathered from local government economic development officials through mailed survey instrument.

Data Analysis

The study is based on data for the six predictor variables for 1987, surveyed opinion of local government economic development officials on level of supply of retail and service functions, and actual number of establishments in each of the 10 retail and 10 service industries for 1987.

The data were entered into the Michigan State University IBM 3090 mainframe, model 180, and were analyzed using programs from the SPSS-X, version 3.1, Advanced Statistics. Pearson correlations, multiple regression, analysis of variance (ANOVA), and Chi-Square tests were used for analyzing and evaluating the data. A level of .05 was the acceptance level of statistical significance used in all tests.

For this study the Multiple Regression Model was used. Since the primary concern was the collective, predictive power of the six independent variables, instead of including only the variables that were statistically significant in the model, all six

predictors were included in the final model. The inclusion of all predictor variables was based on the recognition that although all the predictor variables might not have been statistically significant, they were substantively meaningful to the predicted outcome of the model. This approach also maintained consistency across the twenty functions studied.

The dependent variable was the residual level of supply of retail and service functions. However, the residual would have different meanings in different sizes of cities. For example, in a very large city, an undersupply of five gasoline service stations would not indicate a very significant undersupply, while in a small city, a deficit of five gasoline service stations would be a very significant supply. The residual level of supply, therefore, was adjusted for differences in the sizes of cities by computing the residuals based on per 10,000 population. The multiple regression was used to generate a residual variable which has been used as a measure of level of function supply. The residuals generated by the regression were scores indicating levels of function supply derived as the difference between actual number and predicted number of establishments in each of the retail and service sectors. Positive scores indicated an oversupply of a particular function, and

negative scores indicated that a particular function was undersupplied.

Analysis of Other Hypotheses

Correlation analyses have been used in Hypotheses 3 and 4 to determine any statistically significant relationships between estimates of level of supply of retail and service functions given by local economic development officials and estimates of levels of supply of retail and service functions generated by the model. For Hypotheses 5, 6, 7, 8, and 14 analysis of variance (ANOVA) was used to determine any statistically significant relationships between levels of staff and budget allocations for the promotion of economic sectors and (a) the level of economic distress of the city, (b) supply levels of retail and service functions, and (c) the ranking of importance of economic sectors to achieve the economic development mission. For Hypotheses 9, 10, 11, and 12 correlation analyses were used to determine statistical relationships between staff and budget allocations and tax revenues, and employment generated by the city's economic sectors. For Hypothesis 13, the Chi-Square test was used to determine any statistically significant relationships between level of economic distress and a city's classification of economic development mission.

Limitations of the Model

Validity of the Model

There were difficulties in trying to validate this model because there was no tested method of directly measuring levels (equilibrium, oversupply, undersupply) of the retail and service functions. However, two methods were used to attempt to validate this model:

1. The residual levels of supply generated by the model were compared with the perceived levels of supply estimated by the local economic development officials.

2. The residual levels of supply generated by the model were also compared with the results of the Trade Area Capture (TAC) and the market area PULL scores for each city. TAC is an estimate of the number of customers buying from local businesses. The Pull is a measure of the ability of a community to draw sales from outside. It is the ratio of the trade area capture to the community population.

The major problems with the above methods are:

1. Estimates of levels of supply of retail and service functions given by local government economic development officials could be somewhat inaccurate for several reasons. They were largely based on subjective judgment, and they reflected the supply levels in 1990

instead of supply levels in 1987 for which the study data were collected.

2. The Trade Area Capture (TAC) and the area Pull factor assume uniform consumer taste and buying behavior throughout the state. Neither control for effects of distance, but are adjusted only for income.

The level of supply of retail and service functions was based on two-digit standard industrial classification code (SIC). The two-digit SIC represents major groups of retail or service industries. Because the prediction of supply levels of retail and service functions were based on major industry groups, the predicted supply levels might not have accurately reflected the actual supply levels of the subgroup functions. For example, a predicted oversupply level of automotive repairs, service, and parking functions may not necessarily mean that all three functions in the group had the same level of supply. Any one, or a combination of two of the functions, could be oversupplied, while the third could be undersupplied.

The model, however, does not provide for the effects of nonlocal market demands (exports and/or imports) that may distort the accuracy of the predicted levels of supply of retail and service functions within the city limits.

The use of unit instead of value ($) as a measure of level of supply of retail and service establishments does not compensate for the effects of establishment size as measured by the square footage. The presence of shopping malls or large multiple stores could reduce the expected number of retail and service establishments for a given city size while providing adequate services for the given market.

Summary

In this chapter the model was described, the design and methodology of the research were presented. The data, their sources, and methodology were also discussed. The relevant hypotheses and variables (predictor and dependent) were identified and defined. The research instrument used in the second phase (survey) of the study was also discussed. The statistical methods of multiple regression, Pearson correlation, analysis of variance, and chi-square that were used for data analysis to test the hypotheses and to develop the prediction model were identified and discussed. The limitations of the model were also identified.

In the next Chapter (Chapter IV), the data analyses will be covered and the findings of the research presented.

CHAPTER IV

ANALYSIS OF DATA

In the preceding chapters, problems, previous studies, and method of investigation were discussed. Chapter I identified the main problem and its importance for investigation. Chapter II reviewed relevant literature of previous works (theoretical and empirical studies) on the geography, distribution patterns, and related issues on retail and service industries. Chapter III discussed the research methodology and the design of the study.

In this chapter, the data analysis is presented in four phases:

Phase one analyzes the model for predicting the supply levels of retail and service functions as stated in Hypothesis 1 and 2.

Phase two analyzes the data of the opinion survey of city government's economic development officials to determine whether there exists any statistically significant relationships between estimates of supply levels of retail and service functions as reported by city officials, and the estimates of supply levels for

retail and service functions generated by the study model. Analysis of data in Phase Two is guided by Hypotheses 3 and 4.

Phase three analyzes other components of the survey responses to determine whether there existed statistically significant relationships between levels of allocation of city resources (staff efforts and budget) for the promotion of economic sectors, and levels of retail and service supply functions and the level of distress of the city. Analysis of these issues was guided by Hypotheses 5, 6, 7, and 8.

Phase four examines the significance of relationships between staff efforts and budget allocations, levels of employment, and size of tax revenues generated by the city's major economic sectors (manufacturing, retail trade, services, and wholesale). The statistical tests for these questions were guided by Hypotheses 9, 10, 11, and 12. In addition, tests of statistically significant relationships between city's level of economic distress and its classification of economic development mission, and importance ranking of sector were addressed in Hypotheses 13 and 14 as Phase Five of the study.

Besides analysis of data and research findings, this chapter also attempts to validate the study model by comparing the model's residual level of supply of retail

and service functions with the levels reported by the city economic development officials.

Phase One: The Model

In addressing Hypothesis 1 and 2, the multiple regression model was used to determine the extent to which city population, unemployment, per capita income, proximity to a major city, level of economic distress, and county per capita income predict the supply levels of retail and service functions. Using the number of establishments for each retail and service functions as the independent variable, the multiple regression model was used to generate residuals by taking the difference between the actual and the predicted number of establishments. These residuals were adopted as the measure of the supply level for each of the retail and service functions. In this case, a high negative residual indicates an undersupply of the function while a high positive residual indicates an oversupply of the function. A low residual value (near 0.0) indicates an optimum supply level of the retail or service function.

To ensure that the residual level of supply of retail and service functions generated by the multiple regression model controlled for the differences in the population sizes of the 80 cities studied, analyses of data were based on the supply levels for each of the

retail and service functions on per 10,000 persons. The finding for Hypothesis 1 and 2 are presented below.

Hypothesis 1: The supply levels of retail functions can be predicted significantly by city population, unemployment, per capita income, proximity to a major city, level of economic distress, and county per capita income.

The overall level of supply of retail functions was obtained by computing the sum of the supply level of all ten retail functions. Table 4.1 presents the results of the multiple regression in predicting the level of supply of overall retail functions by the six predictors for 1972, 1977, 1982, and 1987. From these results, it is shown that the six predictors significantly predicted the overall level of supply of retail functions for all the four time periods. The proportion of variance in the overall supply level of retail functions that is explained by the six predictor model ranged from about 41 percent in 1972 to 29 percent in 1977. The proportion of variance in the overall level of supply accounted for by the six predictor model was about 38 percent for both 1982 and 1987.

Although the coefficient of determination for each of the four fitted models for the four year periods was rather low, statistically significant results indicated that by using the six predictors, it was possible for the model to predict significantly the

Table 4.1. Results of the Prediction of Levels of Overall Supply of Retail Functions by Six Predictors for the Four-Year Periods.

Year	Dependent Variable	Multiple R	R Square	F-Value	P-Value
1987	Retail Units	.614	.377	7.049	.0000*
1982	Retail Units	.615	.378	8.520	.0000*
1977	Retail Units	.541	.293	5.707	.0002*
1972	Retail Units	.644	.414	9.762	.0000*

*Significance at 0.05 level.

overall levels of supply of retail functions. The results were statistically significant at .05 level. On average the model accounted for about 38 percent of the proportion of variance in the level of total retail functions.

Table 4.2 presents the results of the t-test in determining whether or not each of the six predictors significantly predict the overall supply level of retail functions. From Table 4.2 it is shown that statistically significant results were observed for the predictor of proximity to a major city ($t \leq -5$, $p < 0.05$) for all the four-year periods. No other predictors were significant at 0.05 level for any of the four-year periods.

In order to determine the extent to which the six predictors predicted each of the ten individual retail functions, separate regression model was used for each retail function. Table 4.3 shows the coefficient of determination, multiple R, F-value and the corresponding P-value for each of the retail functions. From the results in Table 4.3, it is shown that: (1) the model succeeded in significantly predicting nine of the ten retail functions, (2) 43 to 49 percent of the variances of the supply level in four of the ten retail functions was explained by the model, and (3) less than 40 percent of the variance in the supply level of other six retail functions were explained by the model.

Table 4.2. Prediction of Level of Supply of Retail Functions by Predictor Variables for the Four-Year Periods

Predictor Variable	Standardized Regression Coefficient	T-Value	Significance Level
1987			
County Per Capita Income	0.093	0.751	.4555
Unemployment	-0.002	-0.016	.9875
Population	-0.100	-0.929	.3561
Proximity	-0.650	-5.177	.0000*
Per Capita Income	0.169	1.101	.2749
Level of Distress	0.012	0.070	.9443
1982			
County Per Capita Income	-0.045	-0.452	.6524
Unemployment	0.079	0.631	.5302
Population	-0.103	-1.026	.3086
Proximity	-0.622	-5.752	.0000*
Per Capita Income	0.261	1.904	.0610
1977			
County Per Capita Income	-0.031	-0.271	.7874
Unemployment	0.076	0.567	.5727
Population	-0.109	-1.009	.3167
Proximity	-0.467	-4.192	.0001*
Per Capita Income	0.030	-0.227	.8214
1972			
County Per Capita Income	-0.019	-0.187	.8520
Unemployment	0.142	1.118	.2674
Population	-0.133	-1.357	.1791
Proximity	-0.570	-5.340	.0000*
Per Capita Income	0.090	-0.685	.4957

*Significant at 0.05 level.

Table 4.3. Results of the Prediction of Levels of Supply of Each of 10 Retail Functions by the Six Predictor Regression Model for 1987.

Retail Function	Multiple R	R Square	F-Value	P-Value
Building material and garden stores	.70	.49	11.21	.0000*
General merchandise stores	.67	.45	9.82	.0000*
Food stores	.55	.30	5.09	.0000*
Automotive dealers	.66	.44	9.21	.0000*
Gasoline service stations	.59	.35	6.38	.0000*
Apparel and accessory stores	.37	.14	1.91	.0914
Furniture and house furnishing stores	.60	.36	6.73	.0000*
Eating and dining places	.66	.43	8.96	.0000*
Drug and proprietary store	.54	.30	4.97	.0003*
Miscellaneous Retail Store	.58	.33	5.87	.0001*

Note: Significance at .05 level.

Hypothesis 2: The supply levels of service functions can be predicted significantly by city population, unemployment, per capita income, proximity to a major city, level of economic distress, and county per capita income.

As in Hypothesis 1, the overall level of supply of service functions was obtained by computing the sum of the supply level of all ten service functions. The results of the multiple regression analysis in predicting the overall level of supply of service functions by the six predictors for 1972, 1977, 1982, and 1987 are presented in Table 4.4.

Table 4.4 showed that while the model was statistically significant in predicting the overall supply level of service functions, only 40 percent of the variance in the supply level of the service functions was explained by the model. Comparing the 1987 results to the three previous periods (1982, 1977, and 1972) it indicated that although statistical significance at 0.05 level were observed for the three year periods, the proportion of variance explained was lower than 1987.

The results for the strength of prediction of the overall level of supply by each of the six predictors are presented in Table 4.5.

The t-test results show that the predictors of proximity to a major city ($t \simeq -4.8$, $p < 0.05$) and per capita income ($t \simeq 3.2$, $p < 0.05$) were significant predictors of the overall supply of service functions for

Table 4.4. Results of the Prediction of Levels of Overall Supply of Service Functions by Six Predictors for the Four-Year Periods.

Year	Dependent Variable	Multiple R	R Square	F-Value	P-Value
1987	Service (Units)	.633	.401	7.906	.0000*
1982	Service (Units)	.563	.317	6.960	.0000*
1977	Service (Units)	.545	.297	5.918	.0001*
1972	Service (Units)	.572	.327	6.604	.0000*

*Significance at 0.05 level.

Table 4.5. Prediction of Level of Supply of Service Functions by Predictor Variables for the Four-Year Periods.

Predictor Variable	Standardized Regression Coefficient	T-Value	Significance Level
1987			
County Per Capita Income	0.263	2.193	.0316*
Unemployment	-0.071	-0.461	.6461
Population	-0.011	-0.101	.9195
Proximity	-0.593	-4.843	.0000*
Per Capita Income	0.478	3.188	.0021*
Level of Distress	0.187	1.095	.2773
1982			
County Per Capita Income	-0.060	-0.572	.5694
Unemployment	0.188	1.437	.1551
Population	0.058	0.560	.5773
Proximity	-0.557	-4.941	.0000*
Per Capita Income	0.570	3.997	.0002*
1977			
County Per Capita Income	-0.075	-0.670	.5049
Unemployment	0.092	0.691	.4917
Population	-0.020	-0.184	.8542
Proximity	-0.543	-4.913	.0000*
Per Capita Income	0.338	2.547	.0131*
1972			
County Per Capita Income	0.020	0.184	.8546
Unemployment	0.240	1.749	.0848
Population	-0.063	-0.592	.5560
Proximity	-0.526	-4.552	.0000*
Per Capita Income	0.529	3.747	.0004*

*Significance at 0.05 level.

all the four-year periods. County per capita income ($t = 2.19$, $p < 0.05$) was a significant predictor of the overall supply of services only for the year 1987. No other predictor was a significant predictor of the overall supply of services for any of the four-year periods.

To determine the strength of predicting the supply level of the ten individual service functions by the six predictors, separate regression model was used for each retail function. The results for these tests are presented in Table 4.6. Based on the observed F-value and the corresponding P-value, the results of the tests showed that the six predictor model significantly predicted all the ten supply levels of service functions. For this model, the six predictors account for about 42 percent of the variance of the level of supply of health services, 40 percent of the supply level of personal services, and 42 percent of the supply level of engineering, accounting, and other services. The proportion of variance in the supply level of the other individual services that is explained by the six predictors was less than 40 percent.

Phase Two: Analysis of City Officials' Opinions

Additional data for phase two of the study were obtained through a survey instrument in the form of a

Table 4.6. Results of the Prediction of Levels of Supply of Each of 10 Service Functions by the Six Predictor Regression Model for 1987

Service Functions	Multiple R	R Square	F-Value	P-Value
Hotel, rooming and lodging places	.45	.25	3.92	.0019*
Automotive repairs, service and parking	.47	.22	3.40	.0053*
Miscellaneous repair services	.49	.24	3.78	.0025*
Amusement and recreation services	.60	.36	6.51	.0000*
Health services	.65	.42	8.50	.0000*
Legal services	.58	.33	5.89	.0000*
Personal services	.64	.40	8.03	.0000*
Business services	.48	.23	3.50	.0043*
Social services	.49	.24	3.65	.0033*
Engineering, accounting and other services	.65	.42	8.71	.0000*

*Significance at .05 level.

questionnaire mailed to city administrators involved with economic development. The questionnaire was designed to gather information on the officials' perceptions on the level of supply of retail and service functions, the economic development mission of the city, staff efforts and budget allocations for the promotion of local industries, and employment-tax shares of the local economy. The main focus of phase two was to determine whether or not statistically significant relationships existed between the levels of supply of retail and service functions as perceived by the city officials and the levels of supply of the same functions as predicted by the model in phase one of the study.

Respondents from 41 of the 80 cities surveyed responded to the questionnaire. Analysis of data was guided by Hypotheses 3 and 4. The Pearson Moment Correlation Analysis was used to determine the significance of the relationship between the levels of supply of retail and service functions as perceived by the city officials and the levels of supply of the functions as predicted by the model. Findings for Hypotheses 3 and 4 are presented below.

Hypothesis 3: There are statistically significant relationships between levels of retail functions as perceived by the city government's economic development officials and the levels of retail functions predicted by the model.

Table 4.7 presents the observed Pearson Moment Correlation Coefficient and the P-value for the relationship between the predicted supply level of the retail functions and the supply levels of the same retail functions as perceived by the city officials. From these results, it is shown that statistically significant relationships were observed between the levels of supply of retail functions as perceived by the city's economic development officials, and the predicted levels of supply of retail functions generated by the model for the following retail functions: Building material and garden ($r = 0.296$, $p < 0.05$), General merchandise ($r = 0.375$, $p < 0.05$), Gas service station ($r = 0.506$, $p < 0.05$), Furniture and home furnishings ($r = 0.352$, $p < 0.05$), and Eating and drinking places ($r = 0.379$, $p < 0.05$). No statistically significant relationships were observed for all other retail functions.

Hypothesis 4: There are statistically significant relationships between levels of service functions as perceived by the city government's economic development officials and the levels of service functions predicted by the model.

Table 4.8 presents the observed Pearson Moment Correlation Coefficient and the p-value for the relationship between the predicted and perceived level of supply of service functions. From Table 4.8, it is shown that statistically significant relationships were

Table 4.7. Results of the Pearson Moment Correlation Analysis of the Relationships Between the Predicted and Perceived Level of Supply of Retail Functions.

Retail Functions	r	p-v
Building material and garden	.296	.032*
General merchandise	.375	.009*
Food stores	.125	.223
Auto dealers	.214	.093
Gas service station	.506	.001*
Apparel and accessory	.205	.102
Furniture and home furnishings	.352	.013*
Eating and drinking places	.379	.008*
Drug and proprietary	.203	.108
Miscellaneous retail store	.103	.270
Total Retail	.245	.064

* = Significance at .05 level.

Table 4.8. Results of the Pearson Moment Correlation Analysis of the Relationship Between the Predicted and Perceived Level of Supply of Service Functions.

Service Functions	Study Model	
	r	p-value
Hotel, room, lodging	.547	.000*
Auto repair service	.321	.023*
Misc. repair service	.486	.001*
Amusement and recreation	.015	.464
Health services	.240	.068
Legal services	.340	.017*
Personal services	.274	.048*
Business services	.222	.088
Social services	.624	.003*
Engineering accounting Etc.	.447	.002*
Total Service	.515	.000*

* = Significant at .05.

observed between the level of supply of service functions as perceived by the city's economic development officials and the predicted levels of supply for the following service functions: Hotel, room, and lodging ($r = 0.547$, $p < 0.05$), Auto repair service ($r = 0.321$, $p < 0.05$), Miscellaneous repair service ($r = 0.486$, $p < 0.05$), Legal services ($r = 0.340$, $p < 0.05$), Personal services ($r = 0.274$, $p < 0.05$), Social services ($r = 0.624$, $p < 0.05$), and Engineering, accounting, etc. ($r = 0.447$, $p < 0.05$). Overall, a statistically significant positive relationship was observed between the predicted and the perceived level of supply of service functions ($r = 0.515$, $p < 0.05$).

Phase Three: Relationship Between City Government's Economic Development Efforts and the City's Level of Distress

Data analyzed in phase three of this study were obtained through responses from city administrators involved in city economic development. Several questionnaire items were asked to determine the level of importance of various sectors of the economy according to the city officials. Economic sectors identified in the survey included, manufacturing, retail trade, services, wholesale trade, and other sectors. The importance rating was obtained by the respondents ranking the sectors in the order of importance with 1 = most

important and 5 = least important. Other information about the economic sectors obtained through the survey included:

1. Percentage of staff efforts allocated to economic sector promotion
2. Percentage of economic development budget dedicated to advancing the sector
3. Percentage of city's tax revenue generated by the sector
4. Percentage of the city's employment which occur in the sector

In addition, based on the measure developed by the U.S. Department of Housing and Urban Development, cities were classified into three levels of economic distress: with (1) least distressed, (2) moderately distressed, (3) highly distressed.

The main focus of phase three was to determine whether or not statistically significant relationships existed between the city government's economic development efforts and the level of city distress. Analysis of the economic development efforts was guided by Hypothesis 5, 6, 7, and 8. One-way Analysis of Variance (ANOVA) was used to determine whether statistically significant differences existed in the economic development efforts among cities with different levels of distress. Specifically, the statistical tests

in phase three of the study addressed the following issues: (1) the relationships between reported supply levels of retail and service functions and the city's level of economic distress, (2) the relationships between reported supply levels of service functions and level of economic distress, (3) the relationship between levels of staff effort allocations to economic sectors promotions and the level of city distress, (4) the relationship between level of budget allocations to economic sector promotion and the level of city distress.

Hypothesis 5: There are statistically significant relationships between supply levels of retail functions and the level of economic distress of the city.

Table 4.9 shows the results of Analysis of Variance (ANOVA) for the responses from 41 city respondents. The data showed no statistically significant differences in levels of supply of retail functions to cities with different levels of distress ($F = 0.983$, $p < 0.05$). Thus, the level of supply of retail function does not vary with the city's level of distress.

Hypothesis 6: There are statistically significant relationships between supply levels of service functions and level of economic distress of the city.

The results of Analysis of Variance of responses from 41 cities are presented on Table 4.10. From these results, it is shown that no statistically significant

Table 4.9. Results of Analysis of Variance of the Differences in Levels of Supply of Retail Functions by the Cities' Level of Distress.

City's Level of Distress	N	Mean	S.D.	F-Value	P-Value
Least Distress	17	2.8026	.5079		
Moderate Distress	14	2.5405	.6868	0.983	0.3836
High Distress	10	2.5925	.3606		
Total	41	2.6619	.5482		

Table 4.10. Results of Analysis of Variance of the Differences in Levels of Supply of Service Functions by the City's Level of Distress.

City's Level of Distress	N	Mean	S.D.	F-Value	P-Value
Least Distress	17	2.7608	.4271		
Moderate Distress	14	2.8050	.8221	0.228	0.8029
High Distress	10	2.6500	.2801		
Total	41	2.7488	.5715		

differences were observed in the level of supply of service functions among cities of different distress ($F = 0.228$, $p > 0.05$).

Based on the mean level of supply of service functions by the level of distress, the data showed that highly distressed cities have the least level of supply of service functions (2.65) compared to either the moderately distressed (2.81) or the least distressed (2.76). At the 0.05 level, however, these differences were not statistically significant.

Hypothesis 7: There are statistically significant relationships between level of staff efforts allocations to economic sector promotion and a city's level of economic distress.

Table 4.11 shows the one-way Analysis of Variance (ANOVA) results for the differences in percentage of staff efforts allocation to economic sector promotion among cities with different levels of distress. From these results, it is shown that no statistically significance differences in the percentage of staff efforts allocation to sector promotion were observed among cities with different levels of distress (F 0.5, $p < 0.05$) for all the four economic sectors. Although the results of the test were not significant at 0.05 level, the data show that for the manufacturing sector, highly distressed cities allocated an average of 46 percent of staff efforts to manufacturing compared to an

Table 4.11. One-Way Analysis of Variance (ANOVA) Results of the Differences in Percentage of Staff Efforts Allocation to Economic Sector Promotion Among Cities with Different Levels of Distress.

Economic Sector	Level of Distress	n	Mean Percentage	F-Value	P-Value
Manufacturing	Least	12	35.0		
	Moderate	9	40.8	0.304	0.740
	High	10	46.3		
Retail Trade	Least	12	20.8		
	Moderate	9	30.1	0.559	0.578
	High	10	31.3		
Services	Least	12	16.4		
	Moderate	9	5.4	0.883	0.425
	High	10	14.1		
Wholesale Trade	Least	12	3.1		
	Moderate	9	1.7	0.369	0.695
	High	10	3.8		

NOTE: N = 31.

*The sum of the percentages of staff economic development efforts allocated to the four sectors does not equal 100 percent due to some efforts allocated to other miscellaneous sectors.

average of 41 percent for the moderately distressed cities and 35 percent for the least distressed cities. On the other hand, least distressed and highly distressed cities allocated an average of 16 percent and 14 percent of staff efforts, respectively, to service sector compared to 5 percent for the moderately distressed cities.

Hypothesis 8: There are statistically significant relationships between level of budget allocations to economic sector promotion and a city's level of economic distress.

Table 4.12 presents the Analysis of Variance (ANOVA) results of responses from 27 cities covering manufacturing, retail, service, and wholesale sectors. From these results, it is shown that no significant differences exist in the level of city's budget allocations for the promotion of economic sectors among cities with different levels of distress for any economic sector. However, based on the mean percentages of budget allocation for promotion of the four economic sectors, the data show that percentage budget allocation to manufacturing sector was highest among the highly distressed cities (52.9%) than moderately distressed (47.8%) or least distressed (33.6%). In retail trade, services, and wholesale trade the results showed that moderately distressed cities allocate the least

Table 4.12. One-way Analysis of Variance (ANOVA) Results for the Differences in Percentage of Economic Development Budget Allocated to the Four Economic Sectors by Level of Distress.

Economic Sector	Level of Distress	n	Mean Percentage	F-Value	P-Value
Manufacturing	Least	11	33.6		
	Moderate	8	47.8	1.028	0.373
	High	8	52.9		
Retail Trade	Least	11	29.5		
	Moderate	8	21.5	0.228	0.798
	High	8	28.5		
Services	Least	11	10.6		
	Moderate	8	6.0	0.335	0.718
	High	8	10.4		
Wholesale Trade	Least	11	3.4		
	Moderate	8	1.9	0.342	0.714
	High	8	4.3		

NOTE: N = 27.

*The sum of the percentages of staff economic development efforts allocated to the four sectors does not equal 100 percent due to some efforts allocated to other miscellaneous sectors.

percentage of their budget than either least distressed or highly distressed cities.

Phase Four: Relationship Between City Government's Economic Development Efforts with the Level of Tax Revenues and Employment Generated by the Sectors

As indicated in phase three of the study, city government officials in charge of development were asked to indicate the percentage of staff efforts allocated to economic sector promotion, percentage of economic development budget dedicated to advancing the sector, and their perception of the level of supply of retail and service functions. All these were used as the indicators of the city government's economic development efforts for each sector and whether or not the effors reflected city's level of economic distress. Phase four of the study was designed to determine whether or not there exists a statistically significant relationship between various city government's economic efforts and the level of tax revenues and employment generated by each sector.

Research Hypotheses 9, 10, 11, and 12 were used to guide the analysis of data in phase four. The Pearson Moment Correlation Analysis was used to determine whether or not statistically significant relationships exists between city government's economic development efforts

and the level of tax revenues generated by each of the four economic sectors.

Hypothesis 9: There are statistically significant relationships between the size of economic sector staff allocation and the level of tax revenues generated by city's economic sectors.

Table 4.13 presents the results of the Pearson Moment Correlation analysis for the relationship between the size of economic sector staff allocation and the level of tax revenues generated by the city's economic sector. The results showed that statistically significant positive relationships exist between allocation of staff efforts and level of tax revenues generated by service ($r = 0.632$, $p < 0.05$) and wholesale ($r = 0.484$, $p < 0.05$) sectors. Both positive correlation coefficients indicate that high level of staff efforts were allocated to sectors which generate high levels of tax revenues. However, no statistically significant relationships were observed between staff allocated to manufacturing ($r = 0.09$, $p > 0.05$) and retail trade ($r = 0.08$, $p > 0.05$) sectors and the level of tax revenues generated by the sector.

Hypothesis 10: There are statistically significant relationships between the sector budget allocation and the level of tax revenues generated by the city's economic sectors.

Table 4.14 presents the Pearson Moment Correlation analysis results for the relationship between the size of budget allocation and tax revenues generated

Table 4.13. Results of Pearson Moment Correlation Analysis of the relationship Between Staff Efforts Allocation in Each Sector and Tax Revenues Generated by the Sector.

Economic Sector	r	P-Value
Manufacturing	0.093	0.310
Retail Trade	0.083	0.328
Services	0.632	0.000*
Wholesale Trade	0.484	0.013*

*Significance at the 0.05 level.

Table 4.14. Results of Pearson Moment Correlation Analysis of the Relationship Between Development Budget Allocation in Each Sector and Tax Revenues Generated by The Sector.

Economic Sector	r	P-Value
Manufacturing	0.186	.177
Retail Trade	-0.229	.125
Services	0.567	.001*
Wholesale Trade	0.415	.016*

*Significance at the 0.05 level.

by the four economic sectors. The results showed statistically significant relationships between the level of tax revenues generated by the service ($r = 0.57$, $p < 0.05$) and wholesale trade ($r = 0.42$, $p > 0.05$) and the level of budget allocation to the two economic sectors. As in Hypothesis 9, the positive correlation coefficients indicated that higher budget were allocated to the sectors which generated higher levels of tax revenues. However, no statistically significant relationships were observed for the sectors of manufacturing ($r = 0.19$, $p > 0.05$) and retail trade ($r = -0.23$, $p > 0.05$). A negative correlation coefficient observed for retail trade indicated a negative relationship between the level of tax revenues generated by the sector and the level of budget allocation to the sector. However, this relationship was not statistically significant at 0.05 level.

Hypothesis 11: There are statistically significant relationships between level of staff efforts allocation to promoting economic sectors and the levels of employment generated by the sectors.

Table 4.15 shows the Pearson Moment Correlation Analysis results for the relationships between staff efforts allocations and levels of employment generated by the four economic sectors. From these results, it is shown that statistically significant relationships existed between staff effort allocation and level of

Table 4.15. Results of Pearson Moment Correlation Analysis of the Relationship Between Level of Staff Efforts and Level of Employment Generated by that Sector.

Economic Sector	r	P-Value
Manufacturing	0.398	.018*
Retail Trade	0.398	.398
Services	0.106	.296
Wholesale Trade	0.477	.005*

*Significance at the 0.05 level.

employment for the manufacturing ($r = 0.40$, $p < 0.05$) and wholesale trade ($r = 0.48$, $p < 0.05$) sectors. No statistically significant relationships were observed for the retail trade ($r = 0.40$, $p > 0.05$) and services ($r = 0.11$, $p > 0.05$) sectors. However, for the sectors of manufacturing and wholesale trade, the relationships were positive indicating that higher percentage of staff efforts were allocated to the sectors which generated more employment opportunities. These relationships were statistically significant at 0.05 level.

Hypothesis 12. There are statistically significant relationships between level of budget allocations to promoting economic sectors and level of employment generated by the sectors.

Table 4.16 presents the results of the Pearson Moment Correlation Analysis for the relationships between budget allocations for economic development and level of

Table 4.16. Results of Pearson Moment Correlation Analysis of the Relationship Between Levels of Budget Allocation and Level of Employment Generated by the Sector.

Economic Sector	r	P-Value
Manufacturing	0.461	.012*
Retail Trade	-0.501	.006*
Services	0.060	.391
Wholesale Trade	0.475	.009*

*Significance at the 0.05 level.

employment generated by the four economic sectors of manufacturing, retail trade, service, and wholesale sectors. The results showed statistically significant relationships between budget allocation and level of employment generated by manufacturing ($r = 0.46$, $p < 0.05$), retail trade ($r = -0.50$, $p < 0.05$) and wholesale trade ($r = 0.48$, $p < 0.05$) sectors. While the relationships for manufacturing and wholesale trade were positive, the relationship for retail was negative indicating that higher levels of budget were allocated to

a sector which generated low levels of employment. No statistically significant relationship was observed between the level of budget allocations to promoting services sector ($r = 0.06$, $p > 0.05$) and the level of employment generated by the same sector.

Phase Five: Relationship Between Classification of Economic Development Mission and Ranking of Economic Sector with the City's Level of Distress

Two items were included in the questionnaire which required the city government officials to: (1) rank in the order of importance the sectors of manufacturing, retail trade, services and wholesale trade in achieving the city's economic development mission, and (2) classify their city government's economic development mission in terms of whether it is a major objective, one of several objectives, a minor objective and other. Phase five used these responses to examine the relationship between the classification of the economic development mission and the importance ranking of the economic sectors with the city's level of economic distress. Examination of these issues were guided by Hypotheses 12 and 14.

The chi-square test of statistical significance was used to address Hypothesis 13 while a one-way

analysis of variance (ANOVA) was used to address research Hypothesis 14. The findings for Hypotheses 13 and 14 are presented below.

Hypothesis 13. How a city classifies its economic development mission is statistically related to the city's level of distress.

The data on Table 4.17 summarized how 40 respondent cities classified their economic development mission. Classifications indicated economic development as a major objective, one of several major objectives and a minor objective. The breakdown of cities' responses showed that: 12.5 percent of respondent cities classified economic development as their major objective; 80 percent classified economic development as one of several major objectives; and 7.5 percent as a minor objective.

Analysis of the data based on level of economic distress of respondent cities showed that: (1) majority (i.e., 60 percent and over) of cities in all levels of economic distress classified economic development as one of several major objectives. However, the largest number of cities classifying economic development as a major objective represented 40 percent of the high distressed cities. This relationship was tested by the chi-square test of statistical significance and was determined to be significant ($\chi^2 = 10.19$, $p < 0.05$). Thus the results showed that more distressed cities were more likely to

Table 4.17. Chi-Square Results of the Relationship Between Classification of Economic Development Mission and City's Level of Distress.

Economic Condition	N	Major Objective		One of Several Major Objectives		Minor Objective	
		n	%	n	%	n	%
Least Distressed	17	1	5.9	14	82.4	2	11.7
Moderate Distressed	13	--	--	12	92.3	1	7.7
High Distressed	10	4	40.0	6	60.0	--	--
Percent Total	40		12.5		80.0		7.5

Chi square = 10.1914

df = 4

Significance level = .0370

have economic development as a major objective in their mission than less distressed cities.

Hypothesis 14. The type of economic sector a city ranks as important for achieving its economic development mission is significantly related to the city's level of distress.

Table 4.18 show analysis of variance results for the differences in the importance ranking of local economic sectors by the 41 respondent cities with different levels of economic distress. Analysis of data for each economic sector showed that while there were no statistically significant differences ($F = 0.203$, $p > 0.05$) in the importance ranking of economic sectors by cities' levels of economic distress, the highest ranking of importance of manufacturing, retail, and service for achieving economic development mission was given by highly distressed cities. However, this trend was not statistically significant at the 0.05 level.

Validation of the Model

It was stated in the preceding chapter that there was no tested method used to directly measure supply levels of retail and service functions. Since the model developed in this study was designed to predict supply levels of selected retail and service functions, an attempt has been made in this section to validate the model. The validation was done by comparing the model's

Table 4.18. One-Way Analysis of Variance (ANOVA) Results of the Differences in Ranking of Importance of Economic Sectors by City's Level of Economic Distress.

Economic Sector	Level of Distress	n	Mean Percentage	F-Value	P-Value
Manufacturing	Least	17	2.1		
	Moderate	14	2.0	0.203	0.817
	High	10	1.8		
Retail Trade	Least	17	2.6		
	Moderate	14	2.1	1.95	0.156
	High	10	1.7		
Services	Least	17	2.4		
	Moderate	14	2.5	0.102	0.904
	High	10	2.3		
Wholesale Trade	Least	17	3.3		
	Moderate	14	3.6	0.435	0.651
	High	10	3.4		

NOTE: N = 41.

*Signficiant at the .05 level.

residual supply levels with the supply levels reported by local economic development officials.

Comparative Analysis

Comparative analysis of the levels of supply of retail and service functions presented in Table 4.7 and 4.8 showed that:

1. Retail functions: There were statistically significant relationships between residual levels of supply generated by the model and the supply levels reported by local government officials in five of the ten retail functions. There was however no statistically significant relationship between total level of retail supply generated by the model and the total supply levels reported by the local government's economic development officials.

2. Service functions: Statistically significant relationships were observed between the residual level of supply of service functions generated by the model and the supply levels of service functions reported by the local government's economic development officials in seven of the ten service functions studied. The residual levels resulting from the model and the reported supply levels were also highly correlated with regard to the total level of supply of all service functions.

The correlations between residual levels of supply and the reported supply levels provide evidence for the validity of the model.

Comparing the Model with TAC Scores

In comparing the Residual Level of Supply resulting from the model and the Trade Area Capture Supply Level, the following results were observed:

1. Retail functions: Table 4.19 shows the results of the Pearson Moment correlation Analysis between the reported level of supply of retail functions with the supply levels generated by the study model, Trade Area Capture (TAC) and Pull. The results showed that supply levels generated by the model and TAC were significantly correlated with the reported level of supply of retail functions in five of the ten retail functions. However, the levels of supply generated by the model and TAC were significantly correlated in only two of the ten retail functions. There were high correlations between total levels of supply of total retail functions reported by the city officials and TAC.

2. Service functions: Table 4.20 presents the Pearson Moment correlation analysis for the relationship between the reported level of supply of service functions and the supply level of the same functions generated by the study model, Trade Area Capture (TAC). The

Table 4.19. Results of Correlation Analysis Between the Reported Levels of Supply of Retail Function with the Supply Levels Generated by the Model, TAC, and Pull.

	Study Model		TAC		PULL	
Retail Function	r	P-V	r	P-V	r	P-V
Bldg material and garden	.2960	.032*	.2683	.072	.0823	.330
General merchandise	.3746	.009	.6693	.002*	.6746	.002*
Food stores	.1254	.223	.3314	.024*	.1421	.204
Automobile dealers	.2139	.093	.5461	.001*	.3611	.023*
Gas service station	.5055	.001*	.0541	.372	.2465	.065
Apparel and accessory	.2052	.102	.4138	.006*	.2089	.111
Furniture and home furnishing	.3517	.013*	.2912	.050*	.2379	.091
Eating and drinking	.3789	.008*	.2074	.103	.0243	.442
Drug and proprietary	.2028	.108	.0860	.332	.1692	.195
Miscellaneous retail stores	.1025	.270	.0336	.446	.1731	.239
Overall Retail	.2446	.064	.3741	.009*	.1642	.159

* Denotes most significant correlation.

Table 4.20. Results of Correlation Analysis Between the Reported Level of Supply of Service Functions with the Supply Levels Generated by the Model, TAC, and Pull.

	Study Model		TAC		PULL	
Service Function	r	P-V	r	P-V	r	P-V
Hotel, room lodging	.5465	.000*	.6231	.001*	.4678	.016
Auto repair service	.3209	.023*	.0181	.456	.0151	.464
Miscellaneous repair service	.4857	.001*	.3217	.051	.4832	.005*
Amusement and recreation	.0149	.464	-.0954	.293	-.1278	.232
Health services	.2397	.068	.2958	.034*	.4364	.003*
Legal services	.3393	.017*	.1595	.188	.2875	.052
Personal services	.2740	.045	.2645	.057	.4546	.002*
Business services	.2216	.088	.2467	.077	.1733	.160
Social services	.6239	.003*	.3569	.080	.5901	.006*
Engineering, Accounting, etc.	.4474	.002*	.3161	.034*	.4871	.002*
Overall Service	.5147	.000*	.5382	.000*	.5801	.000*

* Denotes most significant correlation.

correlation results showed that the level of supply of service functions generated by the study Model were significantly correlated with TAC in two of the ten service functions. There were significant correlations in the levels of service supply generated by TAC and the reported supply levels by local officials in three of the ten service functions. A significant correlation between reported supply level and the levels generated by the Model, and TAC were also observed in regard to the total supply level of service functions.

Comparing the Model with Pull Scores

With regard to the relationship between the Residual Supply Level and Pull Scores, the following were observed:

1. Retail function: Although the results in Table 4.19 showed high correlation between reported supply levels and TAC in two retail functions, Pull Supply scores correlated with the residual level of supply only in one retail function.

2. Service functions: Table 4.20 showed that: (a) Pull generated supply levels correlated with supply levels generated by the model (residuals) in five of the ten service functions and (b) Pull Supply levels also correlated significantly with reported supply levels in six of the ten service functions. Similarly, Pull Supply

scores correlated significantly with the residual, and TAC, and reported levels of supply for the total service functions.

The Model, TAC and Pull prediction techniques were evaluated to determine which one of the three was the best tool for predicting future levels of supply of retail and service function for similar cities. The evaluation was based on the following criteria:

1. The magnitude of the correlation coefficient between the supply levels reported and those generated by the model, TAC, and Pull were used to determine the relative level of efficiency.
2. Any of the above tools with the highest number of significant correlation coefficients was considered the best prediction tool.

Based on the above conditions, the analysis and summary of correlation data generated by the model's residual levels, TAC and Pull Supply scores from Tables 4.19 and 4.20 are presented in Table 4.21.

Table 4.21. Number of the Most Significant Correlations Between Reported Supply Levels and Model, TAC, and Pull Scores.

Predicted Function	Techniques and Number of Significant Correlations		
	Model (Residual)	TAC	Pull
Retail Functions	4	3	1
Total Retail Function	--	1	--
Service Functions	4	1	3
Total Service Functions	--	--	1
Grand Total	8	5	5

Based on the above summary in Table 4.21, the study model had the highest total number of most significant correlation coefficients in predicting retail and service functions. The model may, therefore, be considered the most efficient among the three techniques for predicting levels of supply for retail and service functions.

Summary

In this chapter, the research findings were presented in five phases, together with a procedure of validating the study model. The multiple regression

model significantly predicted the level of supply of retail and service functions using city per capita income, population, unemployment, proximity to a major city and county per capita income, as regression predictors. The validation procedure determined the study model to be relatively more efficient in predicting the level of supply of retail and service functions than either TAC or Pull. The summary of the findings, conclusions, and recommendations are presented in Chapter V of the dissertation.

CHAPTER V

SUMMARY, CONCLUSIONS, RECOMMENDATIONS

Summary

Introduction

This study has attempted to develop a prediction model using city population, per capita income, unemployment, proximity to a major city, level of distress, and county per capita income, to identify business opportunities based on the level of supply of retail and service functions in selected Michigan cities. The sample used in the study comprised 80 Michigan cities having 10,000 to 100,000 people. The cities were selected for study because previous studies showed that: (1) the number of cities within the above population range would continue to experience rapid growth, (2) these types of cities are often more sensitive to seasonal economic cycles, and (3) they are more likely to respond positively to limited economic development efforts than cities of larger sizes.

The model developed in this study was expected to provide valuable information for public policymakers, urban planners, entrepreneurs, and private and public

economic development professionals. The study was also expected to provide answers to the following questions:

1. What is the possibility of developing a model that could identify business opportunities based on levels of supply of retail and service functions?

2. Can the level of supply of retail and service functions be significantly predicted using a set of independent variables (i.e., city population, unemployment, per capita income, proximity to a major city, level of distress, and county per capita income)?

3. Are there any significant relationships between levels of supply of retail and service functions as perceived by city economic development officials and the level of supply of retail and service functions as generated by the model?

4. Are there any significant relationships between levels of supply of retail and service functions and the city's level of economic distress?

5. Does a significant relationship exist between levels of staff efforts and budget allocation and a city's level of economic distress?

6. Are there any significant relationships between the level of staff efforts and budget allocations for the promotion of economic sectors and the levels of tax revenues and employment generated by these sectors?

7. Is there a statistically significant relationship between a city's classification of its economic development mission and the city's level of economic distress?

8. Does the ranking importance of economic sector have any significant relationship to the city's level of economic distress?

Literature Review

The literature review focused on the theoretical bases--Central Place and Location theories--for understanding the geography of market centers, distribution patterns of retail and service industries and the economic activities and interests of producer/ supplier and consumer in business location decisions.

The review examined the evolutionary development of retail and service industries, structure, and hierarchy of market centers as the result of changes in population size, consumer demographics and shopping behavior, competition, technology, and consumer accessibility to market centers.

Most of the prediction-related models and empirical studies reviewed based their predictions of potential sales for market areas on the central place and location theories. The findings of studies reviewed showed a positively significant correlation between

population size; income level; consumer travel distance and the type(s), order level, volume, and location of retail and service functions.

Methodology

Eighty Michigan cities of 10,000 to 100,000 people were studied. The study model used six independent variables--city population, per capita income, unemployment, proximity to a major city, level of distress, and county per capita income--to predict the level of supply of retail and service functions for the 80 cities using the multiple regression technique.

The dependent variable was the number of establishments in each of the retail and service functions per 10,000 people. The residual generated by the multiple regression was the difference between actual number and the predicted number of establishments in each function. The residual was used as a measure of level of supply in each of the retail and service functions within the city limits.

The data for the validation of the model were the reported estimates of level of retail and service functions by local government economic development officials collected through mailed survey. The secondary data were actual number of establishments in each retail and service functions gathered from the censuses of retail and selected service industries.

Data Analysis and Results

The data generated from the variables were examined in 14 hypotheses in the development of a prediction model, its validation, mission, and resource allocations to local economic development. The hypotheses were tested at the .05 significance level.

Phase One--The Model

Hypotheses 1 and 2 stated that actual supply levels of retail and service functions could be significantly predicted by city population, unemployment, per capita income, proximity to a major city, level of distress and county per capita income. Hypotheses 1 and 2 were tested using multiple regression. For Hypothesis 1, multiple regression results showed that the six predictors significantly predicted overall level of supply of retail functions. Proximity to a major city was found to be statistically significant in the prediction results. Overall the model accounted for 38 percent of the proportion of variance in the level of supply of the retail functions.

For Hypothesis 2, multiple regression results showed that the model significantly predicted overall supply level of service functions. County per capita income, proximity to a major city, and city per capita income were significant predictors of the overall supply

level of service functions. Of the variance in the supply level of the overall service functions 40 percent was explained by the model.

Phase Two: City Officials' Perception of Level of Retail and Sevice Supply

Hypotheses 3 and 4 stated that levels of supply of retail and service functions as perceived by the city's economic development officials and the residual levels of supply of retail and service functions generated by the model would be positively correlated. Positive correlations were found in 5 of 10 retail functions (i.e., Building materials and garden supply stores, General merchandise, Gasoline service stations, Furniture and home furnishing stores, and Eating and drinking places).

For the service functions, the reported estimates and the residual levels of supply were significantly correlated in seven of ten functions studied. A statistically significant positive relationship was observed between the predicted and the perceived level of supply of the overall service functions.

Phase Three: Relationship Between City Government's Development Efforts and City's Level of Distress

Hypotheses 5 and 6 tested the relationship between supply levels of retail and service functions and a city's level of economic distress. Using ANOVA there were no statistically significant relationships between level of economic distress of a city and its level of retail supply. Also there was no significant relationship between the level of service supply and the level of economic distress of the city.

Hypothesis 7, an analysis of variance (ANOVA), was used to test the relationship between level of staff allocation for economic sector promotion and a city's level of economic distress. There were no significant relationships between staff allocation for promotion of economic sectors (manufacturing, retail, service, and wholesale) and the level of economic distress. Although not statistically significant, highly distressed cities allocated an average of 46 percent of their staff efforts to promote manufacturing sectors compared to an average of 41 percent and 31 percent by the moderately and least distressed cities, respectively.

Hypothesis 8 (ANOVA) was used to test the relationship between budget allocations for economic sector promotion and a city's level of economic distress.

Results showed that there were no statistically significant relationships between budget allocations to manufacturing, retail, service, and wholesale, and a city's level of economic distress.

Although not statistically significant, the mean level of supply of service functions showed that highly distressed cities have the least level of supply of service functions (2.65) compared with either the moderately distressed (2.81) or least distressed (2.76) cities.

Phase Four: City's Economic Development Efforts and Level of Tax Revenues, and Employment Generated by Economic Sectors

Hypothesis 9 used correlations to examine the relationships between size of sector staff allocation and the level of tax revenues generated by a city's economic sectors. There were statistically significant positive correlations between staff allocation and level of tax revenues for service and wholesale sectors, but not for manufacturing and retail sectors.

Hypothesis 10 used a correlation to test the relationships between sector budget allocation and the level of tax revenues generated by a city's economic sectors. There were significant relationships between budget allocations and tax revenues generated by the

service and wholesale sectors, but no statistically significant relationship was observed for manufacturing and retail sectors.

Hypothesis 11 concerned relationships between level of staff allocation for economic sector promotion and level of employment generated by the sectors. Correlation results indicated significant relationships between staff effort allocations and the levels of employment generated by manufacturing and wholesale sectors. However, there were no statistically significant relationships observed in the case of retail and service, thus indicating higher percentage of staff efforts were allocated to sectors that generated more employment opportunities.

Hypothesis 12 stated that there was a relationship between level of budget allocations for economic sector promotion and levels of employment generated by the sector. Results of correlation computation showed satistically significant relationships between budget allocations and the levels of employment generated by manufacturing, retail, and wholesale sectors; but the relationship for retail was negative.

Phase Five: City's Classification of Economic Development Mission, Ranking Importance of Economic Sector and City's Level of Distress

In Hypothesis 13, the Chi-Square test was used to determine any significant relationship between how a city classifies its economic development mission and the city's level of economic distress. Results not only showed significant relationships between classifications of a city's economic development mission and its level of economic distress, but that more distressed cities were more likely to have economic development as a major objective in their mission than less distressed cities.

Hypothesis 14 sought to establish whether the type of economic sector ranked as important for achieving a city's economic development mission was significantly related to the city's level of economic distress. ANOVA results showed that although there were no significant relationships between ranking of importance of economic sector and achieving economic development mission, highly distressed cities seemed more likely to rank manufacturing, retail, and service as most important for achieving their economic development mission.

Conclusion

Based on the above results or findings, the following conclusions were reached:

1. The study showed that it is possible to develop a model that can significantly predict levels of retail and service functions using six independent variables--city population, unemployment, per capita income, proximity to a major city, level of distress, and county per capita income.

2. The strong correlations found between reported estimates of supply levels by local government economic development officials and the residual level of supply of retail and service functions generated by the model have validated and reinforced the utility of the model as a predictive tool capable of identifying business opportunities in retail and service sectors for economic planning, development, and growth.

3. The model was found to be more effective in predicting levels of supply of service functions (70 percent in this study) than the levels of retail supply.

4. The significance of performance of each of the six predictor/independent variables in predicting level of supply seemed to depend on the economic sector.

5. Proximity was the only variable that was significant in predicting level of supply of retail functions, while county per capita income, proximity, and city per capita income were significant in predicting level of supply of service functions.

6. Irrespective of the city's classification of economic development as a mission and its level of economic distress, the manufacturing sector was still looked upon by most of the respondent cities as most important for achieving their economic development mission. Although all cities saw manufacturing as of primary importance to achieving their economic development goals/mission, the highly distressed cities considered manufacturing and retail sectors most important to achieving their economic development mission.

7. The level of economic distress of a city had significant influence on how a city classified its economic development mission. But there was no evidence of a statistically significant relationship between a city's level of economic distress and the type of economic sector it ranked most important for achieving its economic development mission.

8. The model was compared and successfully validated with TAC and Pull scores of level of supply, although the validation is not without its weakness. The model has used: (1) actual retail and service data, (2) six predictor variables (population, per capita income, unemployment, proximity to a major city, city's level of distress, and county per capita income), to analyze and generate predicted residual levels of supply for retail

and service functions for each of the 80 cities. The model has also provided for the effects of such important factors as income and proximity. Based on the advantages of the model over the above two validating methods, the model might be considered as the most reliable method for estimating level of supply for retail and service functions.

9. Although prediction output based on 1987 data may not be relevant or reflect the actual market situation in 1990, the model would be valuable in predicting future supply levels of retail and service functions using current available data.

Limitations of the Study

1. Most of the data, especially the number of retail and service establishments, used in the study were based on the censuses of retail trade and selected service industries published every five years for places with population of 2,500 and more. Thus, current projections or estimates of level of supply based on 1987 data may not reflect the actual supply situation.

2. The predicted levels of supply of retail and service functions were based on major industry groups (two-digit SIC), therefore, might not have accurately depicted the actual levels of supply of subgroup functions.

3. Using estimates of levels of supply from local officials, TAC and Pull scores to validate the study model could be misleading because: (1) estimates of levels of supply by local officials were largely based on subjective judgment reflecting supply levels in 1990 and not in 1987 for which the study data were collected; and (b) TAC and Pull erroneously assume statewide uniform consumer taste and purchasing behavior and ignore the important effects of travel distance.

4. The model is only suitable for application in regional markets or places with a large number of cities with population of 10,000 and more, and similar in characteristics to the Michigan cities studied.

5. The model does not provide for the potential effects of race, crime rate, and cost of doing business which could influence business location decisions (investments or disinvestments), and thus level of retail and service supply in a city.

Recommendations

Based on the findings of this study, the following recommendations are proposed for additional study.

The Model

1. While the model has been successful in predicting supply levels for retail and service functions

at the group function level, further study applying the model to predict level of supply of retail and service functions at the subgroup level relevant to each local economy is essential.

2. Increasing the number of predictor variables to include TAC, import level, city's racial composition, crime rate, property tax rate, type of local economic structure, and development policy tools and targets, may improve the predictive accuracy of the model. It may also provide more valuable information about the types and level of relationships and the effects these variables have on the predicted level of supply of retail and service functions and the potential business opportunities in the city.

3. A study is also essential to examine whether the use of the dollar value instead of the number of establishments (units) is a more accurate measure for predicting level of supply of retail and service functions. Dollar value as a measure of level of supply is important to determine the effects the existence/ nonexistence of shopping malls or large multiple stores may have on the actual rather than the theoretical number of retail and service establishments in a city.

4. Further detailed study of the variable of proximity to a larger city is important to determine the influence of this variable in predicting level of supply

of retail and service functions, especially at the subgroup level. Knowing more about the degree of influence of this factor may be important and valuable in exploring intercity economic development cooperation, joint venture or shared equity in targeted economic development projects and/or new business/commercial planning.

Economic Sector and Economic Development Mission

5. Most respondent cities still considered manufacturing as the most important sector for achieving their economic development mission. Manufacturing, as could be inferred, was not only viewed by respondents as synonymous with success of economic development mission, but with economic performance and economic welfare of the city. While manufacturing may be important in achieving improved economic development performance, it may not necessarily achieve economic welfare and/or economic development mission for the following reasons: (1) traditional manufacturing is not accessible to most cities because of the short- and long-term costs of expensive infrastructure improvements, large- or long-term tax abatements and potential environment pollution, and (2) attracting advanced manufacturing businesses may not only be too expensive, especially to the moderate and highly distressed cities, but the number of jobs

generated locally may be too few and highly skilled to justify the amount of resources expended to attract the manufacturing business.

The "foot loose" nature of these businesses (traditional or advanced manufacturing) does not guarantee that they will not relocate at any other opportunity to maximize business profits or higher return on investments. For cities, especially the moderate and/or highly distressed, to base the success or achievement of their economic development mission primarily on manufacturing indicates a major weakness (unrealistic nature) in the economic development mission/goal and selection of development target for achieving it.

Given the above reasons future study should use the model as an integral part in the process of identifying available resources, economic opportunities and limitations of the city as a basis for setting realistic and attainable economic development mission and adopting appropriate tools. It is expected that a relevant, economic development mission is one whose ultimate goal is sustained economic development performance and economic welfare for the majority of the city/community population.

6. Development tools and targets, while realistic analysis and identification of local resources,

opportunities, and limitations are critical in establishing relevant economic development mission or goal, equally important to the success of mission achievement are the type(s) and compatibility of economic development tools and targets employed in pursuit of economic development mission. Future study may be necessary to provide effective principles to ensure that the identification and selection of economic development tools and targets not only recognize, but are compatible with local economic structures, level of economic distress, demographics, and the socio-political environment.

Application of the Model

This study is a basic research whose outcome (predictive model) is intended to provide a valuable tool for identifying business opportunities in retail and service sectors. The model was based on the study of 80 Michigan cities; cities wishing to apply the model should be similar in size and characteristics to the Michigan cities studied. There is no guarantee, however, that its application will always be successful. But for cities wishing to apply the model, the following steps should be taken.

Step 1: A comprehensive situation analysis of the city's economy should include the collection of

current data on: (1) sources and level of local revenues and expenditures; (2) size and quality of labor force; (3) employment and unemployment levels; (4) basic structure of the local economy (manufacturing or nonmanufacturing activities); (5) areas and level of competition from neighboring communities in terms of inflow and outflow of incomes and resources; (6) size of the local market based on demographic characteristics; and (7) performance of local economic sectors in terms of job opportunities and size of tax revenues generated.

Step 2: The next phase of the economic analysis is to use the model to predict the number of retail and service businesses that the community can support given the city's profiles.

Step 3: Based on the information provided in Steps 1 and 2, current economic development mission/goal, target, and policy tools should be evaluated to determine their impact, implementation and relevance to economic opportunities, and limitations of local economy identified in the previous steps.

Step 4: The data provided by the preceding three steps are then used to set a realistic and attainable economic development mission and goal(s), identify potential economic development targets, (i.e., economic sectors such as manufacturing, retail, wholesale service) for promotion; and formulate appropriate policy tools

(e.g., cost reduction incentives for business development and growth such as tax abatement), and promotion of local market expansion, etc.), for achieving sustained community economic growth and welfare.

Step 5. The mission, targets, and policy tools employed by local economies for economic development should be monitored regularly, and periodically evaluated to incorporate any changes in the environment. It is only by a pragmatic response to changes in the environment that success in long-term, overall economic growth and economic welfare can be sustained by the local economy.

APPENDICES

APPENDIX A

SURVEY INSTRUMENT

MICHIGAN PARTNERSHIP FOR ECONOMIC DEVELOPMENT ASSISTANCE

A SURVEY OF RETAIL AND SERVICE OPPORTUNITIES IN MICHIGAN CITIES

MICHIGAN STATE UNIVERSITY

WINTER 1990

INSTRUCTIONS FOR COMPLETING THIS QUESTIONNAIRE

The questionnaire is intended for the Director of Economic Development in the city or the person who most directly serves this function. The person completing the Questionnaire should be very knowledgeable of the city's overall economic development mission and objectives, and policies and programs. Information provided in the survey will remain confidential. Only aggregate data will be disseminated on request to cities participating in this survey.

We estimate 20 - 25 minutes will be required to complete the Questionnaire. Every response is very important so we would appreciate it if you will answer all questions. Please return the questionnaire, even if you are not able to answer all questions.

If you have questions about the survey or completing any of the questions, please contact:

Dare Aworuwa, Project Director,
Michigan State University,
Center for Urban Affairs,
Owen Graduate Center,
East Lansing, MI 48824.
Phone: (517) 353-9145 or (517) 355-8119

or

John Schweitzer, Research Director,
Michigan State University,
Center for Urban Affairs
Owen Graduate Center,
East Lansing, MI 48824.
Phone (517) 353-9144

Please return the completed survey questionnaire in the enclosed self-addressed envelope by **May 15, 1990.**

Thank you for your cooperation and assistance.

This study is partially supported by the Michigan Partnership for Economic Development Assistance, pursuant to the receipt of financial assistance from the Economic Development Administration, Department of Commerce of the United States government, and the Michigan State University Urban Affairs Programs.

Levels of Retail and Service Functions

We want information about the status of selected retail and service businesses in your city, and how well supplied your city is in various types of businesses. For this question please use the following definitions:

Undersupplied: The number of a particular type of business located within your city limits is not adequate to meet the demands of your city.

Oversupplied: The number of a particular type of business within your city limits is more than adequate to meet the demands of your city.

1. Based on your personal opinion and experience, please rate each of the following types of retail businesses in terms of the level of supply within your city limits using the following scale:

DU = definitely undersupplied
SU = slightly undersupplied
AS = adequately supplied
SO = slightly oversupplied
DO = definitely oversupplied
DK = do not know

(Please CIRCLE one level of supply for each retail business sector)

Retail Business Sectors	*Levels of Supply Within City Limits*					
a) Apparel and accessory stores	DU	SU	AS	SO	DO	DK
b) Automotive dealers	DU	SU	AS	SO	DO	DK
c) Building materials, garden supplies stores	DU	SU	AS	SO	DO	DK
d) Drug and proprietary stores	DU	SU	AS	SO	DO	DK
e) Eating and drinking places	DU	SU	AS	SO	DO	DK
f) Food stores	DU	SU	AS	SO	DO	DK
g) Furniture and home furnishing stores	DU	SU	AS	SO	DO	DK
i) General merchandise stores	DU	SU	AS	SO	DO	DK
j) Miscellaneous retail stores	DU	SU	AS	SO	DO	DK

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AS = adequately supplied
SO = slightly oversupplied
DO = definitely oversupplied
DK = do not know

(Please CIRCLE one level of supply for each retail business sector)

Retail Business Sectors	*Levels of Supply Within City Limits*					
a) Apparel and accessory stores	DU	SU	AS	SO	DO	DK
b) Automotive dealers	DU	SU	AS	SO	DO	DK
c) Building materials, garden supplies stores	DU	SU	AS	SO	DO	DK
d) Drug and proprietary stores	DU	SU	AS	SO	DO	DK
e) Eating and drinking places	DU	SU	AS	SO	DO	DK
f) Food stores	DU	SU	AS	SO	DO	DK
g) Furniture and home furnishing stores	DU	SU	AS	SO	DO	DK
i) General merchandise stores	DU	SU	AS	SO	DO	DK
j) Miscellaneous retail stores	DU	SU	AS	SO	DO	DK

2. If you rated any of the types of retail businesses as ***definitely undersupplied,*** please give us reasons for the rating. Please be as specific as possible. (Use the letter of the type of business e.g. a = Apparel and accessory stores, b = Automotive dealers, etc.)

Retail business _____ Reason_____

_____

Retail business _____ Reason_____

_____

Retail business _____ Reason_____

_____

Retail business _____ Reason_____

_____

Retail business _____ Reason_____

_____

3. If you rated any of the types of retail businesses as ***definitely oversupplied,*** please give us reasons for the rating. Please be as specific as possible. (Use the letter of the type of business e.g. a = Apparel and accessory stores b = Automotive dealers, etc.)

Retail business_____ Reason _____

_____

Retail business_____ Reason _____

_____

Retail business_____ Reason _____

_____

Retail business_____ Reason _____

_____

Retail business_____ Reason _____

_____

4. Do the establishments within your city limits in each of the following areas serve primarily a local market, a regional market, or both? (check one for each sector)

	Market Area served			
Retail business sectors	***Local***	***Regional***	***Both***	***Don't know***
a) Apparel and accessory stores	_____	_____	_____	_____
b) Automative dealers	_____	_____	_____	_____
c) Building materials, garden supplies stores	_____	_____	_____	_____
d) Drug and propriety stores	_____	_____	_____	_____
e) Eating and drinking places	_____	_____	_____	_____
f) Food stores	_____	_____	_____	_____
g) Furniture and home furnishing stores	_____	_____	_____	_____
h) Gasoline service stations	_____	_____	_____	_____
i) General merchandise stores	_____	_____	_____	_____
j) Miscellaneous retail stores	_____	_____	_____	_____

(please, continue on page 5)

5. Please rate each of the following types of services in terms of the level of supply within your city limits using the following scale:

DU = definitely undersupplied
SU = slightly undersupplied
AS = adequately supplied
SO = slightly oversupplied
DO = definitely oversupplied
DK = do not know

(Please CIRCLE one level of supply for each service business sector)

Service Business Sectors	*Levels of Supply Within City Limits*					
a) Amusement and recreation services, motion pictures, museums.	DU	SU	AS	SO	DO	DK
b) Automotive repair, services, and parking.	DU	SU	AS	SO	DO	DK
c) Business services (e.g. Advert. agencies, Computer program. services, etc.)	DU	SU	AS	SO	DO	DK
d) Engineering, accounting, other services	DU	SU	AS	SO	DO	DK
e) Health services.	DU	SU	AS	SO	DO	DK
f) Hotel, rooming and lodging places.	DU	SU	AS	SO	DO	DK
g) Legal services.	DU	SU	AS	SO	DO	DK
h) Miscellaneous repair services (e.g. radio & TV repairs, refrig. & A/C services, etc.)	DU	SU	AS	SO	DO	DK
i) Personal services (e.g. barber & beauty shops, phtographic studios, etc.)	DU	S U	AS	SO	DO	DK
j) Social services.	DU	SU	AS	SO	DO	DK

(please, continue on page 6)

6. If you rated any of the types of service businesses as ***definitely undersupplied***, please give us reasons for the rating. Please be as specific as possible. (Use the letter of the type of business e.g. a = Amusement and recreation b = Automotive repairs, etc.)

Service business_____ Reason _____

_____

Service business_____ Reason _____

_____

Service business_____ Reason _____

_____

Service business_____ Reason _____

_____

Service business_____ Reason _____

_____

7. If you rated any of the types of service businesses as ***definitely oversupplied***, please give us reasons for the rating. Please be as specific as possible. (Use the letter of the type of business e.g. a = Amusement and recreation b = Automotive repairs, etc.)

Service business_____ Reason _____

_____

Service business_____ Reason _____

_____

Service business_____ Reason _____

_____

Service business_____ Reason _____

_____

Service business_____ Reason _____

_____

8. Do the establishments within your city limits in each of the following areas serve primarily a local market, a regional market, or both? (Check one for each sector).

	Market Area served			
Service business sectors	*Local*	*Regional*	*Both*	*Don't know*
a) Amusement and recreation services, motion pictures, museums.	____	____	____	____
b) Automotive repair, services, and parking.	____	____	____	____
c) Business services (e.g. Advert. Agencies, Computer Prog. services, etc.)	____	____	____	____
d) Engineering, accounting, other services.	____	____	____	____
e) Health services.	____	____	____	____
f) Hotel, rooming and lodging places.	____	____	____	____
g) Legal services.	____	____	____	____
h) Miscellaneous repair services (e.g. radio & T.V. repairs, refrig. & A/C services. etc.)	____	____	____	____
i) Personal services (e.g. barber & beauty shops, photographic studios, etc)	____	____	____	____
j) Social services	____	____	____	____

9. Considering your city's overall economic development mission, please rank the following sectors in order of their importance in achieving your city's economic development goals in the last five years. Use 1 for the most important sector, 2 for the second most important, etc.

Sector	*Rank level*
Manufacturing	_____
Retail Trade	_____
Services	_____
Wholesale Trade	_____
Other	_____

10. The level of importance of any sector to an economy is often measured by the number of jobs created and/ or the size of tax revenues generated. Given your knowledge of the city's economy, approximately what percentage of the city's employment occurs in:

Sector	*% Total Employment*
Manufacturing	_____
Retail Trade	_____
Services	_____
Wholesale Trade	_____
Other	_____
Total	100%

11. Approximately what percentage of city's tax revenues is generated by:

Sector	*% Total Tax Revenues*
Manufacturing	_____
Retail Trade	_____
Services	_____
Wholesale Trade	_____
Other	_____
Total	100%

Economic Development Mission, Objectives and Promotion Budget Allocation

The set of questions in this section are designed to help us understand your city's economic development mission, objectives and promotion budget allocation.

12. Please summarize the overall economic development mission of your city: (Please ANSWER in space below).

_____

_____

_____

_____

_____

13. How would you classify your city government's economic development mission? (please, CHECK your answer)

Economic development to us is:

____ the major city objective
____ one of the several major city objectives
____ a minor city objective
____ other (specify)_____

14. Given your personal knowledge of the city's economic development efforts, and its economic development budget, what percentage of the economic development is dedicated to advancing the following sectors?

Sector	*% of staff effort*	*% of economic development budget allocation*
Manufacturing	_____	_____
Retail Trade	_____	_____
Services	_____	_____
Wholesale Trade	_____	_____
Other	_____	_____
Total	100%	Total 100%

15. We would appreciated any additional information or comments you would like to make about the city's economic opportunities.

_____
_____
_____
_____
_____

(Please, continue on page 10)

16. Fill in name and address of person to whom the local analysis should be sent:

Name: _____

Title: _____

City: _____

Address: _____

Tel: _____

We thank you for your time and cooperation in completing this questionnaire. We look forward to sharing the results of the study with you as soon as it is completed.

THANK YOU

APPENDIX B

RETAIL TRADE

SELECTED SERVICE INDUSTRIES

DEPENDENT VARIABLES USED IN THE STUDY

A.	RETAIL TRADE (10)
SIC	BUSINESS
56	APPAREL AND ACCESSORY STORES
55	AUTOMOTIVE DEALERS
(EX 554)	
52	BUILDING MATERIALS, GARDEN SUPPLY STORES
591	DRUG AND PROPRIETARY STORES
58	EATING AND DRINKING PLACES
54	FOOD STORES
57	FURNITURE AND HOME FURNISHING STORES
554	GASOLINE SERVICE STATIONS
53	GENERAL MERCHANDISE STORES
59	MISCELLANEOUS RETAIL STORES
(EX 591)	

Source: Census of Retail Trade, 1987.

B.	SELECTED SERVICE INDUSTRIES (10)
SIC	BUSINESS
78,79,84	AMUSEMENT AND RECREATION SERVICES, MOTION PICTURES, MUSEUMS
75	AUTOMOTIVE REPAIR SERVICES AND PARKING
73	BUSINESS SERVICES (e.g., Advert. agencies, computer programming services, etc.)
87	
(ex 8733)	ENGINEERING, ACCOUNTING, OTHER SERVICES
80	HEALTH SERVICES (e.g., medical, surgical, and other health services)
70	HOTEL, ROOMING, AND LODGING PLACES
(ex 704)	
81	LEGAL SERVICES
76	MISCELLANEOUS REPAIR SERVICES (e.g., radio & TV repairs, refrig & a/c services etc.)
72	PERSONAL SERVICES (e.g., barber & beauty shops, photographic studios, etc.)
83	SOCIAL SERVICES (e.g., individual & family. social, counseling, welfare, referral services, job training & voc. rehab; child day care, etc.)

Source: Census of Selected Service Industries, 1987

APPENDIX C

MEASURES OF ECONOMIC DISTRESS

FACTORS AS MEASURE OF LEVEL OF ECONOMIC

DISTRESS--1987

(Categories of Distress: 1 to 7)

* POPULATION GROWTH LAG/DECLINE: (25.3% or more--1960-1984, 4.6% or less for large or s/cities, respectively.

* AMOUNT OF POVERTY (min. 12.3% below poverty level)

* AGE OF HOUSING (at least 20.2% constructed prior to 1940)

* PER CAPITA INCOME GROWTH 1969-1983 (increase--$6,203 or less: 1969-1983).

* JOB LAG IN RETAIL AND MANUFACTURING SECTOR 1977 - 1982 (increase--3.3% or less--1977 - 1982)

* UNEMPLOYMENT (average rate: 6.5% or more)

* LABOR SURPLUS AREA (countries, including cities with 25,000 or more with unemployment rate of 9%--1984-1985).

Source: U. S. Department of Housing and Urban Development for Urban Development Action Grant (UDAG) Programs, 10/1987.

APPENDIX D

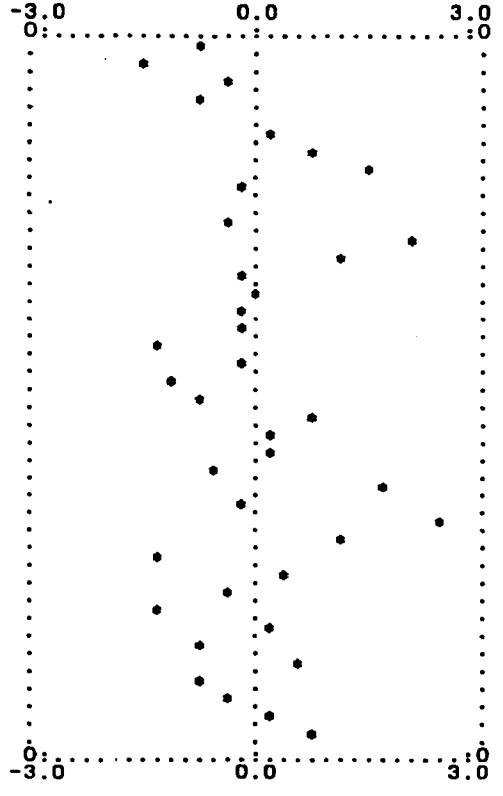
MULTIPLE REGRESSION OUTPUT

* * * * MULTIPLE REGRESSION * * * *

Equation Number 1 Dependent Variable.. EPOP1 Building Materials, Garden Supplies Stores

Casewise Plot of Standardized Residual

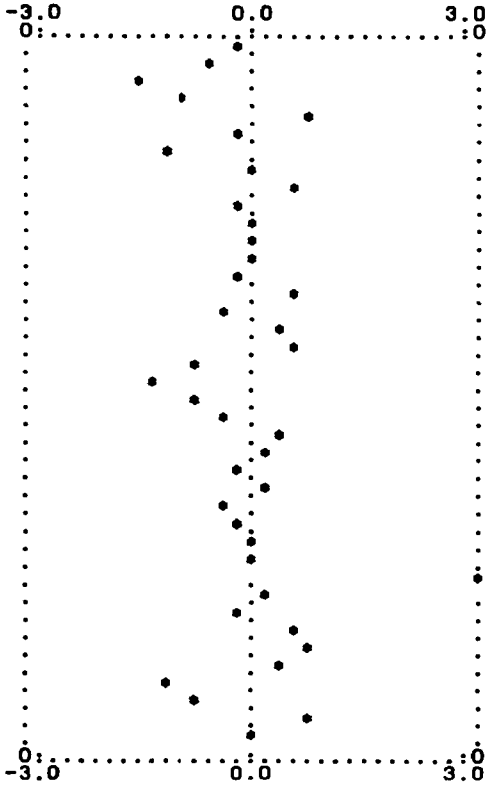
*: Selected M: Missing



Case #	CITY	EPOP1	*PRED	*RESID
1	ADRIAN	5.39	6.9784	-1.5916
2	ALBION	3.87	6.7850	-2.9165
3	ALLEN PARK	2.57	3.1808	-.6109
4	ALPENA	5.31	6.8404	-1.5259
5	AUBURN HLS	7.50	.	.
6	BATTLE CREEK	2.77	2.3038	.4699
7	BAY CITY	3.53	2.1133	1.4132
8	BENTON HARBOR	4.24	1.1921	3.0452
9	BERKLEY	2.86	3.2232	-.3612
10	BEVERLY HLS	.92	.	.
11	BIG RAPIDS	6.62	7.2945	-.6720
12	BIRMINGHAM	7.79	3.4772	4.3125
13	BURTON	4.76	2.3007	2.4580
14	CADILLAC	6.64	7.1563	-.5212
15	CLAWSON	3.55	3.3607	.1854
16	DEARBORN	2.31	2.8440	-.5298
17	DEARBORN HTS	2.43	2.9714	-.5461
18	E GRAND RAPIDS	.85	3.4603	-2.6107
19	EAST DETROIT	2.56	2.8022	-.2395
20	EAST LANSING	.83	2.9514	-2.1601
21	ECORSE	.77	2.2966	-1.5303
22	ESCANABA	8.63	7.1245	1.5086
23	FARMINGTON	3.95	3.4481	.5045
24	FARMINGTON HLS	3.52	3.2138	.3062
25	FERNDALE	1.60	2.6681	-1.0726
26	FRASER	6.51	3.1193	3.3883
27	GARDEN CITY	2.46	3.0147	-.5554
28	GRAND HAVEN	8.10	2.9498	5.1473
29	GRANDVILLE	5.71	3.4875	2.2186
30	GROSSE PT PK	.70	3.4363	-2.7335
31	GROSSE PT WDS	4.26	3.5818	.6761
32	HAMTRAMCK	1.61	2.4392	-.8341
33	HARPER WOODS	.68	3.4082	-2.7284
34	HAZEL PARK	2.97	2.6668	.3035
35	HIGHLAND PARK	.39	1.7832	-1.3929
36	HOLLAND	8.64	7.4265	1.2121
37	INKSTER	.94	2.4193	-1.4788
38	JACKSON	6.22	6.8243	-.6030
39	KALAMAZOO	2.98	2.5088	.4693
40	KENTWOOD CITY	4.76	3.2509	1.5044
Case #	CITY	EPOP1	*PRED	*RESID

Casewise Plot of Standardized Residual

*: Selected M: Missing



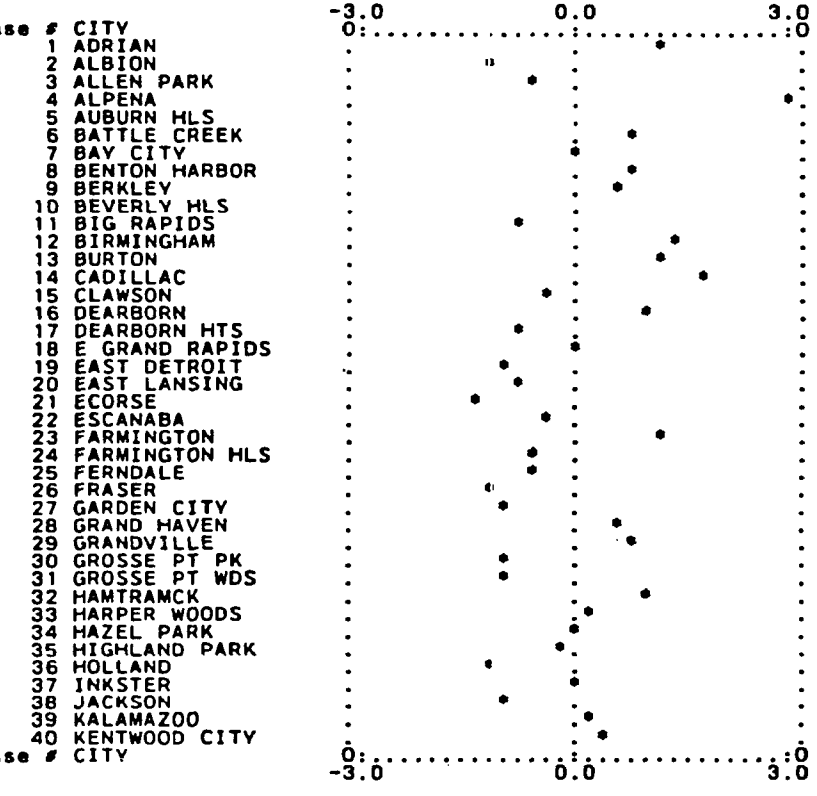
Case #	CITY	EPOP1	*PRED	*RESID
41	LINCOLN PK	2.33	2.6517	-.3180
42	MADISON HTS	1.79	2.8706	-1.0817
43	MARQUETTE	4.21	7.1283	-2.9168
44	MELVINDALE	.90	2.8628	-1.9659
45	MIDLAND	4.74	3.2250	1.5117
46	MONROE	6.87	7.1905	-.3192
47	MT CLEMENS	4.66	7.0308	-2.3676
48	MT PLEASANT	7.31	7.3660	-.0567
49	MUSKEGON	3.52	2.2400	1.2767
50	MUSKEGON HTS	1.37	1.7836	-.4147
51	NILES	7.20	7.0504	.1496
52	NORTON SHORES	2.76	2.8009	-.0372
53	NOVI	3.22	3.3074	-.0920
54	OAK PARK	2.57	2.8899	-.3192
55	OWOSSO	7.78	6.8095	.9726
56	PONTIAC	1.27	1.8747	-.6077
57	PORT HURON	7.40	6.6163	.7867
58	PORTAGE	4.70	3.3543	1.3452
59	RIVER ROUGE	.88	2.3256	-1.4445
60	RIVERVIEW	.71	3.3876	-2.6734
61	ROCHESTER HLS	1.81	3.3210	-1.5091
62	ROMULUS	1.66	2.6107	-.9509
63	ROSEVILLE	3.09	2.4295	.6599
64	ROYAL OAK	3.47	3.0471	.4276
65	SAGINAW	1.66	1.9520	-.2961
66	SAULT STE MARIE	7.16	6.8316	.3317
67	SOUTHFIELD	2.33	3.1840	-.8524
68	SOUTHGATE	2.63	3.0855	-.4530
69	ST CLAIR SHORES	2.64	2.8014	-.1661
70	TAYLOR	2.35	2.5351	-.1883
71	TRAVERSE CITY	15.81	7.2833	8.5294
72	TRENTON	3.78	3.2972	.4817
73	TROY	2.82	3.2317	-.4072
74	WALKER	4.32	3.2649	1.0507
75	WAYNE	4.29	2.8421	1.4436
76	WESTLAND	3.45	2.7251	.7236
77	WOODHAVEN	.90	3.1459	-2.2507
78	WYANDOTTE	1.28	2.7721	-1.4962
79	WYOMING	4.33	2.9010	1.4245
80	YPSILANTI	3.03	2.8656	.1608
Case #	CITY	EPOP1	*PRED	*RESID

* * * * MULTIPLE REGRESSION * * * *

Equation Number 1 Dependent Variable.. EPOP3 General Merchandise Stores

Casewise Plot of Standardized Residual

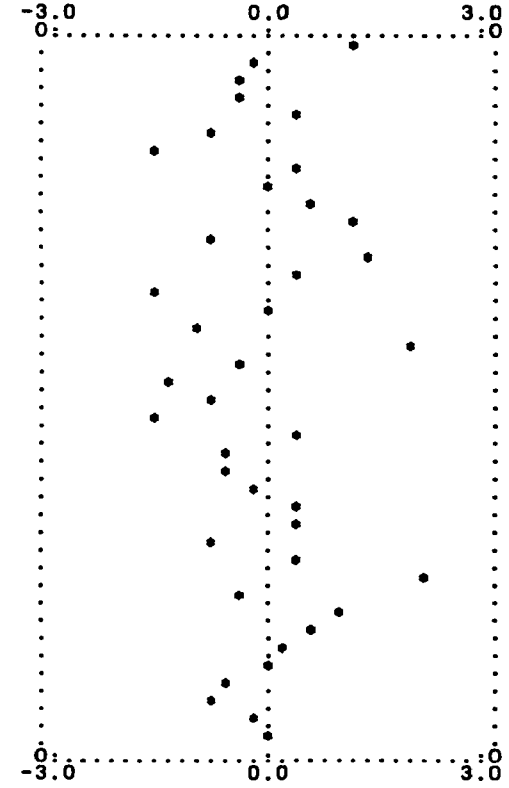
*: Selected M: Missing



Case #	CITY	EPOP3	*PRED	*RESID
1	ADRIAN	4.41	3.2074	1.2001
2	ALBION	1.93	3.0642	-1.1300
3	ALLEN PARK	.64	1.1326	-.4901
4	ALPENA	6.20	3.4631	2.7371
5	AUBURN HLS	.63	.	.
6	BATTLE CREEK	1.48	.7853	.6940
7	BAY CITY	1.01	1.0194	-.0119
8	BENTON HARBOR	2.82	1.9909	.8340
9	BERKLEY	1.72	1.1249	.5923
10	BEVERLY HLS	.00	.	.
11	BIG RAPIDS	2.21	2.9007	-.6932
12	BIRMINGHAM	1.95	.6277	1.3197
13	BURTON	2.38	1.3534	1.0260
14	CADILLAC	4.74	2.9871	1.7522
15	CLAWSON	.71	1.0088	-.2996
16	DEARBORN	1.97	1.0451	.9220
17	DEARBORN HTS	.49	1.2109	-.7258
18	E GRAND RAPIDS	.85	.8987	-.0491
19	EAST DETROIT	.28	1.2095	-.9247
20	EAST LANSING	.42	1.0895	-.6739
21	ECORSE	.00	1.2912	-1.2912
22	ESCANABA	2.88	3.1884	-.3107
23	FARMINGTON	1.98	.9097	1.0666
24	FARMINGTON HLS	.46	1.0887	-.6296
25	FERNDALE	.40	.8693	-.4704
26	FRASER	.00	1.1914	-1.1914
27	GARDEN CITY	.31	1.2929	-.9855
28	GRAND HAVEN	1.62	1.0776	.5419
29	GRANDVILLE	2.14	1.3053	.8345
30	GROSSE PT PK	.00	.9184	-.9184
31	GROSSE PT WDS	.00	.9480	-.9480
32	HAMTRAMCK	2.14	1.1442	.9960
33	HARPER WOODS	1.36	1.1787	.1809
34	HAZEL PARK	.99	1.0811	-.0910
35	HIGHLAND PARK	1.17	1.3435	-.1725
36	HOLLAND	1.73	2.9155	-1.1878
37	INKSTER	1.25	1.2909	-.0370
38	JACKSON	1.89	2.7526	-.8591
39	KALAMAZOO	.91	.6476	.2587
40	KENTWOOD CITY	1.68	1.2493	.4290
Case #	CITY	EPOP3	*PRED	*RESID

Casewise Plot of Standardized Residual

*: Selected M: Missing



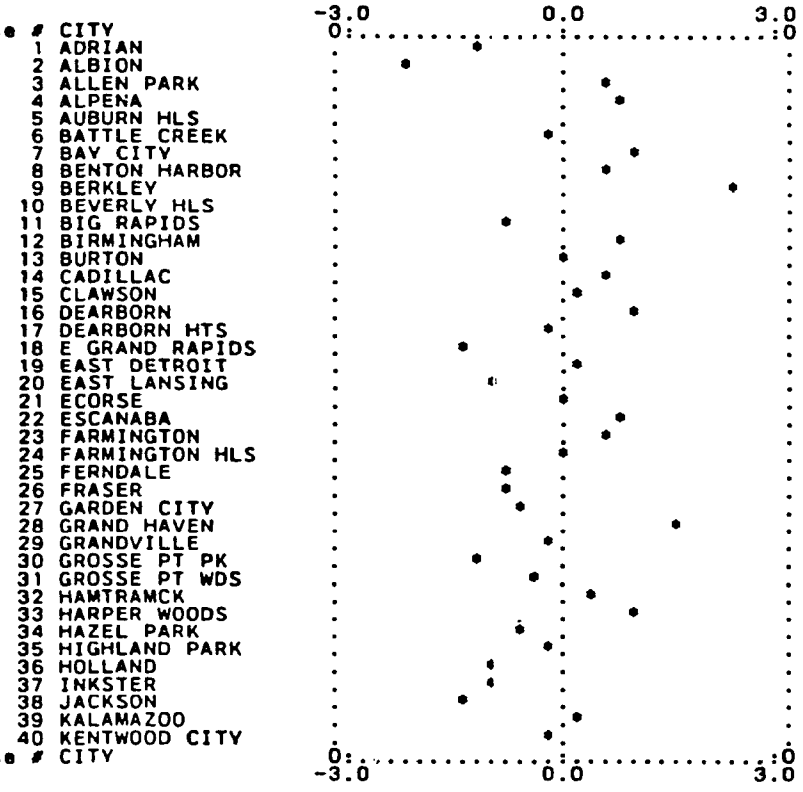
Case #	CITY	EPOP3	*PRED	*RESID
41	LINCOLN PK	2.10	1.0330	1.0673
42	MADISON HTS	.89	1.0132	-.1187
43	MARQUETTE	2.34	2.7951	-.4553
44	MELVINDALE	.90	1.3266	-.4298
45	MIDLAND	1.67	1.2294	.4424
46	MONROE	2.29	2.9795	-.6890
47	MT CLEMENS	1.55	3.0408	-1.4864
48	MT PLEASANT	3.20	2.7877	.4101
49	MUSKEGON	1.00	.9680	.0368
50	MUSKEGON HTS	2.05	1.4774	.5759
51	NILES	4.00	2.8327	1.1673
52	NORTON SHORES	.46	1.2377	-.7770
53	NOVI	2.50	1.1638	1.3371
54	OAK PARK	1.29	.8246	.4607
55	OWOSSO	1.95	3.3761	-1.4306
56	PONTIAC	.84	.8661	-.0214
57	PORT HURON	2.07	2.9265	-.8537
58	PORTAGE	3.22	1.2907	1.9247
59	RIVER ROUGE	.88	1.2747	-.3936
60	RIVERVIEW	.00	1.3858	-1.3858
61	ROCHESTER HLS	.40	1.0756	-.6729
62	ROMULUS	.00	1.5167	-1.5167
63	ROSEVILLE	1.54	1.1223	.4224
64	ROYAL OAK	.30	.9031	-.6009
65	SAGINAW	.55	1.0376	-.4856
66	SAULT STE MARIE	2.87	3.1276	-.2622
67	SOUTHFIELD	1.23	.9138	.3206
68	SOUTHGATE	1.65	1.2346	.4107
69	ST CLAIR SHORES	.28	1.0620	-.7846
70	TAYLOR	1.66	1.2163	.4403
71	TRAVERSE CITY	5.06	2.9686	2.0914
72	TRENTON	.94	1.2539	-.3092
73	TROY	1.78	.8932	.8906
74	WALKER	1.85	1.3179	.5317
75	WAYNE	1.43	1.3129	.1157
76	WESTLAND	1.23	1.1854	.0463
77	WOODHAVEN	.90	1.4346	-.5393
78	WYANDOTTE	.32	.9712	-.6522
79	WYOMING	.96	1.1070	-.1457
80	YPSILANTI	.86	.8399	.0248
Case #	CITY	EPOP3	*PRED	*RESID

* * * * MULTIPLE REGRESSION * * * *

Equation Number 1 Dependent Variable.. EPOP5 Food Stores

Casewise Plot of Standardized Residual

*: Selected M: Missing

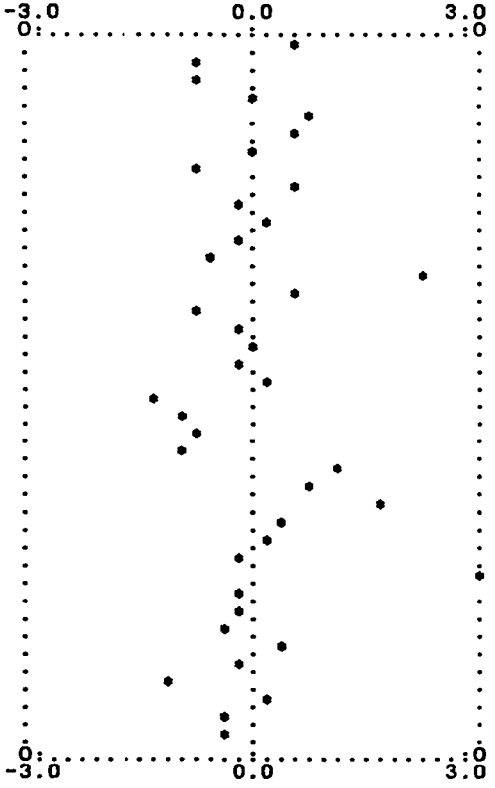


Case #	CITY	EPOP5	*PRED	*RESID
1	ADRIAN	10.28	15.3245	-5.0404
2	ALBION	6.77	16.0404	-9.2706
3	ALLEN PARK	10.60	8.0981	2.5027
4	ALPENA	18.60	14.7772	3.8233
5	AUBURN HLS	7.50	.	.
6	BATTLE CREEK	7.58	8.5148	-.9335
7	BAY CITY	13.10	9.0961	4.0021
8	BENTON HARBOR	12.71	10.4875	2.2243
9	BERKLEY	20.61	10.6290	9.9778
10	BEVERLY HLS	1.84	.	.
11	BIG RAPIDS	11.04	14.1730	-3.1355
12	BIRMINGHAM	14.12	10.4215	3.6973
13	BURTON	9.52	9.7120	-.1947
14	CADILLAC	17.06	14.7444	2.3172
15	CLAWSON	11.35	10.6002	.7474
16	DEARBORN	11.34	6.8536	4.4864
17	DEARBORN HTS	6.79	7.3707	-.5801
18	E GRAND RAPIDS	2.55	8.4563	-5.9074
19	EAST DETROIT	10.54	9.2449	1.2904
20	EAST LANSING	3.74	7.8819	-4.1412
21	ECORSE	9.96	9.8842	.0774
22	ESCANABA	17.99	14.5254	3.4602
23	FARMINGTON	12.85	10.6506	2.1953
24	FARMINGTON HLS	8.88	9.1133	-.2367
25	FERNDALE	7.58	11.3314	-3.7526
26	FRASER	5.78	9.4802	-3.6956
27	GARDEN CITY	5.84	8.2095	-2.3687
28	GRAND HAVEN	16.19	8.9450	7.2494
29	GRANDVILLE	7.13	8.1118	-.9791
30	GROSSE PT PK	2.81	8.3814	-5.5705
31	GROSSE PT WDS	6.69	8.0805	-1.3895
32	HAMTRAMCK	11.24	9.5753	1.6606
33	HARPER WOODS	12.24	8.2722	3.9644
34	HAZEL PARK	8.91	11.3763	-2.4654
35	HIGHLAND PARK	8.98	10.1979	-1.2205
36	HOLLAND	10.71	14.8968	-4.1849
37	INKSTER	4.39	9.0981	-4.7094
38	JACKSON	8.93	15.1140	-6.1878
39	KALAMAZOO	8.68	8.1089	.5665
40	KENTWOOD CITY	6.99	7.8064	-.8134
Case #	CITY	EPOP5	*PRED	*RESID

27-Dec-90 MARKET OPPORTUNITY IDENTIFICATION MODEL
12:45:30 PRELIMINARY ANALYSIS

Casewise Plot of Standardized Residual

*: Selected M: Missing



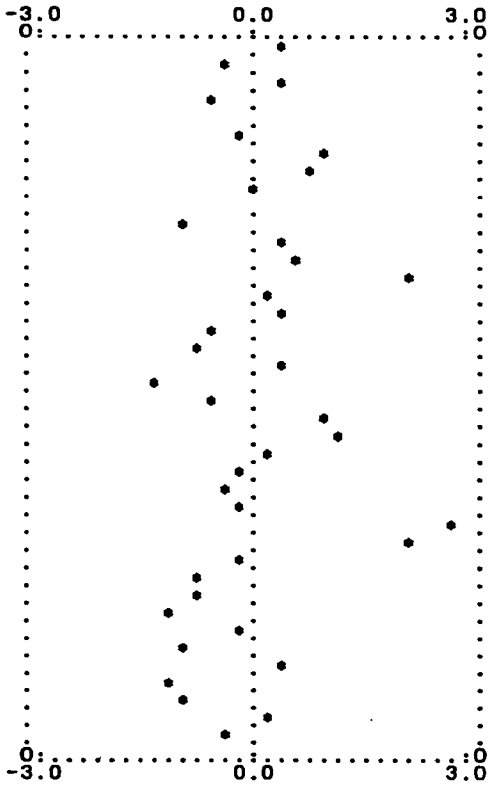
Case #	CITY	EPOP5	*PRED	*RESID
41	LINCOLN PK	11.44	8.5465	2.8888
42	MADISON HTS	6.86	10.6845	-3.8270
43	MARQUETTE	11.23	14.5082	-3.2775
44	MELVINDALE	8.97	9.1011	-.1325
45	MIDLAND	11.42	8.1142	3.3096
46	MONROE	17.87	15.3453	2.5200
47	MT CLEMENS	16.06	16.4790	-.4168
48	MT PLEASANT	10.51	13.9901	-3.4830
49	MUSKEGON	11.05	8.4622	2.5903
50	MUSKEGON HTS	8.90	9.6615	-.7635
51	NILES	16.00	15.4316	.5684
52	NORTON SHORES	6.91	8.0796	-1.1703
53	NOVI	7.86	10.1426	-2.2826
54	OAK PARK	21.21	10.8374	10.3708
55	OWOSSO	18.16	15.6165	2.5417
56	PONTIAC	7.32	11.0066	-3.6857
57	PORT HURON	14.81	15.6127	-.8066
58	PORTAGE	7.67	7.7131	-.0455
59	RIVER ROUGE	8.81	9.9062	-1.0956
60	RIVERVIEW	9.29	8.2126	1.0731
61	ROCHESTER HLS	3.22	9.4727	-6.2515
62	ROMULUS	4.98	8.9485	-3.9693
63	ROSEVILLE	6.18	9.2980	-3.1192
64	ROYAL OAK	5.44	9.4338	-3.9950
65	SAGINAW	13.25	8.3796	4.8673
66	SAULT STE MARIE	17.91	14.6056	3.3027
67	SOUTHFIELD	16.46	9.0091	7.4495
68	SOUTHGATE	9.54	8.2068	1.3358
69	ST CLAIR SHORES	8.60	8.1333	.4659
70	TAYLOR	7.18	7.6636	-.4852
71	TRAVERSE CITY	32.26	14.9885	17.2696
72	TRENTON	7.56	8.1844	-.6265
73	TROY	8.62	9.1329	-.5110
74	WALKER	6.78	8.3791	-1.5973
75	WAYNE	10.95	8.8217	2.1306
76	WESTLAND	6.16	7.1207	-.9623
77	WOODHAVEN	3.58	8.6293	-5.0483
78	WYANDOTTE	9.25	8.7761	.4743
79	WYOMING	6.09	7.5344	-1.4466
80	YPSILANTI	8.21	9.8391	-1.6247
Case #	CITY	EPOP5	*PRED	*RESID

* * * * MULTIPLE REGRESSION * * * *

Equation Number 1 Dependent Variable.. EPOP7 Automotive Dealers

Casewise Plot of Standardized Residual

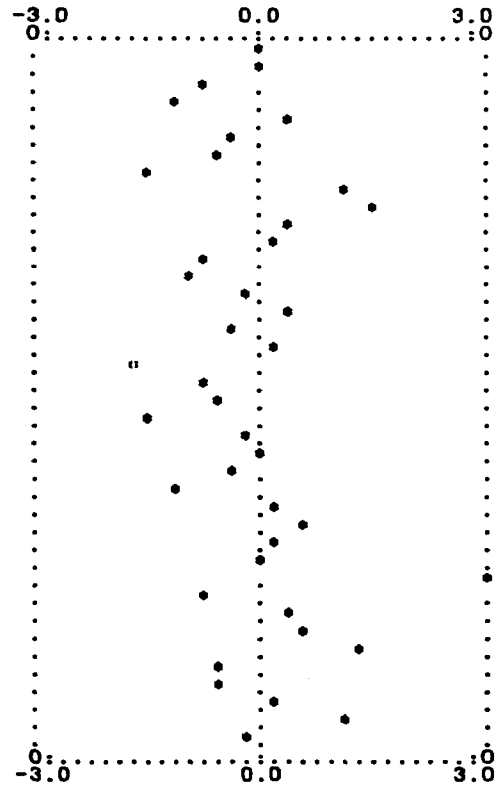
*: Selected M: Missing



Case #	CITY	EPOP7	*PRED	*RESID
1	ADRIAN	10.77	9.7042	1.0695
2	ALBION	8.70	10.0186	-1.3145
3	ALLEN PARK	4.82	3.9518	.8667
4	ALPENA	8.86	10.2815	-1.4241
5	AUBURN HLS	3.75	.	.
6	BATTLE CREEK	3.14	3.6376	-.4942
7	BAY CITY	7.30	4.4825	2.8223
8	BENTON HARBOR	9.89	7.4924	2.3946
9	BERKLEY	5.15	4.9956	.1561
10	BEVERLY HLS	.00	.	.
11	BIG RAPIDS	6.62	9.4826	-2.8601
12	BIRMINGHAM	3.41	2.0817	1.3263
13	BURTON	6.80	5.1123	1.6858
14	CADILLAC	15.17	9.4031	5.7627
15	CLAWSON	4.96	4.6521	.3125
16	DEARBORN	4.05	3.1075	.9425
17	DEARBORN HTS	2.26	3.8540	-1.5904
18	E GRAND RAPIDS	.00	2.3812	-2.3812
19	EAST DETROIT	5.69	4.6614	1.0334
20	EAST LANSING	.83	4.6026	-3.7714
21	ECORSE	3.83	5.5266	-1.6952
22	ESCANABA	12.23	9.6630	2.5672
23	FARMINGTON	6.92	3.6087	3.3083
24	FARMINGTON HLS	3.83	3.0301	.7961
25	FERNDALE	4.39	4.7612	-.3735
26	FRASER	3.62	4.9259	-1.3106
27	GARDEN CITY	4.30	4.6928	-.3891
28	GRAND HAVEN	12.15	4.6773	7.4685
29	GRANDVILLE	10.70	4.8642	5.8348
30	GROSSE PT PK	2.11	2.5130	-.4047
31	GROSSE PT WDS	.00	2.1272	-2.1272
32	HAMTRAMCK	3.21	5.1814	-1.9711
33	HARPER WOODS	1.36	4.3426	-2.9830
34	HAZEL PARK	4.95	5.4569	-.5064
35	HIGHLAND PARK	3.12	5.7257	-2.6032
36	HOLLAND	10.02	8.8215	1.1992
37	INKSTER	2.19	5.1490	-2.9546
38	JACKSON	6.22	8.7050	-2.4837
39	KALAMAZOO	3.63	3.2968	.3287
40	KENTWOOD CITY	3.64	4.4811	-.8447
Case #	CITY	EPOP7	*PRED	*RESID

Casewise Plot of Standardized Residual

*: Selected M: Missing



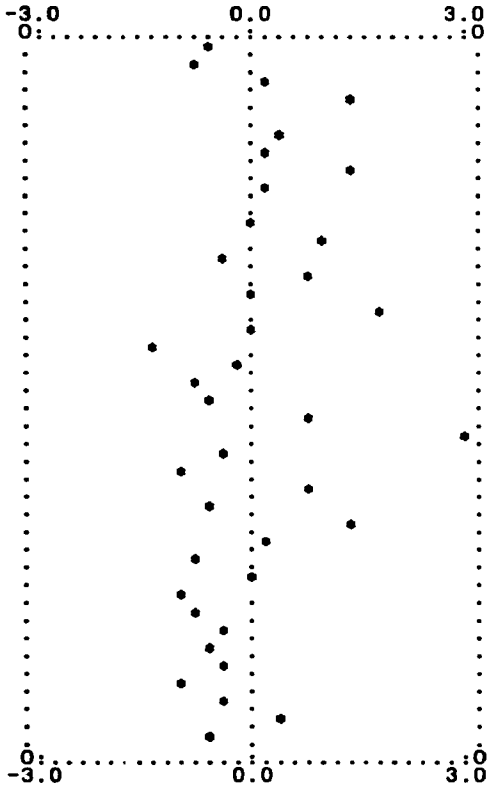
Case #	CITY	EPOP7	*PRED	*RESID
41	LINCOLN PK	3.97	4.2317	-.2643
42	MADISON HTS	4.77	4.6214	.1490
43	MARQUETTE	7.02	8.9675	-1.9483
44	MELVINDALE	1.79	5.1228	-3.3290
45	MIDLAND	5.29	4.1252	1.1688
46	MONROE	8.25	9.0859	-.8404
47	MT CLEMENS	7.77	9.3748	-1.6028
48	MT PLEASANT	5.03	9.0443	-4.0192
49	MUSKEGON	7.79	4.5900	3.1970
50	MUSKEGON HTS	10.27	6.1822	4.0847
51	NILES	10.40	9.0729	1.3271
52	NORTON SHORES	5.07	4.4993	.5675
53	NOVI	2.14	4.1578	-2.0142
54	OAK PARK	1.93	4.3681	-2.4401
55	OWOSSO	9.73	10.0434	-.3158
56	PONTIAC	5.63	4.4949	1.1365
57	PORT HURON	8.00	9.0491	-1.0539
58	PORTAGE	4.95	4.3182	.6287
59	RIVER ROUGE	.88	5.5910	-4.7100
60	RIVERVIEW	2.86	4.8183	-1.9611
61	ROCHESTER HLS	2.42	3.8074	-1.3915
62	ROMULUS	1.66	5.6762	-4.0164
63	ROSEVILLE	4.25	4.5505	-.3025
64	ROYAL OAK	3.47	3.5765	-.1017
65	SAGINAW	3.31	4.3142	-1.0025
66	SAULT STE MARIE	6.45	9.6572	-3.2102
67	SOUTHFIELD	3.57	2.8497	.7164
68	SOUTHGATE	6.25	4.5223	1.7297
69	ST CLAIR SHORES	4.02	3.6096	.4126
70	TAYLOR	4.42	4.3386	.0789
71	TRAVERSE CITY	18.34	9.1957	9.1472
72	TRENTON	2.36	4.4205	-2.0587
73	TROY	4.16	2.9047	1.2577
74	WALKER	6.78	5.0879	1.6938
75	WAYNE	9.05	5.0770	3.9706
76	WESTLAND	2.22	3.8278	-1.6108
77	WOODHAVEN	3.58	5.1336	-1.5526
78	WYANDOTTE	5.10	4.3233	.7804
79	WYOMING	7.21	4.1844	3.0249
80	YPSILANTI	3.89	4.6088	-.7178
Case #	CITY	EPOP7	*PRED	*RESID

**** MULTIPLE REGRESSION ****

Equation Number 1 Dependent Variable.. EPOP9 Gasoline Service Stations

Casewise Plot of Standardized Residual

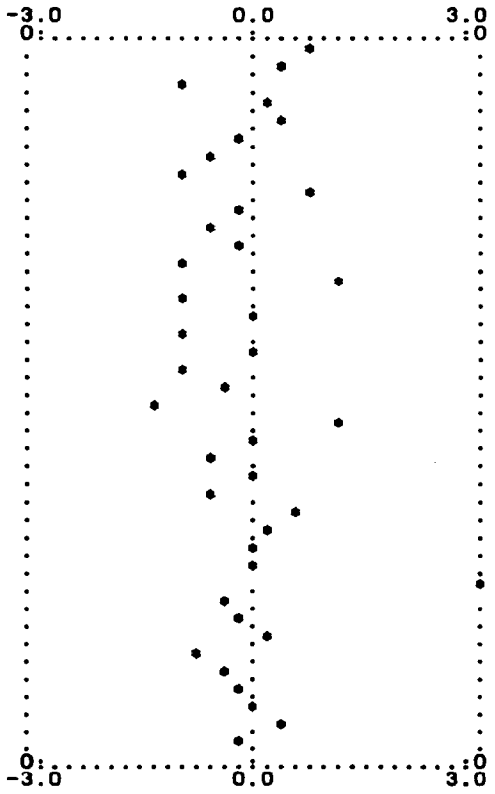
*: Selected M: Missing



Case #	CITY	EPOP9	*PRED	*RESID
1	ADRIAN	8.81	10.5473	-1.7324
2	ALBION	7.74	9.9947	-2.2577
3	ALLEN PARK	5.46	4.8610	.6000
4	ALPENA	15.06	10.8263	4.2313
5	AUBURN HLS	5.63	.	.
6	BATTLE CREEK	4.25	2.8184	1.4346
7	BAY CITY	4.03	3.4829	.5474
8	BENTON HARBOR	10.59	6.0156	4.5776
9	BERKLEY	6.87	6.1700	.6989
10	BEVERLY HLS	.00	.	.
11	BIG RAPIDS	9.57	9.2728	.2931
12	BIRMINGHAM	7.30	4.3623	2.9406
13	BURTON	3.74	5.1637	-1.4248
14	CADILLAC	12.32	9.5668	2.7555
15	CLAWSON	5.67	5.8723	-.1985
16	DEARBORN	9.72	4.2039	5.5161
17	DEARBORN HTS	4.69	4.9308	-.2420
18	E GRAND RAPIDS	.00	4.1068	-4.1068
19	EAST DETROIT	4.56	5.2894	-.7336
20	EAST LANSING	2.08	4.7066	-2.6284
21	ECORSE	3.07	4.8152	-1.7501
22	ESCANABA	12.95	10.1810	2.7686
23	FARMINGTON	14.82	5.4586	9.3635
24	FARMINGTON HLS	4.59	5.7581	-1.1667
25	FERNDALE	1.99	4.8567	-2.8623
26	FRASER	7.95	5.5399	2.4138
27	GARDEN CITY	3.38	5.3365	-1.9550
28	GRAND HAVEN	8.91	4.5258	4.3811
29	GRANDVILLE	6.42	5.8062	.6132
30	GROSSE PT PK	1.41	4.1605	-2.7551
31	GROSSE PT WDS	4.26	4.3164	-.0585
32	HAMTRAMCK	1.61	4.4368	-2.8317
33	HARPER WOODS	2.72	5.2561	-2.5368
34	HAZEL PARK	4.46	5.6227	-1.1673
35	HIGHLAND PARK	2.73	4.5665	-1.8342
36	HOLLAND	8.64	10.0839	-1.4454
37	INKSTER	1.88	4.8782	-2.9974
38	JACKSON	7.84	8.7772	-.9330
39	KALAMAZOO	4.01	2.8392	1.1748
40	KENTWOOD CITY	3.64	5.3904	-1.7540
Case #	CITY	EPOP9	*PRED	*RESID

Casewise Plot of Standardized Residual

*: Selected M: Missing



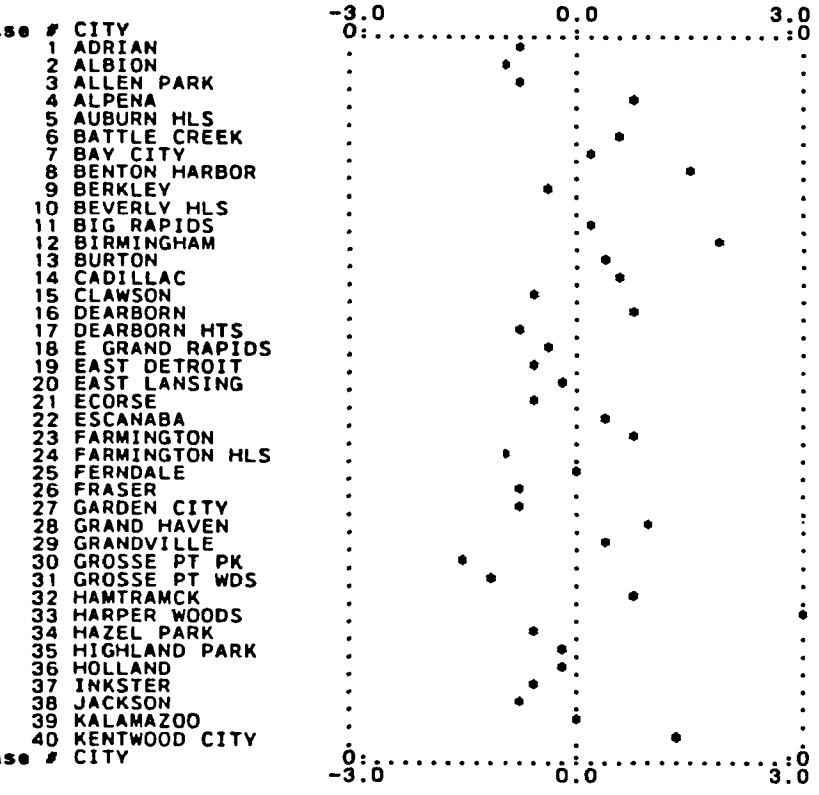
Case #	CITY	EPOP9	*PRED	*RESID
41	LINCOLN PK	6.53	4.1447	2.3897
42	MADISON HTS	6.86	5.4640	1.3934
43	MARQUETTE	5.62	8.8699	-3.2545
44	MELVINDALE	6.28	5.3567	.9214
45	MIDLAND	6.69	5.3836	1.3035
46	MONROE	9.62	10.0617	-.4419
47	MT CLEMENS	8.81	10.6037	-1.7954
48	MT PLEASANT	5.94	8.9890	-3.0502
49	MUSKEGON	5.78	3.2072	2.5703
50	MUSKEGON HTS	4.11	4.6164	-.5096
51	NILES	7.20	9.2115	-2.0115
52	NORTON SHORES	4.15	4.5004	-.3549
53	NOVI	3.22	6.2291	-3.0137
54	OAK PARK	8.68	4.8550	3.8211
55	OWOSSO	7.78	10.9573	-3.1752
56	PONTIAC	3.94	4.1422	-.2003
57	PORT HURON	6.22	9.2819	-3.0633
58	PORTAGE	5.44	5.7079	-.2664
59	RIVER ROUGE	1.76	4.7999	-3.0378
60	RIVERVIEW	5.00	5.9566	-.9566
61	ROCHESTER HLS	1.61	5.9326	-4.3220
62	ROMULUS	9.54	5.8265	3.7171
63	ROSEVILLE	4.83	4.6879	.1393
64	ROYAL OAK	3.47	5.1357	-1.6609
65	SAGINAW	3.59	3.4607	.1270
66	SAULT STE MARIE	7.88	9.5335	-1.6539
67	SOUTHFIELD	6.99	5.1709	1.8241
68	SOUTHGATE	5.59	5.1882	.4057
69	ST CLAIR SHORES	4.85	4.6915	.1629
70	TAYLOR	4.69	4.6544	.0392
71	TRAVERSE CITY	24.67	9.9021	14.7659
72	TRENTON	4.25	5.4089	-1.1576
73	TROY	4.46	5.1537	-.6941
74	WALKER	6.17	5.6988	.4664
75	WAYNE	2.86	5.2987	-2.4416
76	WESTLAND	3.33	4.6490	-1.3235
77	WOODHAVEN	5.37	5.9428	-.5713
78	WYANDOTTE	3.83	4.0657	-.2380
79	WYOMING	5.61	4.6180	.9892
80	YPSILANTI	3.46	4.2390	-.7803
Case #	CITY	EPOP9	*PRED	*RESID

* * * * MULTIPLE REGRESSION * * * *

Equation Number 1 Dependent Variable.. EPOP11 Apparel and Accessory Stores

Casewise Plot of Standardized Residual

*: Selected M: Missing

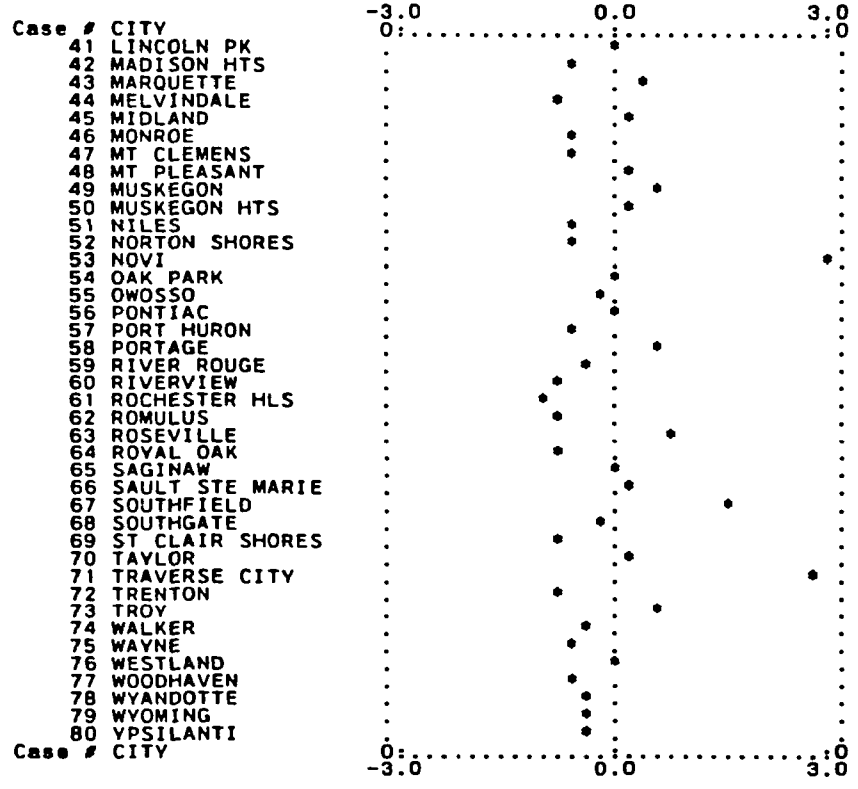


Case #	CITY	EPOP11	*PRED	*RESID
1	ADRIAN	7.84	15.0820	-7.2466
2	ALBION	3.87	12.7568	-8.8884
3	ALLEN PARK	2.57	10.7124	-8.1425
4	ALPENA	22.14	14.7181	7.4254
5	AUBURN HLS	.00	.	.
6	BATTLE CREEK	11.28	6.2538	5.0257
7	BAY CITY	7.81	5.9368	1.8717
8	BENTON HARBOR	19.77	4.4406	15.3335
9	BERKLEY	5.72	9.6580	-3.9339
10	BEVERLY HLS	.92	.	.
11	BIG RAPIDS	13.98	11.7152	2.2657
12	BIRMINGHAM	35.54	17.1108	18.4297
13	BURTON	12.24	8.4876	3.7490
14	CADILLAC	18.96	13.6531	5.3042
15	CLAWSON	4.26	10.1531	-5.8978
16	DEARBORN	18.05	9.8590	8.1923
17	DEARBORN HTS	2.75	9.9713	-7.2227
18	E GRAND RAPIDS	12.74	16.5435	-3.7992
19	EAST DETROIT	4.27	9.0756	-4.8046
20	EAST LANSING	3.95	6.1833	-2.2348
21	ECORSE	1.53	6.4810	-4.9484
22	ESCANABA	17.27	14.4332	2.8330
23	FARMINGTON	20.75	14.0372	6.7138
24	FARMINGTON HLS	5.36	14.9655	-9.6089
25	FERNDALE	7.58	7.3180	.2608
26	FRASER	1.45	9.1170	-7.6709
27	GARDEN CITY	2.46	9.0410	-6.5818
28	GRAND HAVEN	17.81	7.8765	9.9373
29	GRANDVILLE	13.55	9.6720	3.8801
30	GROSSE PT PK	.70	15.9737	-15.2709
31	GROSSE PT WDS	7.30	17.9144	-10.6151
32	HAMTRAMCK	13.38	6.0433	7.3328
33	HARPER WOODS	45.55	10.5676	34.9797
34	HAZEL PARK	.99	6.8553	-5.8652
35	HIGHLAND PARK	3.12	5.2858	-2.1632
36	HOLLAND	13.13	15.7460	-2.6154
37	INKSTER	.94	6.9460	-6.0056
38	JACKSON	5.41	13.2244	-7.8146
39	KALAMAZOO	5.44	5.4886	-.0503
40	KENTWOOD CITY	22.66	9.3462	13.3111
Case #	CITY	EPOP11	*PRED	*RESID

27-Dec-90 MARKET OPPORTUNITY IDENTIFICATION MODEL
12:45:44 PRELIMINARY ANALYSIS

Casewise Plot of Standardized Residual

*: Selected M: Missing



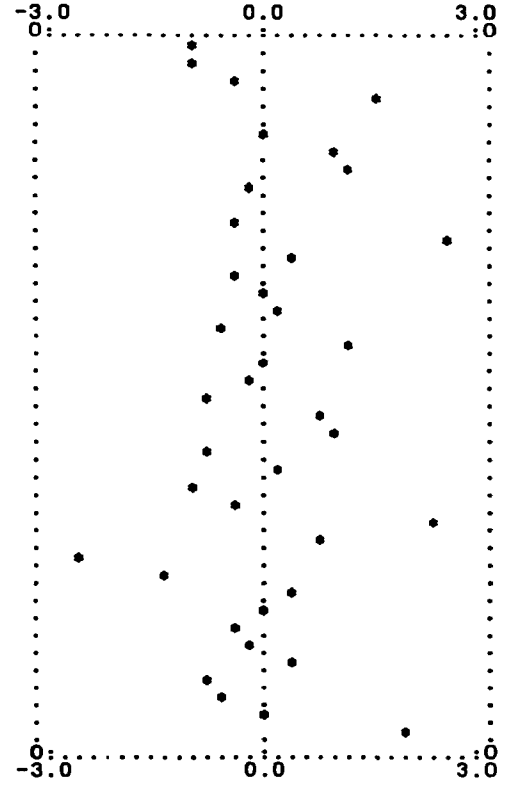
Case #	CITY	EPOP11	*PRED	*RESID
41	LINCOLN PK	6.77	7.5146	-.7468
42	MADISON HTS	3.88	9.0084	-5.1325
43	MARQUETTE	16.85	12.7190	4.1271
44	MELVINDALE	.90	8.8775	-7.9807
45	MIDLAND	13.37	11.0740	2.3002
46	MONROE	10.54	15.5962	-5.0602
47	MT CLEMENS	10.88	16.2571	-5.3763
48	MT PLEASANT	13.25	12.0632	1.1849
49	MUSKEGON	9.80	4.2518	5.5447
50	MUSKEGON HTS	5.48	4.3606	1.1151
51	NILES	8.00	13.9664	-5.9664
52	NORTON SHORES	2.76	8.9155	-6.1518
53	NOVI	41.09	13.1879	27.8982
54	OAK PARK	9.00	8.2152	.7823
55	OWOSSO	12.97	15.7160	-2.7459
56	PONTIAC	4.51	5.3696	-.8644
57	PORT HURON	9.18	14.0501	-4.8704
58	PORTAGE	16.82	10.5491	6.2701
59	RIVER ROUGE	2.64	6.1214	-3.4783
60	RIVERVIEW	4.29	10.7701	-6.4843
61	ROCHESTER HLS	3.22	12.3533	-9.1320
62	ROMULUS	.00	7.6120	-7.6120
63	ROSEVILLE	14.29	7.4684	6.8201
64	ROYAL OAK	2.27	10.3555	-8.0893
65	SAGINAW	5.52	4.8636	.6559
66	SAULT STE MARIE	15.04	13.2524	1.7905
67	SOUTHFIELD	28.39	13.3279	15.0633
68	SOUTHGATE	7.24	9.3096	-2.0703
69	ST CLAIR SHORES	3.05	9.7350	-6.6837
70	TAYLOR	8.42	7.1001	1.3206
71	TRAVERSE CITY	40.48	14.8273	25.6534
72	TRENTON	3.31	10.6156	-7.3091
73	TROY	17.99	13.2283	4.7589
74	WALKER	4.32	8.6633	-4.3477
75	WAYNE	2.86	8.2763	-5.4192
76	WESTLAND	8.25	8.5012	-.2490
77	WOODHAVEN	5.37	10.0542	-4.6827
78	WYANDOTTE	4.15	7.1843	-3.0376
79	WYOMING	4.01	7.3029	-3.2978
80	YPSILANTI	2.16	6.1236	-3.9619
Case #	CITY	EPOP11	*PRED	*RESID

**** MULTIPLE REGRESSION ****

Equation Number 1 Dependent Variable.. EPOP13 Furniture and Home Furnishing Stores

Casewise Plot of Standardized Residual

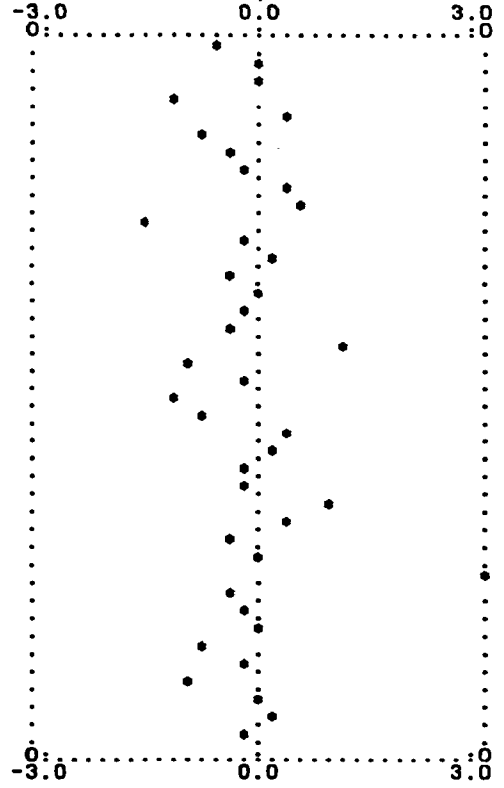
*: Selected M: Missing



Case #	CITY	EPOP13	*PRED	*RESID
1	ADRIAN	5.88	10.0877	-4.2111
2	ALBION	5.80	9.4130	-3.6103
3	ALLEN PARK	4.50	6.4058	-1.9086
4	ALPENA	15.94	9.4346	6.5087
5	AUBURN HLS	3.13	.	.
6	BATTLE CREEK	5.18	5.0246	.1530
7	BAY CITY	8.31	4.2434	4.0690
8	BENTON HARBOR	4.94	.3631	4.5804
9	BERKLEY	4.58	5.0724	-.4932
10	BEVERLY HLS	.00	.	.
11	BIG RAPIDS	8.09	9.5559	-1.4617
12	BIRMINGHAM	22.40	11.7738	10.6216
13	BURTON	5.78	4.3490	1.4294
14	CADILLAC	8.53	10.4608	-1.9300
15	CLAWSON	5.67	5.8608	-.1871
16	DEARBORN	6.48	5.3419	1.1381
17	DEARBORN HTS	3.07	5.1385	-2.0665
18	E GRAND RAPIDS	16.14	11.3768	4.7659
19	EAST DETROIT	4.56	4.8113	-.2555
20	EAST LANSING	2.70	3.3844	-.6828
21	ECORSE	.77	3.7608	-2.9945
22	ESCANABA	12.95	10.1314	2.8182
23	FARMINGTON	12.85	8.8321	4.0138
24	FARMINGTON HLS	4.90	7.8083	-2.9109
25	FERNDALE	5.58	4.7027	.8817
26	FRASER	1.45	5.1519	-3.7057
27	GARDEN CITY	3.07	4.7201	-1.6460
28	GRAND HAVEN	14.57	5.2866	9.2883
29	GRANDVILLE	8.56	5.1963	3.3629
30	GROSSE PT PK	.70	10.8999	-10.1972
31	GROSSE PT WDS	6.08	11.9377	-5.8550
32	HAMTRAMCK	5.35	3.8948	1.4557
33	HARPER WOODS	6.12	6.3187	-.2004
34	HAZEL PARK	1.98	3.6354	-1.6552
35	HIGHLAND PARK	2.34	2.7838	-.4419
36	HOLLAND	12.79	11.1825	1.6026
37	INKSTER	.63	3.6580	-3.0311
38	JACKSON	8.39	10.5416	-2.1564
39	KALAMAZOO	4.66	4.3152	.3462
40	KENTWOOD CITY	12.59	4.9134	7.6740
Case #	CITY	EPOP13	*PRED	*RESID

Casewise Plot of Standardized Residual

*: Selected M: Missing



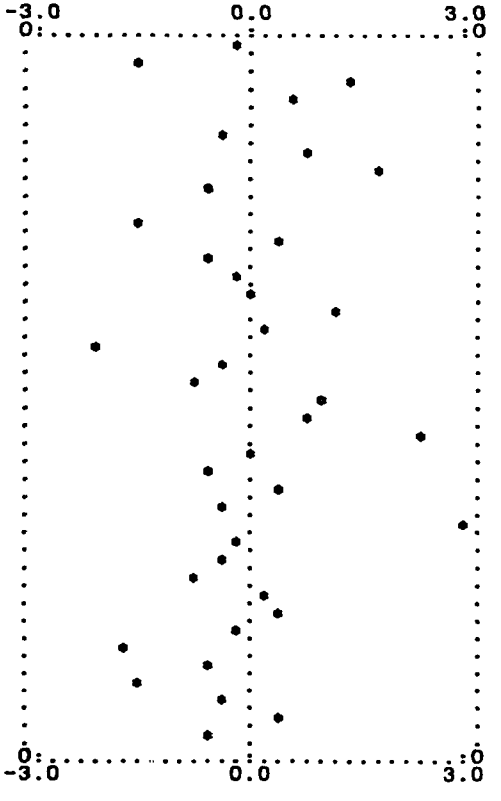
Case #	CITY	EPOP13	*PRED	*RESID
41	LINCOLN PK	2.57	4.7564	-2.1893
42	MADISON HTS	5.37	4.9724	.3943
43	MARQUETTE	10.76	10.4532	.3095
44	MELVINDALE	.00	4.9457	-4.9457
45	MIDLAND	7.52	6.0209	1.5020
46	MONROE	8.25	11.1095	-2.8639
47	MT CLEMENS	9.33	11.0570	-1.7306
48	MT PLEASANT	9.14	9.9976	-.8610
49	MUSKEGON	5.28	3.4871	1.7879
50	MUSKEGON HTS	4.79	2.1873	2.6039
51	NILES	4.80	11.0877	-6.2877
52	NORTON SHORES	5.07	5.5107	-.4439
53	NOVI	7.86	6.9883	.8717
54	OAK PARK	3.53	5.2507	-1.7160
55	OWOSSO	10.38	10.0042	.3719
56	PONTIAC	2.11	2.9756	-.8638
57	PORT HURON	8.88	10.4590	-1.5753
58	PORTAGE	9.89	5.2983	4.5953
59	RIVER ROUGE	.00	3.6097	-3.6097
60	RIVERVIEW	5.00	5.6375	-.6375
61	ROCHESTER HLS	1.41	6.3912	-4.9819
62	ROMULUS	.00	3.2333	-3.2333
63	ROSEVILLE	5.79	3.9844	1.8082
64	ROYAL OAK	6.50	5.6089	.8875
65	SAGINAW	2.48	2.8923	-.4085
66	SAULT STE MARIE	9.31	9.9053	-.5929
67	SOUTHFIELD	10.97	7.3184	3.6540
68	SOUTHGATE	6.58	5.1367	1.4444
69	ST CLAIR SHORES	3.47	5.1549	-1.6875
70	TAYLOR	2.90	3.2547	-.3557
71	TRAVERSE CITY	26.57	10.8955	15.6700
72	TRENTON	4.72	5.9804	-1.2567
73	TROY	6.69	7.4176	-.7281
74	WALKER	4.32	4.5441	-.2285
75	WAYNE	1.43	4.4360	-3.0074
76	WESTLAND	3.57	4.0419	-.4700
77	WOODHAVEN	.90	5.1419	-4.2466
78	WYANDOTTE	4.78	4.9447	-.1600
79	WYOMING	4.97	3.8284	1.1380
80	YPSILANTI	3.46	4.5242	-1.0655
Case #	CITY	EPOP13	*PRED	*RESID

**** MULTIPLE REGRESSION ****

Equation Number 1 Dependent Variable.. EPOP15 Eating and Drinking Places

Casewise Plot of Standardized Residual

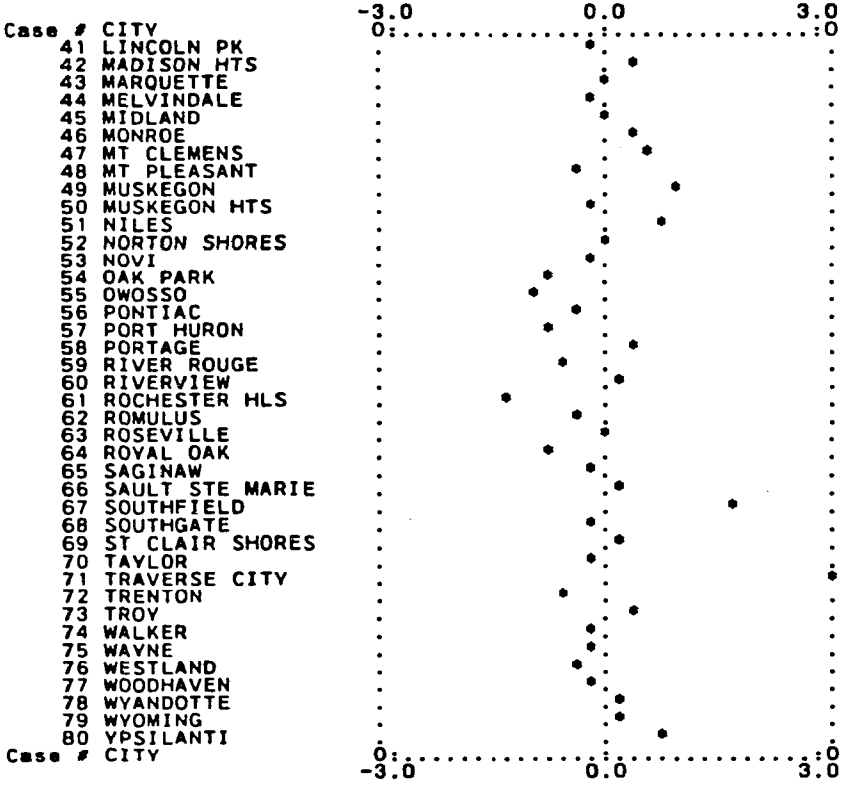
*: Selected M: Missing



Case #	CITY	EPOP15	*PRED	*RESID
1	ADRIAN	31.83	32.6317	-.8002
2	ALBION	21.28	33.2559	-11.9793
3	ALLEN PARK	28.91	18.8001	10.1109
4	ALPENA	37.20	32.3811	4.8200
5	AUBURN HLS	15.00	.	.
6	BATTLE CREEK	16.46	18.6486	-2.1915
7	BAY CITY	24.43	18.9107	5.5225
8	BENTON HARBOR	31.78	18.5143	13.2654
9	BERKLEY	15.46	19.6480	-4.1929
10	BEVERLY HLS	5.51	.	.
11	BIG RAPIDS	20.60	32.6084	-12.0050
12	BIRMINGHAM	23.86	21.5183	2.3376
13	BURTON	15.30	18.9755	-3.6798
14	CADILLAC	32.23	33.0445	-.8170
15	CLAWSON	19.86	20.0055	-.1474
16	DEARBORN	24.76	16.6631	8.0997
17	DEARBORN HTS	19.08	17.3076	1.7708
18	E GRAND RAPIDS	5.95	20.8355	-14.8881
19	EAST DETROIT	16.23	18.7088	-2.4788
20	EAST LANSING	12.05	17.6177	-5.5645
21	ECORSE	26.82	19.4880	7.3319
22	ESCANABA	38.85	32.5782	6.2707
23	FARMINGTON	38.54	20.9190	17.6185
24	FARMINGTON HLS	18.21	18.3561	-.1437
25	FERNDALE	15.96	20.0608	-4.1055
26	FRASER	22.42	19.4218	2.9933
27	GARDEN CITY	15.06	18.2815	-3.2185
28	GRAND HAVEN	41.30	19.5530	21.7425
29	GRANDVILLE	17.12	18.7364	-1.6180
30	GROSSE PT PK	17.57	20.6111	-3.0426
31	GROSSE PT WDS	14.60	20.5972	-5.9987
32	HAMTRAMCK	20.87	19.3549	1.5118
33	HARPER WOODS	21.75	19.2043	2.5496
34	HAZEL PARK	18.81	19.7370	-.9251
35	HIGHLAND PARK	6.25	19.1128	-12.8677
36	HOLLAND	29.03	32.6281	-3.6025
37	INKSTER	7.84	18.5763	-10.7393
38	JACKSON	29.48	32.7377	-3.2543
39	KALAMAZOO	21.11	17.6882	3.4176
40	KENTWOOD CITY	14.27	18.0523	-3.7866
Case #	CITY	EPOP15	*PRED	*RESID

Casewise Plot of Standardized Residual

*: Selected M: Missing



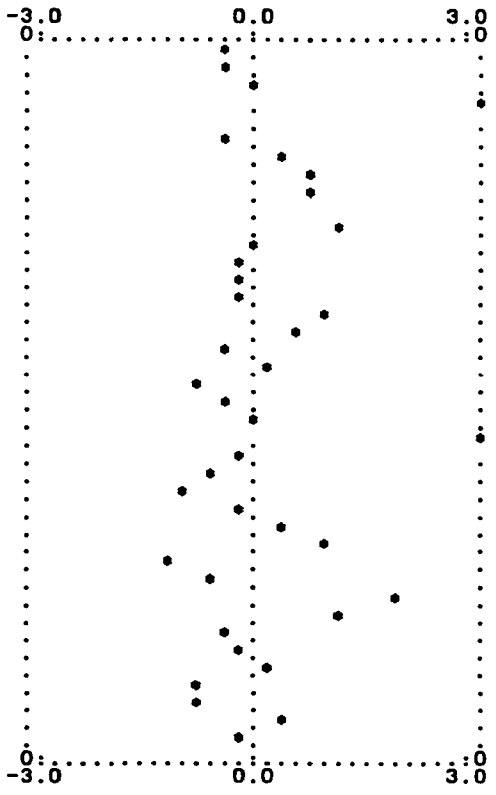
Case #	CITY	EPOP15	*PRED	*RESID
41	LINCOLN PK	16.80	18.5161	-1.7133
42	MADISON HTS	22.66	19.4088	3.2507
43	MARQUETTE	32.76	32.8603	-.1041
44	MELVINDALE	17.94	19.3082	-1.3710
45	MIDLAND	17.83	18.4302	-.5980
46	MONROE	35.27	33.0002	2.2724
47	MT CLEMENS	38.34	33.3966	4.9454
48	MT PLEASANT	29.24	32.4904	-3.2533
49	MUSKEGON	25.12	18.5504	6.5689
50	MUSKEGON HTS	17.11	19.0182	-1.9066
51	NILES	39.20	33.5518	5.6482
52	NORTON SHORES	19.35	18.9359	.4100
53	NOVI	17.86	19.5352	-1.6717
54	OAK PARK	13.50	19.8049	-6.3088
55	OWOSSO	25.29	32.7376	-7.4458
56	PONTIAC	16.05	18.4396	-2.3901
57	PORT HURON	27.24	32.8568	-5.6137
58	PORTAGE	21.02	17.8712	3.1528
59	RIVER ROUGE	14.98	19.5198	-4.5419
60	RIVERVIEW	20.00	18.8207	1.1793
61	ROCHESTER HLS	8.05	18.6001	-10.5470
62	ROMULUS	14.94	18.3393	-3.4016
63	ROSEVILLE	17.57	18.2601	-.6892
64	ROYAL OAK	12.69	18.1947	-5.5042
65	SAGINAW	16.14	17.3838	-1.2392
66	SAULT STE MARIE	34.38	32.7468	1.6372
67	SOUTHFIELD	31.55	18.1828	13.3629
68	SOUTHGATE	16.45	18.4830	-2.0303
69	ST CLAIR SHORES	18.59	17.4489	1.1364
70	TAYLOR	15.05	16.7980	-1.7511
71	TRAVERSE CITY	56.29	33.0122	23.2813
72	TRENTON	14.64	18.8544	-4.2110
73	TROY	20.66	18.4258	2.2372
74	WALKER	16.65	18.6743	-2.0282
75	WAYNE	17.62	18.8163	-1.1973
76	WESTLAND	14.04	16.4953	-2.4541
77	WOODHAVEN	17.01	18.9671	-1.9573
78	WYANDOTTE	20.10	19.0144	1.0813
79	WYOMING	18.58	17.1811	1.4027
80	YPSILANTI	24.64	19.5973	5.0460
Case #	CITY	EPOP15	*PRED	*RESID

* * * * MULTIPLE REGRESSION * * * *

Equation Number 1 Dependent Variable.. EPOP17 Drug and Proprietary Stores

Casewise Plot of Standardized Residual

*: Selected M: Missing

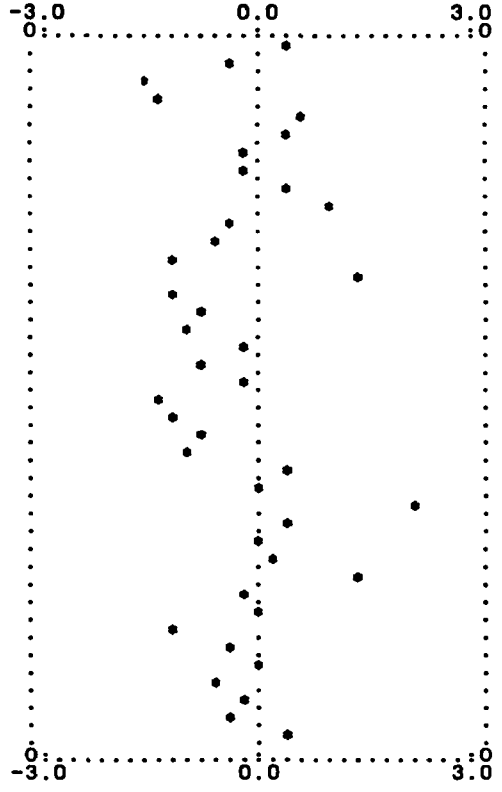


Case #	CITY	EPOP17	*PRED	*RESID
1	ADRIAN	3.92	4.5079	-.5901
2	ALBION	3.87	4.4905	-.6220
3	ALLEN PARK	2.57	2.6066	-.0367
4	ALPENA	8.86	4.4218	4.4356
5	AUBURN HLS	1.88	.	.
6	BATTLE CREEK	2.03	2.4408	-.4068
7	BAY CITY	3.27	2.6544	.6202
8	BENTON HARBOR	4.24	3.1149	1.1223
9	BERKLEY	4.01	2.9307	1.0762
10	BEVERLY HLS	3.68	.	.
11	BIG RAPIDS	5.15	3.6230	1.5279
12	BIRMINGHAM	4.38	4.3286	.0531
13	BURTON	2.72	3.0495	-.3302
14	CADILLAC	3.79	4.1889	-.3974
15	CLAWSON	2.84	2.9986	-.1617
16	DEARBORN	3.47	2.0151	1.4563
17	DEARBORN HTS	2.91	2.1805	.7298
18	E GRAND RAPIDS	3.40	3.8592	-.4607
19	EAST DETROIT	2.85	2.7070	.1404
20	EAST LANSING	.62	1.7060	-1.0826
21	ECORSE	2.30	2.8769	-.5781
22	ESCANABA	4.32	4.2042	.1124
23	FARMINGTON	8.89	3.7686	5.1247
24	FARMINGTON HLS	3.06	3.2712	-.2103
25	FERNDALE	2.39	3.0737	-.6804
26	FRASER	1.45	2.7166	-1.2704
27	GARDEN CITY	2.15	2.3470	-.1952
28	GRAND HAVEN	3.24	2.5837	.6552
29	GRANDVILLE	3.57	2.2533	1.3130
30	GROSSE PT PK	2.11	3.7237	-1.6154
31	GROSSE PT WDS	3.04	3.8993	-.8579
32	HAMTRAMCK	5.35	2.6437	2.7068
33	HARPER WOODS	4.08	2.5649	1.5140
34	HAZEL PARK	2.48	2.9431	-.4679
35	HIGHLAND PARK	2.73	2.9563	-.2241
36	HOLLAND	4.49	4.2686	.2235
37	INKSTER	1.57	2.5622	-.9948
38	JACKSON	3.25	4.2850	-1.0391
39	KALAMAZOO	2.46	1.9120	.5482
40	KENTWOOD CITY	1.96	2.1443	-.1862
Case #	CITY	EPOP17	*PRED	*RESID

27-Dec-90 MARKET OPPORTUNITY IDENTIFICATION MODEL
12:45:57 PRELIMINARY ANALYSIS

Casewise Plot of Standardized Residual

*: Selected M: Missing



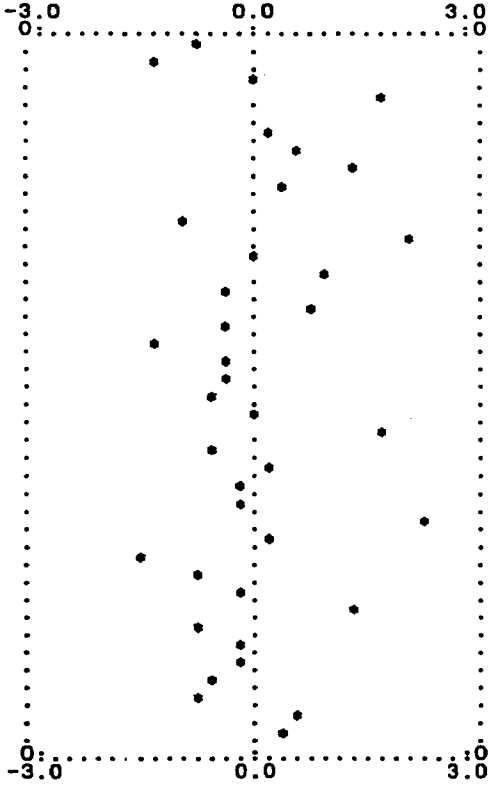
Case #	CITY	EPOP17	*PRED	*RESID
41	LINCOLN PK	3.03	2.4124	.6214
42	MADISON HTS	2.39	2.9884	-.6032
43	MARQUETTE	1.87	3.9765	-2.1047
44	MELVINDALE	.90	2.7688	-1.8719
45	MIDLAND	3.34	2.5565	.7871
46	MONROE	5.04	4.5359	.5030
47	MT CLEMENS	4.66	4.9746	-.3114
48	MT PLEASANT	3.20	3.5770	-.3792
49	MUSKEGON	2.76	2.1470	.6162
50	MUSKEGON HTS	4.11	2.7296	1.3772
51	NILES	4.00	4.4990	-.4990
52	NORTON SHORES	1.84	2.5925	-.7500
53	NOVI	1.79	3.3463	-1.5600
54	OAK PARK	4.82	2.9546	1.8654
55	OWOSSO	3.24	4.7805	-1.5380
56	PONTIAC	1.83	2.8299	-.9997
57	PORT HURON	3.26	4.6406	-1.3832
58	PORTAGE	1.98	2.2174	-.2386
59	RIVER ROUGE	1.76	2.8123	-1.0502
60	RIVERVIEW	2.14	2.5227	-.3798
61	ROCHESTER HLS	1.01	2.8990	-1.8923
62	ROMULUS	.83	2.4877	-1.6578
63	ROSEVILLE	1.54	2.5789	-1.0342
64	ROYAL OAK	1.21	2.6436	-1.4350
65	SAGINAW	2.62	2.1369	.4849
66	SAULT STE MARIE	4.30	4.2443	.0537
67	SOUTHFIELD	5.90	2.9699	2.9278
68	SOUTHGATE	2.96	2.3898	.5717
69	ST CLAIR SHORES	2.36	2.3673	-9.4177E-03
70	TAYLOR	2.21	1.9141	.2946
71	TRAVERSE CITY	6.33	4.3169	2.0082
72	TRENTON	2.36	2.5507	-.1889
73	TROY	3.12	2.9968	.1250
74	WALKER	.62	2.2506	-1.6340
75	WAYNE	1.90	2.5359	-.6312
76	WESTLAND	1.85	1.8768	-.0292
77	WOODHAVEN	1.79	2.6471	-.8565
78	WYANDOTTE	2.23	2.4300	-.1971
79	WYOMING	1.28	1.7910	-.5094
80	YPSILANTI	3.03	2.4698	.5566
Case #	CITY	EPOP17	*PRED	*RESID

* * * * MULTIPLE REGRESSION * * * *

Equation Number 1 Dependent Variable.. EPOP19 Miscellaneous Retail Stores

Casewise Plot of Standardized Residual

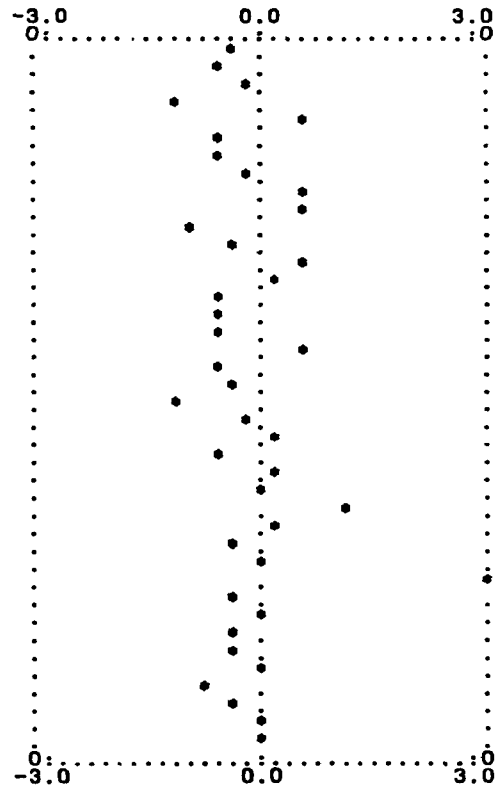
*: Selected M: Missing



Case #	CITY	EPOP19	*PRED	*RESID
1	ADRIAN	17.14	25.2787	-8.1386
2	ALBION	11.61	25.0783	-13.4728
3	ALLEN PARK	14.13	14.6659	-.5316
4	ALPENA	40.74	22.5883	18.1557
5	AUBURN HLS	6.88	.	.
6	BATTLE CREEK	14.05	11.8193	2.2339
7	BAY CITY	15.87	10.6786	5.1904
8	BENTON HARBOR	16.95	3.2011	13.7481
9	BERKLEY	21.18	16.7817	4.3975
10	BEVERLY HLS	2.76	.	.
11	BIG RAPIDS	14.72	23.6067	-8.8900
12	BIRMINGHAM	49.66	28.3394	21.3198
13	BURTON	11.90	11.7644	.1322
14	CADILLAC	36.02	25.5336	10.4853
15	CLAWSON	14.89	18.4308	-3.5372
16	DEARBORN	18.75	10.6888	8.0568
17	DEARBORN HTS	6.47	11.0995	-4.6322
18	E GRAND RAPIDS	11.05	23.9463	-12.9012
19	EAST DETROIT	9.11	13.1122	-4.0006
20	EAST LANSING	6.23	9.2793	-3.0449
21	ECORSE	5.36	11.0664	-5.7024
22	ESCANABA	24.46	24.3229	.1375
23	FARMINGTON	41.50	23.5259	17.9760
24	FARMINGTON HLS	13.31	18.9917	-5.6768
25	FERNDALE	17.55	16.5056	1.0453
26	FRASER	13.02	14.6289	-1.6137
27	GARDEN CITY	9.53	11.5912	-2.0616
28	GRAND HAVEN	36.44	13.7034	22.7339
29	GRANDVILLE	14.27	13.1047	1.1607
30	GROSSE PT PK	7.73	23.0033	-15.2732
31	GROSSE PT WDS	17.64	24.4554	-6.8155
32	HAMTRAMCK	8.56	11.3374	-2.7767
33	HARPER WOODS	28.55	15.1472	13.4048
34	HAZEL PARK	6.44	14.5572	-8.1215
35	HIGHLAND PARK	7.03	8.8913	-1.8655
36	HOLLAND	26.26	27.7970	-1.5358
37	INKSTER	4.70	10.0230	-5.3208
38	JACKSON	19.20	26.0489	-6.8441
39	KALAMAZOO	16.06	10.8630	5.1929
40	KENTWOOD CITY	15.38	11.8527	3.5319
Case #	CITY	EPOP19	*PRED	*RESID

Casewise Plot of Standardized Residual

*: Selected M: Missing



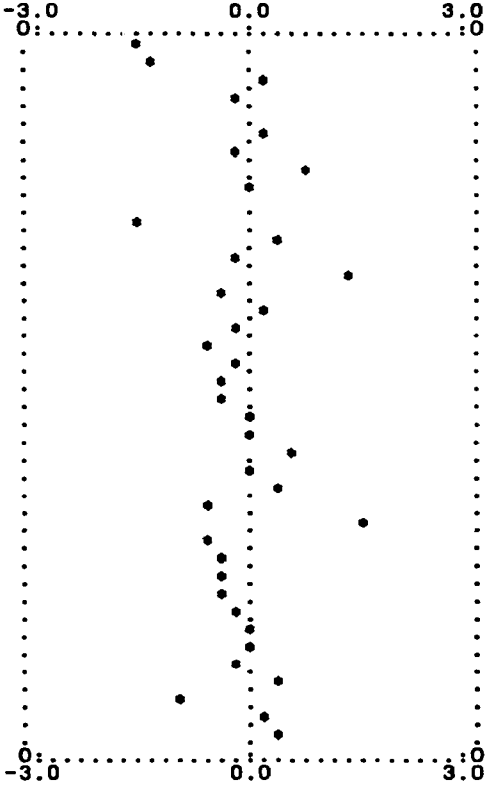
Case #	CITY	EPOP19	*PRED	*RESID
41	LINCOLN PK	8.40	11.8170	-3.4156
42	MADISON HTS	11.03	16.1871	-5.1555
43	MARQUETTE	23.87	25.4132	-1.5480
44	MELVINDALE	1.79	12.8721	-11.0783
45	MIDLAND	19.50	14.0896	5.4145
46	MONROE	22.90	27.7437	-4.8395
47	MT CLEMENS	22.80	29.0828	-6.2849
48	MT PLEASANT	21.93	24.3866	-2.4588
49	MUSKEGON	14.57	8.7852	5.7840
50	MUSKEGON HTS	11.64	6.7797	4.8561
51	NILES	17.60	27.6588	-10.0588
52	NORTON SHORES	7.83	12.1245	-4.2940
53	NOVI	25.37	19.2268	6.1394
54	OAK PARK	19.92	17.1676	2.7552
55	OWOSSO	19.46	24.9741	-5.5189
56	PONTIAC	6.48	11.7747	-5.2986
57	PORT HURON	21.02	26.0083	-4.9837
58	PORTAGE	18.06	12.5243	5.5316
59	RIVER ROUGE	4.41	10.9396	-6.5344
60	RIVERVIEW	10.00	13.6312	-3.6312
61	ROCHESTER HLS	6.64	17.4877	-10.8438
62	ROMULUS	7.05	9.1677	-2.1138
63	ROSEVILLE	13.52	11.2875	2.2287
64	ROYAL OAK	10.58	15.9231	-5.3476
65	SAGINAW	9.94	7.2075	2.7277
66	SAULT STE MARIE	22.92	23.5096	-.5870
67	SOUTHFIELD	30.17	18.2744	11.8998
68	SOUTHGATE	14.81	12.4725	2.3350
69	ST CLAIR SHORES	8.60	12.2951	-3.6959
70	TAYLOR	8.14	7.6796	.4650
71	TRAVERSE CITY	73.37	26.9890	46.3823
72	TRENTON	9.45	14.1578	-4.7105
73	TROY	18.43	18.7311	-.2979
74	WALKER	8.63	12.0068	-3.3755
75	WAYNE	7.62	11.6482	-4.0292
76	WESTLAND	8.01	8.5683	-.5624
77	WOODHAVEN	5.37	12.8973	-7.5258
78	WYANDOTTE	8.93	12.7689	-3.8375
79	WYOMING	9.45	9.2841	.1680
80	YPSILANTI	13.40	14.2091	-.8066
Case #	CITY	EPOP19	*PRED	*RESID

* * * * MULTIPLE REGRESSION * * * *

Equation Number 1 Dependent Variable.. EPOP21 Hotel, Rooming, and Lodging Places

Casewise Plot of Standardized Residual

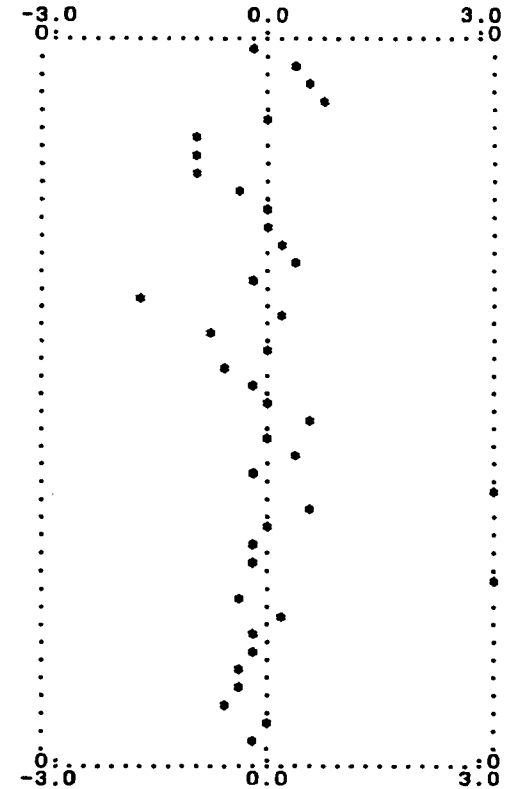
*: Selected M: Missing



Case #	CITY	EPOP21	*PRED	*RESID
1	ADRIAN	.49	4.5343	-4.0446
2	ALBION	.97	4.5556	-3.5885
3	ALLEN PARK	1.93	1.5081	.4193
4	ALPENA	4.43	5.0081	-.5794
5	AUBURN HLS	.63	.	.
6	BATTLE CREEK	2.03	1.2880	.7461
7	BAY CITY	.76	1.4946	-.7390
8	BENTON HARBOR	4.24	2.0644	2.1729
9	BERKLEY	.57	.8316	-.2592
10	BEVERLY HLS	.00	.	.
11	BIG RAPIDS	.74	4.8420	-4.1061
12	BIRMINGHAM	1.95	.8352	1.1122
13	BURTON	.68	1.4356	-.7558
14	CADILLAC	8.53	4.8211	3.7097
15	CLAWSON	.00	.8416	-.8416
16	DEARBORN	1.50	.9545	.5498
17	DEARBORN HTS	.65	1.2231	-.5763
18	E GRAND RAPIDS	.00	1.7429	-1.7429
19	EAST DETROIT	.85	1.1962	-.3419
20	EAST LANSING	.42	1.2417	-.8261
21	ECORSE	.77	1.6858	-.9195
22	ESCANABA	5.04	4.8661	.1699
23	FARMINGTON	.99	.9343	.0539
24	FARMINGTON HLS	1.99	.4678	1.5218
25	FERNDALE	.80	.6905	.1073
26	FRASER	2.17	1.3807	.7885
27	GARDEN CITY	.00	1.5040	-1.5040
28	GRAND HAVEN	5.67	1.6818	3.9862
29	GRANDVILLE	.00	1.6703	-1.6703
30	GROSSE PT PK	.70	1.7203	-1.0176
31	GROSSE PT WDS	.61	1.7360	-1.1277
32	HAMTRAMCK	.54	1.5820	-1.0469
33	HARPER WOODS	1.36	1.6604	-.3008
34	HAZEL PARK	.99	.7729	.2172
35	HIGHLAND PARK	1.56	1.5820	-.0207
36	HOLLAND	3.80	4.2512	-.4502
37	INKSTER	2.51	1.5040	1.0039
38	JACKSON	1.62	4.3033	-2.6804
39	KALAMAZOO	1.42	.7994	.6249
40	KENTWOOD CITY	2.52	1.4474	1.0701
Case #	CITY	EPOP21	*PRED	*RESID

Casewise Plot of Standardized Residual

*: Selected M: Missing



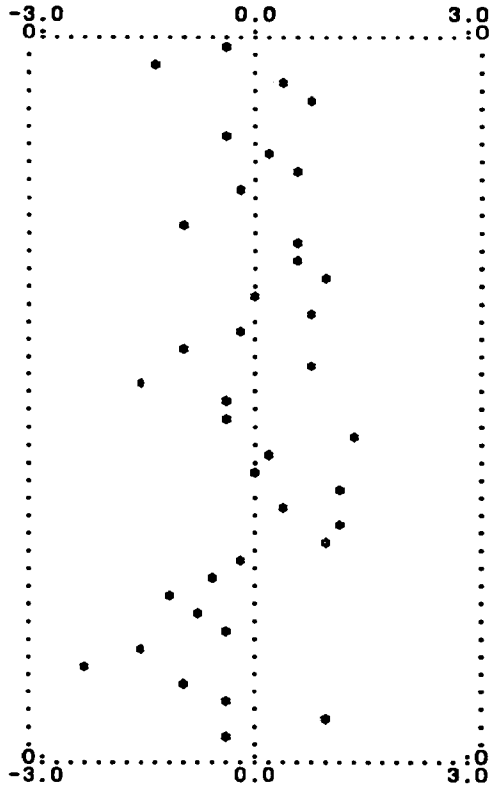
Case #	CITY	EPOP21	*PRED	*RESID
41	LINCOLN PK	.70	1.3402	-.6401
42	MADISON HTS	1.79	.6603	1.1286
43	MARQUETTE	6.08	4.6698	1.4135
44	MELVINDALE	3.59	1.7256	1.8618
45	MIDLAND	1.39	1.3822	.0110
46	MONROE	1.83	4.3781	-2.5458
47	MT CLEMENS	1.55	4.1277	-2.5733
48	MT PLEASANT	1.83	4.6934	-2.8661
49	MUSKEGON	.50	1.6137	-1.1113
50	MUSKEGON HTS	2.05	1.9972	.0562
51	NILES	4.80	4.5955	.2045
52	NORTON SHORES	2.30	1.9077	.3954
53	NOVI	1.79	.8049	.9815
54	OAK PARK	.32	.6267	-.3054
55	OWOSSO	.00	4.6503	-4.6503
56	PONTIAC	.56	.2517	.3115
57	PORT HURON	2.37	4.3323	-1.9634
58	PORTAGE	1.48	1.3444	.1397
59	RIVER ROUGE	.00	1.6897	-1.6897
60	RIVERVIEW	1.43	1.7163	-.2878
61	ROCHESTER HLS	.81	.5570	.2483
62	ROMULUS	3.32	1.6291	1.6904
63	ROSEVILLE	1.16	1.0057	.1528
64	ROYAL OAK	1.51	.3358	1.1750
65	SAGINAW	.83	1.1255	-.2976
66	SAULT STE MARIE	15.76	4.9846	10.7747
67	SOUTHFIELD	1.78	.3253	1.4577
68	SOUTHGATE	1.65	1.5137	.1316
69	ST CLAIR SHORES	.42	.8185	-.4024
70	TAYLOR	.69	1.0892	-.3989
71	TRAVERSE CITY	18.34	4.5671	13.7758
72	TRENTON	.47	1.6213	-1.1489
73	TROY	1.04	.3709	.6697
74	WALKER	1.23	1.6371	-.4041
75	WAYNE	.95	1.6157	-.6633
76	WESTLAND	.00	1.0144	-1.0144
77	WOODHAVEN	.90	1.7546	-.8593
78	WYANDOTTE	.00	1.4249	-1.4249
79	WYOMING	.96	1.1375	-.1763
80	YPSILANTI	.86	1.1351	-.2705
Case #	CITY	EPOP21	*PRED	*RESID

**** MULTIPLE REGRESSION ****

Equation Number 1 Dependent Variable.. EPOP23 Automotive, Repairs, Services, and Packing

Casewise Plot of Standardized Residual

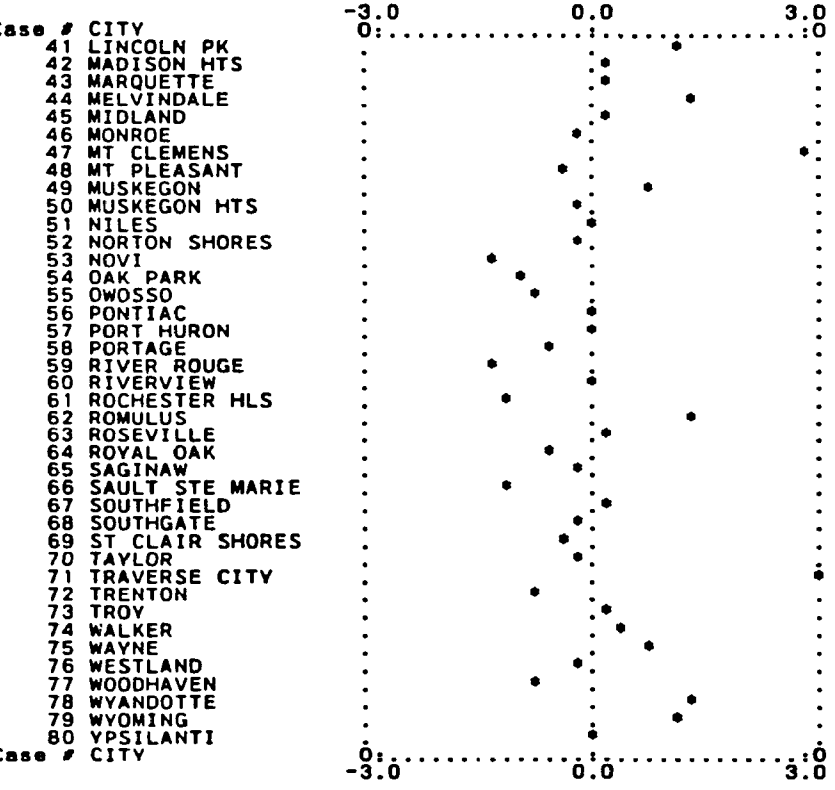
*: Selected M: Missing



Case #	CITY	EPOP23	*PRED	*RESID
1	ADRIAN	11.26	13.0256	-1.7622
2	ALBION	7.74	13.4132	-5.6763
3	ALLEN PARK	8.99	6.8831	2.1114
4	ALPENA	16.83	13.3256	3.5035
5	AUBURN HLS	5.63	.	.
6	BATTLE CREEK	4.44	6.1687	-1.7308
7	BAY CITY	8.31	7.4261	.8863
8	BENTON HARBOR	14.12	11.9343	2.1900
9	BERKLEY	9.16	9.7755	-.6169
10	BEVERLY HLS	1.84	.	.
11	BIG RAPIDS	7.36	11.7832	-4.4249
12	BIRMINGHAM	7.79	5.5074	2.2822
13	BURTON	11.90	8.9413	2.9553
14	CADILLAC	16.11	11.9497	4.1640
15	CLAWSON	9.22	9.2295	-9.6173E-03
16	DEARBORN	9.37	5.7693	3.6036
17	DEARBORN HTS	6.31	6.8395	-.5340
18	E GRAND RAPIDS	.00	4.5790	-4.5790
19	EAST DETROIT	11.67	8.4631	3.2112
20	EAST LANSING	.83	7.8085	-6.9773
21	ECORSE	7.66	9.1875	-1.5247
22	ESCANABA	10.79	12.3812	-1.5898
23	FARMINGTON	13.83	7.7360	6.0980
24	FARMINGTON HLS	7.81	7.1111	.6942
25	FERNDALE	9.17	9.3851	-.2108
26	FRASER	13.74	8.7652	4.9730
27	GARDEN CITY	9.53	7.9973	1.5324
28	GRAND HAVEN	12.96	7.7653	5.1902
29	GRANDVILLE	12.13	8.1753	3.9502
30	GROSSE PT PK	3.51	4.7602	-1.2465
31	GROSSE PT WDS	1.82	4.2346	-2.4098
32	HAMTRAMCK	3.21	8.6324	-5.4221
33	HARPER WOODS	4.08	7.4042	-3.3254
34	HAZEL PARK	8.42	10.4412	-2.0253
35	HIGHLAND PARK	2.73	9.5481	-6.8158
36	HOLLAND	1.38	11.8697	-10.4875
37	INKSTER	4.70	8.6773	-3.9751
38	JACKSON	10.01	11.3543	-1.3462
39	KALAMAZOO	10.10	6.0249	4.0748
40	KENTWOOD CITY	5.87	7.6802	-1.8061
Case #	CITY	EPOP23	*PRED	*RESID

Casewise Plot of Standardized Residual

*: Selected M: Missing



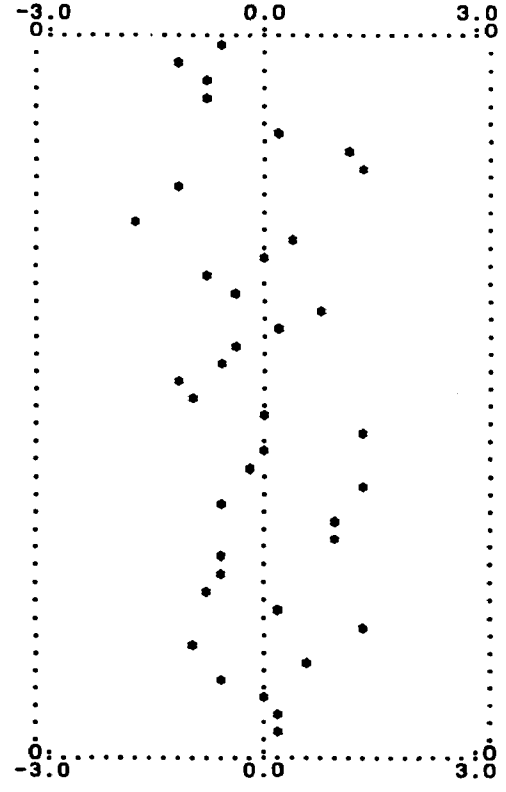
Case #	CITY	EPOP23	*PRED	*RESID
41	LINCOLN PK	12.60	7.2785	5.3236
42	MADISON HTS	10.14	9.2555	.8816
43	MARQUETTE	12.17	11.2464	.9202
44	MELVINDALE	14.35	8.5963	5.7534
45	MIDLAND	8.08	7.3683	.7120
46	MONROE	10.99	12.2180	-1.2239
47	MT CLEMENS	26.42	13.2473	13.1775
48	MT PLEASANT	9.59	11.2152	-1.6218
49	MUSKEGON	10.30	7.2072	3.0917
50	MUSKEGON HTS	8.90	9.6647	-.7667
51	NILES	12.00	11.7851	.2149
52	NORTON SHORES	6.45	7.1473	-.6987
53	NOVI	2.86	8.6488	-5.7906
54	OAK PARK	4.50	8.8089	-4.3101
55	OWOSSO	10.38	13.5712	-3.1950
56	PONTIAC	9.15	9.1398	.0112
57	PORT HURON	11.84	12.0605	-.2156
58	PORTAGE	4.70	7.6326	-2.9331
59	RIVER ROUGE	3.52	9.2631	-5.7389
60	RIVERVIEW	7.86	8.1622	-.3051
61	ROCHESTER HLS	3.02	8.1447	-5.1248
62	ROMULUS	15.35	9.4881	5.8646
63	ROSEVILLE	8.27	8.3191	.9491
64	ROYAL OAK	5.44	7.7838	-2.3450
65	SAGINAW	6.21	7.3319	-1.1224
66	SAULT STE MARIE	7.16	12.1093	-4.9460
67	SOUTHFIELD	7.54	6.7862	.7574
68	SOUTHGATE	7.24	7.7252	-.4860
69	ST CLAIR SHORES	5.55	6.9841	-1.4362
70	TAYLOR	6.90	7.5588	-.6565
71	TRAVERSE CITY	26.57	12.0563	14.5091
72	TRENTON	3.78	7.5660	-3.7871
73	TROY	7.43	6.8410	.5917
74	WALKER	9.86	8.5259	1.3385
75	WAYNE	11.90	8.5387	3.3661
76	WESTLAND	5.54	6.8338	-1.2912
77	WOODHAVEN	5.37	8.6390	-3.2675
78	WYANDOTTE	13.08	7.3500	5.7282
79	WYOMING	12.02	7.2618	4.7536
80	YPSILANTI	8.65	8.2533	.3935
Case #	CITY	EPOP23	*PRED	*RESID

* * * * MULTIPLE REGRESSION * * * *

Equation Number 1 Dependent Variable.. EPOP25 Miscellaneous Repair Services

Casewise Plot of Standardized Residual

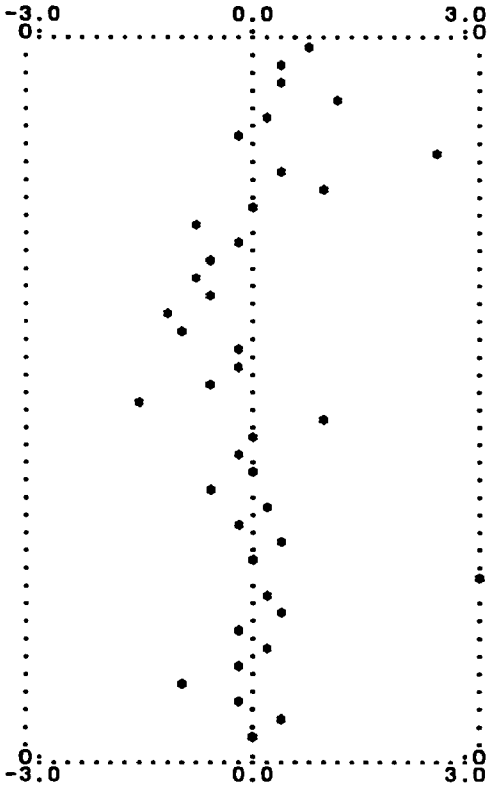
*: Selected M: Missing



Case #	CITY	EPOP25	*PRED	*RESID
1	ADRIAN	4.41	5.8996	-1.4922
2	ALBION	2.90	5.8890	-2.9877
3	ALLEN PARK	.96	2.6355	-1.6718
4	ALPENA	3.54	5.3443	-1.8014
5	AUBURN HLS	4.38	.	.
6	BATTLE CREEK	1.85	1.5633	.2858
7	BAY CITY	5.04	2.1010	2.9367
8	BENTON HARBOR	7.06	3.9042	3.1580
9	BERKLEY	2.86	5.5539	-2.6919
10	BEVERLY HLS	.00	.	.
11	BIG RAPIDS	.00	4.3006	-4.3006
12	BIRMINGHAM	4.87	3.9598	.9087
13	BURTON	3.74	3.6202	.1188
14	CADILLAC	2.84	4.7223	-1.8787
15	CLAWSON	4.26	5.3325	-1.0771
16	DEARBORN	3.70	2.0170	1.6859
17	DEARBORN HTS	3.23	2.5648	.6688
18	E GRAND RAPIDS	.85	1.9188	-1.0692
19	EAST DETROIT	2.56	3.7952	-1.2326
20	EAST LANSING	.00	2.7852	-2.7852
21	ECORSE	.77	3.2894	-2.5231
22	ESCANABA	5.04	4.9688	.0671
23	FARMINGTON	7.91	4.8605	3.0447
24	FARMINGTON HLS	4.59	4.6495	-.0581
25	FERNDALE	4.79	5.0698	-.2832
26	FRASER	7.23	3.9874	3.2432
27	GARDEN CITY	1.54	3.0540	-1.5169
28	GRAND HAVEN	4.86	2.7092	2.1491
29	GRANDVILLE	5.71	3.2646	2.4415
30	GROSSE PT PK	.70	1.9547	-1.2520
31	GROSSE PT WDS	.61	1.8625	-1.2543
32	HAMTRAMCK	1.07	3.0105	-1.9404
33	HARPER WOODS	3.40	2.9160	.4831
34	HAZEL PARK	8.91	5.5733	3.3376
35	HIGHLAND PARK	1.17	3.2965	-2.1255
36	HOLLAND	6.91	5.7035	1.2073
37	INKSTER	1.57	3.1190	-1.5516
38	JACKSON	4.60	4.7863	-.1879
39	KALAMAZOO	2.59	1.9134	.6763
40	KENTWOOD CITY	3.64	2.9842	.6521
Case #	CITY	EPOP25	*PRED	*RESID

Casewise Plot of Standardized Residual

*: Selected M: Missing



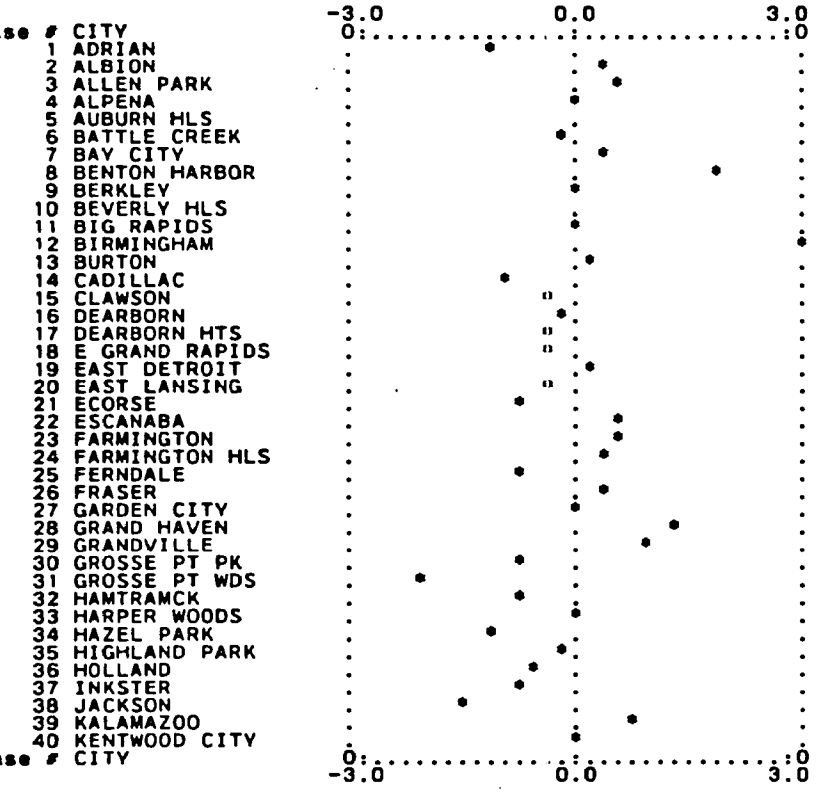
Case #	CITY	EPOP25	*PRED	*RESID
41	LINCOLN PK	4.43	2.5071	1.9270
42	MADISON HTS	5.96	5.1871	.7759
43	MARQUETTE	5.15	4.2780	.8694
44	MELVINDALE	6.28	3.2820	2.9961
45	MIDLAND	3.62	3.1333	.4889
46	MONROE	5.50	5.7461	-.2491
47	MT CLEMENS	12.95	6.8910	6.0624
48	MT PLEASANT	5.03	4.1526	.8726
49	MUSKEGON	3.77	1.5549	2.2130
50	MUSKEGON HTS	2.74	2.6916	.0463
51	NILES	3.20	5.0024	-1.8024
52	NORTON SHORES	1.38	1.9618	-.5800
53	NOVI	3.93	5.2696	-1.3396
54	OAK PARK	2.89	4.8971	-2.0051
55	OWOSSO	4.54	6.1678	-1.6282
56	PONTIAC	1.83	4.7036	-2.8733
57	PORT HURON	2.96	5.2950	-2.3338
58	PORTAGE	2.72	3.2428	-.5221
59	RIVER ROUGE	2.64	3.3052	-.6620
60	RIVERVIEW	2.14	3.3175	-1.1747
61	ROCHESTER HLS	1.21	4.9869	-3.7789
62	ROMULUS	5.81	3.6165	2.1926
63	ROSEVILLE	3.48	3.5485	-.0729
64	ROYAL OAK	4.23	4.6202	-.3900
65	SAGINAW	1.93	2.0739	-.1420
66	SAULT STE MARIE	2.87	4.4102	-1.5449
67	SOUTHFIELD	4.80	4.3662	.4342
68	SOUTHGATE	2.63	2.9450	-.3125
69	ST CLAIR SHORES	4.02	3.1421	.8801
70	TAYLOR	2.48	2.6465	-.1617
71	TRAVERSE CITY	16.45	5.3172	11.1281
72	TRENTON	3.31	2.9901	.3165
73	TROY	5.20	4.3879	.8150
74	WALKER	3.08	3.3407	-.2581
75	WAYNE	3.81	3.2199	.5897
76	WESTLAND	2.09	2.4320	-.3381
77	WOODHAVEN	.90	3.4534	-2.5581
78	WYANDOTTE	2.23	2.5261	-.2932
79	WYOMING	3.68	2.5852	1.0995
80	YPSILANTI	3.46	3.5288	-.0700
Case #	CITY	EPOP25	*PRED	*RESID

* * * * M U L T I P L E R E G R E S S I O N * * * *

Equation Number 1 Dependent Variable.. EPOP27 Amusement and Recreation Services, Motion Pictures Amusement

Casewise Plot of Standardized Residual

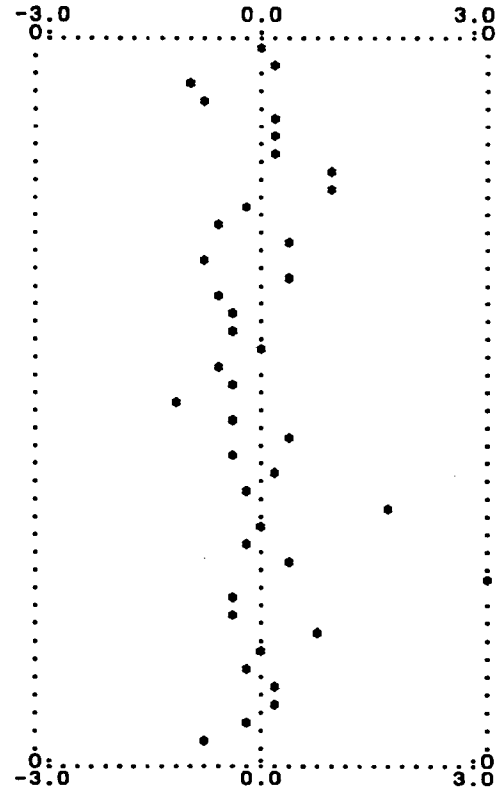
*: Selected M: Missing



Case #	CITY	EPOP27	*PRED	*RESID
1	ADRIAN	4.41	7.7844	-3.3770
2	ALBION	8.70	7.2557	1.4484
3	ALLEN PARK	6.42	4.9124	1.5122
4	ALPENA	7.09	6.9998	.0861
5	AUBURN HLS	5.00	.	.
6	BATTLE CREEK	2.77	3.4511	-.6775
7	BAY CITY	3.78	2.8695	.9089
8	BENTON HARBOR	5.65	.0509	5.5988
9	BERKLEY	5.15	4.9764	.1753
10	BEVERLY HLS	1.84	.	.
11	BIG RAPIDS	7.36	7.2657	.0926
12	BIRMINGHAM	18.01	8.7824	9.2312
13	BURTON	4.08	3.3409	.7380
14	CADILLAC	4.74	7.7866	-3.0473
15	CLAWSON	4.26	5.4848	-1.2294
16	DEARBORN	3.47	4.2116	-.7402
17	DEARBORN HTS	2.75	4.1493	-1.4007
18	E GRAND RAPIDS	6.80	7.7711	-.9741
19	EAST DETROIT	4.84	4.0768	.7638
20	EAST LANSING	2.08	3.1702	-1.0921
21	ECORSE	.77	2.8259	-2.0596
22	ESCANABA	9.35	7.5934	1.7591
23	FARMINGTON	8.89	7.1546	1.7387
24	FARMINGTON HLS	7.65	6.5722	1.0801
25	FERNDALE	1.99	4.3818	-2.3874
26	FRASER	5.78	4.4336	1.3509
27	GARDEN CITY	3.69	3.8924	-.2035
28	GRAND HAVEN	8.10	4.0449	4.0522
29	GRANDVILLE	7.13	4.4406	2.6921
30	GROSSE PT PK	4.92	7.4929	-2.5737
31	GROSSE PT WDS	1.82	8.1700	-6.3452
32	HAMTRAMCK	.54	2.9965	-2.4615
33	HARPER WOODS	4.76	4.9898	-.2312
34	HAZEL PARK	.50	3.8057	-3.3106
35	HIGHLAND PARK	1.17	1.9683	-.7973
36	HOLLAND	6.91	8.8117	-1.9009
37	INKSTER	.31	2.8967	-2.5832
38	JACKSON	3.25	7.8643	-4.6184
39	KALAMAZOO	5.83	3.4518	2.3750
40	KENTWOOD CITY	4.20	4.1726	.0232
Case #	CITY	EPOP27	*PRED	*RESID

Casewise Plot of Standardized Residual

*: Selected M: Missing



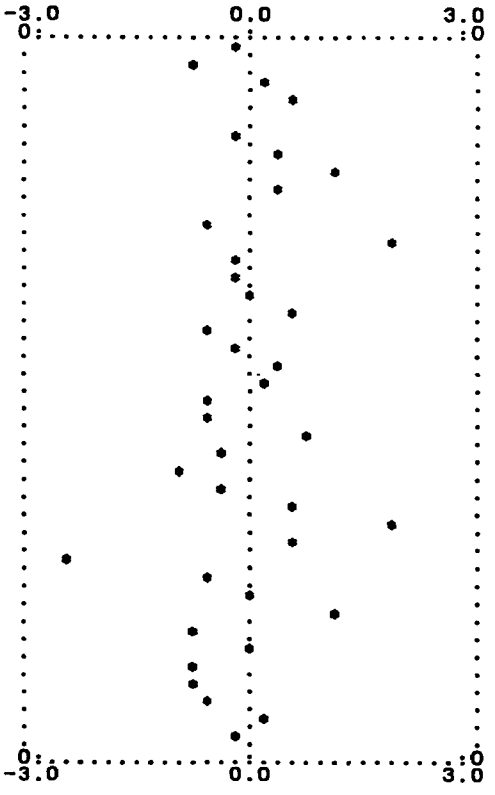
Case #	CITY	EPOP27	*PRED	*RESID
41	LINCOLN PK	3.50	3.6591	-.1585
42	MADISON HTS	5.07	4.7026	.3660
43	MARQUETTE	4.68	7.7566	-3.0771
44	MELVINDALE	1.79	3.8662	-2.0725
45	MIDLAND	5.29	4.8584	.4356
46	MONROE	9.16	8.5656	.5961
47	MT CLEMENS	9.33	8.7433	.5832
48	MT PLEASANT	10.51	7.6124	2.8947
49	MUSKEGON	5.53	2.3618	3.1645
50	MUSKEGON HTS	.68	1.3262	-.6418
51	NILES	6.40	8.2365	-1.8365
52	NORTON SHORES	5.07	3.8441	1.2227
53	NOVI	3.57	6.1114	-2.5387
54	OAK PARK	6.11	4.8448	1.2606
55	OWOSSO	5.84	7.6185	-1.7819
56	PONTIAC	1.55	2.9887	-1.4401
57	PORT HURON	6.81	7.7545	-.9437
58	PORTAGE	4.45	4.5553	-.1032
59	RIVER ROUGE	.88	2.7578	-1.8768
60	RIVERVIEW	3.57	4.6208	-1.0494
61	ROCHESTER HLS	2.62	5.8338	-3.2165
62	ROMULUS	1.66	2.8008	-1.1410
63	ROSEVILLE	4.83	3.3946	1.4326
64	ROYAL OAK	4.23	5.2359	-1.0058
65	SAGINAW	2.90	2.1349	.7628
66	SAULT STE MARIE	6.45	7.1209	-.6739
67	SOUTHFIELD	11.25	6.2833	4.9634
68	SOUTHGATE	4.28	4.1593	.1184
69	ST CLAIR SHORES	3.61	4.3330	-.7269
70	TAYLOR	3.87	2.8394	1.0259
71	TRAVERSE CITY	22.14	8.3413	13.7966
72	TRENTON	3.78	4.7494	-.9705
73	TROY	5.35	6.3561	-1.0045
74	WALKER	6.17	3.9429	2.2223
75	WAYNE	3.81	3.5934	.2161
76	WESTLAND	3.08	3.4188	-.3396
77	WOODHAVEN	4.48	4.1802	.2960
78	WYANDOTTE	4.47	3.8139	.6518
79	WYOMING	2.56	3.3818	-.8186
80	YPSILANTI	1.73	3.9369	-2.2076
Case #	CITY	EPOP27	*PRED	*RESID

*** * * * MULTIPLE REGRESSION * * * ***

Equation Number 1 Dependent Variable.. EPOP29 Health Services

Casewise Plot of Standardized Residual

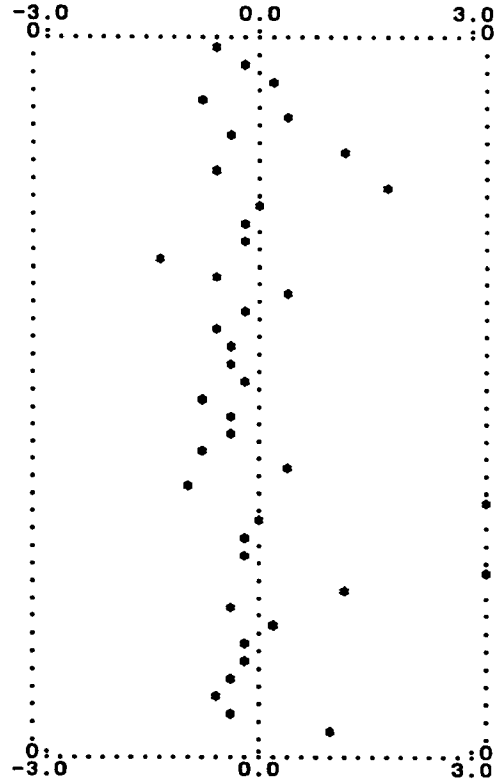
*: Selected M: Missing



Case #	CITY	EPOP29	*PRED	*RESID
1	ADRIAN	36.24	40.0549	-3.8160
2	ALBION	25.15	37.6225	-12.4775
3	ALLEN PARK	29.55	26.5886	2.9649
4	ALPENA	42.52	33.5441	8.9714
5	AUBURN HLS	8.13	.	.
6	BATTLE CREEK	23.67	25.2450	-1.5764
7	BAY CITY	25.19	20.5202	4.6687
8	BENTON HARBOR	19.07	-.7047	19.7725
9	BERKLEY	29.77	24.3458	5.4195
10	BEVERLY HLS	31.25	.	.
11	BIG RAPIDS	24.28	33.3659	-9.0833
12	BIRMINGHAM	92.50	61.1843	31.3181
13	BURTON	16.32	20.4320	-4.1166
14	CADILLAC	37.91	39.4462	-1.5315
15	CLAWSON	27.66	28.1450	-.4854
16	DEARBORN	33.44	25.2814	8.1599
17	DEARBORN HTS	13.26	21.8651	-8.6072
18	E GRAND RAPIDS	48.43	52.0856	-3.6574
19	EAST DETROIT	27.90	21.9505	5.9538
20	EAST LANSING	13.92	12.1873	1.7363
21	ECORSE	6.90	15.7402	-8.8436
22	ESCANABA	28.78	37.1259	-8.3489
23	FARMINGTON	57.31	43.9574	13.3548
24	FARMINGTON HLS	36.42	41.3531	-4.9283
25	FERNDALE	11.97	26.5944	-14.6279
26	FRASER	15.91	21.2460	-5.3386
27	GARDEN CITY	25.51	17.8423	7.6726
28	GRAND HAVEN	51.82	20.8512	30.9707
29	GRANDVILLE	25.68	17.0331	8.6445
30	GROSSE PT PK	9.84	49.6099	-39.7715
31	GROSSE PT WDS	43.80	54.4280	-10.6324
32	HAMTRAMCK	15.52	16.4532	-.9369
33	HARPER WOODS	42.15	24.0276	18.1206
34	HAZEL PARK	7.92	19.8564	-11.9356
35	HIGHLAND PARK	12.10	13.5760	-1.4761
36	HOLLAND	32.83	45.8658	-13.0392
37	INKSTER	4.39	15.3058	-10.9171
38	JACKSON	37.33	45.2743	-7.9467
39	KALAMAZOO	26.54	23.2573	3.2868
40	KENTWOOD CITY	14.55	17.9517	-3.4062
Case #	CITY	EPOP29	*PRED	*RESID

Casewise Plot of Standardized Residual

*: Selected M: Missing



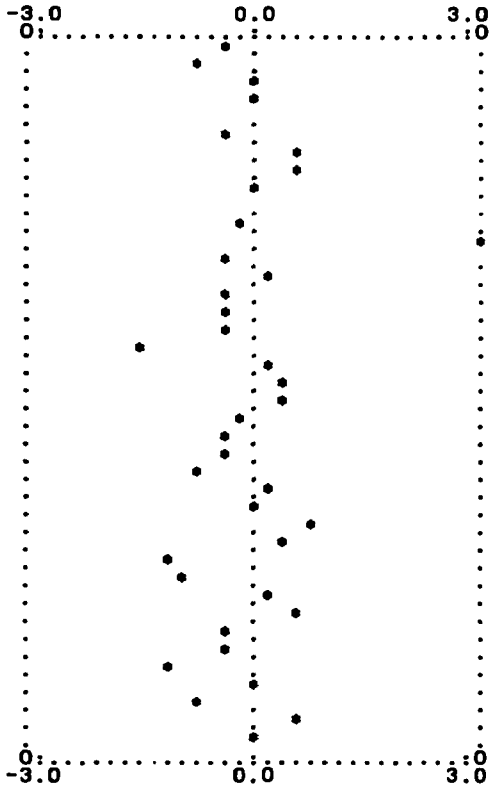
Case #	CITY	EPOP29	*PRED	*RESID
41	LINCOLN PK	13.54	21.3755	-7.8399
42	MADISON HTS	22.66	26.7937	-4.1342
43	MARQUETTE	43.05	40.6094	2.4416
44	MELVINDALE	7.17	18.8752	-11.7003
45	MIDLAND	31.76	24.8833	6.8804
46	MONROE	39.85	45.9881	-6.1346
47	MT CLEMENS	66.32	48.5368	17.7845
48	MT PLEASANT	26.95	36.4648	-9.5119
49	MUSKEGON	41.95	14.6462	27.3031
50	MUSKEGON HTS	8.21	7.2050	1.0085
51	NILES	41.60	45.4286	-3.8286
52	NORTON SHORES	17.50	20.8369	-3.3335
53	NOVI	13.22	34.5695	-21.3505
54	OAK PARK	18.64	28.7712	-10.1337
55	OWOSSO	45.40	39.6467	5.7489
56	PONTIAC	19.71	23.4846	-3.7746
57	PORT HURON	36.42	45.7054	-9.2826
58	PORTAGE	14.35	20.1429	-5.7972
59	RIVER ROUGE	7.93	14.7515	-6.8220
60	RIVERVIEW	15.71	19.6768	-3.9625
61	ROCHESTER HLS	18.92	32.4835	-13.5586
62	ROMULUS	5.39	10.8280	-5.4338
63	ROSEVILLE	13.32	20.5063	-7.1833
64	ROYAL OAK	19.19	31.0432	-11.8563
65	SAGINAW	21.25	15.6879	5.5623
66	SAULT STE MARIE	22.21	36.7014	-14.4951
67	SOUTHFIELD	89.15	39.8042	49.3468
68	SOUTHGATE	19.09	19.8339	-.7487
69	ST CLAIR SHORES	22.88	25.8924	-3.0075
70	TAYLOR	10.91	14.4545	-3.5489
71	TRAVERSE CITY	107.53	42.9774	64.5495
72	TRENTON	42.04	22.7989	19.2417
73	TROY	35.08	39.9201	-4.8376
74	WALKER	17.26	14.8113	2.4514
75	WAYNE	13.33	16.6870	-3.3537
76	WESTLAND	13.67	18.1635	-4.4918
77	WOODHAVEN	13.43	18.0123	-4.5835
78	WYANDOTTE	12.76	21.4815	-8.7223
79	WYOMING	8.01	15.6008	-7.5906
80	YPSILANTI	36.32	21.1322	15.1842
Case #	CITY	EPOP29	*PRED	*RESID

* * * * MULTIPLE REGRESSION * * * *

Equation Number 1 Dependent Variable.. EPOP31 Legal Services

Casewise Plot of Standardized Residual

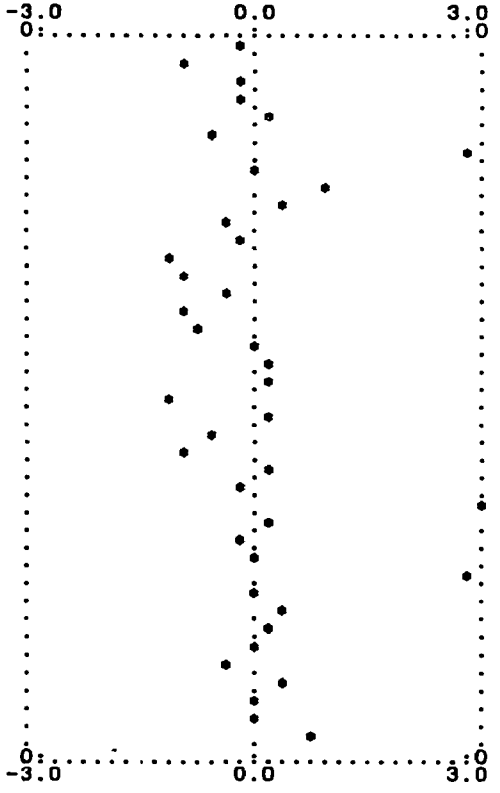
*: Selected M: Missing



Case #	CITY	EPOP31	*PRED	*RESID
1	ADRIAN	9.30	13.5188	-4.2142
2	ALBION	5.80	12.5121	-6.7094
3	ALLEN PARK	4.50	5.2298	-.7325
4	ALPENA	9.74	9.4466	.2965
5	AUBURN HLS	.63	.	.
6	BATTLE CREEK	3.33	7.1508	-3.8224
7	BAY CITY	9.57	5.0540	4.5178
8	BENTON HARBOR	2.82	-3.0397	5.8645
9	BERKLEY	5.72	6.4951	-.7710
10	BEVERLY HLS	2.76	.	.
11	BIG RAPIDS	5.89	7.6100	-1.7233
12	BIRMINGHAM	51.61	22.9752	28.6314
13	BURTON	2.72	5.3556	-2.6363
14	CADILLAC	12.32	11.2424	1.0799
15	CLAWSON	4.26	7.7243	-3.4689
16	DEARBORN	4.51	7.3664	-2.8536
17	DEARBORN HTS	1.46	4.6702	-3.2151
18	E GRAND RAPIDS	2.55	15.7152	-13.1663
19	EAST DETROIT	6.83	5.3005	1.5332
20	EAST LANSING	2.91	-.4536	3.3630
21	ECORSE	5.36	2.0199	3.3441
22	ESCANABA	8.63	10.4079	-1.7748
23	FARMINGTON	10.87	14.7467	-3.8772
24	FARMINGTON HLS	12.24	16.1508	-3.9071
25	FERNDALE	1.99	9.1813	-7.1869
26	FRASER	4.34	3.3623	.9761
27	GARDEN CITY	.92	1.7057	-.7835
28	GRAND HAVEN	9.72	2.3122	7.4044
29	GRANDVILLE	2.85	-.5960	3.4491
30	GROSSE PT PK	3.51	14.6814	-11.1677
31	GROSSE PT WDS	7.30	16.6481	-9.3488
32	HAMTRAMCK	3.21	2.0673	1.1429
33	HARPER WOODS	7.48	2.8670	4.6109
34	HAZEL PARK	1.98	5.9704	-3.9902
35	HIGHLAND PARK	.00	2.8676	-2.8676
36	HOLLAND	5.53	15.6038	-10.0751
37	INKSTER	1.25	2.1202	-.8663
38	JACKSON	9.74	16.4872	-6.7496
39	KALAMAZOO	12.30	7.1174	5.1836
40	KENTWOOD CITY	.56	1.2201	-.6606
Case #	CITY	EPOP31	*PRED	*RESID

Casewise Plot of Standardized Residual

*: Selected M: Missing



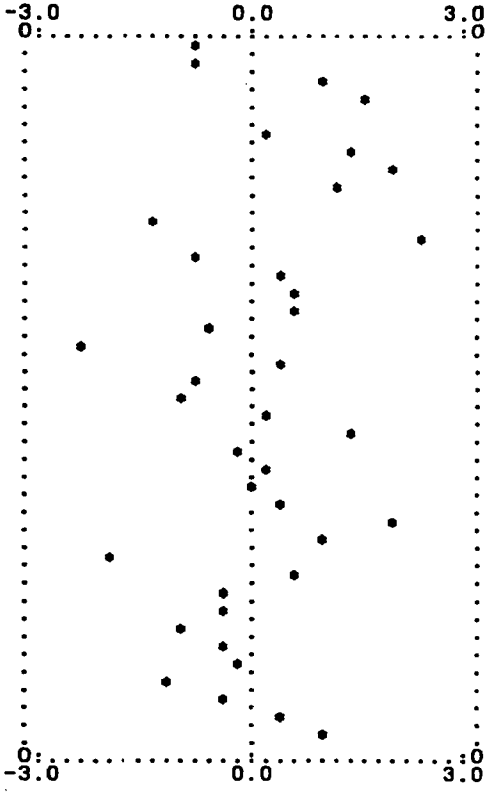
Case #	CITY	EPOP31	*PRED	*RESID
41	LINCOLN PK	2.80	4.5609	-1.7604
42	MADISON HTS	1.19	9.0960	-7.9034
43	MARQUETTE	10.76	12.0741	-1.3114
44	MELVINDALE	.90	1.9023	-1.0054
45	MIDLAND	6.13	4.9137	1.2161
46	MONROE	11.45	15.9852	-4.5331
47	MT CLEMENS	45.08	18.7343	26.3434
48	MT PLEASANT	8.68	9.2623	-.5825
49	MUSKEGON	9.29	1.2630	8.0312
50	MUSKEGON HTS	2.05	-1.5418	3.5952
51	NILES	12.00	15.0219	-3.0219
52	NORTON SHORES	.92	2.1925	-1.2713
53	NOVI	1.43	11.4683	-10.0393
54	OAK PARK	1.29	9.7785	-8.4931
55	OWOSSO	10.38	13.6921	-3.3160
56	PONTIAC	3.52	11.4543	-7.9347
57	PORT HURON	10.07	17.5138	-7.4457
58	PORTAGE	2.23	2.4684	-.2423
59	RIVER ROUGE	3.52	1.4060	2.1182
60	RIVERVIEW	2.86	.9735	1.8837
61	ROCHESTER HLS	1.01	11.1314	-10.1248
62	ROMULUS	.83	-.6449	1.4747
63	ROSEVILLE	1.35	6.1563	-4.8047
64	ROYAL OAK	3.02	11.6607	-8.6391
65	SAGINAW	7.04	4.4986	2.5388
66	SAULT STE MARIE	7.88	10.4645	-2.5848
67	SOUTHFIELD	52.94	15.6529	37.2891
68	SOUTHGATE	3.62	2.3424	1.2772
69	ST CLAIR SHORES	6.24	8.3312	-2.0899
70	TAYLOR	1.93	2.7358	-.8032
71	TRAVERSE CITY	39.85	13.5260	26.3222
72	TRENTON	3.31	2.8578	.4488
73	TROY	17.99	15.3722	2.6150
74	WALKER	.62	-.9228	1.5393
75	WAYNE	1.43	1.2538	.1748
76	WESTLAND	1.35	4.2430	-2.8882
77	WOODHAVEN	3.58	.7849	2.7961
78	WYANDOTTE	4.47	3.8511	.6146
79	WYOMING	1.44	1.8924	-.4505
80	YPSILANTI	10.38	4.2374	6.1387
Case #	CITY	EPOP31	*PRED	*RESID

* * * * MULTIPLE REGRESSION * * * *

Equation Number 1 Dependent Variable.. EPOP33 Personal Services

Casewise Plot of Standardized Residual

*: Selected M: Missing

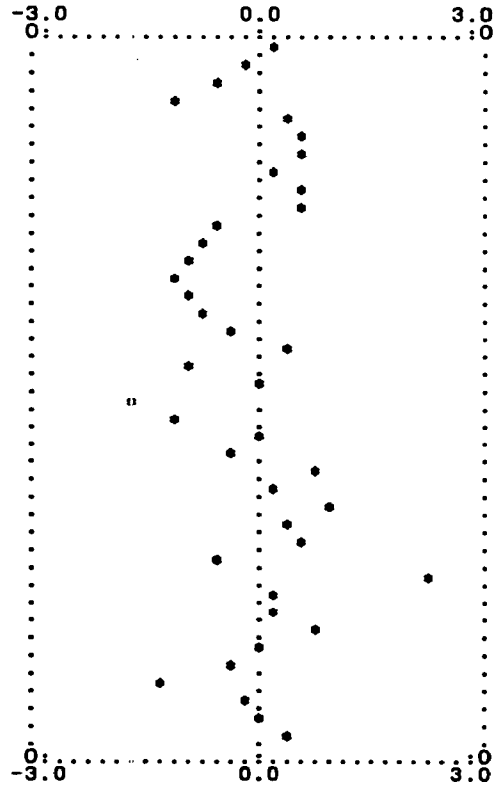


Case #	CITY	EPOP33	*PRED	*RESID
1	ADRIAN	12.24	15.9414	-3.6985
2	ALBION	12.57	15.5268	-2.9542
3	ALLEN PARK	14.13	9.5872	4.5471
4	ALPENA	21.26	14.6929	6.5649
5	AUBURN HLS	10.00	.	.
6	BATTLE CREEK	9.25	8.5287	.7169
7	BAY CITY	13.85	7.8426	6.0113
8	BENTON HARBOR	12.71	4.5358	8.1760
9	BERKLEY	15.46	10.2757	5.1793
10	BEVERLY HLS	1.84	.	.
11	BIG RAPIDS	8.83	14.8935	-6.0635
12	BIRMINGHAM	25.32	15.0390	10.2775
13	BURTON	4.76	8.3374	-3.5788
14	CADILLAC	17.06	15.7007	1.3609
15	CLAWSON	13.48	10.8588	2.6164
16	DEARBORN	11.22	8.9810	2.2433
17	DEARBORN HTS	6.63	8.7413	-2.1124
18	E GRAND RAPIDS	3.40	13.0492	-9.6507
19	EAST DETROIT	10.82	9.0306	1.7894
20	EAST LANSING	4.36	7.5926	-3.2285
21	ECORSE	3.83	7.6311	-3.7997
22	ESCANABA	16.55	15.3689	1.1779
23	FARMINGTON	18.77	12.9122	5.8625
24	FARMINGTON HLS	11.48	12.2390	-.7606
25	FERNDALE	10.77	10.0962	.6736
26	FRASER	9.40	9.2507	.1492
27	GARDEN CITY	9.84	8.3722	1.4648
28	GRAND HAVEN	17.00	8.6995	8.3045
29	GRANDVILLE	12.84	8.6896	4.1492
30	GROSSE PT PK	4.22	12.7055	-8.4890
31	GROSSE PT WDS	15.82	13.4136	2.4014
32	HAMTRAMCK	5.89	7.7995	-1.9140
33	HARPER WOODS	8.16	9.4952	-1.3375
34	HAZEL PARK	5.45	9.2814	-3.8358
35	HIGHLAND PARK	5.46	6.9346	-1.4701
36	HOLLAND	16.59	17.1014	-.5154
37	INKSTER	2.82	7.6071	-4.7858
38	JACKSON	14.34	16.3316	-1.9957
39	KALAMAZOO	10.10	8.5827	1.5170
40	KENTWOOD CITY	12.31	8.5592	3.7485
Case #	CITY	EPOP33	*PRED	*RESID

27-Dec-90 MARKET OPPORTUNITY IDENTIFICATION MODEL
12:46:33 PRELIMINARY ANALYSIS

Casewise Plot of Standardized Residual

*: Selected M: Missing



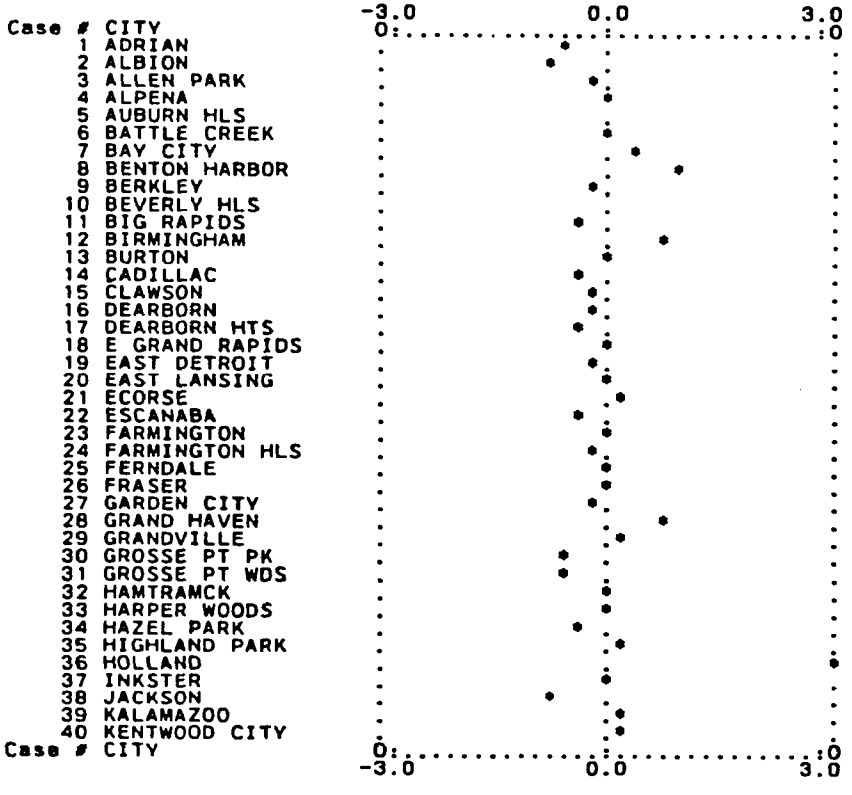
Case #	CITY	EPOP33	*PRED	*RESID
41	LINCOLN PK	9.10	8.4894	.6121
42	MADISON HTS	9.24	10.2558	-1.0131
43	MARQUETTE	13.10	15.7629	-2.6605
44	MELVINDALE	3.59	8.4598	-4.8724
45	MIDLAND	11.42	9.5169	1.9069
46	MONROE	19.24	16.9294	2.3101
47	MT CLEMENS	20.21	17.4959	2.7114
48	MT PLEASANT	15.99	15.3539	.6351
49	MUSKEGON	9.80	7.0005	2.7960
50	MUSKEGON HTS	8.21	5.8414	2.3722
51	NILES	14.40	16.5669	-2.1669
52	NORTON SHORES	5.07	8.2773	-3.2105
53	NOVI	7.15	11.5881	-4.4426
54	OAK PARK	5.78	10.5133	-4.7292
55	OWOSSO	11.67	15.7814	-4.1083
56	PONTIAC	5.91	8.9560	-3.0430
57	PORT HURON	14.81	16.3294	-1.5234
58	PORTAGE	10.64	8.9954	1.6403
59	RIVER ROUGE	3.52	7.5336	-4.0094
60	RIVERVIEW	8.57	8.9510	-.3795
61	ROCHESTER HLS	3.62	11.2595	-7.6356
62	ROMULUS	2.07	7.2315	-5.1568
63	ROSEVILLE	8.11	8.5075	-.3979
64	ROYAL OAK	9.06	10.8062	-1.7416
65	SAGINAW	10.07	7.0560	3.0171
66	SAULT STE MARIE	15.76	14.9332	.8261
67	SOUTHFIELD	15.77	11.9857	3.7871
68	SOUTHGATE	10.20	8.6783	1.5224
69	ST CLAIR SHORES	11.51	9.3919	2.1199
70	TAYLOR	4.56	7.4490	-2.8935
71	TRAVERSE CITY	26.57	16.4656	10.0999
72	TRENTON	10.39	9.2413	1.1507
73	TROY	13.23	12.0534	1.1768
74	WALKER	11.71	8.2454	3.4685
75	WAYNE	8.10	8.1367	-.0414
76	WESTLAND	6.40	8.0261	-1.6214
77	WOODHAVEN	2.69	8.5726	-5.8869
78	WYANDOTTE	7.97	8.6273	-.6528
79	WYOMING	7.85	7.9030	-.0530
80	YPSILANTI	10.38	9.0307	1.3454
Case #	CITY	EPOP33	*PRED	*RESID

* * * * MULTIPLE REGRESSION * * * *

Equation Number 1 Dependent Variable.. EPOP35 Business Services (Advert Agencies, Computer Program)

Casewise Plot of Standardized Residual

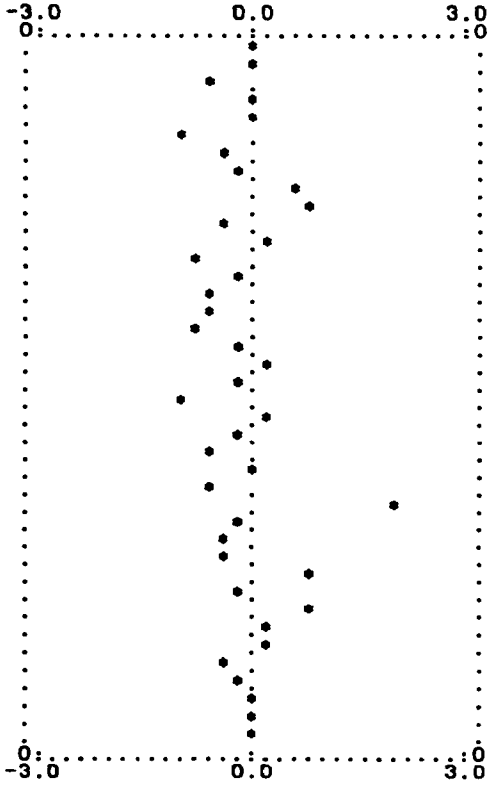
*: Selected M: Missing



Case #	CITY	EPOP35	*PRED	*RESID
1	ADRIAN	14.69	26.5744	-11.8830
2	ALBION	5.80	22.6012	-16.7985
3	ALLEN PARK	8.35	12.0020	-3.6500
4	ALPENA	17.71	18.0742	-.3594
5	AUBURN HLS	15.63	.	.
6	BATTLE CREEK	5.73	6.7446	-1.0124
7	BAY CITY	8.31	2.1180	6.1944
8	BENTON HARBOR	8.47	-13.8081	22.2827
9	BERKLEY	14.31	20.2682	-5.9580
10	BEVERLY HLS	11.95	.	.
11	BIG RAPIDS	11.04	18.6904	-7.6528
12	BIRMINGHAM	50.63	34.2673	16.3656
13	BURTON	6.80	6.4973	.3008
14	CADILLAC	11.37	21.4380	-10.0636
15	CLAWSON	18.44	21.6668	-3.2271
16	DEARBORN	14.00	17.6166	-3.6152
17	DEARBORN HTS	6.47	13.9090	-7.4417
18	E GRAND RAPIDS	20.39	19.4855	.9053
19	EAST DETROIT	8.26	12.6128	-4.3554
20	EAST LANSING	7.27	8.1753	-.9018
21	ECORSE	2.30	.0261	2.2728
22	ESCANABA	11.51	21.2749	-9.7641
23	FARMINGTON	26.68	27.0645	-.3846
24	FARMINGTON HLS	30.76	33.6678	-2.9056
25	FERNDALE	17.15	17.8910	-.7390
26	FRASER	12.29	11.0679	1.2242
27	GARDEN CITY	5.53	8.4500	-2.9167
28	GRAND HAVEN	20.24	4.7096	15.5333
29	GRANDVILLE	14.27	8.3967	5.8686
30	GROSSE PT PK	7.73	18.7644	-11.0343
31	GROSSE PT WDS	9.73	21.8883	-12.1560
32	HAMTRAMCK	3.21	1.6335	1.5768
33	HARPER WOODS	10.20	10.1483	.0488
34	HAZEL PARK	7.43	15.3236	-7.8979
35	HIGHLAND PARK	3.90	-1.9843	5.8875
36	HOLLAND	182.79	33.7519	149.0401
37	INKSTER	2.82	3.5712	-.7498
38	JACKSON	12.98	27.8892	-14.9057
39	KALAMAZOO	16.19	13.3722	2.8132
40	KENTWOOD CITY	15.38	10.4882	4.8964
Case #	CITY	EPOP35	*PRED	*RESID

Casewise Plot of Standardized Residual

*: Selected M: Missing



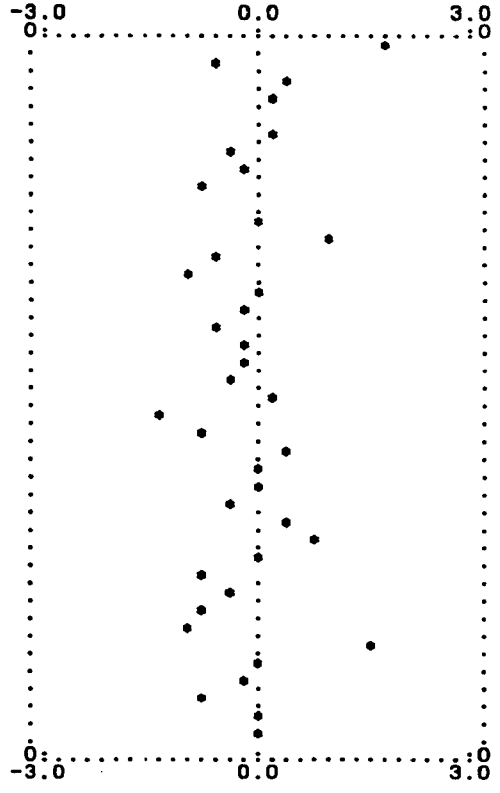
Case #	CITY	EPOP35	*PRED	*RESID
41	LINCOLN PK	7.47	8.1901	-.7221
42	MADISON HTS	19.38	21.0176	-1.6378
43	MARQUETTE	10.29	22.5993	-12.3045
44	MELVINDALE	5.38	4.6443	.7369
45	MIDLAND	13.65	14.1558	-.5030
46	MONROE	12.37	30.9123	-18.5440
47	MT CLEMENS	24.87	34.9513	-10.0808
48	MT PLEASANT	16.45	21.8698	-5.4239
49	MUSKEGON	10.80	-1.7602	12.5615
50	MUSKEGON HTS	5.48	-9.7642	15.2399
51	NILES	18.40	25.3740	-6.9740
52	NORTON SHORES	5.07	2.1434	2.9234
53	NOVI	11.43	26.2703	-14.8376
54	OAK PARK	17.35	20.9158	-3.5636
55	OWOSSO	11.02	24.9588	-13.9342
56	PONTIAC	7.74	18.7101	-10.9669
57	PORT HURON	13.03	27.6943	-14.6649
58	PORTAGE	7.91	13.9812	-6.0663
59	RIVER ROUGE	1.76	-.4578	2.2199
60	RIVERVIEW	4.29	8.9523	-4.6666
61	ROCHESTER HLS	7.65	28.6795	-21.0290
62	ROMULUS	7.05	2.6631	4.3908
63	ROSEVILLE	8.88	11.9847	-3.1026
64	ROYAL OAK	14.65	28.4106	-13.7560
65	SAGINAW	6.21	5.0119	1.1975
66	SAULT STE MARIE	5.73	17.1254	-11.3947
67	SOUTHFIELD	73.65	33.5505	40.1020
68	SOUTHGATE	3.62	9.1250	-5.5053
69	ST CLAIR SHORES	9.99	19.3011	-9.3150
70	TAYLOR	3.31	10.0426	-6.7295
71	TRAVERSE CITY	43.01	27.3028	15.7080
72	TRENTON	7.56	10.2088	-2.6509
73	TROY	48.61	32.9681	15.6420
74	WALKER	12.33	6.6311	5.6993
75	WAYNE	9.52	5.1943	4.3295
76	WESTLAND	4.43	13.8774	-9.4433
77	WOODHAVEN	1.79	6.4939	-4.7033
78	WYANDOTTE	6.70	7.0454	-.3468
79	WYOMING	9.93	11.0546	-1.1219
80	YPSILANTI	8.65	10.2466	-1.5999
Case #	CITY	EPOP35	*PRED	*RESID

**** MULTIPLE REGRESSION ****

Equation Number 1 Dependent Variable.. EPOP37 Social Services

Casewise Plot of Standardized Residual

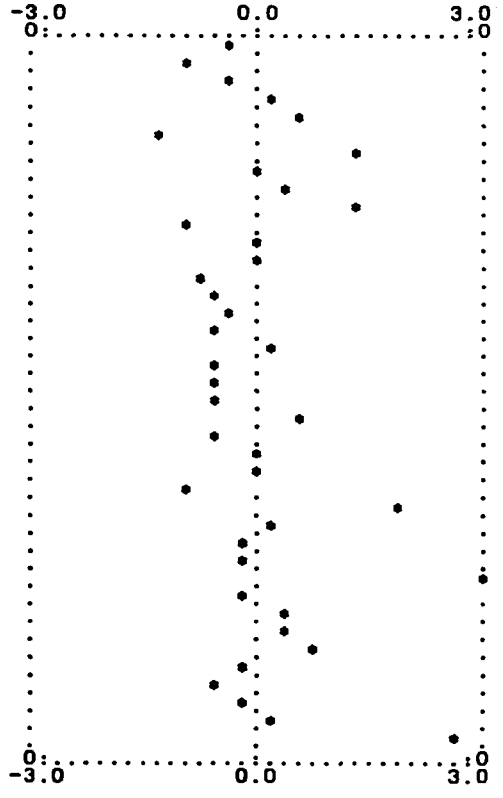
*: Selected M: Missing



Case #	CITY	EPOP37	*PRED	*RESID
1	ADRIAN	7.35	3.8011	3.5446
2	ALBION	2.90	3.9313	-1.0299
3	ALLEN PARK	2.25	1.5580	.6907
4	ALPENA	3.54	3.2409	.3020
5	AUBURN HLS	2.50	.	.
6	BATTLE CREEK	2.40	1.8668	.5371
7	BAY CITY	.76	1.5570	-.8014
8	BENTON HARBOR	.00	.2281	-.2281
9	BERKLEY	.57	2.0257	-1.4532
10	BEVERLY HLS	.92	.	.
11	BIG RAPIDS	3.68	3.7629	-.0838
12	BIRMINGHAM	4.87	3.0568	1.8117
13	BURTON	.34	1.3703	-1.0304
14	CADILLAC	1.90	3.8396	-1.9439
15	CLAWSON	2.13	2.1947	-.0671
16	DEARBORN	1.16	1.6433	-.4862
17	DEARBORN HTS	.32	1.4173	-1.0940
18	E GRAND RAPIDS	1.70	2.1577	-.4585
19	EAST DETROIT	1.14	1.6040	-.4651
20	EAST LANSING	.62	1.4118	-.7883
21	ECORSE	1.53	1.2777	.2548
22	ESCANABA	.72	3.5874	-2.8680
23	FARMINGTON	.99	2.5195	-1.5314
24	FARMINGTON HLS	2.91	2.3044	.6034
25	FERNDALE	2.39	2.3479	.0454
26	FRASER	1.45	1.5997	-.1536
27	GARDEN CITY	.31	1.2737	-.9663
28	GRAND HAVEN	2.43	1.5152	.9140
29	GRANDVILLE	2.85	1.2292	1.6238
30	GROSSE PT PK	2.11	2.0983	9.9340E-03
31	GROSSE PT WDS	.61	2.1296	-1.5213
32	HAMTRAMCK	.54	1.4344	-.8994
33	HARPER WOODS	.00	1.4641	-1.4641
34	HAZEL PARK	.00	2.0316	-2.0316
35	HIGHLAND PARK	4.29	1.2145	3.0790
36	HOLLAND	4.15	4.2460	-.0995
37	INKSTER	.94	1.2658	-.3254
38	JACKSON	2.70	4.3209	-1.6160
39	KALAMAZOO	2.20	2.1012	.1000
40	KENTWOOD CITY	1.40	1.3150	.0836
Case #	CITY	EPOP37	*PRED	*RESID

Casewise Plot of Standardized Residual

*: Selected M: Missing



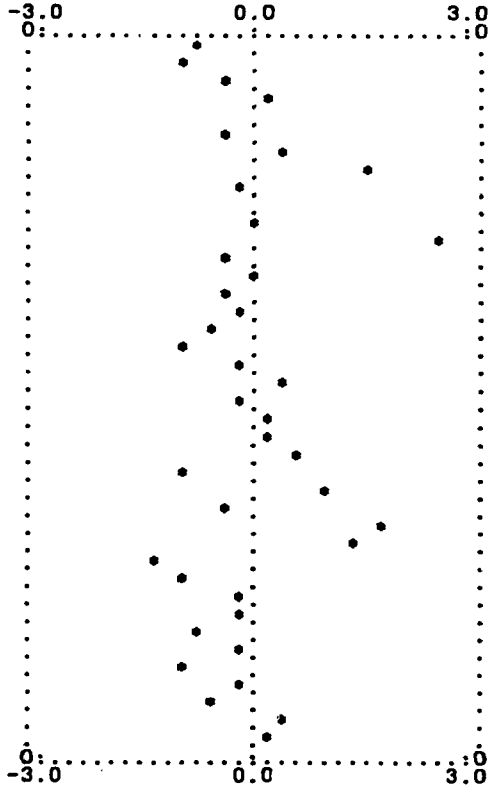
Case #	CITY	EPOP37	*PRED	*RESID
41	LINCOLN PK	.70	1.6102	-.9100
42	MADISON HTS	.30	2.1918	-1.8936
43	MARQUETTE	3.28	4.0494	-.7738
44	MELVINDALE	1.79	1.2607	.5330
45	MIDLAND	2.51	1.4966	1.0111
46	MONROE	1.37	4.1714	-2.7971
47	MT CLEMENS	7.25	4.3470	2.9069
48	MT PLEASANT	4.11	3.9506	.1608
49	MUSKEGON	2.26	1.4120	.8487
50	MUSKEGON HTS	3.42	.7965	2.6258
51	NILES	2.40	4.2080	-1.8080
52	NORTON SHORES	1.38	1.1955	.1863
53	NOVI	2.14	2.1268	.0168
54	OAK PARK	.64	2.4155	-1.7728
55	OWOSSO	2.59	3.6221	-1.0280
56	PONTIAC	1.55	2.3401	-.7915
57	PORT HURON	2.96	4.1985	-1.2373
58	PORTAGE	1.73	1.3515	.3799
59	RIVER ROUGE	.00	1.2796	-1.2796
60	RIVERVIEW	.00	1.1874	-1.1874
61	ROCHESTER HLS	1.01	2.1876	-1.1809
62	ROMULUS	2.07	.9588	1.1159
63	ROSEVILLE	.39	1.6900	-1.3038
64	ROYAL OAK	2.27	2.3581	-.0920
65	SAGINAW	1.38	1.5014	-.1215
66	SAULT STE MARIE	1.43	3.5708	-2.1382
67	SOUTHFIELD	6.45	2.4655	3.9808
68	SOUTHGATE	1.65	1.3598	.2855
69	ST CLAIR SHORES	1.53	1.8125	-.2869
70	TAYLOR	.97	1.3249	-.3586
71	TRAVERSE CITY	14.55	4.0388	10.5090
72	TRENTON	.94	1.3729	-.4282
73	TROY	3.12	2.4867	.6351
74	WALKER	1.85	1.1988	.6507
75	WAYNE	2.86	1.2444	1.6127
76	WESTLAND	.99	1.4013	-.4160
77	WOODHAVEN	.00	1.1236	-1.1236
78	WYANDOTTE	1.28	1.6712	-.3953
79	WYOMING	1.76	1.4441	.3182
80	YPSILANTI	7.35	1.9970	5.3528
Case #	CITY	EPOP37	*PRED	*RESID

* * * * M U L T I P L E R E G R E S S I O N * * * *

Equation Number 1 Dependent Variable.. EPOP39 Engineering, Accounting, Other Services

Casewise Plot of Standardized Residual

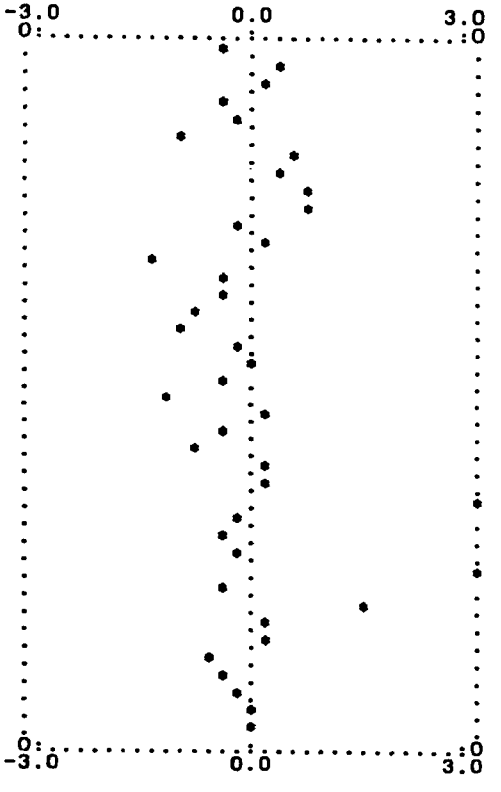
*: Selected M: Missing



Case #	CITY	EPOP39	*PRED	*RESID
1	ADRIAN	8.33	14.7896	-6.4644
2	ALBION	3.87	12.0117	-8.1432
3	ALLEN PARK	6.42	10.6935	-4.2688
4	ALPENA	11.51	9.4679	2.0467
5	AUBURN HLS	13.13	.	.
6	BATTLE CREEK	3.70	7.5501	-3.8519
7	BAY CITY	7.81	4.7720	3.0366
8	BENTON HARBOR	8.47	-6.5220	14.9966
9	BERKLEY	10.88	13.3864	-2.5106
10	BEVERLY HLS	23.90	.	.
11	BIG RAPIDS	6.62	7.1496	-.5271
12	BIRMINGHAM	57.45	33.6734	23.7755
13	BURTON	3.40	7.6031	-4.2040
14	CADILLAC	11.37	11.5484	-.1740
15	CLAWSON	11.35	15.1603	-3.8128
16	DEARBORN	9.49	11.6849	-2.1964
17	DEARBORN HTS	4.69	9.3961	-4.7073
18	E GRAND RAPIDS	16.14	24.3990	-8.2562
19	EAST DETROIT	7.12	9.6055	-2.4871
20	EAST LANSING	5.40	2.4898	2.9134
21	ECORSE	1.53	2.8684	-1.3358
22	ESCANABA	12.95	11.0839	1.8657
23	FARMINGTON	26.68	24.1049	2.5749
24	FARMINGTON HLS	31.37	25.6610	5.7134
25	FERNDALE	4.39	13.1880	-8.8003
26	FRASER	18.08	8.5189	9.5578
27	GARDEN CITY	3.07	6.0266	-2.9525
28	GRAND HAVEN	21.05	5.5323	15.5203
29	GRANDVILLE	17.83	5.3570	12.4747
30	GROSSE PT PK	10.54	23.0456	-12.5045
31	GROSSE PT WDS	17.03	26.3647	-9.3331
32	HAMTRAMCK	1.61	3.0900	-1.4848
33	HARPER WOODS	7.48	8.8966	-1.4187
34	HAZEL PARK	2.48	9.8807	-7.4055
35	HIGHLAND PARK	.39	1.7146	-1.3243
36	HOLLAND	10.02	18.6941	-8.6734
37	INKSTER	1.57	3.6670	-2.0996
38	JACKSON	10.28	16.1086	-5.8300
39	KALAMAZOO	11.52	8.3338	3.1903
40	KENTWOOD CITY	8.67	6.4103	2.2610
Case #	CITY	EPOP39	*PRED	*RESID

Casewise Plot of Standardized Residual

*: Selected M: Missing



Case #	CITY	EPOP39	*PRED	*RESID
41	LINCOLN PK	3.73	6.9657	-3.2318
42	MADISON HTS	19.08	14.6332	4.4485
43	MARQUETTE	13.57	11.7792	1.7912
44	MELVINDALE	1.79	5.5783	-3.7846
45	MIDLAND	8.64	11.0183	-2.3808
46	MONROE	10.08	18.2082	-8.1303
47	MT CLEMENS	26.42	21.5302	4.8946
48	MT PLEASANT	13.25	9.2610	3.9871
49	MUSKEGON	7.28	.1661	7.1185
50	MUSKEGON HTS	2.74	-3.7928	6.5306
51	NILES	12.80	15.4940	-2.6940
52	NORTON SHORES	5.99	4.9890	.9990
53	NOVI	7.15	20.2941	-13.1487
54	OAK PARK	11.25	14.8746	-3.6278
55	OWOSSO	11.02	14.7958	-3.7711
56	PONTIAC	4.36	12.4239	-8.0595
57	PORT HURON	7.70	17.1315	-9.4323
58	PORTAGE	7.17	8.7733	-1.6004
59	RIVER ROUGE	1.76	2.1605	-.3984
60	RIVERVIEW	2.86	7.1686	-4.3114
61	ROCHESTER HLS	8.46	19.6936	-11.2378
62	ROMULUS	2.90	1.8966	1.0079
63	ROSEVILLE	5.21	8.6355	-3.4221
64	ROYAL OAK	11.78	18.4654	-6.6814
65	SAGINAW	4.83	3.5469	1.2827
66	SAULT STE MARIE	10.74	9.3426	1.4024
67	SOUTHFIELD	56.51	24.2613	32.2467
68	SOUTHGATE	4.61	6.9484	-2.3417
69	ST CLAIR SHORES	9.57	13.0509	-3.4809
70	TAYLOR	2.76	4.8994	-2.1385
71	TRAVERSE CITY	53.13	15.2788	37.8521
72	TRENTON	5.67	8.6587	-2.9903
73	TROY	38.65	24.0342	14.6160
74	WALKER	5.55	3.9334	1.6153
75	WAYNE	5.71	4.6460	1.0683
76	WESTLAND	2.09	7.6508	-5.5569
77	WOODHAVEN	2.69	5.9329	-3.2471
78	WYANDOTTE	4.78	6.3657	-1.5810
79	WYOMING	5.77	5.1531	.6143
80	YPSILANTI	7.78	7.1688	.6133
Case #	CITY	EPOP39	*PRED	*RESID

BIBLIOGRAPHY

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Alonso, William. "The Economics of Urban Size." Papers of the Regional Science Association 26 (1976): 67-83.

Alperovich, Gerston. "Scale Economies and Diseconomies in the Determination of City Size Distribution." Journal of Urban Economics 12 (2) (September 1982): 212-213.

Applebaum, W., and Cohen, S. B. "The Dynamics of Store Trading Areas and Market Equilibrium." Annals of the Association of American Geographers, 51 (1961): 73-101.

Alvarado-Greenwood, W. et al. Organizing Production Cooperatives: A Strategy for Community Economic Development. Berkeley, CA: National Economic Development and Law Center, 1978.

Bartsch, Charles. "Reaching for Recovery: New Economic Initiative in Michigan, Northeast-Midwest Institute." Washington, D.C.: The Center for Regional Policy, 1985.

Bendavid-Val, A. Local Economic Development Planning: From Goals to Projects. Chicago: American Planning Association, 1980.

Bergman, E. M., ed. Local Economies in Transition: Policy Realities and Development Potentials. Durham, N.C.: Duke University Press, 1986.

Berry, Brian J. L. "The Retail Component of the Urban Model." Journal of the American Institute of Planners 31 (2) (1965): 150-154.

Berry, Brian J. L. Geography of Market Centers and Retail Distribution. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1967.

Berry, Brian J. L. "Commercial Structure and Commercial Blight." Paper No. 85, Department of Geography Research, University of Chicago, 1963.

Berry, Brian J. L. Growth Centers in the American Urban System, Vol. 1. Community Development and Regional Growth in the Sixties and Seventies. Cambridge, MA: Ballinger Publishing Company, 1973.

Berry, Brian J. L., and Garrison, William L. "A Note on Central Place Theory and the Range of a Good." Economic Geography, 34 (1958): 304-311.

Berry, Brian J. L., and Garrison, William L. "Alternative Explanations of Urban Rank Size Relationship." Annals, Association of American Geographies 48 (1958): 83-91.

Berry, Brian J. L., and Garrison, William L. "The Functional Bases of the Central Place Hierarchy." Economic Geography (April, 1958): 145-154.

Berry, Brian J. L., et al. "Urban Population Densities; Structure and Change." Geographical Review 53 (July 1963).

Bingham, R. D., and Blair, J. P., eds. Urban Economic Development. Beverly Hills, CA: Sage Publications, 1984.

Blair, John P., and Premus, Robert. "Major Factor in Industrial Location: A Review." Economic Development Quarterly 1 (February 1987): 72-85.

Boal, F. N., and Johnson, D. B. "The Functions of Retail and Service Establishments on Commercial Ribbons." The Canadian Geographer 9 (3) (1965): 156-168.

Bowman, Ann O. M. "The Visible 'Hand-Mayor Issues' in City Economic Policy." NLC Working Paper, A Research Report sponsored by National League of Cities and the Lincoln Institute of Land Policy, Cambridge, MA, November 1987.

Bowman, Ann O. M. "City Government Promotion of Economic Development." Paper prepared for delivery at the Annual Meeting of the Urban Affairs Association, St. Louis, MO, March 10-12, 1988.

Bowman, Ann O. M. "Tools and Targets: The Mechanics of City Economic Development." A Research Report sponsored by the National League of Cities and the Lincoln Institute of Land Policy, Cambridge, MA, October 1987.

Boyce, Ronald R., and Clark, W. A. V. "Selected Spatial Variables and Central Business Districts Retail Sales." Papers and Proceedings: The Regional Science Association 11 (1963): 82, 193.

Brown, M. P.; Applebaum, W., and Salmon, Wallis J. Strategy Problem of Mass Retailers and Wholesalers. Chicago: Richard D. Irwin Inc., 1970.

Brunn, Stanley. "Changes in the Service Structure of Rural Centers." Rural Sociology 33 (June 1968): 200-206.

Buck, Nick. "Service Industries and Local Labor Markets: Towards 'An Anatomy of Service Job Loss.'" Urban Studies 25(4) (August 1988): 320-329.

Bucklin, L. P. Consumer Shopping Patterns in an Urban Region. Berkeley, CA: School of Business, University of California, 1966.

Butler, James E., and Fuguitt, Glenn V. "Small Town Population Change and Distance from Large Towns: A Replication of Hassinger's Study." Rural Sociology 35 (1970): 397-409.

Candelis, Wray O., ed. United States Service Industries Handbook. New York: Praeger Publishers, 1988.

Carruthers, W. I. "Service Centers in Greater London." The Town Planning Review 33(1) (April 1962): 3-27.

Census of Retail Trade (1987). Michigan Geographic Area Series, Bureau of Census, U.S. Department of Commerce, August 1989.

Census of Service Industries (1987). Michigan Geographic Area Series, Bureau of Census, U.S. Department of Commerce, October 1989.

Christaller, Q. Central Places in Southern Germany. Englewood Cliffs, N.J.: Prentice-Hall, 1966.

Coffey, William J., and Polese, Mario. "The Concept of Local Development: A Stages Model of Endogeneous Regional Growth." Papers of the Regional Science Association, 55 (1984): 1-11.

Council for Economic Action Inc., Boston.

County and City Data Book. U.S. Department of Commerce, 1988.

Dalrymple, D. J., and Thompson, D. L. Retailing: An Economic View. New York: The Free Press, 1969.

Daniels, Peter. Service Industries: Growth and Locations. Cambridge: Cambridge University Press, 1982.

Davis, Donna. Michigan Service Industry Overview. Growth and Decline of Selected Service Industries. Lansing, MI: Michigan Department of Commerce, Business Research Office, April 1988.

Davis, Ross L. "Effects of Consumer Income Differences on the Business Provisions of Small Shopping Centers." Urban Studies 5(2) (June 1968).

_____. Retailing and Commercial Planning. London: Croom Helm Ltd., 1984.

Dawson, John A. The Marketing Environment. New York: St. Martin's Press, 1979.

Dickinson, R. E. "Markets and Market Areas of East Anglia." Economic Geography, 10.

Dubbink, David T. "Estimating the Spatial Distribution of Industry Within an Urban Region." Annals of Regional Science 2(2) (December 1968): 187-195.

Duncan, Otis Duncan. "Service Industries and the Urban Hierarchy." Papers and Proceedings: The Regional Science Association 5 (1959): 105-119.

Economic Report of the President. "The State of Small Business: A Report of the President." Transmitted to the Congress, 1989. Washington, D.C.: U.S. Government Printing Office, 1989.

Etu, Akono Joseph. "Factors Associated with Growth and Decline of Places in Michigan, 1930-1970." Ph.D. Dissertation, Michigan State University, East Lansing, Michigan, 1977.

Fainstein et al. Reconstructing the City: The Political Economy of the Urban Redevelopment. New York: Longman Inc., 1983.

Farr, Cheryl A., ed. Shaping the Local Economy: Current Perspectives on Economic Development. Washington, D. C.: Practical Management Series, International City Management Association, 1984.

Foster, R. Scott, ed. The New Economic Role of American States: Strategies in Competitive World Economy. New York: Oxford University Press, 1988.

Franckowiak, Eugene N. "Location Perception and the Hierarchical Structure of Retail Centers." Michigan Geographical Publication No. 22. Ann Arbor, MI: Department of Geography, University of Michigan, 1978, pp. 198-202.

Friedland, R. Power and Crisis in the City: Corporations, Unions, and Urban Policy. London: The Macmillan Press Ltd., 1982.

Fuguitt, Glenn V., and Deeley, Nora Ann. "Retail Service Patterns and Small Town Population Change: Replication of Hassinger's Study." Rural Sociology 31 (March 1966): 53-61.

Garner, Barry J. "The Internal Structure of Retail Nucleation." Studies in Geography, No. 12. Chicago, IL: Northwestern University, 1966: 22-26, 98-99.

Ghosh, A., and McLafferty, S. L. Location Strategies for Retail and Service. Lexington, 1987.

Giltman, Gary. Michigan's Retail and Wholesale Trade Industry: An Overview. Lansing, MI: Michigan Department of Commerce, Business Research Office, May 1987.

Gimlin, Hoyt, ed. "America's Economy: Problems and Prospects (Editorial Research Reports." Congressional Quarterly Inc. Washington, D.C., 1986.

Godlund, S. "The Function and Growth Bus Traffic Within the Sphere of Urban Influence." Fund Studies in Geography, Series B, No. 18, 1956.

Green, G., and Fleischmann. "Community Characteristics and the Adoption of Local Economic Development Plans." Paper prepared for delivery at the Annual Meeting of the Urban Affairs Association, St. Louis, MO, March 10-12, 1988.

Griffith, Daniel A. "Dynamic Characteristics of Spatial Economic System." Economic Geography 58 (1982): 177-178.

Gruen, V., and Smith, L. Shopping Towns USA: The Planning of Shopping Centers. New York: Reinhold Publishing Corporation, 1965.

Haber, William; Mcheau, E. C.; Taylor, H. C., et al. "The Michigan Economy: Its Potentials and Its Problems." Kalamazoo, Michigan: The W. E. Upjohn Institute for Employment Research, 1959.

Hall, M.; Knapp, J.; and Winsten, C. Distribution in Great Britain and North America. Oxford University Press, 1961.

Hamilton, F. E. Iran. "A View of Spatial Behavior, Industrial Organizations, and Decision Making." In Spatial Perspective on Industrial Organizations an Decision Making, pp. 3-46. Edited by F. E. I. Hamilton. New York: John Wiley and Son, 1974.

Hartley, Robert. Retailing: Challenge and Opportunity. Boston: Houghton Mifflin Company, 1975.

Hass, Mark P. The Michigan Econmy--1982-1987. Lansing, MI: Michigan Department of Commerce, January 1988.

Hassinger, Edward. "The Relationship of Retail-Service Patterns to Trade-Center Population Change." Rural Sociology 22(3) (1957): 235-240.

Hausner, Victor A. Urban Economic Change: Five City Studies. Oxford: Clarendon Press, 1987.

Heilbrun, James. Urban Economics and Public Policy. New York: St. Martin's Press, Inc., 1981.

Hirschman, E. "A Descriptive Theory of Retail Market Structure." Journal of Retail 54 (4) (1978): 29-48.

Hodge, Gerald. "The Prediction of Trade Centre Viability in the Great Plains." Ph.D. Dissertation, Massachusetts Institute of Technology, 1965.

Hoffer, Charles, S. R. "Changes in the Retail and Service Facilities of Rural Trade Centers in Michigan, 1900 and 1930." Michigan State College AES Special Bull. 261, East Lansing, September 1935: 12.

Hoover, Edgar M. The Location of Economic Activity. New York: McGraw-Hill Book Company, Inc., 1963.

Hower, Hoyt. "U.S. Metropolitan Area Retail Shopping Patterns." Urban Land 25 (March 1966).

Hoyt, Homer. "Market Analysis of Shopping Centers." Urban Land Institute, Technical Bulletin, No. 12 (October 1949): 1-7.

Huff, David L. "Defining and Estimating a Trade Area." Journal of Marketing 28 (July, 1964): 34-38.

Huff, David L. "Ecological Characteristics of Consumer Behavior." Proceedings of the Regional Science Association 7 (1961): 19-28.

Hustede, Ron; Shaffer, Ron; and Pulver, Glen. Community Economic Analysis: A How-To Manual. Ames, Iowa: Iowa State University, North Central Region Center for Rural Development, November, 1984.

Hutter, C. R., and Sawhill, Isabell V., eds. The Legacy of Reagonomics: Prospects for Long-Term Growth. Washington, D.C.: The Urban Institute Press, 1984, 1-15.

Ingene, Charles A. "Temporal Influences Upon Special Shopping Behavior of Consumers." Papers of the Regional Science Association 54 (1984): 72.

Isard, Walter. Location and Space-Economy. Cambridge: The Massachusetts Institute of Technology Press, 1956.

Isserman, Andrew M. "Location Quotient Approach to Estimating Regional Economic Impacts." Journal of the American Institute of Planners, 43 (1977): 33-41.

_____. Toward Growth with Stability: Recommendations for Long-Term Action. Michigan Economic Action Council, June 1, 1976.

Jackson, John R. Michigan in the New Economic Role of American States: Strategies in Competitive World Economy. New York: Oxford University Press, 1988.

Johnson, L. J. "Centrality within Metropolis." Economic Geography, 40 (1964).

Johnston, R. L., and Rimmer, P. J. "A Note on Consumer Behavior in an Urban Hierarchy." Journal of Regional Science 7 (Winter, 1967).

Jonassen, C. T. The Shopping Center Versus Downtown: A Motivation Research on Shopping Habits and Attitudes in Three Cities. Columbus: Bureau of Business Research, College of Commerce and Administration, The Ohio University, 1955, p. 82.

Judd, D. R. The Politics of American Cities: Private Power and Public Policy. 2nd ed. Boston: Little, Brown and Company, 1984.

Kamer, Pearl M. The U.S. Economy in Crisis: Adjusting to the New Realities. New York: Praeger Publishers, 1988.

Kaplan, M., and Cuciti, P. L., eds. The Great Society and Its Legacy: Twenty Years of U.S. Social Policy. Durham, N.C.: Duke University Press, 1986.

Kennedy, M. D. "The Fiscal Crisis of the City." Cities in Transition: Class, Capital, and the State. Beverly Hills, CA: Sage Publications, 1984.

Kenyon, James B. "On the Relationship Between Central Function and Size of Place." Annals of the Association of American Geographers 57 (1967).

King, Leslie J. Central Place Theory. Beverly Hills, CA: Sage Publications, Inc., 1984.

Kramer, R. M., and Specht, H. Reading in Community Organization Practice. Englewood Cliffs, NJ: Prentice-Hall, Inc., 1969.

Kurtzman, Joel. The Decline and Crash of the American Economy. New York: W. W. Norton and Company, 1988.

Kutscher, Ronald E. "Structural Change in Employment in the United States." In United States Service Industries Handbook, pp. 23-32. Edited by Wray O. Candilis. New York: Praeger Publishers, 1988.

_____. Michigan Statistical Abstract. Bureau of Business Research, School of Business Administration, Wayne State University, Detroit, Tables V-1, XV-1, XXI-1, XXII-3, 1986-87.

Lackshmann, T. R., and Hansen, Walter G. "A Retail Market Potential Model." Journal of the American Institute of Planners 31(2) (May 1965).

Levy, J. M. Urban and Metropolitan Economics. New York: McGraw-Hill Book Company, 1985.

Lewis, J. P., and Trail, A. L. "The Assessment of Shopping Potential and the Demand for Shops." Town Planning Review, 38 (1968).

Lewis, W. A. "Competition in Retail Trade." Economica, 12 (1945).

Losch, August. The Economics of Location. Translated by W. H. Woglom and W. F. Stopler. New Haven, CN: Yale University Press, 1954.

Manson, D. M., and Howland, M. P. "The Effect of Business Cycles in Metropolitan Suburbanization." Economic Geography 60(1) (January 1984): 111.

Mason, J. B., and Mayer, Morris L. Modern Retailing: Theory and Prentice. Dallas: Business Publication, Inc.

Mehtabadin, K. R. Reagonomics: Successes and Failures. Lewiston: The Edwin Mellan Press, 1986.

Melvin, Bruce L. "Village Service Agencies: New York, 1925." Ithaca, NY: Cornell University AES Bull. 493, August 1929, pp. 24-33.

Meyers, E. M. Rebulding America's Cities. Cambridge, MA: Ballinger Publishing Company, 1986.

Michigan Economic Action Council. "Toward Growth and Stability: Recommendations for Long-Term Action." East Lansing, MI., 1976.

Michigan Employment Security Commission, Bureau of Research and Statistics. Labor Market Analysis Section: Annual Average, 1972-1987 Civilian Labor Force and Wage and Salary Employment Estimates--Michigan, County, Multi-County and Selected Cities and Townships. February 6, 1986.

Miller, William G., ed. Regrowing the American Economy. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1983.

Mills, Edwin S. "Economic Aspects of City Sizes." In Commission of Population Growth and the American Future, vol. 5, pp. 387-394. Edited by Sara Mills Mazie. Washington, D.C. Commission of Population Growth and the American Future, Population Distribution and Policy, 1972.

Mitchelson, Ronald L., and Fisher, James S. "Long Distance Community and Income Change in the Towns of Upstate New York." Economic Geography 63(1) (January 1987): 51.

Mueller, W. F., and Garoian, L. Changes in the Market Structure of Grocery Retailing. Madison, WI., 1961.

Mulligan, Gordon F. "Central Place Population: Some Implications of Consumer Shopping Behavior." Annals of the Association of American Geographers 74 (1) (March 1984): 53-54.

Murdie, R. A. "Cultural Differences in Consumer Travel." Economic Geography 41(3) (July 1965): 155.

Murdie, R. A. "Cultural Differences in Consumer Travel." Economic Geography 41(5) (July 1965): 211-212.

Murray, James M., and Harris, James L. A Regional Economic Analysis of the Turtle Mountain Reservation: Determining Potential for Commercial Development. MN: Federal Reserve Bank of Minneapolis, 1978.

Nelson, Richard L. The Selection of Retail Locations. New York: F. W. Dodge Corporation, 1958.

Niles, M. Hansen. "A Growth Center Strategy for the United States." Review of Regional Studies 1 (1970).

Nord, Stephen; Phelps, John J.; and Sheets, Robert G. "An Analysis of Economic Impact of the Service Sector on Underemployment in Major Metropolitan Areas in the United States." Urban Studies 25(5) (October 1988): 426-430.

Northam, Ray M. "Population Size, Relative Location, and Declining Urban Centers: Conteminous United States, 1940-1960." Land Economics 65 (August 1969): 315.

Nourse, H. O. Regional Economics: A Study in the Economic Structure, Stability, and Growth of Regions. New York: McGraw-Hill Book Company, 1968.

Ohuallachain, B. "Regional and Technological Implications of the Recent Buildup in American Defense Spending." Annals of the Association of American Geographies 77 (1987): 208-222.

Palmer, John I., and Sawhill, Isabel V., eds. The Reagan Record: An Assessment of America's Changing Domestic Priorities. Cambridge, MA: Ballinger Publishing Company, 1984.

Parr, John B. "Interaction in an Urban System: Aspects of Trade and Community." Economic Geography 63 (1) (January 1987): 222-223.

Parr, John R., and Denike, Kenneth G. "Theoretical Problems in Central Place Analysis." Economic Geography 46 (4) (October 1970): 568-585.

Perry, S. E. Communities on the Way: Rebuilding Local Economies in the United States and Canada. Albany: State University of New York Press, 1987.

Peterson, P. E. City Limits. Chicago: The University of Chicago Press, 1981.

Proudfoot, Malcolm J. "City Retail Structure." Economic Geography 13 (1937): 425-442.

Rasmussen, David W. Urban Economies. New York: Harper and Row Publishers, 1973.

Ray, D. M. "Cultural Differences in Consumer Travel Behavior in Eastern Ontario." Canadian Geographers, 11 (1967): 143-155.

Richetto, Jeffrey P. "Toward a Theory of De-Locating Economic Activities: Some Evidence From the United States." Geography Research Forum 7 (1984): 1-14.

Riddle, Dorothy I. Service-Led Growth: The Role of the Service Sector in World Development. New York: Praeger Publishers, 1986.

Reilly, W. J. The Law of Retail Gravitation. New York: Knickerbocker Press, 1931.

Riposa, G., and Andranovich. "Whose Interests are Being Served: An Analysis of Institutional Representation and Outcomes in Local Economic Development Policy in the 1980's." Prepared for the Urban Affairs Association Conference, St. Louis, MO, March 19, 1988.

Rogers, D. S. "Trends in Retailing and Consumer Behavior." In Store Location and Store Assessment Research. Edited by R. L. Davies and D. S. Rogers. New York: John Wiley and Sons, 1984.

Sanders, Irwin T. "Theories of Community Development." Rural Sociology 23 (1) (March 1958): 5.

Schetter, Clarence. "Relation of City Size to Economic Services." American Sociological Review 8 (February 1943): 60.

Schnell, Eileen. Changes in Boston's Retail Landscape. New York: Retail Research Institute, 1964.

Scott, Peter. Geography and Retailing. Chicago: Aldine Publishing Company, 1970.

Shaffer, Ron. Community Economics: Economic Structure and Change in Smaller Communities. Ames, IA: Iowa State University Press, 1989.

Shaffer Ron, and Pulver, Glen. "Community Economic Development Forces, Theories, and Policy Options." In Economic Development for Rural Revitalization: A Handbook. North Central Regional Center for Rural Development, Iowa State University, Ames, April, 1987.

Shafroth, Frank H. "The Reagan Years and the Nation's Cities." In The Municipal Yearbook, 1989. Washington, D.C.: International City Managment Association, 1989.

Shelp, R. K.; Stephenson, J. C.; Truitt, N. S.; and Wasow, B. Service Industries and Economic Development: Case Studies in Technology Transfer. Sponsored and Administered by the FMME Fund for Multination Management Education. New York: Prager Publishers, 1984.

Shepard, I. D., and Thomas, C. J. "Urban Consumer Behavior." In Retail Geography. Edited by John A. Dawson. New York: John Wiley & Sons, 1980.

Siddnall, William R. "Wholesale-Retail Trade Ratios as Indices of Urban Centrality." Economic Geography 37 (2) (April 1961): 124-132.

Smith, Lynn T. "The Role of the Village in American Rural Society." Rural Sociology 7 (1942): 16-18.

Soplin, Robert, and Allen, Robert Y. Retailing. Reston Publishing Company, Inc., 1978.

Stabler, Jack C. "Trader Center Evolution in the Great Plains." Journal of Regional Service, 27(2) ((87): 225-241.

Stevens, Benjamin H. "Location of Economic Activities." Journal of Regional Science 25 (4): 1985.

Tarver, J. D. "Suburbanization of Retail Trade in the Standard Metropolitan Areas of the United States, 1948-54." American Sociological Review, 22 (1957).

Thorpe, D., and Nader, G. A. "Customer Movement and Shopping Center Structure: A Study of a Central Place System in Northern Durham." Regional Studies, 1967.

Tisedell, C. "The Theory of Optimal City Size: Elementary Speculations about Analysis and Policy." Urban Studies, 1, 2 (February 1975): 71-70.

Ullman, Edward L.; Dacey, M. F.; and Bradsy, H. The Economic Base of American Cities. Center of Urban and Regional Research, University of Washington. Seattle: The University of Washington Press, 1969, p. 97.

U.S., Department of Housing and Urban Development. October 17, 1987.

U.S., Municipal Yearbook.

Wagner, William B. "An Emperical Test of Reilly's Law of Retail Gravitation: Growth and Change." Journal of Regional Development, 5 (3) (July 1974): 30-35.

Waite, Charles A. Service Sector: Its Importance and Prospects for the Future in United States Service Industries Handbook, pp. 1-14. Edited by Candilis O. Wray. New York: Praeger Publishers, 1988.

Weber, Bruce A., and Howell, Robert E., eds. Coping with Rapid Growth in Rural Communities. Colorado: Wstview Press, 1982.

Weinstein, Bernard L., and Firestone, Robert E. Regional Growth and Decline in the United States: The Rise of the Sunbelt and the Decline of the Northeast. New York: Praeger Publishers, 1978.

Wingo, Jr., L., and Perloff, H. S., eds. Issues in Urban Economies. Based on papers presented at a conference sponsored by the Committee on Urban Economies of Resources for the Future, Inc. Baltimore, Maryland: The John Hopkins Press, 1968.

Zuiches, James H. "In-Migration and Growth of Nonmetropolitan Urban Places." Rural Sociology 35 (September 1970).