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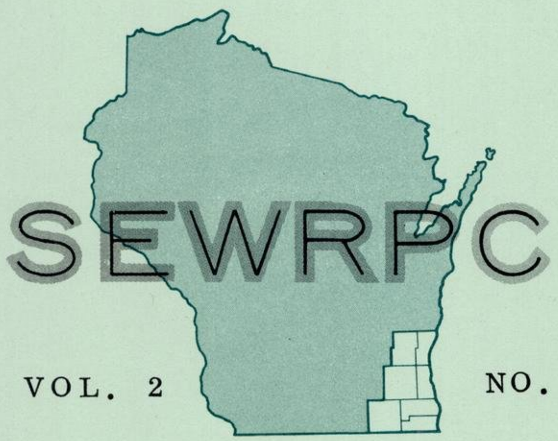
TECHNICAL RECORD



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AUGUST - SEPTEMBER

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* * * * A MODAL SPLIT MODEL FOR SOUTHEASTERN WISCONSIN * * * *

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

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A MODAL SPLIT MODEL FOR SOUTHEASTERN WISCONSIN

by Edward Weiner, Highway Engineer[1]

INTRODUCTION

One of the primary outputs of the Southeastern Wisconsin Regional Land Use-Transportation Study is a set of alternative transportation system plans for a corresponding set of alternative land use plan proposals. Three alternative land use proposals are being prepared. The first represents a controlled existing trend concept wherein the recent trend of low-density residential development within the Region is assumed to continue but under the imposition of land use controls established in the public interest to minimize leapfrog development, encroachment upon environmental or natural resource conservation corridors, encroachment development for urban use of areas covered by soils unsuited for such use, and other detrimental effects of unplanned development and to maximize utilization of existing utility facilities. The second represents a corridor concept in which the residential development is concentrated at medium and high densities along major transportation routes, highway or transit, forming development corridors which interlock with recreational and agricultural wedges. The third represents a satellite city concept, the major portion of new residential development within the Region being absorbed in greatly increased development of existing outlying communities of the Region.

The travel demand generated by each alternative land use plan must be estimated to provide the basic data necessary to develop, test, and evaluate the appropriate transportation systems required to serve and support the land use patterns. The traffic load generated by the three plans will probably be different in quantity, spatial distribution, and relative utilization of highway and transit facilities. In the plan design stage, the traffic load generated by the proposed land use patterns is allocated to the appropriate portion of the supporting transportation systems; and new or improved transportation facilities are provided in the plans, consistent with the forecast traffic demand. The estimation of the relative utilization of the two major travel modes, consequently, constitutes a necessary prerequisite to the design and evaluation of the alternative transportation systems. This paper describes the method developed by the SEWRPC for such estimation of the "modal split" and the application of this method in plan preparation. The method described herein was developed specifically for regional planning purposes and, as such, has its greatest applicability as a broad, areawide transportation planning tool.

Mathematical Models

A model is a representation of some part of the real world. Physical models of ships, buildings, bridges, dams, canals, highways, and other structures, for example, have always been used by engineers to depict real objects and thereby to better under-

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[1] *On assignment to SEWRPC from U.S. Department of Commerce, Bureau of Public Roads.*

stand their appearance and operation before construction. Some small-scale physical models, such as models of airframes and building frames, are actually tested under various conditions and loadings to determine how well their full-scale counterpart will function under similar situations when built.

Mathematical models are also representations of some part of the real world. These models use symbols, rather than physical matter, to represent reality. Mathematical models are not new. Newton's equation describing the gravitational force between two objects is a mathematical model of a physical reality. Any equation which similarly describes the interaction or movement of physical bodies may be thought of as a mathematical model.

In recent years the field of application of mathematical models has been broadened to include some aspects of human behavior. Specifically, in the field of transportation planning, mathematical models are in use which simulate the quantity and distribution of personal travel, as well as its mode (highway versus transit). Because human behavior is exceedingly complex, a model representing some aspect of this behavior cannot possibly incorporate all of the many variables that may actually affect the behavior. It remains for the model builder to identify the pertinent, essential variables and their relationship to the specific behavior pattern and thereby simplify the real world situation sufficiently to permit its simulation. As a result, some error must always be tolerated. But if the model has been based on the critical relationships involved, it should reproduce the behavior with a degree of accuracy acceptable for system design purposes.

Modal Split Models

Modal split may be defined as the division of total person trips generated by the land use activities in a planning area between transportation by public mass transit and by private automobile. Modal split models relate this division to correlatable factors in a mathematical form, either as an equation, curve, or surface. The empirical data necessary to develop these models are collected in comprehensive inventories of the travel patterns existing within a planning area. These travel pattern inventories, or origin and destination studies, are not, therefore, attitudinal surveys, but studies of the actual, observed characteristics of travel within the planning area.

In applying these models to estimate the design year modal split, there is an implicit assumption that the variables which presently influence the level of transit utilization will do so in much the same manner in the future. Thus, given a set of values for the independent variables involved, the models will estimate the same modal split irrespective of the point in time being considered. The model should, therefore, treat all of the basic variables affecting the modal split in a manner which will assure that their relationship on the modal split does, in fact, remain unchanged over time.

Evolution of Modal Split Techniques

The several modal split techniques that have been developed in previous transportation studies can be classified according to the mechanics of the computation or according to the position of the computation in the entire forecasting process. Considering the mechanics involved, the models developed to date utilize one of three approaches.

The split is applied to: 1) the trip ends at the zone of origin, 2) the trip interchange between zones of origin and destination, or 3) a combination of both. Thus, the modal split has been applied at either of two stages in the travel forecasting process, before or after trip distribution. Where the split has been made at the trip origin or combined at trip origin and in route, it has been applied before trip distribution. When the split has been made in route, it has been applied after the trips were distributed.

Once the mechanics of the model and its position in the travel forecasting process are determined, the models can further be grouped by whether or not transit and auto trips are distributed on separate networks and by the independent variables that are incorporated in the model.

In Route Approach: The earliest modal split technique utilized diversion curves applied after trip distribution. Total trips were distributed on the basis of door-to-door travel times obtained from the highway network, and then trip interchanges were split using the ratio of travel time on the transit network divided by travel time on the highway network as the sole independent variable. This procedure is similar to the use of freeway diversion curves designed to determine the percent of traffic which would be diverted from an existing highway to a proposed paralleling freeway. Generally, only one transit diversion curve was developed for each urban area. Even though such diversion curves could measure the effect of changes in the transportation system under existing travel and land use patterns, there was no provision for changing the curve for future conditions to reflect the influence of such factors as increased automobile availability and income or the changing density of development within the urban area. In some instances, the curves were assumed to hold over time. In others, an attempt was made to intuitively modify a curve to reflect these changes; but no uniform explicit procedure was developed for such modification.

This technique has been further developed in several recent transportation studies so that it now can incorporate additional independent variables which measure the influence of socio-economic changes on transit utilization, such as income, as well as the effects of walk, wait, and transfer times and relative travel cost on the two transportation modes. The influence of trip purpose has been incorporated, too. The newer models of this type, however, all utilize the same basic diversion curve technique.

The most recent model to use this approach splits trip interchanges using a set of regression equations instead of diversion curves. It incorporates the effects of income, residential density, employment density, and parking cost.

A limitation of this approach is the implicit assumption that the transit network has no effect on the distribution of transit travel, in that all trips are distributed based solely on the influence of the highway network. Transit travel does have a distinctive distributional pattern which this approach ignores. The influence of changes in the transit network on transit distribution cannot, therefore, be determined; and its effect on transit utilization cannot be measured using this approach.

One End Approach: A second approach splits trip ends before trip distribution and then distributes transit and highway travel on the basis of the influence of the respective networks. These models determine the modal split primarily on the basis of socio-economic variables, such as automobile availability and residential density. This approach recognizes the different distributional patterns of transit and highway travel. It does not, however, incorporate variables describing the transportation system in estimating the modal split. This approach is limited to the extent that it cannot evaluate the effect of changes in the transportation system on transit usage.

Combined Approach: A combined approach has been developed which overcomes the limitations of the first two approaches described. Total trips are split either before or after trip distribution, and separate networks for highway and transit are used to distribute the trips. Thus, the combined approach considers the effect of the configuration of the highway and transit networks on the modal split, as well as the effects of socio-economic variables. This approach has been used within both the gravity and intervening opportunity distribution model frameworks. The two mathematical techniques for these modal split models are basically different, although they accomplish the same purpose of measuring the effect of the transportation system, socio-economic variables, and trip characteristics on the modal split, while recognizing the separate distributional pattern of transit and highway travel.

MODEL DESIGN

Model Approach[2]

The combined approach, defined in the previous section, provides the most comprehensive approach presently available for describing transit utilization within a planning area. Figure 1 illustrates the position of this modal split model in the overall travel forecasting process. Total trip productions and attractions in each zone are estimated from land use and population characteristics. The modal split model is applied to estimate transit trip productions. The model estimates the proportion of total person trip productions using transit. In this manner the total amount of future travel demand is derived from land use through the application of the trip generation relationships and the demand for transit determined as a proportion of the total demand. Subtracting these trips from total person trip productions yields automobile person trip productions to which average automobile occupancy factors are applied to convert to automobile driver trip productions. The automobile and transit trip ends are balanced separately, distributed by separate gravity models, and assigned to the transit and highway networks, respectively.

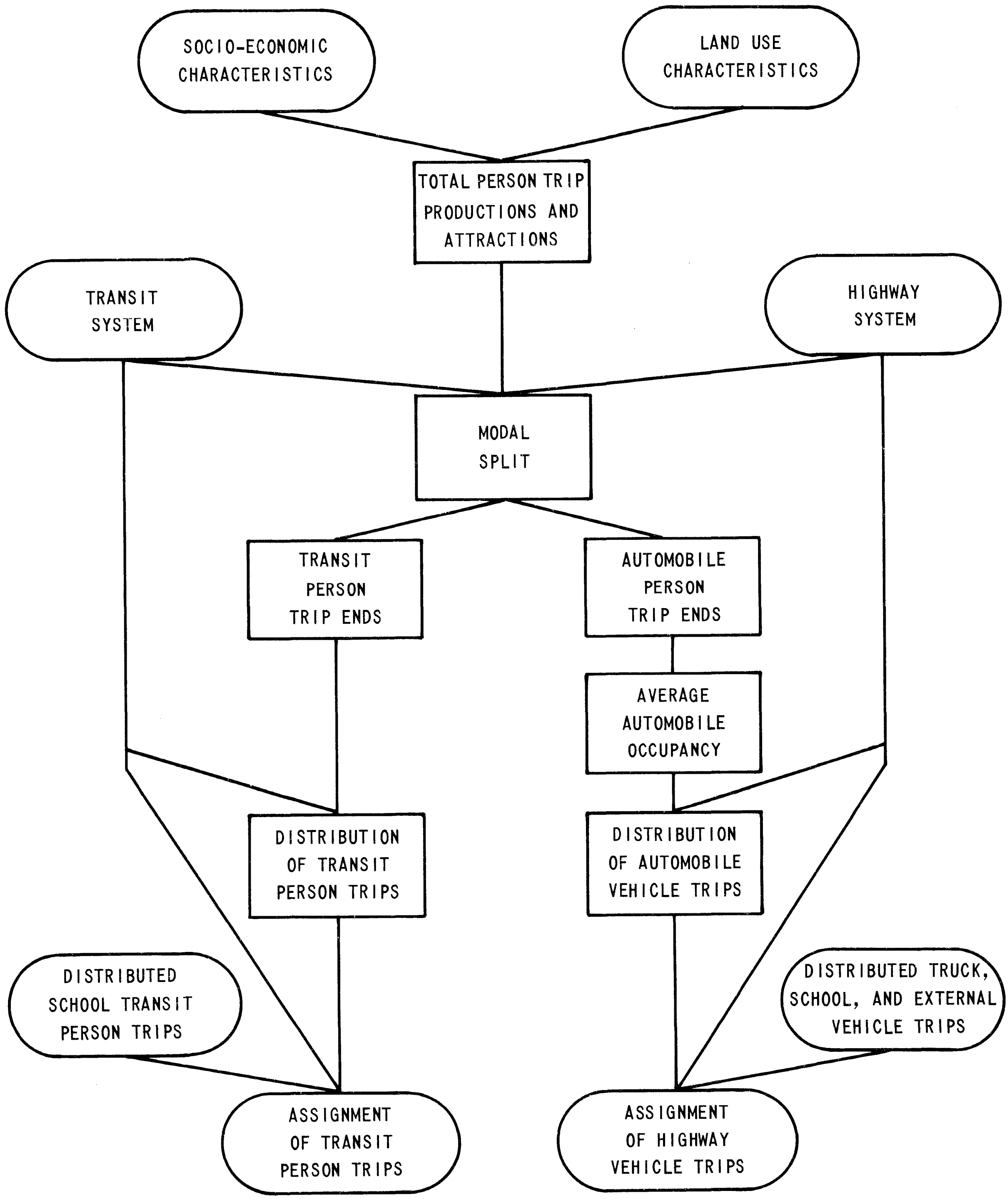
Trip Distribution Pattern

The distributional pattern of transit trips is distinctive from highway trips in both space and time. Transit trips are concentrated in the most intensely urbanized areas of the Region, whereas highway trips are more widely dispersed throughout the Region. Furthermore, transit trips are more highly oriented to the central business districts (CBD's) of the three urbanized areas within the Region (Milwaukee, Racine, and Kenosha). CBD oriented transit person trips constitute 33.8 percent of all transit person trips in the Milwaukee urbanized area, 38.7 percent in the Racine area, 49.3 percent in the Kenosha area, and 34.3 percent for the three areas combined. For automobile

[2] *This modal split model approach using the gravity model framework was first described in a paper entitled: "Modal Split Model," presented at the O & D committee meeting, Highway Research Board, January 1964, by Joseph L. Schoefer and Alan M. Voorhees.*

Figure I

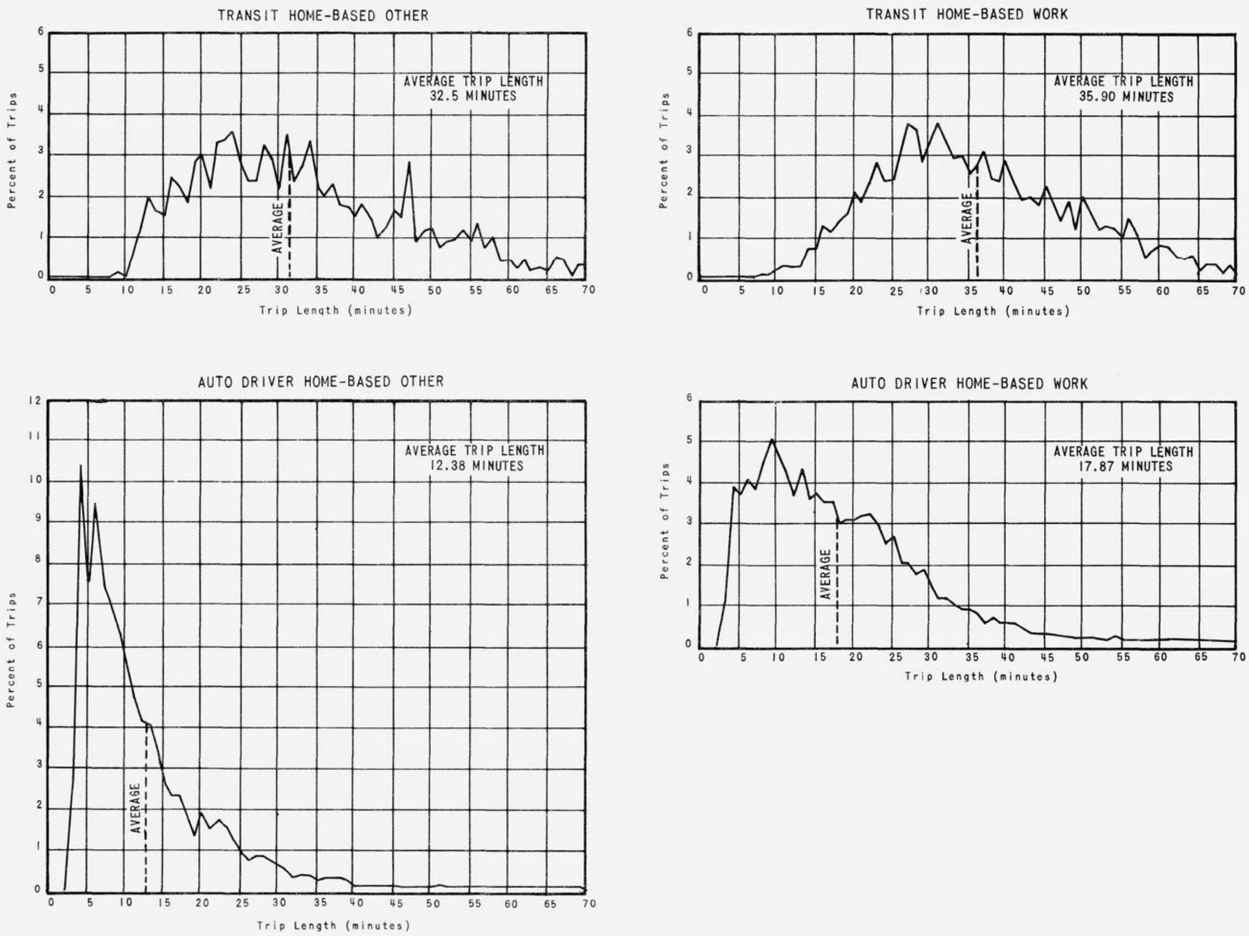
SEQUENCE OF TRAVEL FORECASTING PROCESS



person trips, the percentages are considerably lower: 6.8 percent for the Milwaukee area, 15.3 percent for the Racine area, 22.9 percent for the Kenosha area, and 8.5 percent for the three areas combined.

Figure 2

TRIP LENGTH FREQUENCY DISTRIBUTIONS



The difference in trip lengths measured in minutes between the two types of trips also indicated distinctly different trip universes. Figure 2 compares the trip length frequencies of automobile and transit trips for home-based[3] and other[4] purposes.

Furthermore, the average trip length measured in travel time is considerably longer for transit than for automobile driver trips made for the same purposes. Table 1 shows that for three trip purposes the average transit trip length is more than twice that for

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[3] *In the gravity model theory, all trips have two ends; a "production" end and an "attraction" end. For trips beginning or ending at the home (home-based trips), the "production" end is defined as the home end, while the "attraction" end is defined as the non-home end. For trips having neither end at the home (non-home-based trips), the origin is defined as the "production" end and the destination as the "attraction" end.*

[4] *Home-based other trips include: home-based personal business, home-based medical-dental, home-based social-eat meal, home-based serve passenger, and home-based recreation trips.*

automobile driver trips; and for the fourth purpose, home-based shop, it is three times as long. Since these two modes do constitute separate and distinct trip universes, separate gravity models were used to distribute them; and it was, therefore, necessary for the modal split model to divide trip ends preceding the distribution phase of the travel forecasting process.

Table 1

AVERAGE TRIP LENGTHS BY MODE AND PURPOSE WITHIN THE REGION - 1963

Trip Purpose	Average Trip Lengths (minutes)[a]	
	Auto Driver Trips	Transit Trips
Home-Based Work	17.87	35.90
Home-Based Shop	9.20	28.50
Home-Based Other.	12.38	32.51
Non-Home-Based.	12.55	28.37

[a] *From Origin and Destination Survey.*

Source: SEWRPC.

Variables Affecting Modal Split

The independent variables which affect the choice of travel mode can be grouped in three categories:

1. Characteristics of the tripmaker.
2. Characteristics of the transportation system.
3. Characteristics of the trip.

Each of these has an important bearing on the use of transit in an urban area and were, consequently, incorporated into the modal split model.

Tripmaker Characteristics

There are several variables which can be used to measure tripmaker characteristics: structure type, income, automobile availability, and net residential density. Structure type indicates (Table 2) the increased use of transit by persons residing in multi-family structures. This relationship, however, is probably a second order effect, and the variation in automobile availability with structure type is probably the real cause of the variation in transit utilization. Moreover, the difficulty of predicting the future pattern of structures at the zonal level outweighs the usefulness of this variable.

Income has been used in previous modal split models because of its conditioning effect on the other tripmaker characteristics of automobile availability and net residential density. Table 3 indicates a strong relationship between household income and transit usage. Two problems present themselves with utilization of this variable. First, income is probably the least reliable piece of data collected by the home interview survey. In many zones the survey data was found to be statistically unstable, and the median income could not be determined. Secondly, reliable estimates of future income at the zonal level are difficult to make. This variable is, furthermore, relatively insensitive to changes in the future distributional pattern of population and, therefore, of little value in measuring the effect of alternative land use plans.

Automobile availability[5] shows the strongest effect on transit utilization (Table 4). Transit utilization drops sharply from zero- to one-automobile households. This effect is due to the high use of transit by families having no other available mode of travel.

Table 2

STRUCTURE TYPE RELATED TO TOTAL PERSON AND TRANSIT TRIPS AND PERCENT BY TRANSIT FOR MILWAUKEE AND KENOSHA - 1963

Structure Type	Milwaukee Home Interview Area			Kenosha Home Interview Area		
	Average Number of Trips Per Household		Percent by Transit	Average Number of Trips Per Household		Percent by Transit
	Total Person Trips	Transit Trips		Total Person Trips	Transit Trips	
1 family	8.68	0.61	7.0	8.82	0.29	3.3
2 family	5.77	0.88	15.3	5.59	0.21	3.5
3- 4 family	5.25	0.78	14.9	5.76	0.27	4.7
5-19 family	4.47	0.84	18.8	5.33	0.30	5.6
20 or more family	3.00	1.00	33.3	2.11	0.20	10.5
Trailer	5.13	0.13	2.5	5.64	0.05	0.9
Area Totals	7.05	0.72	10.2	7.72	0.27	3.5

Source: SEWRPC.

Table 3

HOUSEHOLD INCOME RELATED TO TOTAL PERSON AND TRANSIT TRIPS AND PERCENT BY TRANSIT FOR MILWAUKEE AND KENOSHA - 1963

Median Household Income ($1,000)	Milwaukee Home Interview Area			Kenosha Home Interview Area		
	Average Number of Trips Per Household		Percent by Transit	Average Number of Trips Per Household		Percent by Transit
	Total Person Trips	Transit Trips		Total Person Trips	Transit Trips	
0 - 2 . . .	1.77	0.60	33.9	2.49	0.14	5.6
2 - 4 . . .	3.74	0.90	24.1	4.34	0.25	5.8
4 - 6 . . .	6.41	0.76	11.9	6.82	0.27	4.0
6 - 8 . . .	8.34	0.70	8.4	9.46	0.28	3.0
8 - 10 . . .	10.02	0.70	7.0	10.51	0.37	3.5
10 - 12 . . .	11.02	0.66	6.0	12.00	0.33	2.8
12 - 14 . . .	11.20	0.59	5.3	13.08	0.50	3.6
14 - 16 . . .	11.79	0.45	3.8	13.56	0.15	1.1
over 16 . . .	12.29	0.42	3.4	13.64	0.23	1.7
Area Totals	7.05	0.72	10.2	7.72	0.27	3.5

Source: SEWRPC.

[5]*Automobile availability is defined as the total number of automobiles owned or garaged at the tripmaker's domicile.*

Table 4

AUTOMOBILE AVAILABILITY RELATED TO TOTAL PERSON AND TRANSIT TRIPS AND PERCENT BY TRANSIT FOR MILWAUKEE AND KENOSHA - 1963

Number of Automobiles Owned and Garaged at Household	Milwaukee Home Interview Area			Kenosha Home Interview Area		
	Average Number of Trips Per Household		Percent by Transit	Average Number of Trips Per Household		Percent by Transit
	Total Person Trips	Transit Trips		Total Person Trips	Transit Trips	
0	2.00	1.35	67.5	1.20	0.38	31.7
1	7.22	0.60	8.3	7.73	0.25	3.2
2	11.13	0.42	3.8	11.42	0.22	1.9
3	14.03	0.35	2.5	12.88	0.43	3.3
4 or more . .	15.16	0.26	1.7	12.00	0.50	4.2
Area Totals	7.05	0.72	10.2	7.72	0.27	3.5

Source: SEWRPC.

Figure 3 illustrates the consistent nature of the correlation between the use of transit and the average number of automobiles per household in each zone for home-based work trip purpose.

The estimation of future automobile availability at the zonal level can be made with a minimum of difficulty and is sensitive to alternate patterns of population distribution.

Figure 3

AUTOMOBILE AVAILABILITY RELATED TO TRANSIT UTILIZATION RATE FOR HOME - BASED WORK TRIPS MILWAUKEE URBANIZING AREA

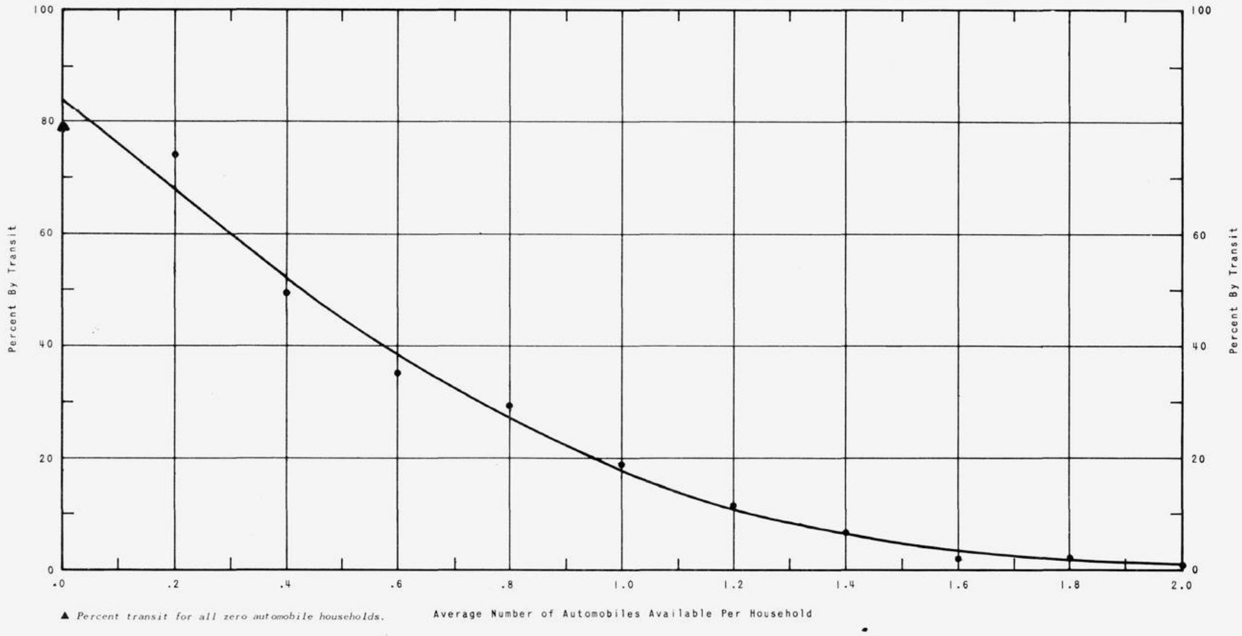


Table 5

NET RESIDENTIAL DENSITY RELATED TO TOTAL PERSON AND TRANSIT TRIPS AND PERCENT BY TRANSIT FOR MILWAUKEE AND KENOSHA - 1963

Average Persons per Net Residential Acre	Milwaukee Home Interview Area				Kenosha Home Interview Area			
	Average Number of Trips per Household		Percent by Transit	Density Class	Average Number of Trips per Household		Percent by Transit	Density Class
	Total Person Trips	Transit Trips			Total Person Trips	Transit Trips		
0 - 10 . . .	10.17	0.17	1.7		9.54	0.17	1.8	
10 - 20 . . .	9.55	0.32	3.4		9.50	0.19	2.0	
20 - 25 . . .	8.59	0.48	5.6	low	8.64	0.34	3.9	low
25 - 30 . . .	8.10	0.65	8.0		5.28	0.11	2.1	
30 - 35 . . .	7.54	0.66	8.8		5.70	0.22	3.9	
35 - 40 . . .	6.55	0.76	11.6		5.38	0.14	2.6	
40 - 50 . . .	6.22	0.83	13.3	medium	N[a]	N	--	medium
50 - 60 . . .	5.76	0.98	17.0		2.84	0.19	6.7	
60 - 70 . . .	4.72	1.23	26.0		N	N	--	
70 - 80 . . .	4.55	1.24	27.2		N	N	--	
80 - 90 . . .	4.05	1.21	29.8	high	N	N	--	high
90 - 120 . . .	3.79	1.11	29.2		N	N	--	
Over 120	2.38	0.85	35.7		N	N	--	
Area Totals	7.05	0.72	10.2		7.72	0.27	3.5	

[a] *N = no zones in density group.*

Source: SEWRPC.

The effect of net residential density on transit usage is shown in Table 5. As expected, a consistent pattern of decreased transit usage with decreased net residential density is indicated.

All of the variables which characterize the tripmaker are, however, strongly interrelated. Since automobile availability and net residential density seemed to show the most promise as variables to describe the tripmaker, the extent of their interrelationship was investigated. Net residential density was divided into low-, medium-, and high-density classes (Table 5); and for each class, automobile availability was plotted against the transit utilization rate for home-based work and other purposes in the Milwaukee home interview area. Figures 4 and 5 indicate that, once the effect of automobile availability on percent transit usage is accounted for, there is no significant additional effect from net residential density.

In summary, automobile availability, defined as the average number of automobiles owned and garaged per household in each zone, was, therefore, chosen as the independent variable most expressive of tripmaker characteristics.

Transportation System Characteristics: The ability to determine the effect of the quality of transportation service provided by the highway and transit systems on the relative use of these modes is the most critical criteria that a modal split model must meet. The "accessibility index" was selected to describe this quality of service. This index measures the ease by which all activity within the Region can be reached from a particular zone by a specific transportation network for a given purpose.

The accessibility from zone i to zone j is defined as the product of the trip attractions (transit or auto) in zone j times the friction factor for the zonal interchange, which is determined from the door-to-door travel time for the interchange.[6] These products are summed from zone i to all other zones in the Region to obtain the accessibility index for zone i. The equation for the index is as follows:

$$V_i = \sum_{j=1}^{n} A_j \, (F_{ij})$$

where:

V_i = accessibility index for zone i to all other zones (auto or transit)

A_j = attractions in zone j (auto or transit)

F_{ij} = travel time friction factor for travel from zone i to zone j on the particular transportation system being considered

n = number of zones

[6] *Door-to-door travel time includes: for the highway network, time to walk to the automobile, drive to the trip destination, park the automobile, and walk to the door of the specific destination; for the transit network, time to walk to the transit stop, wait for the transit vehicle, transfer (if necessary), make the trip on the transit vehicle, and walk to the door of the specific destination.*

Figure 4

AUTOMOBILE AVAILABILITY RELATED TO TRANSIT UTILIZATION RATE BY RESIDENTIAL DENSITY CLASS FOR THE MILWAUKEE URBANIZING AREA

Home - Based Work Trips

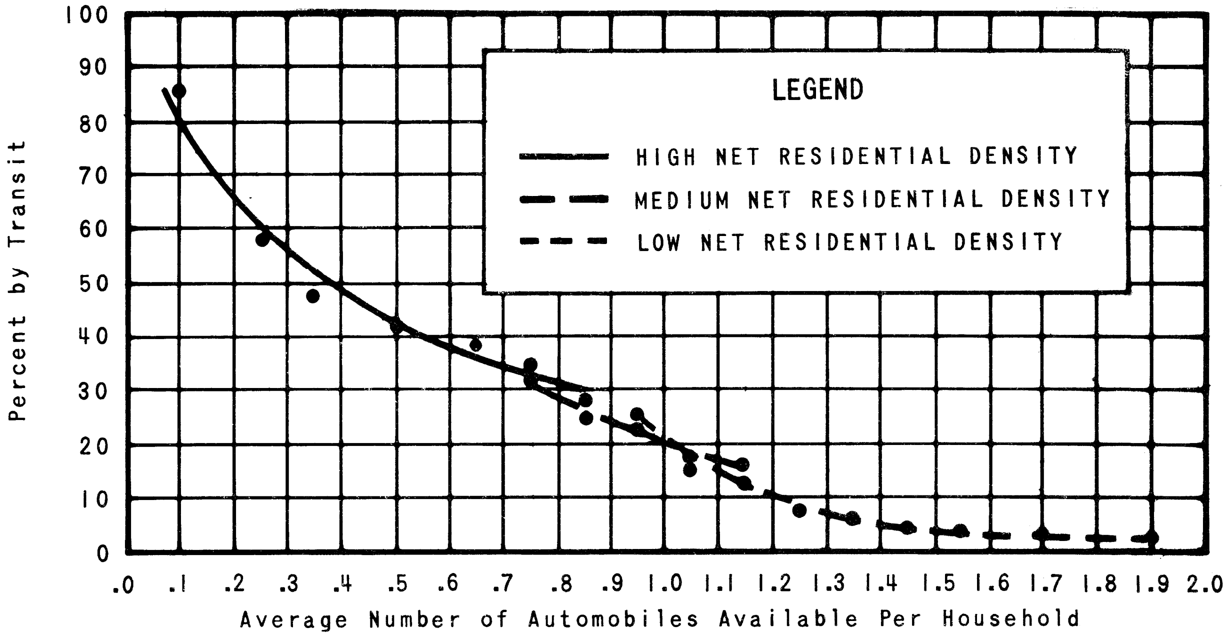
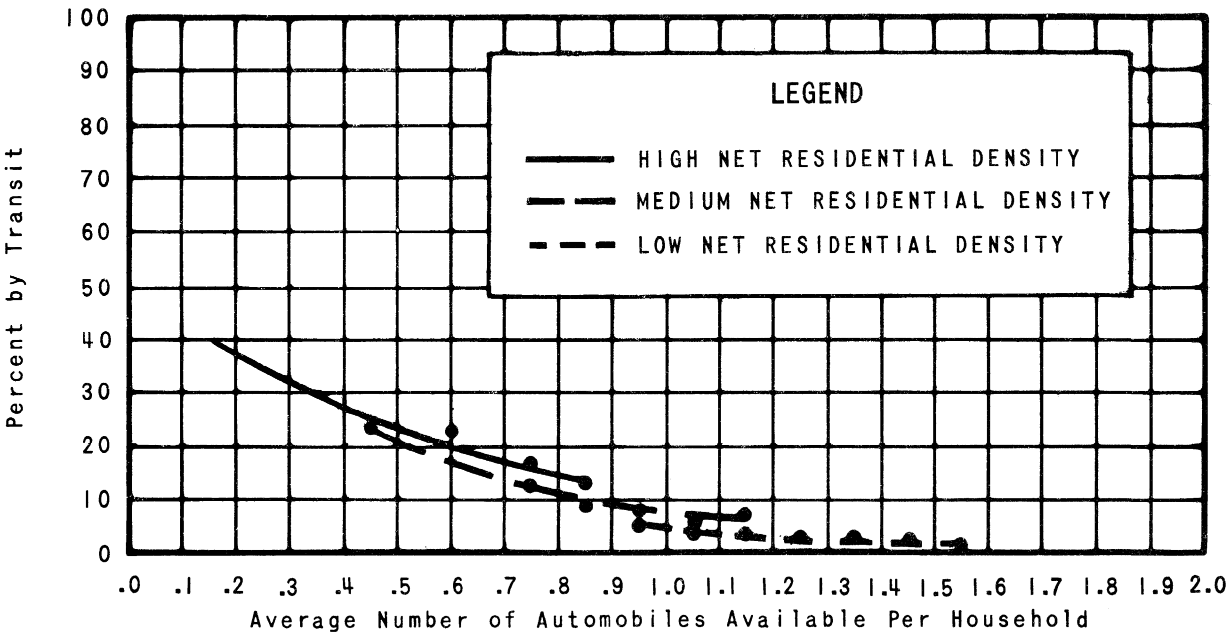


Figure 5

AUTOMOBILE AVAILABILITY RELATED TO TRANSIT UTILIZATION RATE BY RESIDENTIAL DENSITY CLASS FOR THE MILWAUKEE URBANIZING AREA

Home - Based Other Trips



The friction factor is equal to one divided by the door-to-door travel time raised to some power "b." This power, "b," varies with the travel time.

$$F_{ij} = \frac{1}{(\text{travel time})^b}$$

From the above equation, it can be seen that the greater the travel time from zone i to zone j, the smaller the F-factor and consequently the lower the accessibility index. This index is derived from the gravity model in which it is the denominator:

$$T_{ij} = \frac{P_i \; F_{ij} \; A_j}{\sum_{j=1}^{n} F_{ij} \; A_j}$$

where:

T_{ij} = the number of trips between zone i and zone j (auto or transit)

P_i = the number of productions in zone i (auto or transit) and the other variables have been previously defined

The accessibility index can be easily calculated as a standard output of the gravity model before trip distribution.[7]

Relative travel service provided by the two models is measured by the ratio of accessibility indices, called the "accessibility ratio." This is the variable which is actually used to measure the relative effect of changes in the transportation system.

Trip Characteristics: Classification of transit trips by the five trip purposes used for trip generation and trip distribution reveals some differences in transit usage. The percent transit usage ranges from a high of 24 and 26 percent for home-based school purpose in Milwaukee and Kenosha to a low of 5 and 1 percent for non-home-based trips (Table 6).

Table 6

TRIP PURPOSE RELATED TO TRANSIT USAGE FOR MILWAUKEE AND KENOSHA - 1963

Purpose	Milwaukee	Kenosha
Home-Based Work	19	4
Home-Based Shop	7	2
Home-Based School[a]	24	26
Home-Based Other	5	1
Non-Home-Based	5	1

[a] *Home-based school trip purpose category includes school bus trips.*

Source: SEWRPC.

[7] *See, Calibrating and Testing a Gravity Model for any Size Urban Area, U. S. Bureau of Public Roads, October 1965.*

Home-based school trips were estimated by an alternate hand-fit method. Application of the modal split analysis was, therefore, limited to four trip purposes:

1. Home-based work
2. Home-based shop
3. Home-based other
4. Non-home-based

These are the same purposes that were used in the trip generation and trip distribution phases of the travel forecasting process.

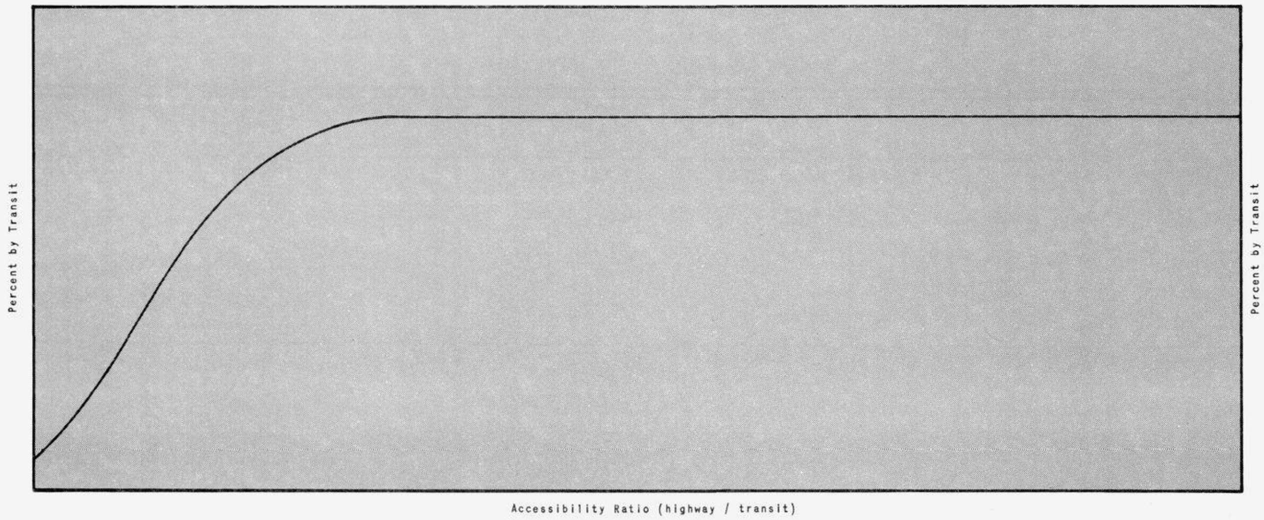
Mathematical Form of the Model

Using the three variables which exhibited a strong influence on the modal split, several mathematical forms for the model were investigated. Average automobile availability per household was plotted against percent transit usage and a smooth continuous curve resulted. Figure 3 shows the curve for home-based work trips, Milwaukee. No logical break points indicating high, medium, and low automobile availability levels were apparent. It was decided, therefore, to treat this relationship as continuous. This eliminated the possibility of using a family of curves as the model form, in that plots of accessibility ratio and percent transit usage also indicated a continuous relationship.

Since automobile availability and accessibility ratio both produce a continuous mathematical relationship with percent transit usage, a surface with each axis representing one of the variables was selected as the form for the model. At this point, the shape of the curves making up the surface were studied for compatibility. The automobile availability curve was found to be concave upwards with the highest transit usage in zones with the lowest automobile availability (Figure 3).

Figure 6

SCHEMATIC REPRESENTATION OF RELATIONSHIP BETWEEN ACCESSIBILITY RATIO AND PERCENT TRANSIT USAGE AS USED IN OTHER MODAL SPLIT MODELS



The accessibility ratio has been defined in other modal split models as the accessibility index for the transit system divided by the accessibility index for the highway system. Figure 6 shows this relationship schematically of accessibility ratio (transit/highway) against percent transit usage.

As the figure illustrates, this relationship produces a curve which for automobile availability is concave downward. The highest percent transit usage occurs in zones with the highest accessibility ratios. To transform this curve so that it would also be concave upwards, the accessibility ratio was defined as the accessibility index for the highway network divided by the accessibility index for the transit network:

$$(\text{accessibility ratio } i = \frac{(\text{accessibility index for highway network})}{(\text{accessibility index for transit network})}$$

$$(\text{accessibility ratio } i = \frac{\sum_{j=1}^{n} F_{ij} A_j \text{ (highway)}}{\sum_{j=1}^{n} F_{ij} A_j \text{ (transit)}}$$

The plot of accessibility ratio against percent transit usage for home-based work purpose, Milwaukee, is shown in Figure 7.

Merging the effect of these two causal variables on percent transit usage defines a surface of the form displayed in Figure 8.

Figure 7

ACCESSIBILITY RATIO VERSUS PERCENT TRANSIT USAGE
HOME - BASED WORK PURPOSE MILWAUKEE HOME INTERVIEW AREA

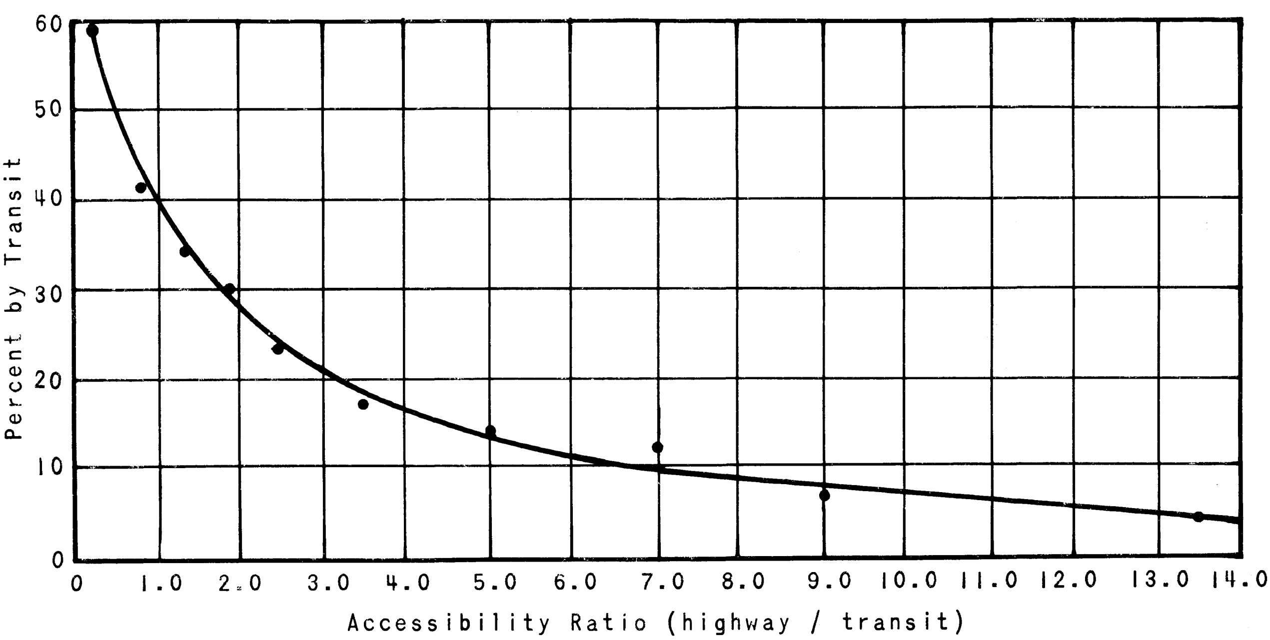
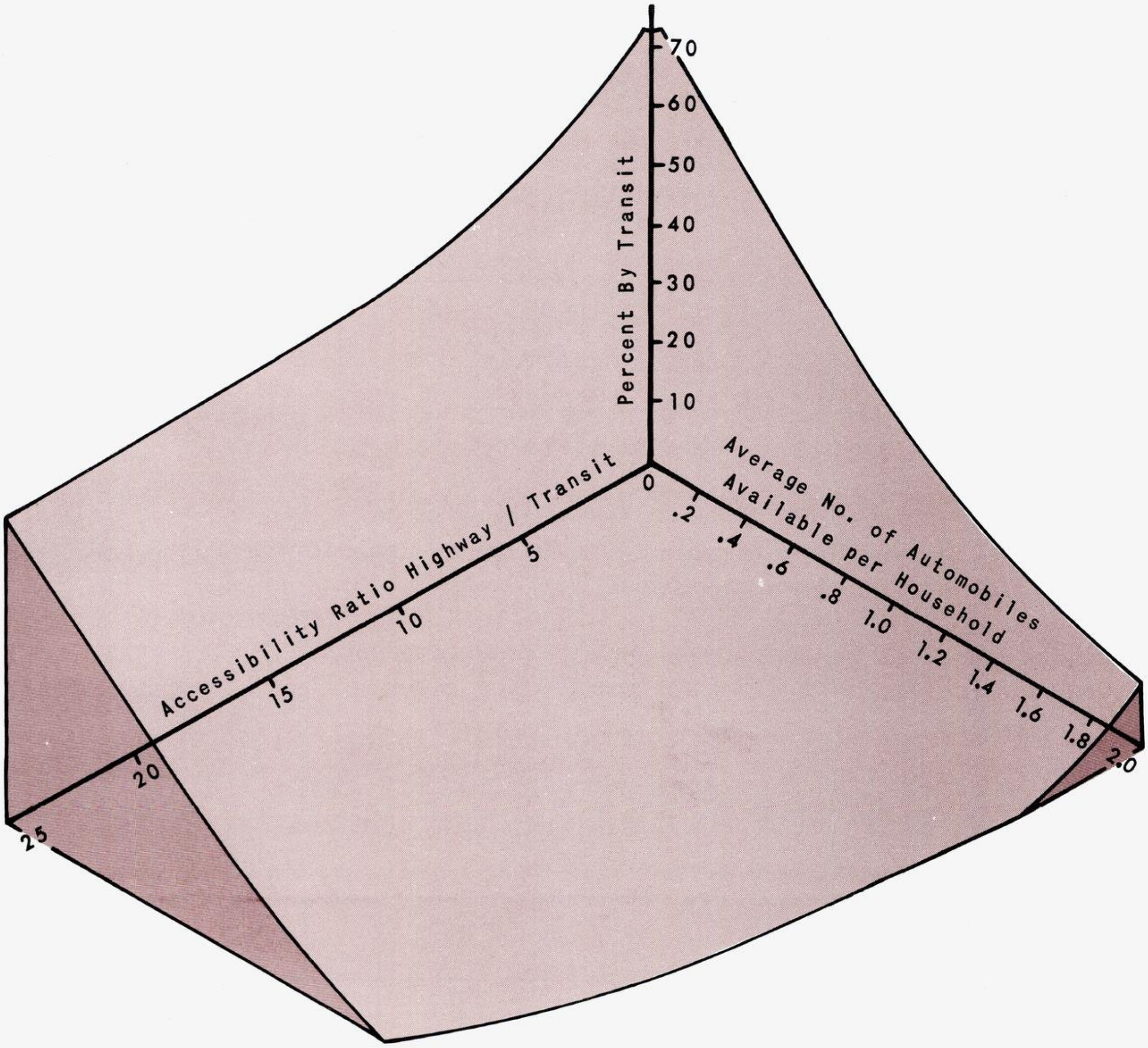


Figure 8

MODAL SPLIT SURFACE FOR HOME - BASED WORK TRIPS IN THE MILWAUKEE URBANIZING AREA



Fitting a mathematical function to the data which defines this surface would have been the most direct way to proceed from this stage. Two factors, however, prevented using this approach. First, the time necessary to determine the mathematical functions for each of the four purposes was beyond the time constraints and manpower resources available. Second, budgetary limitations pointed to the use of an IBM 1401 card system instead of a larger computer.

Two methods were, therefore, considered to approximate this surface: 1) a rate analysis and 2) an interpolation procedure.

The rate analysis consists of grouping observations into intervals, not necessarily equal, of automobile availability and accessibility ratio, called cells. For each cell the weighted average percent transit usage was calculated and this value applied to all zones which fall into the cell. The interpolation procedure, on the other hand, applies these weighted averages for the cells at the midpoints of the intervals on both axes. Straight line segments were then drawn between them on both axes. The procedure thus linearly interpolates among these calculated averages using the given values for automobile availability and accessibility ratio to determine the transit utilization for a given zone.

<u>Interpolation Procedure</u>

The second procedure was finally selected because it gave better results with lower zonal deviations from the calculated values. A four-point linear interpolating formula was found to be the simplest method to use in a computer program to accomplish the interpolation.[8] To illustrate the operation of this procedure, assume any four points on a three dimensional surface (Figure 9), where the axes represent automobile availability, accessibility ratio, and percent transit usage. To calculate the percent transit utilization for an automobile availability of "x_a" and an accessibility ratio "y_b," the equation is:

$$\text{Transit utilization} = (1 + uv - u - v)\, t_{00} + u(1-v)\, t_{10} + v(1-u)\, t_{01} + uv\, t_{11}$$

$$\text{where } u = \frac{x_a - x_0}{x_1 - x_0}$$

$$v = \frac{y_b - y_0}{y_1 - y_0}$$

The value "t_{00}" is the percent transit for an automobile availability of x_0 and an accessibility ratio of y_0. The percent transit of t_{00}, t_{10}, t_{01}, t_{11}, are known values calculated from all observations in a particular cell and plotted at the cell's midpoint.

Substituting actual numbers into the equation and using Figure 10 for reference:

$$u = \frac{1.0 - 0.9}{1.1 - 0.9} = .50$$

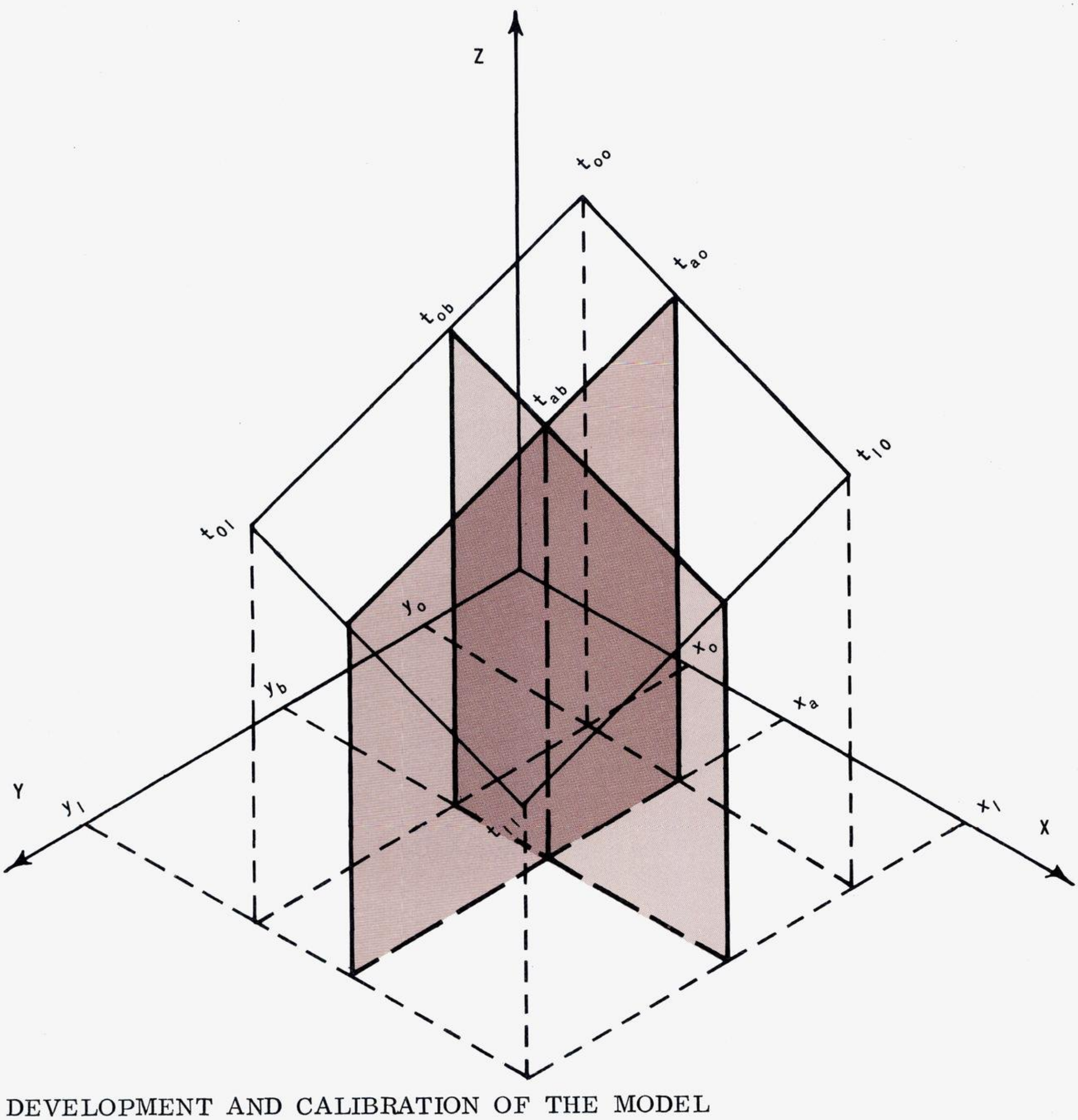
$$v = \frac{1{,}000 - 850}{1{,}500 - 850} = .23$$

$$\begin{aligned} t_{ab} &= (1 + 0.12 - 0.50 - 0.23)\ 21.1 + (0.50)\ (0.77)\ 6.6 \\ &\quad + (0.23)\ (0.50)\ 9.5 + (0.12)\ (4.8) \\ &= 8.23 + 2.54 + 1.09 + 0.58 \\ &= 12.44 \end{aligned}$$

[8] *See <u>Numerical Analysis</u> by Kaiser S. Knoz, McGraw-Hill Book Co., Inc., 1957, New York, New York, page 250-2 for derivation of formula.*

Figure 9

GRAPHICAL REPRESENTATION OF INTERPOLATION PROCEDURE FOR CALCULATING THE COORDINATES OF AN UNKNOWN POINT ON A THREE DIMENSIONAL SURFACE FROM FOUR KNOWN POINTS ON THE SURFACE



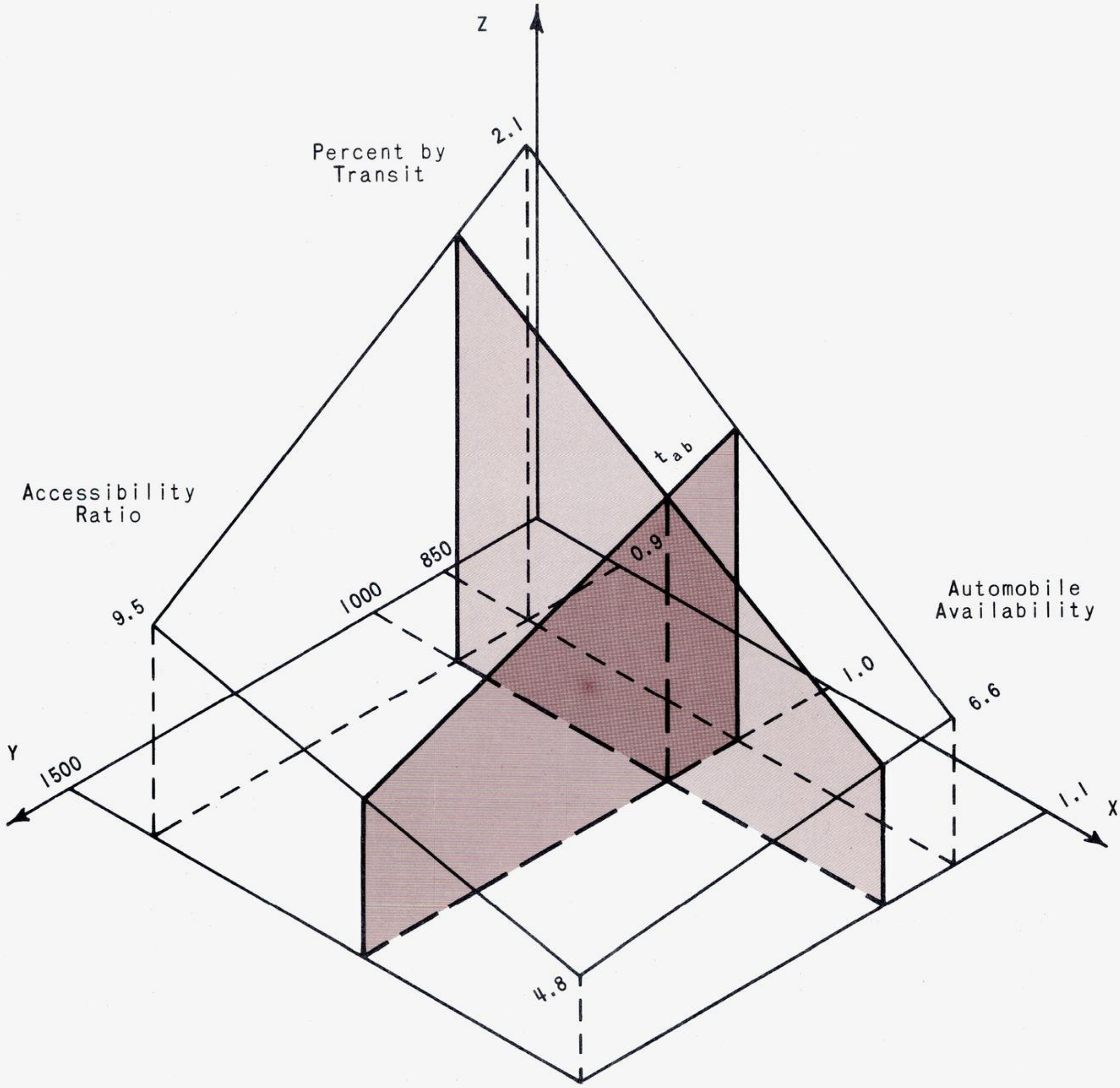
DEVELOPMENT AND CALIBRATION OF THE MODEL

Data Coverage for the Model

For traffic planning purposes, the seven-county Southeastern Wisconsin Region has been divided into 619 internal traffic analysis zones ranging in size from 0.04 square miles in the case of the Milwaukee CBD to 38.09 square miles in the most sparsely settled portion of the Region. The traffic analysis zones have been further grouped by rings and sectors into 74 internal traffic analysis districts, each district being

Figure 10

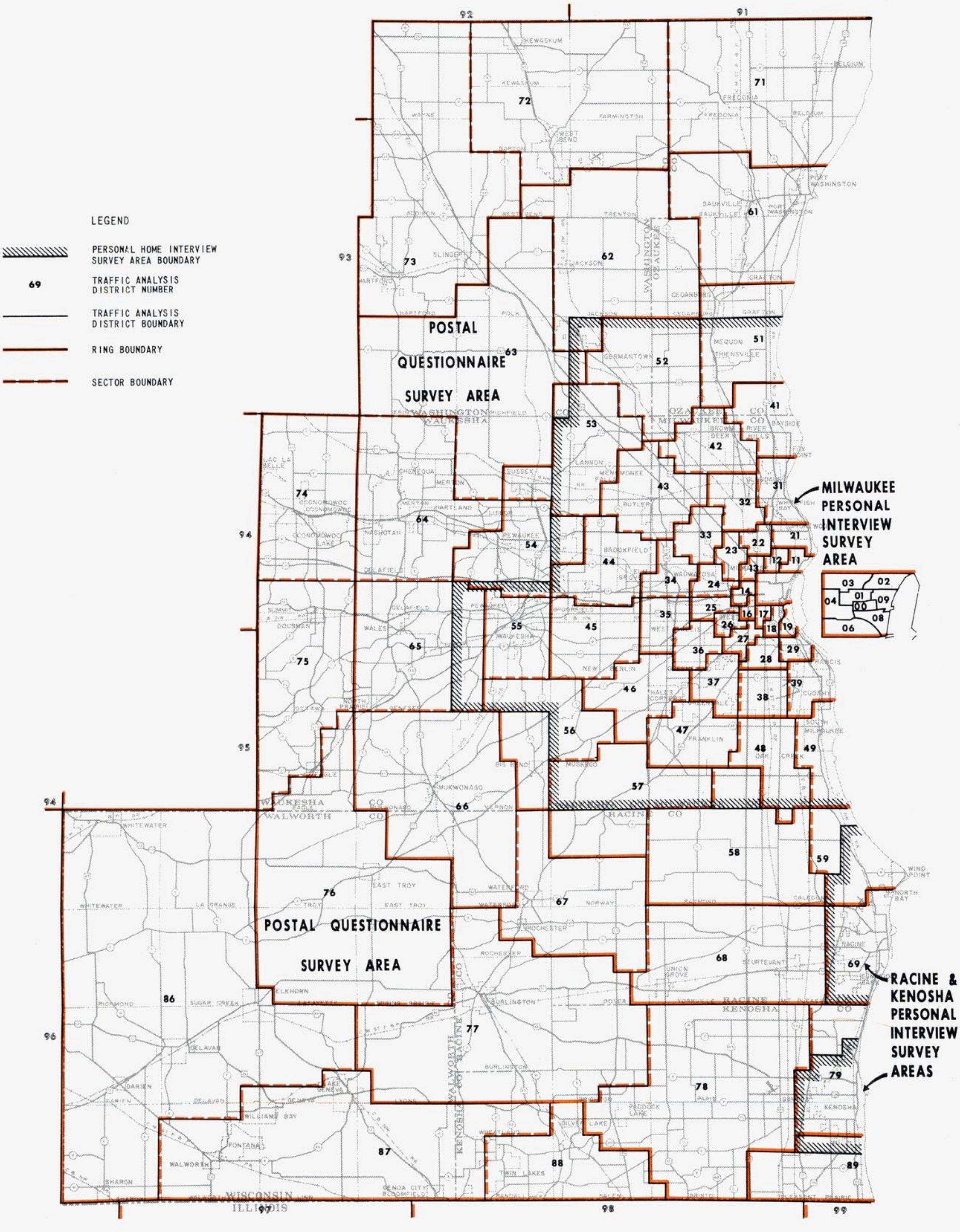
GEOGRAPHICAL REPRESENTATION OF INTERPOLATION PROCEDURE FOR CALCULATING TRANSIT UTILIZATION



identified by a two-digit number, the first digit referring to its ring number and the second to its sector number, with district 00 being the Milwaukee CBD. The regional travel inventory (origin and destination studies) was conducted on the basis of four geographic sampling areas. In the Milwaukee urbanizing area (Map 1), the home interview survey sampling rate was 1 in 31 households. In the Racine and Kenosha urbanizing areas, the home interview sampling rate was 1 in 10 households. Travel habits and patterns in the remainder of the Region were surveyed by means of a postal questionnaire survey, which had a useable return equivalent to a sampling rate of 1 in

Map I

TRAFFIC ANALYSIS DISTRICTS AND HOME INTERVIEW AREA BOUNDARIES IN THE REGION



6 households. The scope of the postal questionnaire was, of necessity, narrower than that of the home interview questionnaire.[9]

The modal split model was developed and calibrated using only data collected for the three home interview survey areas. These three areas together accounted for 98.4 percent of the transit trips made within the Region on an average weekday in the base year 1963. The remaining 1.6 percent consisted primarily of intercity transit trips made between the Kenosha-Milwaukee-Racine areas.

A Separate Model for Racine and Kenosha

Since the urbanizing areas (home interview areas) of Racine and Kenosha had significantly smaller base year populations than Milwaukee (Table 7), it was expected that the frequency and characteristics of transit tripmaking might correspondingly differ between the areas.

Table 7

POPULATION AND TRANSIT USAGE IN THE THREE HOME INTERVIEW AREAS OF THE REGION - 1963

Home Interview Area	Population (1963)	Percent of All Trips by Transit
Milwaukee	1,221,000	10.2
Racine	108,000	3.1
Kenosha	82,000	2.2

Source: SEWRPC.

It was indeed found that, as indicated in Table 7, the Milwaukee urbanizing area did exhibit a substantially higher rate of transit utilization than the Racine and Kenosha areas and that the variation in the rate of transit utilization between the Racine and Kenosha areas was small. Furthermore, it was found, as indicated in Table 6, that similar differences existed within the various trip purpose categories. Therefore, it was thought that if a single model were developed for all three areas combined it would probably overestimate transit utilization in the smaller urbanizing areas because of the weighting effect in such a combined analysis of the large number of transit trips made in the Milwaukee area. To account for the variation between the areas, two modal split models of the form previously described were developed, one for the Milwaukee and one for the combined Racine and Kenosha urbanizing areas.

Stratification and Grouping of Data

Automobile Availability: For analytical purposes the average automobile availability rate per household in each traffic analysis zone was stratified and grouped by trip purpose separately for the Milwaukee and for the Racine and Kenosha areas combined.

[9] *For a detailed discussion of the home interview and postal questionnaire surveys, see "Conducting the Household Postal Questionnaire Survey," by Wade G. Fox, and "Conducting the Home Interview Survey," by Sheldon W. Sullivan, SEWRPC Technical Record, Vol. 1-No. 2, December 1963 - January 1964.*

The data was grouped based on the number of households in each automobile availability class so that no group would contain less than 500 households for the Milwaukee and 400 for the Racine and Kenosha areas.[10] It was also found desirable for ease of data manipulation to use equal automobile availability intervals. An interval of 0.2 of an automobile per household was found to meet both criteria. The resulting matrix of average automobile availability and percent transit utilization used in the model development is shown in Table 8.

Table 8

AVERAGE AUTOMOBILE AVAILABILITY RELATED TO PERCENT TRANSIT USAGE BY TRIP PURPOSE FOR MILWAUKEE AND RACINE-KENOSHA - 1963

Average Number of Automobiles Available per Household per Zone	Percent Transit Usage						
	Milwaukee Home Interview Area				Racine-Kenosha Combined Home Interview Areas		
	Home-Based Work	Home-Based Shop	Home-Based Other	Non-Home-Based	Home-Based Work	Home-Based Other[a]	Non-Home-Based
0 - 0.2.	88.7[b]	33.3[b]	30.4[b]	15.4[b]	N[c]	N	N
0.2 - 0.4.	52.5	40.8	27.6	13.1	N	N	N
0.4 - 0.6.	42.9	26.1	23.0	9.3	14.4[b]	1.8[b]	2.0[b]
0.6 - 0.8.	34.7	25.1	18.2	7.6	12.5	5.9	1.0
0.8 - 1.0.	24.4	11.2	8.4	4.1	6.9	2.5	1.0
1.0 - 1.2.	15.3	5.2	4.2	2.5	6.7	2.5	1.4
1.2 - 1.4.	8.0	2.0	2.0	1.4	3.6	1.3	0.3
1.4 - 1.6.	3.4	0.8	1.2	0.5	1.5	0.4	0.0
1.6 - 1.8.	2.8	0.0	0.2	0.0	0.6	0.0	0.0
1.8 - 2.0.	0.9	0.0	0.6	0.0	0.0	0.0	0.0
2.0 - 2.2.	0.0	0.0	0.0	0.0	0.0	0.0	0.0

[a] *Includes home-based shop.*
[b] *Based on one zone.*
[c] *N = no zones in auto availability group.*

Source: SEWRPC.

An insufficient number of transit trips were made in the home-based shop and home-based other trip purpose categories in the combined Racine and Kenosha area to permit meaningful calculation of individual transit utilization rates for these two trip purposes. These two trip purposes were, therefore, combined; and the increased number of transit trips so obtained provided useable data for the model development.

Accessibility Ratio: Since trip attractions represent one component of the accessibility ratio, this ratio will vary by trip purpose. For analytical purposes, therefore, each set of accessibility ratios were stratified and grouped by trip purpose so that no single accessibility ratio class would contain less than 1,000 transit trips for the Milwaukee and 500 for the Racine and Kenosha areas. Several classes did not strictly meet this

[10] *All zones that had no households or no total trips generated in 1963 were eliminated from the analysis. Also, zones which had a zero transit accessibility index, predominantly those outside the transit service area, were eliminated from the particular trip purpose for which they exhibited this characteristic.*

criteria, but contained a sufficient number of trips, it was believed, to establish a stable transit utilization rate. Since the range of accessibility ratio to be established for each class was completely flexible, the problem of an insufficient number of transit trips in the highest and lowest ranges of accessibility ratio did not exist, as it did for the automobile availability analysis. Transit utilization rates were found to vary the most in the lower ranges of accessibility ratio; and the class intervals were chosen to reflect this variation, smaller class intervals being used in the low ranges and successively increased in the higher ranges. The resulting matrices of accessibility ratio ranges by trip purpose and urbanizing area and the transit utilization rates used in the model development are shown in Tables 9 and 10.

Table 9

ACCESSIBILITY RATIO RELATED TO PERCENT TRANSIT USAGE BY TRIP PURPOSE FOR RACINE-KENOSHA - 1963

Home-Based Work		Home-Based Other[a]		Non-Home-Based	
Accessibility Ratio Range	Percent by Transit	Accessibility Ratio Range	Percent by Transit	Accessibility Ratio Range	Percent by Transit
5.00 - 10.00	10.0	30 - 50	3.6	500 - 1,000	1.7
10.00 - 20.00	6.2	50 - 100	2.9	1,000 - 3,000	1.4
20.00 - 50.00	4.5	100 - 200	2.1	3,000 - 10,000	0.5
50.00 - 90.00	1.7	200 - 1,200	0.8	> 10,000	0.0
> 90.00	0.7	> 1,200	0.0		

[a] *Includes home-based shop productions.*

Source: SEWRPC.

Two-Way Stratification: Using the intervals of automobile availability and accessibility ratio previously determined as described, the zonal data were arrayed into cells for each urbanizing area and for each trip purpose (Figure 11).

For each cell the mean transit utilization rate was calculated by dividing the sum of the transit productions by the sum of the total trip productions.

Figure 11

DATA ARRAYS BY TRIP PURPOSE CATEGORY AND HOME INTERVIEW AREA

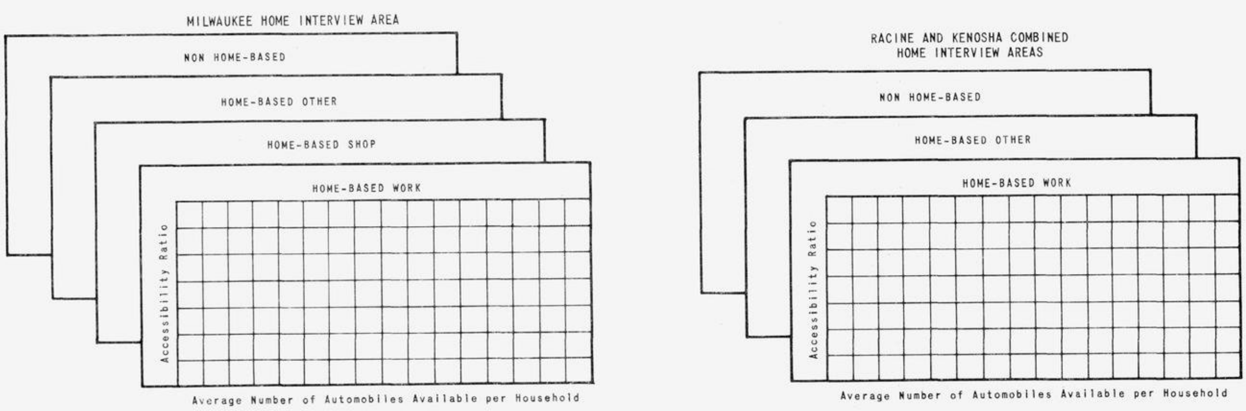


Table 10

ACCESSIBILITY RATIO RELATED TO PERCENT TRANSIT USAGE
BY TRIP PURPOSE FOR MILWAUKEE - 1963

Home-Based Work		Home-Based Shop		Home-Based Other		Non-Home-Based	
Accessibility Ratio Range	Percent by Transit	Accessibility Ratio Range	Percent by Transit	Accessibility Ratio Range	Percent by Transit	Accessibility Ratio Range	Percent by Transit
0.25 - 0.50	59.1	1 - 10	42.1	0.10 - 2.00	21.0	5 - 25	13.1
0.50 - 1.00	41.5	10 - 20	40.5	2.00 - 4.00	21.5	25 - 50	8.5
1.00 - 1.50	34.6	20 - 40	33.9	4.00 - 6.00	15.4	50 - 100	5.2
1.50 - 2.00	30.1	40 - 60	20.0	6.00 - 8.00	10.3	100 - 300	4.0
2.00 - 3.00	23.3	60 - 100	17.6	8.00 - 10.00	9.7	300 - 500	1.8
3.00 - 4.00	17.7	100 - 300	17.4	10.00 - 15.00	5.3	500 - 1,000	1.4
4.00 - 6.00	13.6	300 - 700	10.1	15.00 - 30.00	3.9	>1,000	0.5
6.00 - 8.00	12.3	700 - 1,000	8.4	30.00 - 50.00	3.0		
8.00 - 10.00	6.5	1,000 - 2,000	4.2	50.00 - 100.00	1.5		
10.00 - 15.00	4.3	2,000 - 3,000	3.3	>100.00	0.9		
15.00 - 50.00	2.2	3,000 - 6,000	2.8				
>50.00	2.9	>6,000	1.0				

Source: SEWRPC.

In several instances, it was found that a certain class of accessibility ratio would consistently have a relatively small number of zones (1 to 3) in each cell. Whenever this situation occurred, the class was combined with the one immediately preceding or succeeding it, depending on which class exhibited a similar transit utilization rate. The automobile availability class remained unchanged.

A consistent pattern of cells with no observations in them emerged. Those cells with high automobile availability and low accessibility ratios, and low automobile availability and high accessibility ratios almost invariably contained no observations. This pattern seemed to indicate some interaction between the two variables, although not strong enough to mask their combined effect on transit utilization. Table 11 illustrates this pattern for home-based work trip productions in the Milwaukee home interview area.

Evaluation of Rate Analysis Model

The transit utilization rate values obtained in these arrays were applied to all zones based on the appropriate cell into which the zone fell. The calculated transit utilization rates were compared with the corresponding actual transit utilization rates at the zonal level, as determined from the survey data, to determine the ability of the model to accurately reproduce the existing pattern of transit utilization. An inspection of the differences for the seven arrays showed that the errors were higher than could be tolerated for traffic forecasting purposes. It was, therefore, concluded that the application of this procedure would not satisfactorily reproduce the pattern of transit utilization; and subsequent analysis and calibrations were continued for only the interpolation procedure.

Table 11

DISTRIBUTION OF ZONES STRATIFIED BY AVERAGE AUTOMOBILE AVAILABILITY AND ACCESSIBILITY RATIO FOR HOME-BASED WORK PURPOSE FOR MILWAUKEE - 1963

Accessibility Ratio Range	Average Number of Automobiles Available per Household per Zone										
	0.0 to 0.2	0.2 to 0.4	0.4 to 0.6	0.6 to 0.8	0.8 to 1.0	1.0 to 1.2	1.2 to 1.4	1.4 to 1.6	1.6 to 1.8	1.8 to 2.0	2.0 to 2.2
.20 - .60. . . .	1	5	4	2	--	1	--	--	--	--	--
.60 - 1.50. . . .	--	7	14	18	4	3	--	--	--	4	--
1.50 - 2.00. . . .	--	--	2	6	6	2	1	--	--	--	--
2.00 - 3.00. . . .	--	--	1	3	21	8	3	2	--	2	--
3.00 - 7.00. . . .	--	--	--	1	7	31	14	11	2	4	--
7.00 - 10.00. . . .	--	--	--	--	2	4	26	5	6	7	--
10.00 - 40.00. . . .	--	--	--	--	--	8	24	32	12	7	--
40.00 - 160.00. . . .	--	--	--	--	--	--	7	5	2	4	1
>160.00. . . .	--	--	--	--	--	--	--	1	--	--	--

Source: SEWRPC.

Development of Curves for Interpolation Model

As previously noted, the final form of the model was to approximate the estimated transit utilization surface using linear interpolation between the weighted averages of transit productions calculated for each cell. Each surface can, therefore, be described by a family of curves in either of two planes. The data from the arrays were plotted as a family of curves in both planes for each trip purpose and urbanizing area. Each point was plotted at the midpoint of the cell on both axes. To obtain a smooth approximation of the surface, a curve was hand fitted through each set of data (a row or column) in the arrays. Greater weight was given to points calculated from the larger number of observations in drawing the curves.

The curves in both planes displayed a strong parallel tendency within trip purposes, although for each purpose the slope of the family was different. The basic shape of all curves in the same plane was similar. The only exception to this tendency occurred in the high ranges of both automobile availability and accessibility ratio where the curves were found to converge to zero. It was believed that deviations from the tendency of curves within a family to be parallel was due to random variation in the data rather than to any significant variation in transit utilization rates. Such deviations were generally found to be less than 5 percent. The values for transit utilization rates were accordingly adjusted so that all curves for each purpose were parallel, with the exception of the curves for the high ranges of automobile availability and accessibility ratio. Where the curves so constructed intersected the midpoint of a cell, the new transit utilization rate was read and a new set of arrays assembled. These arrays contain the values to be used in the calibrated models and were subsequently tested to determine if they would accurately reproduce the 1963 pattern of transit utilization. Before these arrays could be tested, the curves had to be extrapolated.

Extrapolation of Curves

It was necessary to extrapolate the families of transit utilization curves for three reasons. First, the interpolation formula could not be applied to any zone that did not have four calculated points surrounding it. Since the transit utilization rate values comprising the data arrays were plotted at the midpoints of their cells, some zones necessarily fell outside the range of the arrays. It was, therefore, impossible to calculate the modal split for these zones without extrapolation. Second, the historic trend in automobile availability within the Region indicated future increases in this parameter to values beyond the range of existing data. Therefore, the curves had to be extrapolated into the high automobile availability classes. Third, rapid transit proposals advanced in the transportation system plans could conceivably increase the transit accessibility index in portions of the Region so that accessibility ratios would result that were lower than existing ratios. This possibility required extrapolation of the curves beyond the existing low range of the accessibility ratios.

The extrapolation of empirical data beyond the range of observed values is an uncertain procedure at best. To minimize any errors that might be built into the model in this manner, a uniform extrapolating procedure was developed. Whenever any particular curve was extrapolated, the other curves in the family were inspected to determine whether any other curve existed in this new range of the variables. When such a curve was found to exist, the curve to be extrapolated was extended parallel to the existing curve. Since several curves in a family existed in different ranges of the variables, most extrapolations could be made in this manner. If no other curve were found to exist in the range of the variables, the curve was extended linearly based on an extrapolation of the slope of the previous two points in the array. In several instances, the curves were forced to zero where the data indicated that the transit utilization rates for zones with higher automobile availability and accessibility ratios were zero. This procedure was followed for both families of curves involved in a particular extrapolation so that the extrapolated values agreed in both cases. This was done as a further safeguard against building an arbitrary transit utilization rate into the model. Most of the curves had to be extrapolated only one cell beyond the range of the existing data. The extrapolated values were inserted into the arrays, and this step concluded the calibration phase in the development of the model.

The final set of curves used is displayed in Figures 12 through 18. The two sets of curves in the figures represent the same array of data plotted in different planes. The data arrays are shown in Tables 12 through 18, together with the boundary of the 1963 empirical data.

Calculation of Transit Trip Attractions

In the application of the modal split model, it is first necessary to calculate the transit trip attractions, as these are required to compute accessibility ratios. The relationships between transit trip attractions and land use and socio-economic data were developed through multiple regression analysis. Two sets of equations were formulated, the first by regressing trip rate data against independent variable data by rate and the second by regressing total trip attractions against totals for the independent variables. The analysis was completed by purpose at the zonal level. The regression calculations were terminated when the improvement in the coefficient of determination, r^2, was less than 0.010. At this point, the addition of subsequent independent variables was judged to add little to the relationship. It was found that equations developed from the rate data produced poor results with low r^2 values and high standard errors of estimate, s. The second set of equations was finally chosen to estimate future trip attractions. They are listed in Table 19, with their respective r^2, s, mean $(\bar{y})$, and standard error as a percent of the mean.

Each regression model was applied in two ways to estimate future transit trip attractions. In the first and most straightforward method of application, total land use plan data were used as input to calculate total future transit trip attractions by zone. This application of the model assumes an ideal linear relationship between the dependent and independent variables. As the r^2 values of the equations indicate, this is not the situation. A nonlinear adjustment factor was introduced to account for the deviation from linearity. This factor was calculated as the ratio of actual trip attractions to model estimates for trip attractions for the 1963 data. Using this second method of application, the assumption is that a zone demonstrating an above or below average transit trip attraction rate in 1963, due to the unique characteristics of the zone, would demonstrate a proportionately above or below average rate in the future. The adjustment factor was calculated for each zone by trip purpose and applied to the increment in trip attractions, which was computed by applying the model equations to the increment of land use plan data at the zonal level. The resulting adjusted incre-

Figure 12

MODEL SPLIT RELATIONSHIPS
MILWAUKEE HOME INTERVIEW AREA
HOME-BASED WORK TRIP PURPOSE

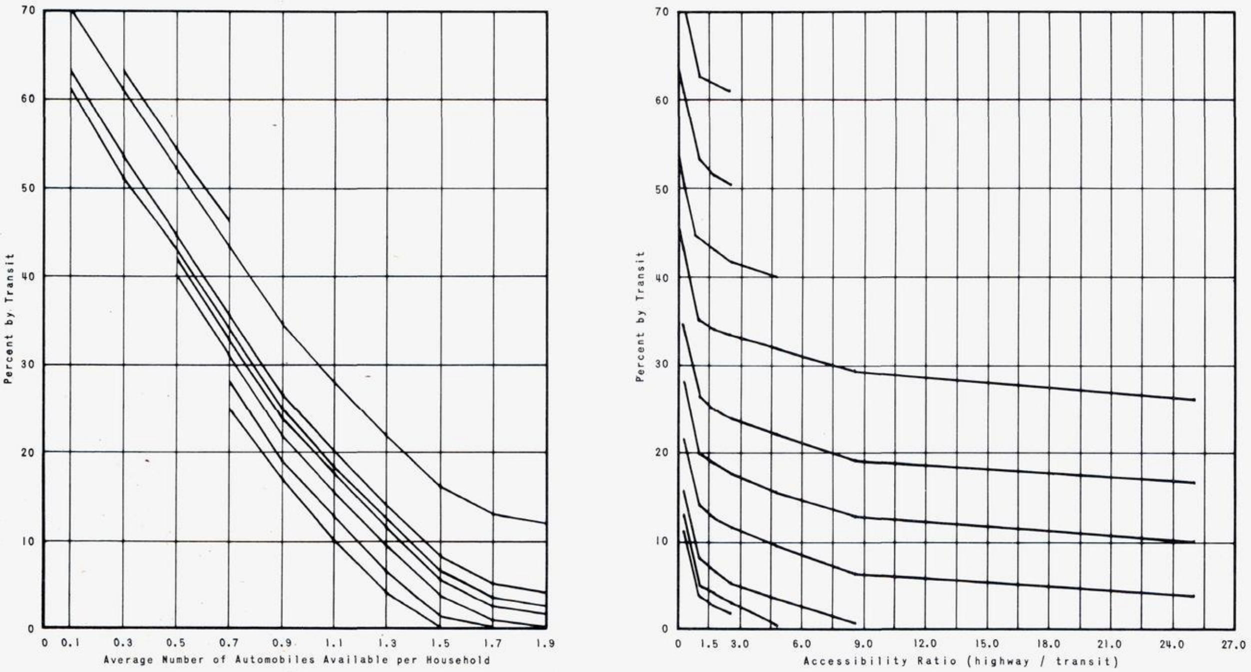


Table 12

MODAL SPLIT RELATIONSHIPS
MILWAUKEE HOME INTERVIEW AREA
HOME-BASED WORK TRIP PURPOSE

Accessibility Ratio	Average Number of Automobiles Available per Household										
	0.1	0.3	0.5	0.7	0.9	1.1	1.3	1.5	1.7	1.9	2.1
0.01	.	63.0	54.0	46.0	.	.	.	.	.	.	.
0.30	70.4	61.4	52.4	43.4	34.4	28.0	22.0	16.0	13.0	12.0	.
1.05	62.5	53.5	44.5	35.5	26.5	20.1	14.1	8.1	5.1	4.1	.0
1.75	61.0	52.0	43.0	34.0	25.0	18.6	12.6	6.6	3.6	2.6	.0
2.50	.	51.0	42.0	33.0	24.0	17.6	11.6	5.6	2.6	1.6	.0
5.00	.	.	40.0	31.0	22.0	15.6	9.6	3.6	.6	.0	.0
8.50	.	.	.	28.0	19.0	12.6	6.6	.6	.0	.0	.0
25.00	.	.	.	25.5	16.5	10.1	4.1	.0	.0	.0	.0
100.00	.	.	.	.	.0	.0	.0	.0	.0	.0	.0
200.00	.	.	.	.	.0	.0	.0	.0	.0	.0	.0

NOTE: Black line delineates the boundary of the 1963 survey data.

Figure 13

MODAL SPLIT RELATIONSHIPS
MILWAUKEE HOME INTERVIEW AREA
HOME-BASED SHOP TRIP PURPOSE

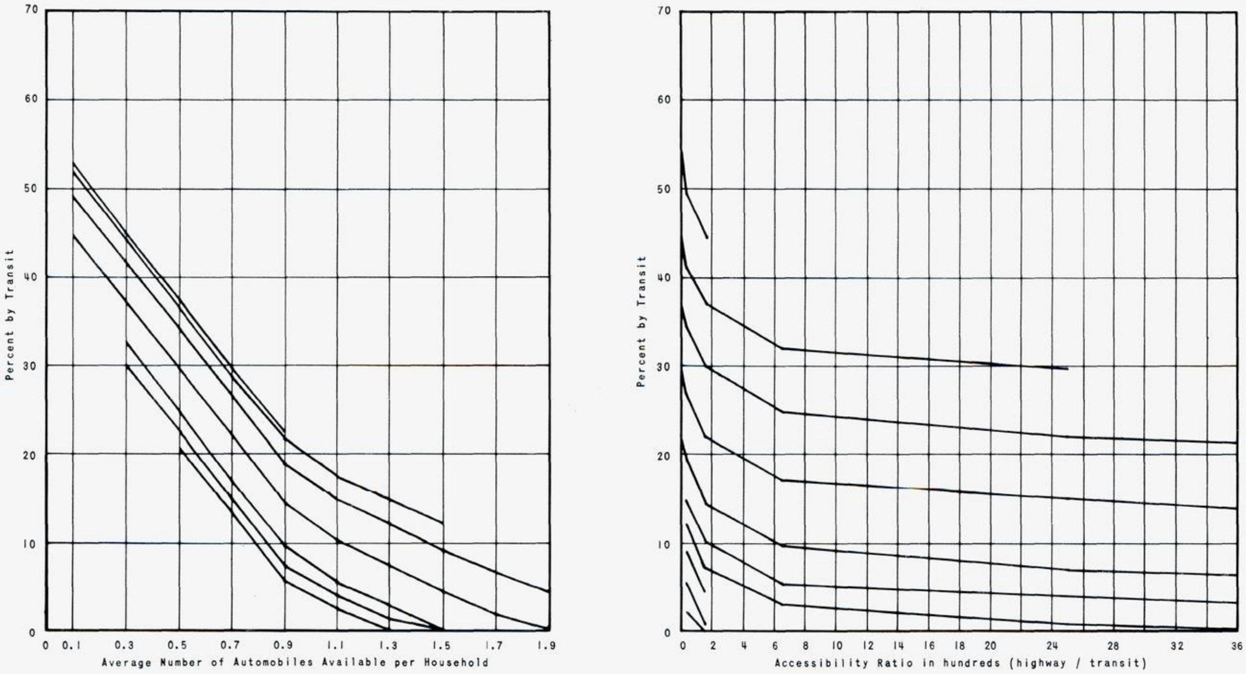


Table 13

MODAL SPLIT RELATIONSHIPS
MILWAUKEE HOME INTERVIEW AREA
HOME-BASED SHOP TRIP PURPOSE

Accessibility Ratio	Average Number of Automobiles Available per Household										
	0.1	0.3	0.5	0.7	0.9	1.1	1.3	1.5	1.7	1.9	2.1
0.10	52.2	44.7	37.2	29.7	22.2	.	.	.	.	.	.
5.00	52.0	44.5	37.0	29.5	22.0	17.7	14.9	11.9	.	.	.
25.00	49.1	41.6	34.1	26.6	19.1	14.8	12.0	9.0	6.0	4.1	.0
170.00	44.5	37.0	29.5	22.0	14.5	10.2	7.4	4.4	1.4	.0	.0
650.00	.	32.3	24.8	17.3	9.8	5.5	2.7	.0	.0	.0	.0
2,500.00	.	29.9	22.4	14.9	7.4	4.1	1.3	.0	.0	.0	.0
4,000.00	.	.	20.9	13.4	5.9	2.6	.0	.0	.0	.0	.0
10,000.00	.	.	.0	.0	.0	.0	.0	.0	.0	.0	.0

NOTE: Black line delineates the boundary of the 1963 survey data.

Figure 14

MODAL SPLIT RELATIONSHIPS
MILWAUKEE HOME INTERVIEW AREA
HOME-BASED OTHER TRIP PURPOSE

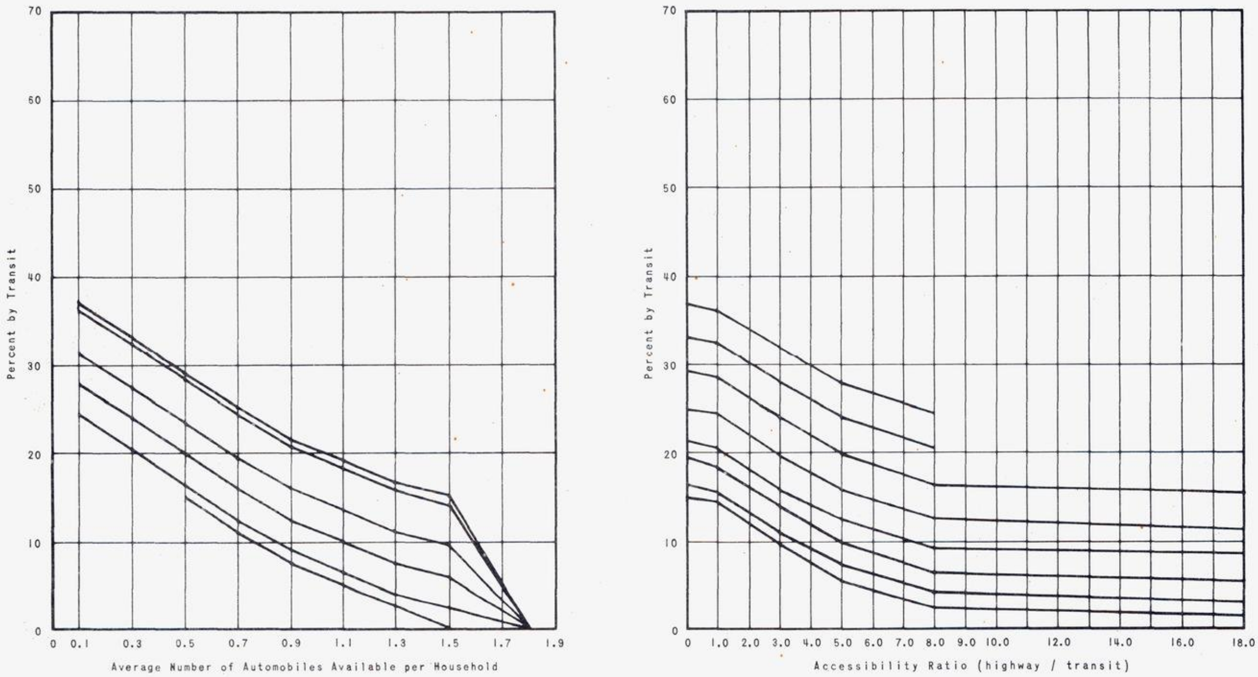


Table 14

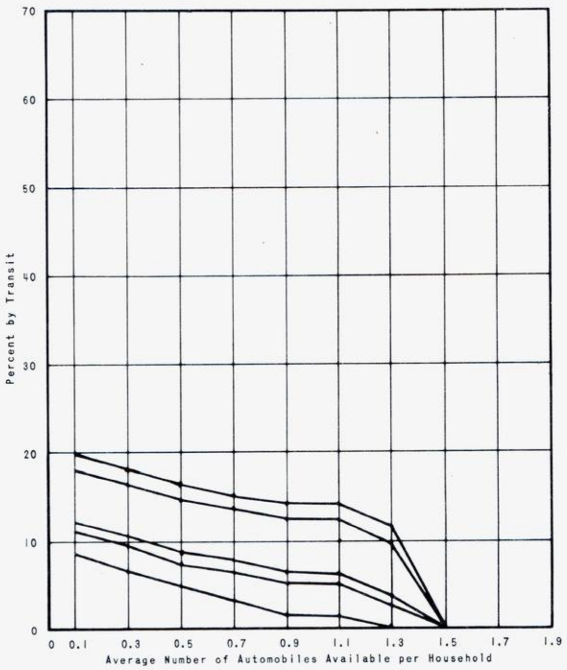
MODAL SPLIT RELATIONSHIPS
MILWAUKEE HOME INTERVIEW AREA
HOME-BASED OTHER TRIP PURPOSE

Accessibility Ratio	Average Number of Automobiles Available per Household										
	0.1	0.3	0.5	0.7	0.9	1.1	1.3	1.5	1.7	1.9	2.1
0.01	37.0	33.0	29.0	25.0	21.5	19.0	16.5	15.0	.0	.0	.0
1.00	36.5	32.5	28.5	24.5	21.0	18.5	16.0	14.5	.0	.0	.0
3.00	31.7	27.7	23.7	19.7	16.2	13.7	11.2	9.7	.0	.0	.0
5.00	28.0	24.0	20.0	16.0	12.5	10.0	7.5	6.0	.0	.0	.0
8.00	24.5	20.5	16.5	12.5	9.0	6.5	4.0	2.5	.0	.0	.0
20.00	.	.	15.3	11.3	7.8	5.3	2.8	.0	.0	.0	.0
80.00	.	.	.0	.0	.0	.0	.0	.0	.0	.0	.0
100.00	.	.	.	.0	.0	.0	.0	.0	.0	.0	.0

NOTE: Black line delineates the boundary of the 1963 survey data.

Figure 15

MODAL SPLIT RELATIONSHIPS
MILWAUKEE HOME INTERVIEW AREA
NON-HOME-BASED TRIP PURPOSE



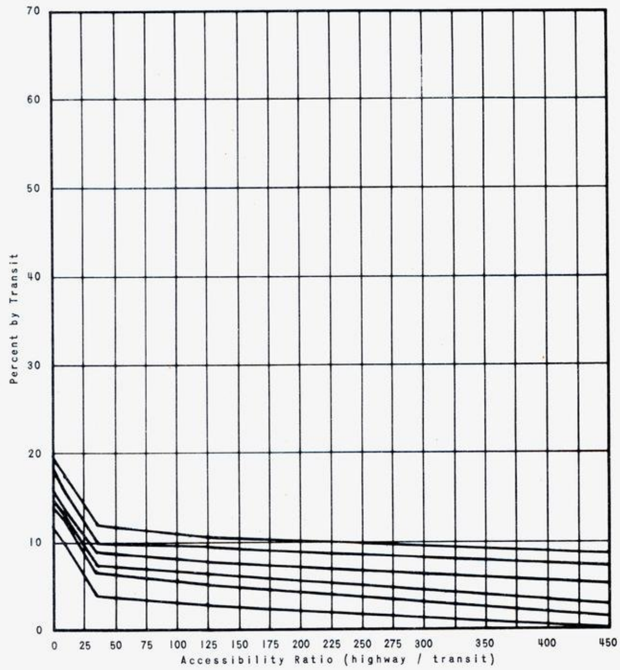


Table 15

MODAL SPLIT RELATIONSHIPS
MILWAUKEE HOME INTERVIEW AREA
NON-HOME-BASED TRIP PURPOSE

Accessibility Ratio	Average Number of Automobiles Available per Household										
	0.1	0.3	0.5	0.7	0.9	1.1	1.3	1.5	1.7	1.9	2.1
0.10	19.9	18.2	16.5	15.3	14.2	14.2	11.6	.0	.0	.0	.0
10.00	18.2	16.5	14.8	13.6	12.5	12.5	9.9	.0	.0	.0	.0
35.00	12.1	10.4	8.7	7.5	6.4	6.4	3.8	.0	.0	.0	.0
125.00	11.0	9.3	7.6	6.4	5.3	5.3	2.7	.0	.0	.0	.0
450.00	8.4	6.7	5.0	2.8	1.7	1.7	.0	.0	.0	.0	.0
500.00	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10,000.00	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

NOTE: Black line delineates the boundary of the 1963 survey data.

Figure 16

MODAL SPLIT RELATIONSHIPS
RACINE AND KENOSHA COMBINED HOME INTERVIEW AREAS
HOME-BASED WORK TRIP PURPOSE

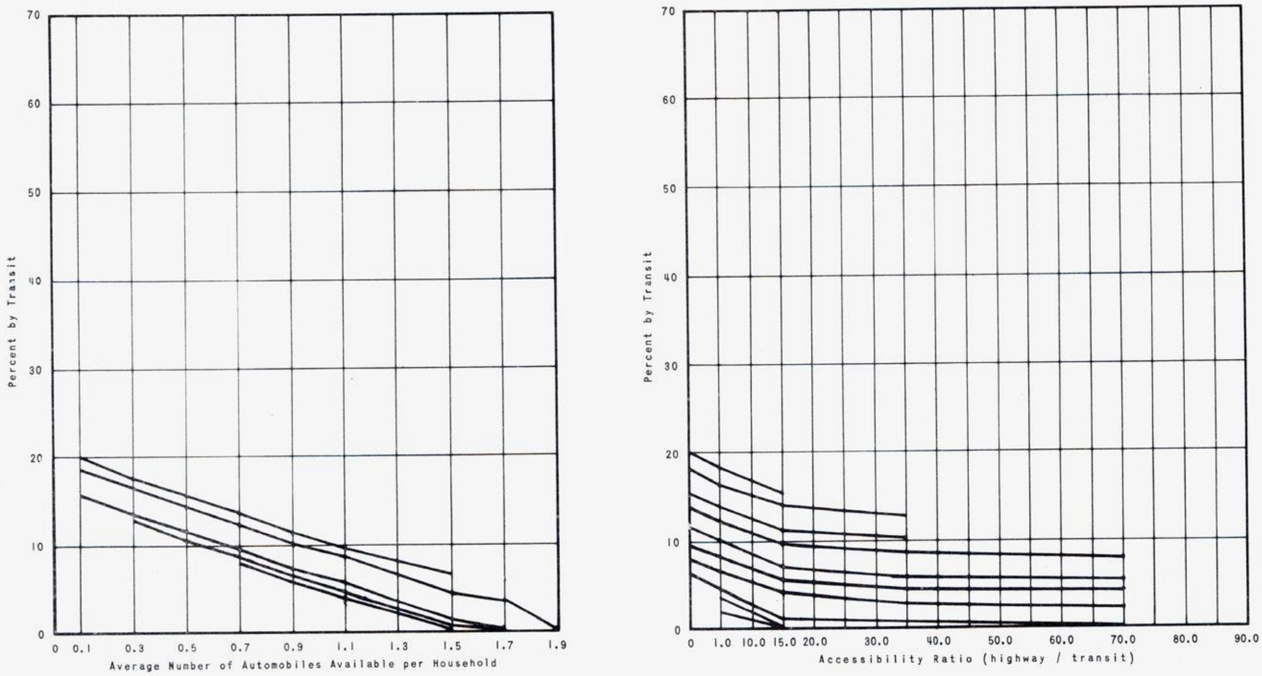


Table 16

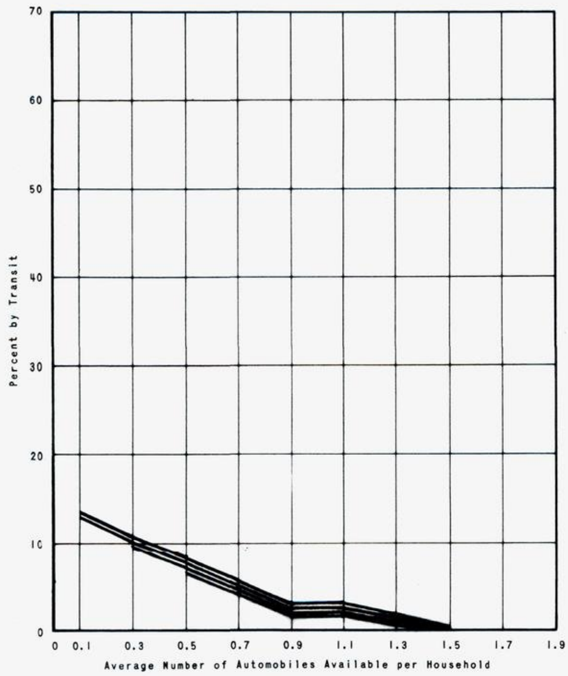
MODAL SPLIT RELATIONSHIPS
RACINE AND KENOSHA COMBINED HOME INTERVIEW AREAS
HOME-BASED WORK TRIP PURPOSE

Accessibility Ratio	Average Number of Automobiles Available per Household										
	0.1	0.3	0.5	0.7	0.9	1.1	1.3	1.5	1.7	1.9	2.1
0.50	20.0	17.8	15.6	13.4	11.2	9.6	8.0	6.4	.	.	.
5.00	18.8	16.6	14.4	12.2	10.0	8.4	6.8	4.2	3.6	2.0	.0
15.00	15.8	13.6	11.4	9.2	7.0	5.4	3.8	1.2	.0	.0	.0
35.00	.	12.9	10.7	8.5	6.3	4.7	3.1	.5	.0	.0	.0
70.00	.	.	.	8.0	5.8	4.1	2.5	.0	.0	.0	.0
100.00	.	.	.	.0	.0	.0	.0	.0	.0	.0	.0

NOTE: Black line delineates the boundary of the 1963 survey data.

Figure 17

MODAL SPLIT RELATIONSHIPS
RACINE AND KENOSHA COMBINED HOME INTERVIEW AREAS
HOME-BASED OTHER TRIP PURPOSE



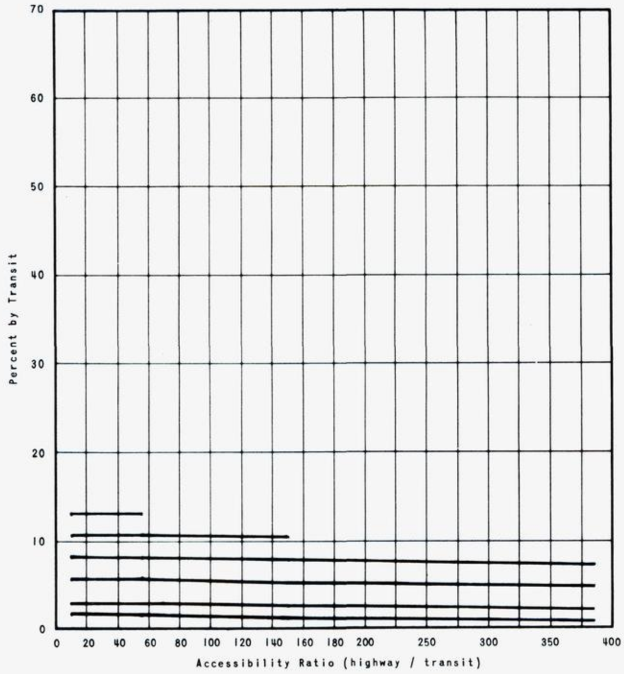


Table 17

MODAL SPLIT RELATIONSHIPS
RACINE AND KENOSHA COMBINED HOME INTERVIEW AREAS
HOME-BASED OTHER TRIP PURPOSE

Accessibility Ratio	Average Number of Automobiles Available per Household										
	0.1	0.3	0.5	0.7	0.9	1.1	1.3	1.5	1.7	1.9	2.1
10.00	13.3	10.7	8.1	5.5	2.9	2.9	1.6	.0	.0	.0	.
55.00	13.2	10.6	8.0	5.4	2.8	2.8	1.5	.0	.0	.0	.
150.00	.	10.4	7.8	5.2	2.6	2.6	1.3	.0	.0	.0	.
350.00	.	.	7.2	4.6	2.0	2.0	.7	.0	.0	.0	.
750.00	.	.	.0	.0	.0	.0	.0	.0	.0	.0	.
1,000.00	.	.	.0	.0	.0	.0	.0	.0	.0	.0	.

NOTE: Black line delineates the boundary of the 1963 survey data.

Figure 18

MODAL SPLIT RELATIONSHIPS
RACINE AND KENOSHA COMBINED HOME INTERVIEW AREAS
NON-HOME-BASED TRIP PURPOSE

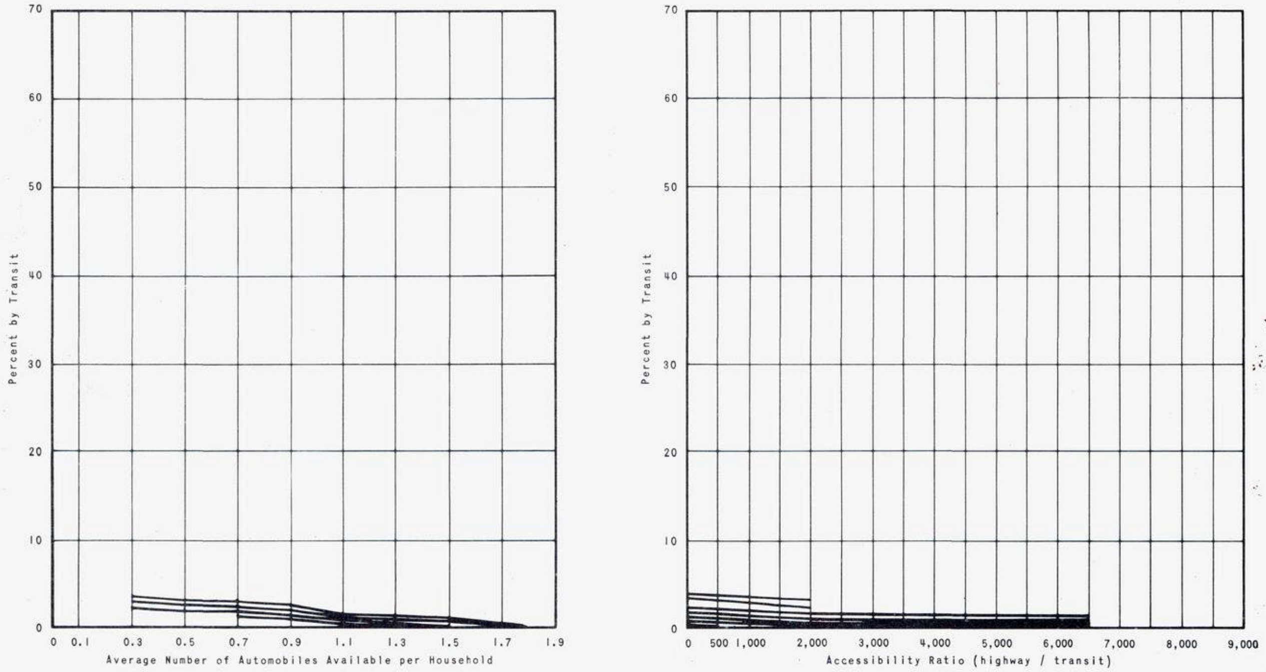


Table 18

MODAL SPLIT RELATIONSHIPS
RACINE AND KENOSHA COMBINED HOME INTERVIEW AREAS
NON-HOME-BASED TRIP PURPOSE

Accessibility Ratio	Average Number of Automobiles Available per Household										
	0.1	0.3	0.5	0.7	0.9	1.1	1.3	1.5	1.7	1.9	2.1
10.00	.	3.2	2.8	2.4	2.0	1.4	1.1	.8	.0	.0	.0
500.00	.	3.1	2.7	2.3	1.9	1.3	1.0	.7	.0	.0	.0
2,000.00	.	2.8	2.4	2.0	1.3	1.0	.7	.0	.0	.0	.0
6,500.00	.	.	.	1.7	1.0	.7	.4	.0	.0	.0	.0
10,000.00	.	.	.	.	.0	.0	.0	.0	.0	.0	.

NOTE: Black line delineates the boundary of the 1963 survey data.

Table 19

TRANSIT TRIP ATTRACTION GENERATION EQUATIONS

Purpose	Equations	Coefficient of Determination r^2	Standard Error of Estimate s	Mean $\bar{y}$	s as a percent of $\bar{y}$
1. Home-Based Work. . .	1.093 (Total Employment on Retail and Service Land) - 0.530 (Automobiles Available) + 0.425 (Total Employment) + 455	0.833	47.9	60.9	78.6
2. Home-Based Shop. . .	3.213 (Retail Employment on Retail and Service Land) - 248	0.663	56.8	37.9	43.3
3. Home-Based Other[a]. .	0.155 (Total Employment on Retail and Service Land) - 1.509 (Retail and Service Acres) + 0.042 (Total Employment) + 0.292 (Retail Employment on Retail and Service Land) + 287	0.403	339.6	387.5	87.7
4. Non-Home-Based . . .	0.281 (Total Employment on Retail and Service Land) - 0.079 (Automobiles Available) + 124	0.584	14.2	13.1	108.5

[a] *Based on all zones with more than 100 home-based other transit trip attractions.*

Source: SEWRPC.

mental data were added to the 1963 survey attractions to obtain the total future transit trip attractions.

The results of the first method of application were used in zones where the absolute increase in whatever data comprising the independent variable was greater than the corresponding 1963 level of that data. Thus, in such a situation, it was assumed that whatever unique characteristics the zone possessed would be significantly changed through future land use development. Where the change in data comprising the independent variables was less than the corresponding 1963 level of that data, the results of the second method of application were used. In a few zones, for which either method of application yielded unrealistic results, a reasonable value was substituted, based on consideration of land use and socio-economic characteristics not accounted for in the independent variables and comparison with other zones possessing similar characteristics.

Transit trip attractions were thus calculated for the three alternative regional land use plans and used, in turn, to calculate accessibility indices. The relationships used to calculate the non-transit trip attractions were developed in the trip generation phase of the travel forecasting process using the same approach.[11]

APPLICATION OF THE MODAL SPLIT MODEL

The majority of the transit analyses and all modal split programs were written for an IBM 1401 card system (4 K) in RPG.[12] The sequence of steps in applying the modal split model to data derived from land use plans is described below, and the steps are displayed in the process flow chart in Figure 19.

The application sequence occurs in three general steps: development of the basic data input cards, calculation of the transit utilization rate, and application of the transit utilization rate to total person trip productions with the output in the standard format for direct input into the gravity model program (PR-135).

The preliminary step to development of the deck of basic input cards is the calculation of the input data. In calculating the average automobile availability per household for each zone, the total number of households in the zones is available directly from the land use plan data; and the number of automobiles available in the zones is calculated from a regression equation. Both are input into a single data card preceding the trip generation phase of the travel forecasting process. Program A is applied to divide the total number of automobiles available by the total number of households and output the results into the basic data card, along with zone, district, trip purpose, and home interview area code.

There are four inputs to the calculation of the accessibility ratios: the highway and transit skim trees and the highway and transit trip attractions. The gravity model

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[11] *See SEWRPC Planning Report No. 7, Volume 2, Forecasts and Alternative Plans 1990.*

[12] *RPG, or Report Program Generator, is a special program designed to produce reports ranging from simple listings of items from the input file to complex reports that incorporate editing and calculation of input data.*

Figure 19

PROCESS FLOW CHART FOR MODAL SPLIT MODEL

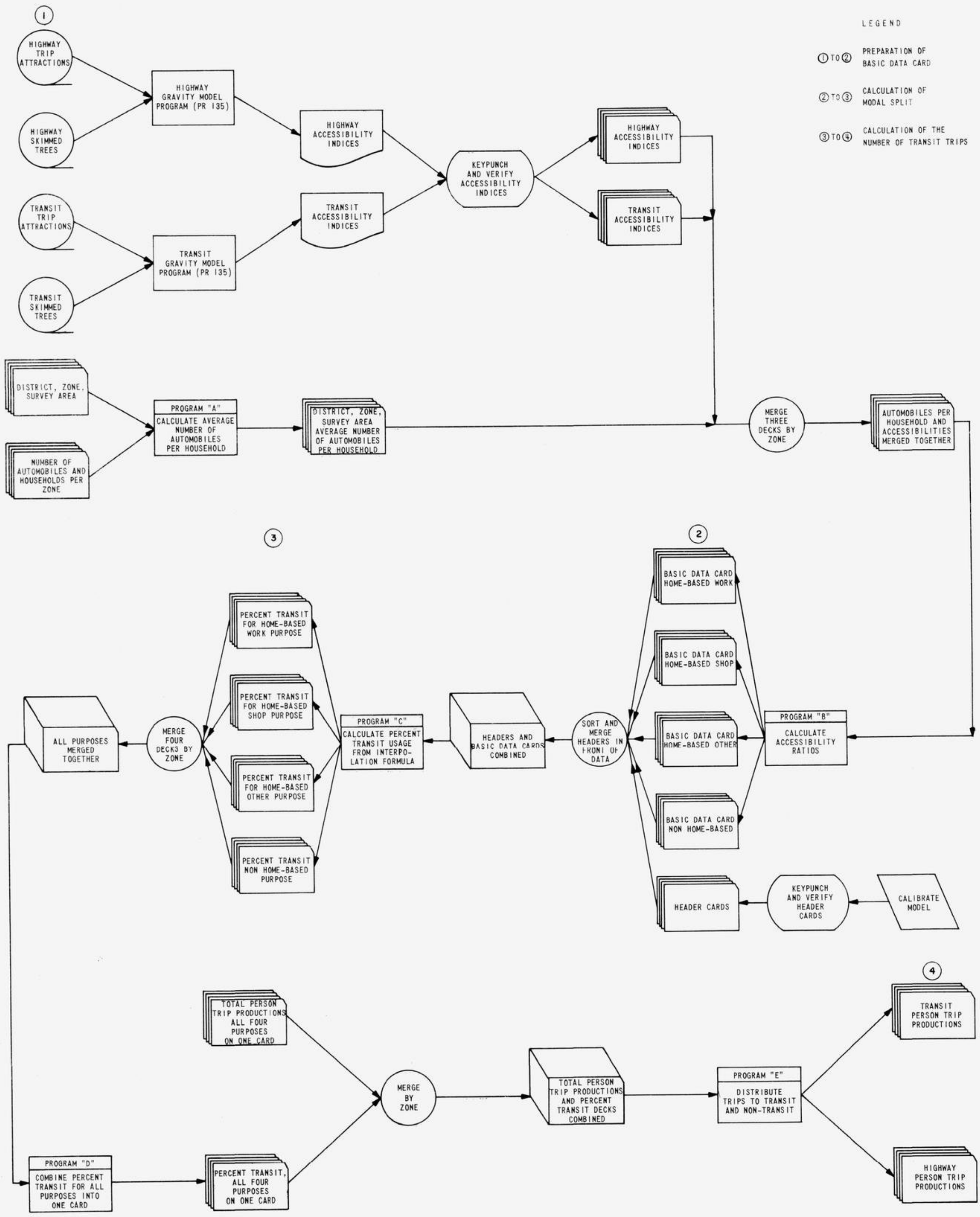
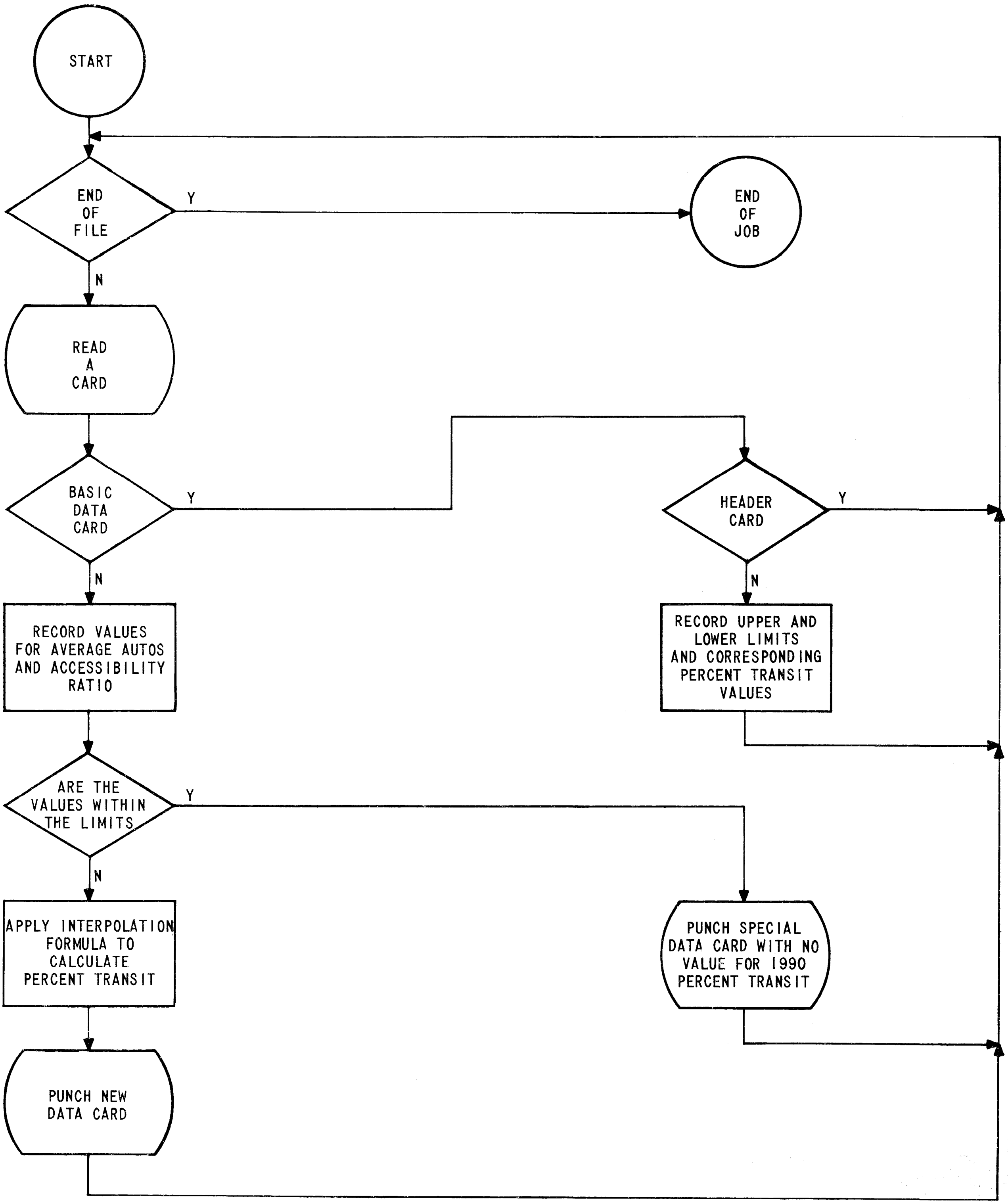


Figure 20

FLOW DIAGRAM FOR PROGRAM "C" TO CALCULATE PERCENT TRANSIT USAGE USING THE INTERPOLATION PROCEDURE



program is run separately for highway and transit suppressing all binary output except the accessibility indices.[13] The accessibility indices are keypunched by four purposes for each zonal card with highway and transit indices in separate decks. Program B divides the highway accessibility indices by the transit accessibility indices and outputs the accessibility ratios directly into the basic data cards.

The preparation of the basic data cards is now complete, four cards for each zone by trip purpose. These decks are sorted by home interview area, trip purpose, and zone into their appropriate cells.[14] Header cards containing the upper and lower limits of percent transit usage for each cell are placed in front of those data cards in the cell. Program C calculates the percent transit usage by zone for each of four purposes using the linear interpolation formula. A flow diagram of Program C is displayed in Figure 20.

Program C outputs the transit utilization rate in a one purpose per card format. These are rearranged by Program D into a new format containing four purposes per card, the format of the total trip productions. Program E applies the utilization rates; and the result is two decks of trip productions, one for highway and one for transit, in the format directly useable in the gravity model program. Transit person trip attractions are subtracted from total person trip attractions, by Program E, and similarly output in the gravity model format.

The last step consists of balancing total transit trip attractions to total transit trip productions separately for five areas: Milwaukee rings 0 and 1, Milwaukee ring 2, Milwaukee rings 3 through 5, Racine, and Kenosha.

Although there are several steps in this sequence that could be combined, the multiple step approach allows for intermediate checking of results to check for possible errors before excessive time is spent in processing the results.

TEST OF THE MODEL

Regional Comparisons

The modal split model was applied utilizing 1963 origin and destination survey data to test its ability to reproduce the existing pattern of transit trip production within the three urbanizing areas of the Region. The results are displayed in Table 20.

At the regional level, the model reproduced the 1963 transit productions remarkably well. For all trip purposes except home-based work, the model application produced a slight underestimation of the number of transit trip productions. This underestimation ranged from 0.35 to 6.33 percent, although the difference for any trip purpose category was no greater than 1,561 transit trip productions. The model may, therefore, be expected to slightly underestimate transit trip productions under future conditions.

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[13] *Calibrating and Testing a Gravity Model For Any Size City*, U. S. Bureau of Public Roads, October 1965, p. A-49, Option 2 "on" in program PR 135.

[14] See *Stratification and Grouping of Data*, page 26.

Table 20

COMPARISON OF ORIGIN AND DESTINATION SURVEY AND MODEL TRANSIT TRIP PRODUCTION BY TRIP PURPOSE WITHIN THE THREE URBANIZING AREAS OF THE REGION

Trip Purpose	Transit Trip Productions		(Model/O & D) x 100 percent
	O & D Survey	Model Estimates	
Milwaukee			
Home-Based Work. . .	146,379	147,940	101.06
Home-Based Shop. . .	28,186	27,449	97.38
Home-Based Other . .	51,700	50,649	97.96
Non-Home-Based . . .	18,136	18,073	99.65
Subtotal	*244,401*	*244,111*	*99.88*
Racine-Kenosha			
Home-Based Work. . .	5,774	5,409	93.68
Home-Based Other[a]. .	4,746	4,560	96.08
Non-Home-Based . . .	1,280	1,223	95.55
Subtotal	*11,800*	*11,192*	*94.85*
Regional Total	256,201	255,303	99.65

[a] *Includes home-based shop purpose.*

Source: SEWRPC.

District Level Comparisons

Results of the model application and survey data comparisons at the district level were displayed to depict the ability of the model to geographically distribute the transit utilization rates accurately. As Table 21 indicates, the vast majority of the districts displayed errors smaller than a difference of 5 percent between the model and actual transit utilization rates by trip purpose. For all purposes at least 63 percent of the districts showed a difference of 3 percent or less between model and survey data results.

Table 21

ERROR DISTRIBUTION IN DISTRICTS BY TRIP PURPOSE FOR MILWAUKEE AND RACINE - KENOSHA

Trip Purpose	Percent Transit Usage (actual minus model)						
	0-1	1-2	2-3	3-4	4-5	5-10	10
	Number of Districts in Range						
Milwaukee							
Home-Based Work. .	10	7	10	3	2	7	4
Home-Based Shop. .	15	4	7	1	2	6	6
Home-Based Other .	17	8	3	5	1	7	2
Non-Home-Based . .	25	5	8	3	1	1	0
Racine-Kenosha							
Home-Based Work. .	1	3	0	0	0	0	0
Home-Based Other .	4	0	0	0	0	0	0
Non-Home-Based . .	4	0	0	0	0	0	0

Source: SEWRPC.

The difference parameter was chosen to measure the model's accuracy, rather than percent difference, because of the small base of the actual transit utilization rate at the district and zonal levels.

Maps 2 through 5 show the actual and model estimates for the number of transit trip productions for each district within the Region by trip purpose. The maps indicate that the distributional pattern of actual transit trip productions is satisfactorily reproduced by the model with only a very few districts having appreciable errors.

Zonal Comparisons

Since the model is intended to be applied at the zonal level, it was also necessary to test its accuracy at this geographic level. Table 22 shows the error distribution by number of zone, trip purpose, and size. It indicates that at least 61 percent of all zones have differences (for any given trip purpose category) between the actual and model transit utilization rates of less than 5 percent. Table 22 and Appendix A show the model and origin-destination zonal values for transit utilization rates and transit trips.

Table 22

ERROR DISTRIBUTION IN ZONES BY PURPOSE FOR MILWAUKEE AND RACINE-KENOSHA

Trip Purpose	Percent Transit Usage (actual minus model)					
	0-1	0-5	5-10	10-20	20-50	50
	Number of Zones in Range					
Milwaukee						
Home-Based Work. . .	54	152	87	32	5	2
Home-Based Shop. . .	145	75	45	31	16	2
Home-Based Other . .	195	65	42	18	6	2
Non-Home-Based . . .	190	104	29	10	0	0
Racine-Kenosha						
Home-Based Work. . .	15	32	0	0	1	0
Home-Based Other . .	38	8	2	0	0	0
Non-Home-Based . . .	38	9	0	0	0	0

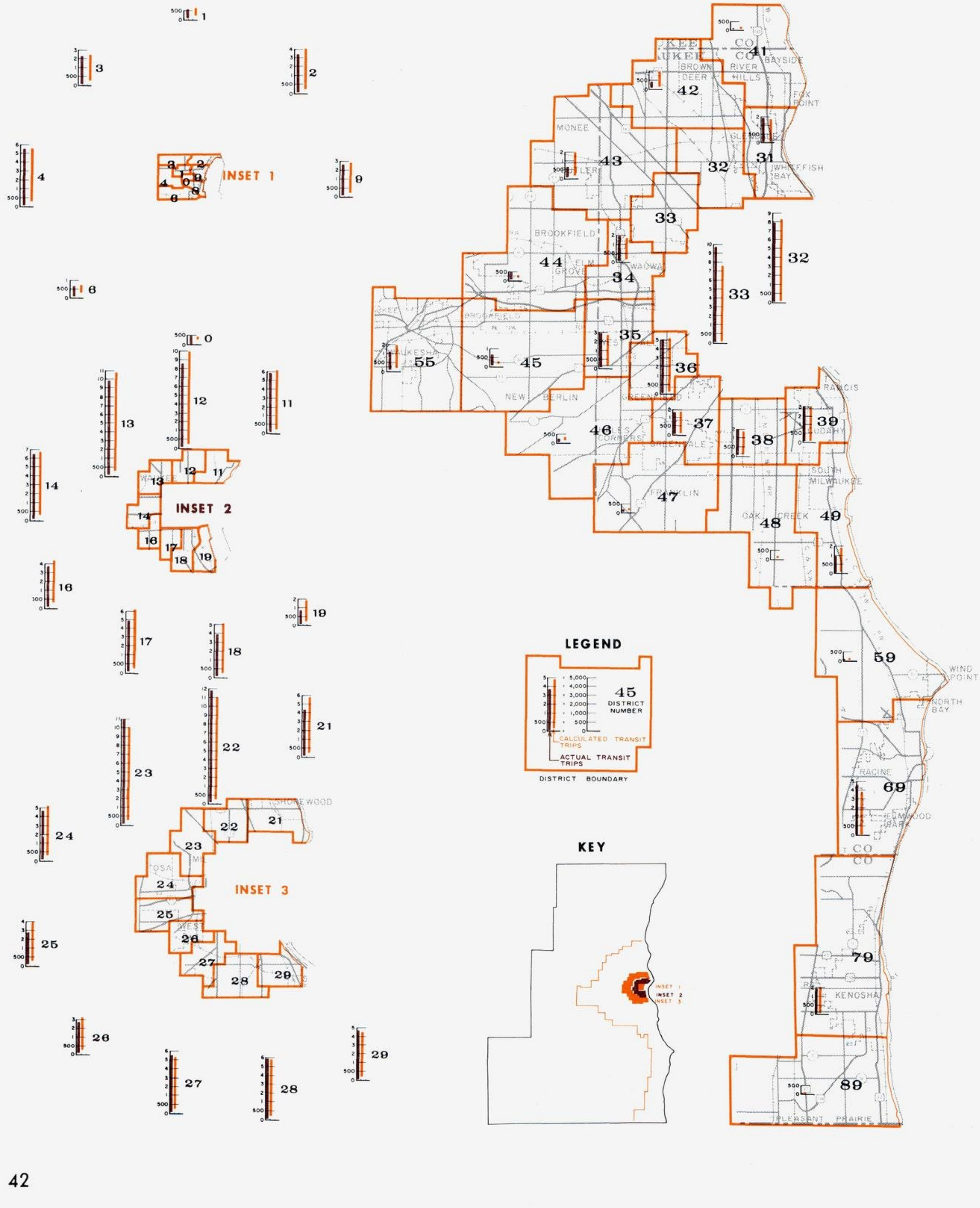
Source: SEWRPC.

The error frequency distributions are displayed in Figures 21 and 22 for the actual minus the model estimates of transit trip productions. In all cases, the distributions approximate a normal distribution, with only a few zones displaying appreciable errors in estimation of transit trip productions. For all trip purposes, the model estimated trip production within plus or minus 50 trip productions of the survey data for most zones, ranging from 46.9 percent of the zones for home-based work purpose in Milwaukee to 91.0 percent for non-home-based purpose in Racine-Kenosha.

Map 2

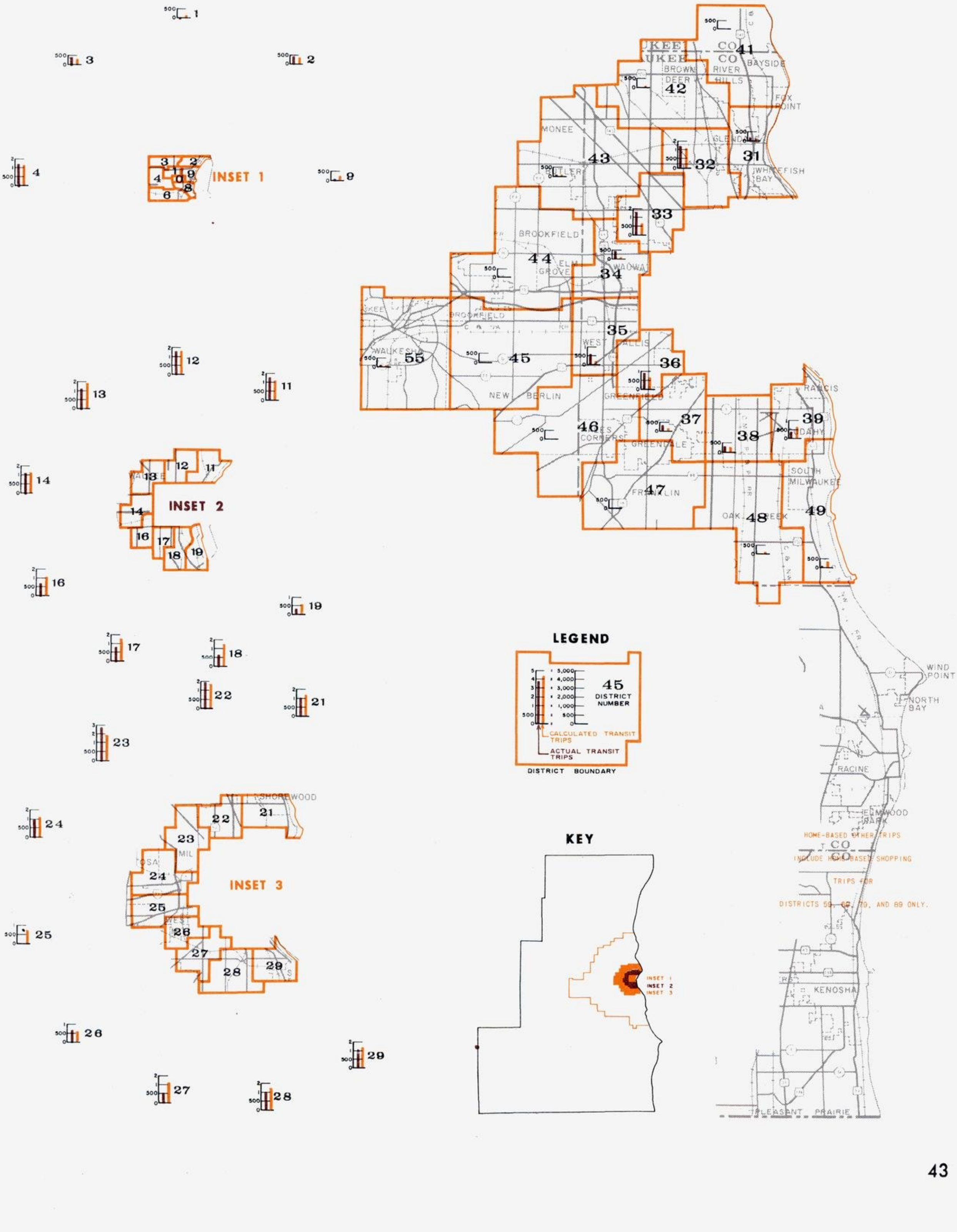
DISTRICT COMPARISONS OF TRANSIT TRIP PRODUCTION ACTUAL SURVEY AND CALCULATED MODEL RESULTS

Home-Based Work



Map 3

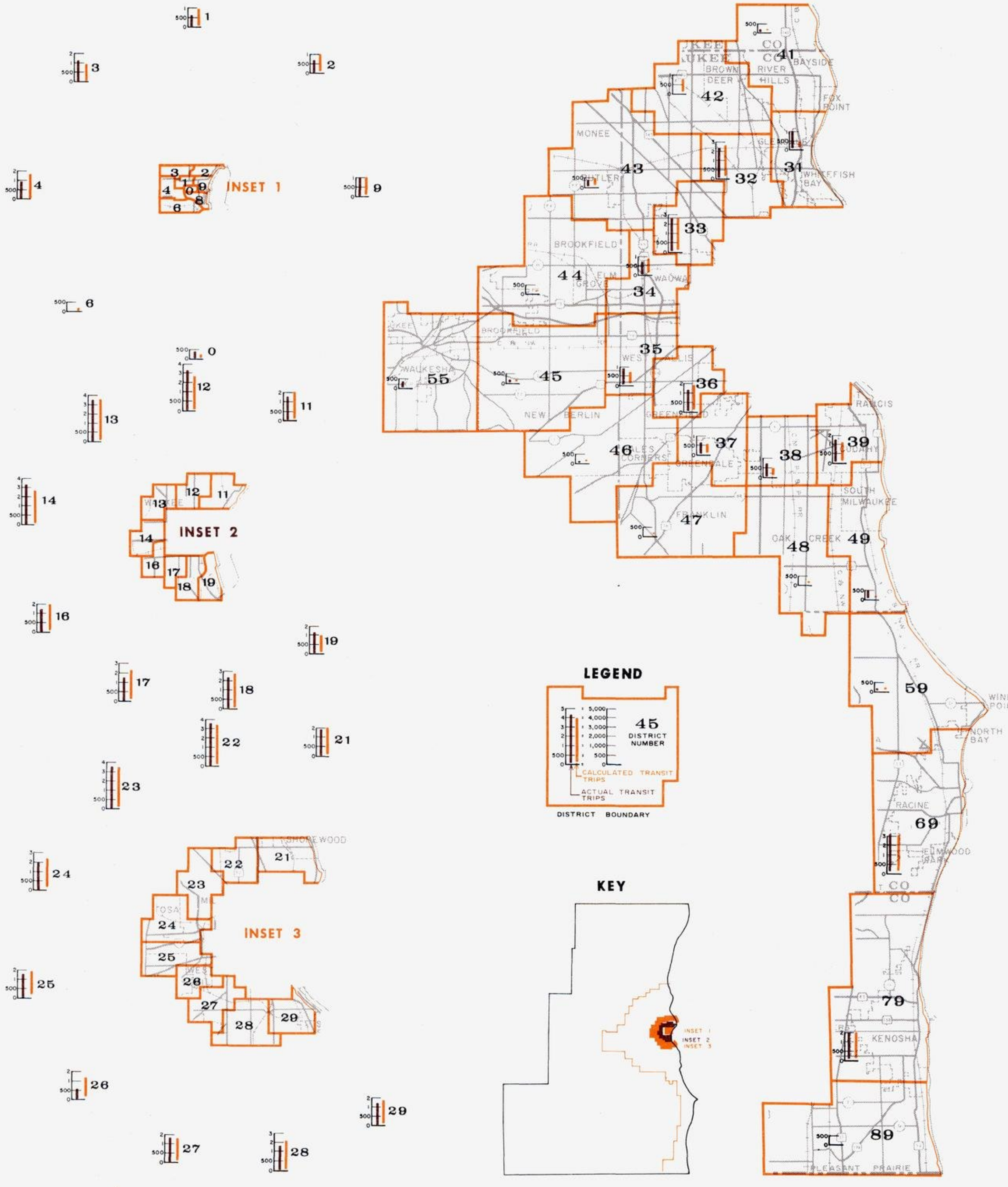
DISTRICT COMPARISONS OF TRANSIT TRIP PRODUCTION
ACTUAL SURVEY AND CALCULATED MODEL RESULTS
Home-Based Other



Map 4

DISTRICT COMPARISONS OF TRANSIT TRIP PRODUCTION ACTUAL SURVEY AND CALCULATED MODEL RESULTS

Home-Based Shop



Map 5

DISTRICT COMPARISONS OF TRANSIT TRIP PRODUCTION ACTUAL SURVEY AND CALCULATED MODEL RESULTS

Non-Home-Based

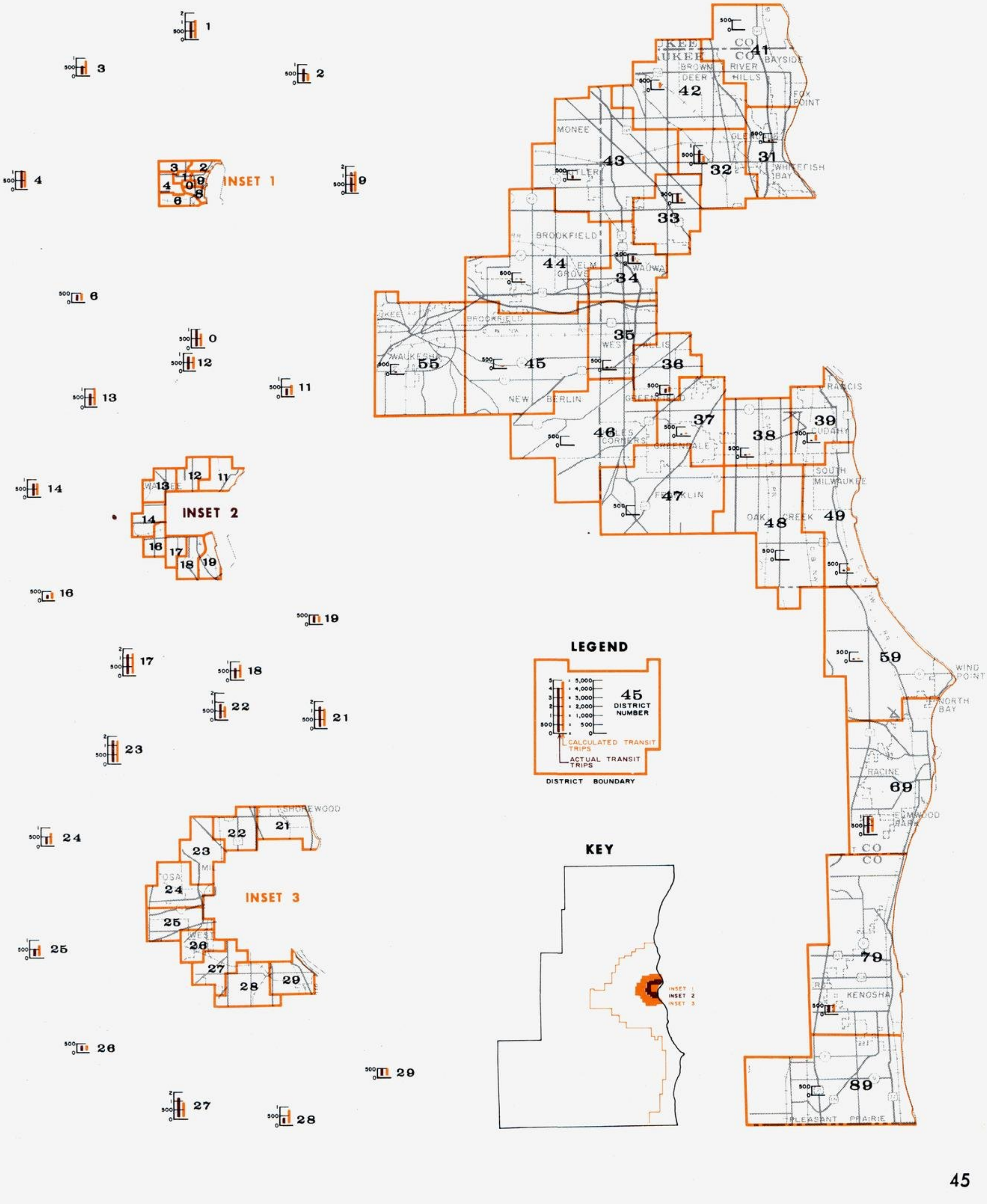


Figure 21

PERCENTAGE DISTRIBUTION OF ZONES BY SIZE ERROR AND DIFFERENCE IN TRANSIT PRODUCTIONS MILWAUKEE HOME INTERVIEW AREA

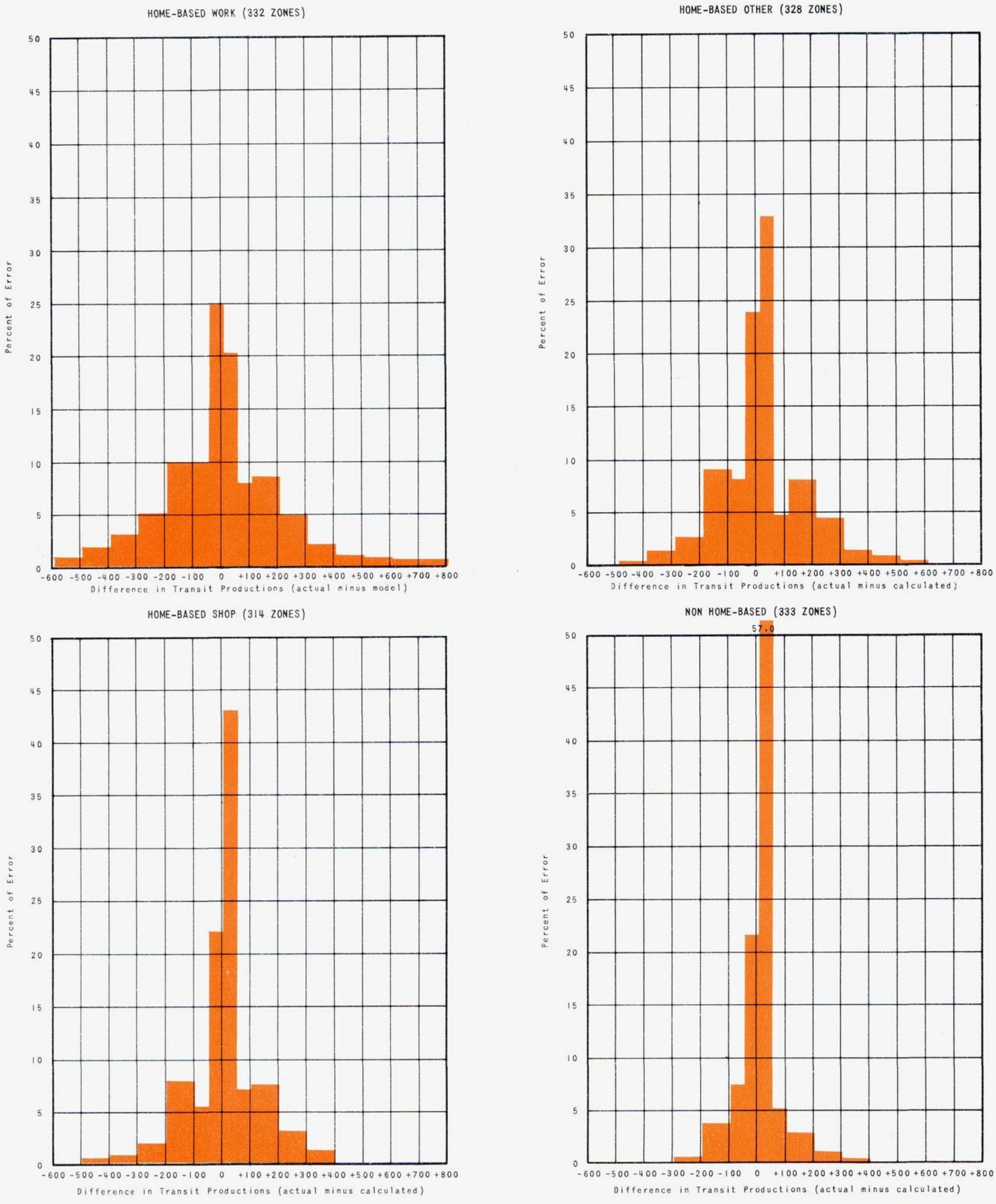
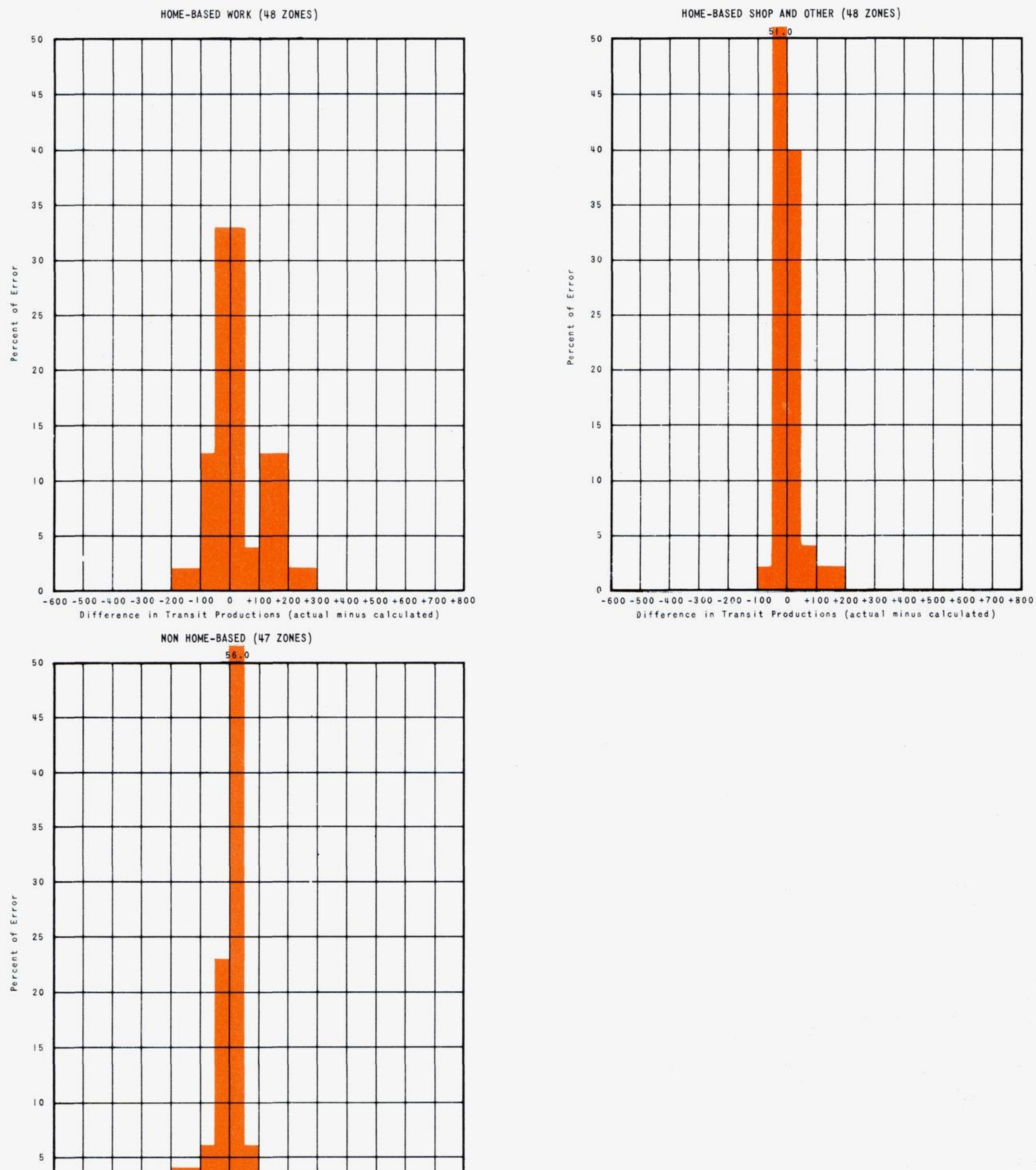


Figure 22

PERCENTAGE DISTRIBUTION OF ZONES BY SIZE ERROR AND DIFFERENCE IN TRANSIT PRODUCTIONS RACINE - KENOSHA HOME INTERVIEW AREA



Evaluation and Conclusions

On the basis of the tests performed on the model, it was concluded that the model replicated the actual transit utilization pattern within the Region with reasonable accuracy. At the regional, district, and zonal levels, the model was found to estimate satisfactorily the transit utilization rate and number of transit trip productions for all four trip purpose categories.

Appendix A

COMPARISONS OF TRANSIT TRIP PRODUCTION O & D SURVEY AND MODEL RESULTS BY PURPOSE

MILWAUKEE HOME INTERVIEW AREA — HOME-BASED WORK

	O-D SURVEY			MODEL		DIFFERENCE	
DIST ZONE	TOTAL TRIPS	TRANSIT TRIPS	PERCENT TRANSIT	TRANSIT TRIPS	PERCENT TRANSIT	TRANSIT TRIPS	PER-CENT
00 003	398	398	100.0	178.3	44.8	219.7	55.2
00	398	398	100.0	178.3	44.8	219.7	55.2
01 007	574	492	85.7	391.5	68.2	100.5	17.5
01	574	492	85.7	391.5	68.2	100.5	17.5
02 011	3,503	1,803	51.5	1,919.6	54.8	116.6-	3.3-
02 012	1,781	655	36.8	1,000.9	56.2	345.9-	19.4-
02 013	1,927	615	31.9	768.9	39.9	153.9-	8.0-
02	7,211	3,073	42.6	3,689.4	51.2	616.4-	8.6-
03 014	154	154	100.0	91.0	59.1	63.0	40.9
03 015	151	38	25.2	88.6	58.7	50.6-	33.5-
03 016	426	234	54.9	247.5	58.1	13.5-	3.2-
03 017	2,924	1,578	54.0	1,459.1	49.9	118.9	4.1
03	3,655	2,004	54.8	1,886.2	51.6	117.8	3.2
04 018	1,626	1,198	73.7	873.2	53.7	324.8	20.0
04 020	1,282	768	59.9	678.2	52.9	89.8	7.0
04 021	6,575	3,243	49.3	3,445.3	52.4	202.3-	3.1-
04	9,483	5,209	54.9	4,996.7	52.7	212.3	2.2
06 022	491	404	82.3	283.8	57.8	120.2	24.5
06 024	288	144	50.0	134.5	46.7	9.5	3.3
06	779	548	70.3	418.3	53.7	129.7	16.6
09 029	72	72	100.0	43.0	59.7	29.0	40.3
09 030	1,770	1,081	61.1	993.0	56.1	88.0	5.0
09 031	1,225	505	41.2	699.5	57.1	194.5-	15.9-
09 032	1,009	721	71.5	530.7	52.6	190.3	18.9
09	4,076	2,379	58.4	2,266.2	55.6	112.8	2.8
11 034	908	395	43.5	469.4	51.7	74.4-	8.2-
11 035	4,850	1,539	31.7	1,862.4	38.4	323.4-	6.7-
11 036	552	0	.0	108.7	19.7	108.7-	19.7-
11 037	3,415	1,496	43.8	1,284.0	37.6	212.0	6.2
11 038	456	114	25.0	88.0	19.3	26.0	5.7
11 039	3,186	1,201	37.7	1,153.3	36.2	47.7	1.5
11 040	2,587	925	35.8	716.6	27.7	208.4	8.1
11	15,954	5,670	35.5	5,682.4	35.6	12.4-	.1-
12 041	2,171	1,006	46.3	1,000.8	46.1	5.2	.2
12 042	3,104	1,131	36.4	1,368.9	44.1	237.9-	7.7-
12 043	3,354	1,421	42.4	1,455.6	43.4	34.6-	1.0-
12 044	3,000	1,224	40.8	1,350.0	45.0	126.0-	4.2-
12 045	4,458	1,691	37.9	1,752.0	39.3	61.0-	1.4-
12 046	2,883	880	30.5	1,052.3	36.5	172.3-	6.0-
12 047	4,442	1,000	22.5	1,332.6	30.0	332.6-	7.5-
12	23,412	8,353	35.7	9,312.2	39.8	959.2-	4.1-
13 048	3,839	1,480	38.6	1,673.8	43.6	193.8-	5.0-
13 049	4,496	1,387	30.8	1,793.9	39.9	406.9-	9.1-
13 050	4,812	1,667	34.6	1,766.0	36.7	99.0-	2.1-
13 051	4,594	1,823	39.7	1,644.7	35.8	178.3	3.9
13 052	3,850	1,406	36.5	1,185.8	30.8	220.2	5.7
13 053	3,109	796	25.6	979.3	31.5	183.3-	5.9-
13 054	3,033	1,138	37.5	1,025.2	33.8	112.8	3.7
13	27,733	9,697	35.0	10,068.7	36.3	371.7-	1.3-
14 055	2,327	1,108	47.6	919.2	39.5	188.8	8.1
14 056	2,673	1,046	39.1	1,186.8	44.4	140.8-	5.3-
14 057	3,646	1,054	28.9	1,298.0	35.6	244.0-	6.7-
14 058	4,835	2,698	55.8	2,272.5	47.0	425.5	8.8
14 059	777	370	47.6	341.9	44.0	28.1	3.6
14	14,258	6,276	44.0	6,018.4	42.2	257.6	1.8
16 061	130	0	.0	29.1	22.4	29.1-	22.4-
16 062	2,836	1,198	42.2	969.9	34.2	228.1	8.0
16 063	3,112	917	29.5	1,002.1	32.2	85.1-	2.7-
16 064	3,473	1,366	39.3	1,066.2	30.7	299.8	8.6
16 065	1,510	84	5.6	656.9	43.5	572.9-	37.9-
16	11,061	3,565	32.2	3,724.2	33.7	159.2-	1.5-
17 066	2,230	581	26.1	979.0	43.9	398.0-	17.8-
17 067	3,034	1,239	40.8	1,234.8	40.7	4.2	.1
17 068	2,835	959	33.8	1,122.7	39.6	163.7-	5.8-
17 069	3,187	865	27.1	1,045.3	32.8	180.3-	5.7-
17 070	3,362	1,107	32.9	1,166.6	34.7	59.6-	1.8-
17	14,648	4,751	32.4	5,548.4	37.9	797.4-	5.5-
18 071	1,561	568	36.4	830.5	53.2	262.5-	16.8-
18 073	2,155	599	27.8	737.0	34.2	138.0-	6.4-
18 074	801	89	11.1	334.0	41.7	245.0-	30.6-
18 075	2,419	702	29.0	783.8	32.4	81.8-	3.4-
18 076	5,804	1,665	28.7	1,985.0	34.2	320.0-	5.5-
18	12,740	3,623	28.4	4,670.3	36.7	1,047.3-	8.3-
19 078	702	117	16.7	294.8	42.0	177.8-	25.3-
19 079	3,956	620	15.7	1,076.0	27.2	456.0-	11.5-
19	4,658	737	15.8	1,370.8	29.4	633.8-	13.6-
21 080	5,155	1,648	32.0	1,510.4	29.3	137.6	2.7
21 081	6,187	1,015	16.4	1,404.4	22.7	389.4-	6.3-
21 082	943	41	4.3	151.8	16.1	110.8-	11.8-
21 083	3,882	477	12.3	989.9	25.5	512.9-	13.2-
21 084	1,285	86	6.7	127.2	9.9	41.2-	3.2-
21 085	374	0	.0	80.0	21.4	80.0-	21.4-
21 086	2,837	630	22.2	621.3	21.9	8.7	.3
21 087	1,894	180	9.5	382.6	20.2	202.6-	10.7-
21	22,557	4,077	18.1	5,267.6	23.4	1,190.6-	5.3-
22 088	4,550	2,160	47.5	1,451.5	31.9	708.5	15.6
22 089	4,490	2,032	45.3	1,701.7	37.9	330.3	7.4
22 090	3,591	1,184	33.0	1,195.8	33.3	11.8-	.3-
22 091	5,859	1,845	31.5	1,933.5	33.0	88.5-	1.5-
22 092	4,492	1,583	35.2	1,459.9	32.5	123.1	2.7
22 093	6,813	1,669	24.5	1,594.2	23.4	74.8	1.1
22 094	1,837	600	32.7	586.0	31.9	14.0	.8
22 095	3,046	440	14.4	648.8	21.3	208.8-	6.9-
22	34,678	11,513	33.2	10,571.4	30.5	941.6	2.7
23 096	6,632	1,889	28.5	1,704.4	25.7	184.6	2.8
23 097	4,015	1,119	27.9	1,039.9	25.9	79.1	2.0
23 098	5,811	1,521	26.2	1,446.9	24.9	74.1	1.3
23 099	6,223	1,867	30.0	1,337.9	21.5	529.1	8.5
23 100	5,247	1,585	30.2	1,065.1	20.3	519.9	9.9
23 101	5,495	1,076	19.6	1,104.5	20.1	28.5-	.5-
23 102	3,811	814	21.4	910.8	23.9	96.8-	2.5-
23 103	4,344	852	19.6	821.0	18.9	31.0	.7
23	41,578	10,723	25.8	9,430.5	22.7	1,292.5	3.1
24 104	1,073	481	44.8	475.3	44.3	5.7	.5
24 105	1,037	74	7.1	71.6	6.9	2.4	.2
24 106	532	0	.0	138.9	26.1	138.9-	26.1-
24 107	1,928	371	19.2	439.6	22.8	68.6-	3.6-
24 108	3,823	667	17.4	795.2	20.8	128.2-	3.4-
24 109	1,910	225	11.8	175.7	9.2	49.3	2.6
24 110	5,146	1,482	28.8	1,214.5	23.6	267.5	5.2
24 111	3,774	523	13.9	664.2	17.6	141.2-	3.7-
24 112	3,066	484	15.8	469.1	15.3	14.9	.5
24 113	1,713	74	4.3	186.7	10.9	112.7-	6.6-
24	24,002	4,381	18.3	4,630.8	19.3	249.8-	1.0-
25 115	1,863	695	37.3	471.3	25.3	223.7	12.0
25 116	835	132	15.8	211.3	25.3	79.3-	9.5-
25 117	2,486	317	12.8	569.3	22.9	252.3-	10.1-
25 118	3,335	259	7.8	546.9	16.4	287.9-	8.6-
25 119	2,083	116	5.6	520.8	25.0	404.8-	19.4-
25 120	1,192	75	6.3	178.8	15.0	103.8-	8.7-
25 121	3,665	907	24.7	846.6	23.1	60.4	1.6
25	15,459	2,501	16.2	3,345.0	21.6	844.0-	5.4-
26 122	893	90	10.1	198.2	22.2	108.2-	12.1-
26 123	3,894	993	25.5	996.9	25.6	3.9-	.1-
26 124	1,014	351	34.6	223.1	22.0	127.9	12.6
26 125	152	0	.0	35.9	23.6	35.9-	23.6-
26 127	3,766	722	19.2	877.5	23.3	155.5-	4.1-
26 128	2,690	296	11.0	425.0	15.8	129.0-	4.8-
26	12,409	2,452	19.8	2,756.6	22.2	304.6-	2.4-
27 129	4,200	1,344	32.0	1,226.4	29.2	117.6	2.8
27 130	3,696	1,200	32.5	1,094.0	29.6	106.0	2.9
27 131	3,040	790	26.0	729.6	24.0	60.4	2.0
27 132	7,156	1,797	25.1	1,459.8	20.4	337.2	4.7
27 133	2,463	256	10.4	335.0	13.6	79.0-	3.2-
27	20,555	5,387	26.2	4,844.8	23.6	542.2	2.6
28 134	6,084	1,581	26.0	1,594.0	26.2	13.0-	.2-
28 135	304	152	50.0	53.2	17.5	98.8	32.5
28 136	6,003	1,549	25.8	1,614.8	26.9	65.8-	1.1-
28 137	5,079	1,137	22.4	904.1	17.8	232.9	4.6
28 138	4,471	1,098	24.6	943.4	21.1	154.6	3.5
28 139	2,652	351	13.2	286.4	10.8	64.6	2.4
28	24,593	5,868	23.9	5,395.9	21.9	472.1	2.0
29 140	4,139	959	23.2	1,183.8	28.6	224.8-	5.4-
29 141	4,054	757	18.7	612.2	15.1	144.8	3.6
29 142	4,627	312	6.7	744.9	16.1	432.9-	9.4-
29 143	4,094	1,101	26.9	663.2	16.2	437.8	10.7
29 144	3,596	1,289	35.8	845.1	23.5	443.9	12.3
29	20,510	4,418	21.5	4,049.2	19.7	368.8	1.8
31 145	2,233	194	8.7	140.7	6.3	53.3	2.4
31 146	4,296	390	9.1	360.9	8.4	29.1	.7
31 147	3,077	793	25.8	363.1	11.8	429.9	14.0

Appendix A (continued)

31	148	5,339	220	4.1	347.0	6.5	127.0-	2.4-
31	149	2,369	129	5.4	64.0	2.7	65.0	2.7
31	150	1,244	0	.0	41.1	3.3	41.1-	3.3-
31	151	841	37	4.4	51.3	6.1	14.3-	1.7-
31	152	2,333	0	.0	158.6	6.8	158.6-	6.8-
31	153	445	0	.0	.4	.1	.4-	.1-
31		22,177	1,763	7.9	1,527.1	6.9	235.9	1.0
32	154	3,020	867	28.7	749.0	24.8	118.0	3.9
32	155	4,176	1,015	24.3	1,186.0	28.4	171.0-	4.1-
32	156	1,828	0	.0	221.2	12.1	221.2-	12.1-
32	157	6,193	1,176	19.0	1,213.8	19.6	37.8-	.6-
32	158	8,852	1,467	16.6	1,566.8	17.7	99.8-	1.1-
32	159	5,938	1,132	19.1	801.6	13.5	330.4	5.6
32	160	5,764	1,017	17.6	881.9	15.3	135.1	2.3
32	161	7,019	841	12.0	1,172.2	16.7	331.2-	4.7-
32	162	584	37	6.3	32.1	5.5	4.9	.8
32	163	2,184	150	6.9	227.1	10.4	77.1-	3.5-
32	164	1,535	77	5.0	44.5	2.9	32.5	2.1
32		47,093	7,779	16.5	8,096.2	17.2	317.2-	.7-
33	165	5,702	1,100	19.3	1,106.2	19.4	6.2-	.1-
33	166	3,300	949	28.8	745.8	22.6	203.2	6.2
33	167	6,658	1,236	18.6	965.4	14.5	270.6	4.1
33	168	5,586	1,325	23.7	709.4	12.7	615.6	11.0
33	169	3,768	450	11.9	293.9	7.8	156.1	4.1
33	170	7,258	874	12.0	776.6	10.7	97.4	1.3
33	171	4,718	618	13.1	500.1	10.6	117.9	2.5
33	172	8,178	1,460	17.9	940.5	11.5	519.5	6.4
33	173	8,095	978	12.1	688.1	8.5	289.9	3.6
33	174	6,694	528	7.9	582.4	8.7	54.4-	.8-
33		59,957	9,518	15.9	7,308.4	12.2	2,209.6	3.7
34	175	2,162	425	19.7	291.9	13.5	133.1	6.2
34	176	3,115	370	11.9	423.6	13.6	53.6-	1.7-
34	177	112	75	67.0	9.0	8.0	66.0	59.0
34	178	1,719	234	13.6	127.2	7.4	106.8	6.2
34	179	5,160	348	6.7	232.2	4.5	115.8	2.2
34	180	936	150	16.0	86.1	9.2	63.9	6.8
34	181	746	75	10.1	47.0	6.3	28.0	3.8
34	182	1,876	0	.0	5.6	.3	5.6-	.3-
34	183	1,869	0	.0	3.7	.2	3.7-	.2-
34	184	1,290	86	6.7	68.4	5.3	17.6	1.4
34		18,985	1,763	9.3	1,294.7	6.8	468.3	2.5
35	185	671	374	55.7	67.8	10.1	306.2	45.6
35	186	6,765	974	14.4	1,008.0	14.9	34.0-	.5-
35	187	3,676	872	23.7	525.7	14.3	346.3	9.4
35	188	3,582	154	4.3	315.2	8.8	161.2-	4.5-
35	189	1,405	38	2.7	116.6	8.3	78.6-	5.6-
35	190	1,021	37	3.6	80.7	7.9	43.7-	4.3-
35	191	2,127	330	15.5	140.4	6.6	189.6	8.9
35	192	740	0	.0	50.3	6.8	50.3-	6.8-
35	193	474	0	.0	33.7	7.1	33.7-	7.1-
35		20,461	2,779	13.6	2,338.4	11.4	440.6	2.2
36	194	4,297	817	19.0	790.6	18.4	26.4	.6
36	195	5,347	529	9.9	978.5	18.3	449.5-	8.4-
36	196	6,896	1,175	17.0	841.3	12.2	333.7	4.8
36	197	3,147	456	14.5	579.0	18.4	123.0-	3.9-
36	198	7,455	805	10.8	715.7	9.6	89.3	1.2
36	199	3,901	512	13.1	479.8	12.3	32.2	.8
36	200	2,919	190	6.5	157.6	5.4	32.4	1.1
36	201	4,810	290	6.0	384.8	8.0	94.8-	2.0-
36	202	1,701	36	2.1	5.1	.3	30.9	1.8
36		40,473	4,810	11.9	4,932.4	12.2	122.4-	.3-
37	203	2,154	182	8.4	157.2	7.3	24.8	1.1
37	204	4,356	547	12.6	487.9	11.2	59.1	1.4
37	205	1,776	148	8.3	120.8	6.8	27.2	1.5
37	206	1,406	0	.0	70.3	5.0	70.3-	5.0-
37	207	1,238	76	6.1	47.0	3.8	29.0	2.3
37	208	1,584	77	4.9	82.4	5.2	5.4-	.3-
37	209	2,479	296	11.9	230.5	9.3	65.5	2.6
37	210	1,406	74	5.3	54.8	3.9	19.2	1.4
37	211	1,036	0	.0	38.3	3.7	38.3-	3.7-
37		17,435	1,400	8.0	1,289.2	7.4	110.8	.6
38	212	3,750	986	26.3	708.8	18.9	277.2	7.4
38	213	2,273	82	3.6	272.8	12.0	190.8-	8.4-
38	214	2,774	378	13.6	155.3	5.6	222.7	8.0
38	215	152	0	.0	9.9	6.5	9.9-	6.5-
38	216	1,290	0	.0	81.3	6.3	81.3-	6.3-
38	217	1,737	113	6.5	130.3	7.5	17.3-	1.0-
38	218	306	0	.0	19.9	6.5	19.9-	6.5-
38	219	683	0	.0	21.9	3.2	21.9-	3.2-
38	220	1,338	255	19.1	66.9	5.0	188.1	14.1
38		14,303	1,814	12.7	1,467.1	10.3	346.9	2.4
39	221	2,106	234	11.1	261.1	12.4	27.1-	1.3-
39	222	3,003	468	15.6	561.6	18.7	93.6-	3.1-
39	223	2,757	691	25.1	441.1	16.0	249.9	9.1
39	224	780	39	5.0	56.2	7.2	17.2-	2.2-
39	225	4,875	936	19.2	965.3	19.8	29.3-	.6-
39	226	1,053	0	.0	46.3	4.4	46.3-	4.4-
39	227	401	89	22.2	23.3	5.8	65.7	16.4
39	228	2,434	240	9.9	452.7	18.6	212.7-	8.7-
39	229	1,287	234	18.2	66.9	5.2	167.1	13.0
39		18,696	2,931	15.7	2,874.5	15.4	56.5	.3
41	230	410	0	.0	17.6	4.3	17.6-	4.3-
41	231	1,775	0	.0	.0	.0	.0	.0
41	232	336	0	.0	.7	.2	.7-	.2-
41	233	75	0	.0	5.9	7.8	5.9-	7.8-
41	234	1,828	0	.0	.0	.0	.0	.0
41	236	262	0	.0	.0	.0	.0	.0
41	237	474	0	.0	8.1	1.7	8.1-	1.7-
41	238	405	0	.0	.0	.0	.0	.0
41	239	37	0	.0	1.6	4.2	1.6-	4.2-
41	240	504	36	7.1	8.1	1.6	27.9	5.5
41	241	432	0	.0	.0	.0	.0	.0
41	242	217	0	.0	16.1	7.4	16.1-	7.4-
41	243	144	0	.0	4.3	3.0	4.3-	3.0-
41		6,899	36	.5	62.4	.9	26.4-	.4-
42	244	615	0	.0	38.7	6.3	38.7-	6.3-
42	245	2,493	0	.0	463.7	18.6	463.7-	18.6-
42	246	218	0	.0	.0	.0	.0	.0
42	247	252	0	.0	14.1	5.6	14.1-	5.6-
42	248	1,767	181	10.2	63.6	3.6	117.4	6.6
42	250	2,348	0	.0	239.5	10.2	239.5-	10.2-
42	251	840	0	.0	22.7	2.7	22.7-	2.7-
42	252	435	0	.0	.0	.0	.0	.0
42	253	396	72	18.2	.8	.2	71.2	18.0
42	254	1,444	0	.0	39.0	2.7	39.0-	2.7-
42	258	216	0	.0	2.8	1.3	2.8-	1.3-
42	259	253	0	.0	.0	.0	.0	.0
42		11,277	253	2.2	884.9	7.8	631.9-	5.6-
43	261	2,433	76	3.1	165.4	6.8	89.4-	3.7-
43	262	5,834	316	5.4	385.0	6.6	69.0-	1.2-
43	263	1,378	0	.0	64.8	4.7	64.8-	4.7-
43	264	2,899	0	.0	5.8	.2	5.8-	.2-
43	265	2,589	116	4.5	390.9	15.1	274.9-	10.6-
43	266	1,944	0	.0	163.3	8.4	163.3-	8.4-
43	267	108	0	.0	1.1	1.0	1.1-	1.0-
43	268	1,624	36	2.2	3.2	.2	32.8	2.0
43	269	2,280	38	1.7	225.7	9.9	187.7-	8.2-
43	270	1,669	0	.0	26.7	1.6	26.7-	1.6-
43	271	1,642	0	.0	83.7	5.1	83.7-	5.1-
43	272	360	0	.0	.4	.1	.4-	.1-
43	273	432	0	.0	.0	.0	.0	.0
43	274	72	0	.0	.0	.0	.0	.0
43	275	396	0	.0	.0	.0	.0	.0
43	276	2,556	0	.0	.0	.0	.0	.0
43	277	144	0	.0	.0	.0	.0	.0
43	278	288	0	.0	.0	.0	.0	.0
43	279	2,196	0	.0	.0	.0	.0	.0
43		30,844	582	1.9	1,516.0	4.9	934.0-	3.0-
44	280	1,919	0	.0	5.8	.3	5.8-	.3-
44	281	979	0	.0	2.0	.2	2.0-	.2-
44	282	1,620	72	4.4	1.6	.1	70.4	4.3
44	283	1,066	82	7.7	1.1	.1	80.9	7.6
44	284	976	78	8.0	14.6	1.5	63.4	6.5
44	285	1,003	77	7.7	49.1	4.9	27.9	2.8
44	286	540	0	.0	.5	.1	.5-	.1-
44	287	1,980	0	.0	.0	.0	.0	.0
44	288	898	0	.0	8.1	.9	8.1-	.9-
44	289	1,681	0	.0	52.1	3.1	52.1-	3.1-
44	290	988	0	.0	.0	.0	.0	.0
44	291	468	0	.0	.0	.0	.0	.0
44		14,118	309	2.2	134.9	1.0	174.1	1.2
45	292	1,332	108	8.1	62.6	4.7	45.4	3.4
45	293	1,407	0	.0	29.5	2.1	29.5-	2.1-
45	294	647	0	.0	21.4	3.3	21.4-	3.3-
45	295	1,440	324	22.5	41.8	2.9	282.2	19.6
45	296	252	0	.0	.3	.1	.3-	.1-
45	297	1,224	36	2.9	1.2	.1	34.8	2.8
45	298	1,152	0	.0	2.3	.2	2.3-	.2-
45	299	360	36	10.0	1.1	.3	34.9	9.7
45	300	288	0	.0	.0	.0	.0	.0
45		8,102	504	6.2	160.2	2.0	343.8	4.2
46	301	555	0	.0	35.5	6.4	35.5-	6.4-
46	302	407	74	18.2	4.5	1.1	69.5	17.1
46	303	222	0	.0	2.9	1.3	2.9-	1.3-
46	304	592	0	.0	.0	.0	.0	.0
46	305	2,109	37	1.8	12.7	.6	24.3	1.2
46	306	37	0	.0	.4	1.1	.4-	1.1-
46	307	108	0	.0	1.4	1.3	1.4-	1.3-
46	308	434	0	.0	3.5	.8	3.5-	.8-
46	309	1,468	37	2.5	.0	.0	37.0	2.5
46	310	360	0	.0	5.0	1.4	5.0-	1.4-
46	311	612	0	.0	20.8	3.4	20.8-	3.4-
46	312	2,369	0	.0	73.4	3.1	73.4-	3.1-
46	313	540	0	.0	31.9	5.9	31.9-	5.9-
46		9,813	148	1.5	192.0	2.0	44.0-	.5-
47	314	1,036	74	7.1	55.9	5.4	18.1	1.7
47	316	144	0	.0	6.8	4.7	6.8-	4.7-
47	317	864	0	.0	44.1	5.1	44.1-	5.1-
47	318	180	0	.0	5.0	2.8	5.0-	2.8-
47	319	108	0	.0	.2	.2	.2-	.2-
47	320	216	0	.0	.4	.2	.4-	.2-
47	321	396	0	.0	.0	.0	.0	.0
47	322	216	0	.0	.0	.0	.0	.0
47	323	324	0	.0	.0	.0	.0	.0
47	324	252	36	14.3	.3	.1	35.7	14.2
47		3,736	110	2.9	112.7	3.0	2.7-	.1-
48	326	195	0	.0	3.9	2.0	3.9-	2.0-
48	327	537	0	.0	8.6	1.6	8.6-	1.6-
48	328	351	0	.0	8.1	2.3	8.1-	2.3-
48	329	402	0	.0	7.2	1.8	7.2-	1.8-
48	330	156	0	.0	2.2	1.4	2.2-	1.4-
48	331	351	0	.0	7.7	2.2	7.7-	2.2-
48	332	765	0	.0	12.2	1.6	12.2-	1.6-
48	333	78	0	.0	.9	1.2	.9-	1.2-
48	334	117	0	.0	2.7	2.3	2.7-	2.3-
48	335	507	0	.0	37.0	7.3	37.0-	7.3-
48	336	1,522	0	.0	6.1	.4	6.1-	.4-
48		4,981	0	.0	96.6	1.9	96.6-	1.9-
49	337	234	0	.0	38.1	16.3	38.1-	16.3-
49	338	2,379	117	4.9	266.4	11.2	149.4-	6.3-
49	339	2,750	125	4.5	79.8	2.9	45.2	1.6
49	340	1,137	122	10.7	250.1	22.0	128.1-	11.3-
49	341	1,802	135	7.5	403.6	22.4	268.6-	14.9-
49	342	819	156	19.0	16.4	2.0	139.6	17.0
49	343	2,028	78	3.8	160.2	7.9	82.2-	4.1-
49	344	3,230	120	3.7	371.5	11.5	251.5-	7.8-
49	345	156	0	.0	1.7	1.1	1.7-	1.1-
49	346	644	0	.0	43.1	6.7	43.1-	6.7-

49 347	1,365	39	2.9	99.6	7.3	60.6-	4.4-
49	16,544	892	5.4	1,730.5	10.5	838.5-	5.1-
55 390	71	0	.0	.0	.0	.0	.0
55 391	963	71	7.4	.0	.0	71.0	7.4
55 392	1,928	0	.0	.0	.0	.0	.0
55 393	3,497	73	2.1	101.4	2.9	28.4-	.8-
55 394	464	0	.0	3.7	.8	3.7-	.8-
55 395	4,915	294	6.0	516.1	10.5	222.1-	4.5-
55 396	3,928	71	1.8	597.1	15.2	526.1-	13.4-
55 397	653	0	.0	.0	.0	.0	.0
55 398	36	0	.0	.0	.0	.0	.0
55 399	2,239	110	4.9	51.5	2.3	58.5	2.6
55 400	3,133	203	6.5	87.7	2.8	115.3	3.7
55 402	285	0	.0	.0	.0	.0	.0
55 403	1,070	71	6.6	50.3	4.7	20.7	1.9
55	23,182	893	3.9	1,407.8	6.1	514.8-	2.2-
REGION TOTALS	756,057	146,379		147,939.8		1,560.8-	

MILWAUKEE HOME INTERVIEW AREA HOME-BASED SHOP

	O-D SURVEY			MODEL		DIFFERENCE	
DIST ZONE	TOTAL TRIPS	TRANSIT TRIPS	PERCENT TRANSIT	TRANSIT TRIPS	PERCENT TRANSIT	TRANSIT TRIPS	PER-CENT
01 007	246	82	33.3	126.4	51.4	44.4-	18.1-
01	246	82	33.3	126.4	51.4	44.4-	18.1-
02 011	857	369	43.1	349.7	40.8	19.3	2.3
02 012	962	184	19.1	398.3	41.4	214.3-	22.3-
02 013	164	123	75.0	45.8	27.9	77.2	47.1
02	1,983	676	34.1	793.8	40.0	117.8-	5.9-
03 015	38	0	.0	17.2	45.2	17.2-	45.2-
03 016	267	191	71.5	119.6	44.8	71.4	26.7
03 017	421	267	63.4	162.1	38.5	104.9	24.9
03	726	458	63.1	298.9	41.2	159.1	21.9
04 018	342	342	100.0	137.1	40.1	204.9	59.9
04 020	514	428	83.3	205.6	40.0	222.4	43.3
04 021	1,751	727	41.5	700.4	40.0	26.6	1.5
04	2,607	1,497	57.4	1,043.1	40.0	453.9	17.4
09 029	216	72	33.3	94.0	43.5	22.0-	10.2-
09 032	289	0	.0	110.4	38.2	110.4-	38.2-
09	505	72	14.3	204.4	40.5	132.4-	26.2-
11 034	316	316	100.0	121.7	38.5	194.3	61.5
11 035	552	158	28.6	147.4	26.7	10.6	1.9
11 036	506	0	.0	69.3	13.7	69.3-	13.7-
11 037	380	112	29.5	103.0	27.1	9.0	2.4
11 038	607	114	18.8	80.7	13.3	33.3	5.5
11 039	1,117	496	44.4	283.7	25.4	212.3	19.0
11 040	1,197	154	12.9	216.7	18.1	62.7-	5.2-
11	4,675	1,350	28.9	1,022.5	21.9	327.5	7.0
12 041	549	120	21.9	193.8	35.3	73.8-	13.4-
12 042	695	38	5.5	234.9	33.8	196.9-	28.3-
12 043	551	394	71.5	182.4	33.1	211.6	38.4
12 044	315	118	37.5	108.7	34.5	9.3	3.0
12 045	1,530	689	45.0	431.5	28.2	257.5	16.8
12 046	681	160	23.5	184.6	27.1	24.6-	3.6-
12 047	1,442	160	11.1	291.3	20.2	131.3-	9.1-
12	5,763	1,679	29.1	1,627.2	28.2	51.8	.9
13 048	1,553	40	2.6	520.3	33.5	480.3-	30.9-
13 049	1,128	148	13.1	331.6	29.4	183.6-	16.3-
13 050	947	455	48.0	257.6	27.2	197.4	20.8
13 051	494	266	53.8	131.4	26.6	134.6	27.2
13 052	1,295	185	14.3	272.0	21.0	87.0-	6.7-
13 053	758	38	5.0	168.3	22.2	130.3-	17.2-
13 054	758	151	19.9	171.3	22.6	20.3-	2.7-
13	6,933	1,283	18.5	1,852.5	26.7	569.5-	8.2-
14 055	887	333	37.5	264.3	29.8	68.7	7.7
14 056	857	353	41.2	290.5	33.9	62.5	7.3
14 057	742	185	24.9	196.6	26.5	11.6-	1.6-
14 058	1,069	356	33.3	382.7	35.8	26.7-	2.5-
14 059	315	37	11.7	103.0	32.7	66.0-	21.0-
14	3,870	1,264	32.7	1,237.1	32.0	26.9	.7
16 062	1,633	279	17.1	401.7	24.6	122.7-	7.5-
16 063	677	159	23.5	150.3	22.2	8.7	1.3
16 064	1,640	273	16.6	359.2	21.9	86.2-	5.3-
16 065	544	42	7.7	169.7	31.2	127.7-	23.5-
16	4,494	753	16.8	1,080.9	24.1	327.9-	7.3-
17 066	974	0	.0	315.6	32.4	315.6-	32.4-
17 067	2,071	439	21.2	623.4	30.1	184.4-	8.9-
17 068	518	0	.0	147.6	28.5	147.6-	28.5-
17 069	684	228	33.3	167.6	24.5	60.4	8.8
17 070	1,189	164	13.8	309.1	26.0	145.1-	12.2-
17	5,436	831	15.3	1,563.3	28.8	732.3-	13.5-
18 071	455	43	9.5	182.5	40.1	139.5-	30.6-
18 073	717	318	44.4	169.2	23.6	148.8	20.8
18 074	401	0	.0	125.1	31.2	125.1-	31.2-
18 075	663	39	5.9	157.1	23.7	118.1-	17.8-
18 076	2,881	365	12.7	731.8	25.4	366.8-	12.7-
18	5,117	765	15.0	1,365.7	26.7	600.7-	11.7-
19 078	156	117	75.0	46.6	29.9	70.4	45.1
19 079	3,060	248	8.1	477.4	15.6	229.4-	7.5-
19	3,216	365	11.3	524.0	16.3	159.0-	5.0-
21 080	1,643	163	9.9	294.1	17.9	131.1-	8.0-
21 081	2,997	234	7.8	353.6	11.8	119.6-	4.0-
21 082	861	0	.0	79.2	9.2	79.2-	9.2-
21 083	1,252	217	17.3	180.3	14.4	36.7	2.9
21 084	1,024	86	8.4	55.3	5.4	30.7	3.0
21 085	299	0	.0	23.3	7.8	23.3-	7.8-
21 086	1,444	90	6.2	118.4	8.2	28.4-	2.0-
21 087	1,175	226	19.2	97.5	8.3	128.5	10.9
21	10,695	1,016	9.5	1,201.7	11.2	185.7-	1.7-
22 088	347	116	33.4	76.3	22.0	39.7	11.4
22 089	653	346	53.0	180.9	27.7	165.1	25.3
22 090	740	296	40.0	165.8	22.4	130.2	17.6
22 091	1,234	243	19.7	254.2	20.6	11.2-	.9-
22 092	1,398	494	35.3	283.8	20.3	210.2	15.0
22 093	2,592	73	2.8	318.8	12.3	245.8-	9.5-
22 094	899	256	28.5	177.1	19.7	78.9	8.8
22 095	1,606	80	5.0	138.1	8.6	58.1-	3.6-
22	9,469	1,904	20.1	1,595.0	16.8	309.0	3.3
23 096	1,890	592	31.3	285.4	15.1	306.6	16.2
23 097	1,430	271	19.0	213.1	14.9	57.9	4.1
23 098	2,184	312	14.3	314.5	14.4	2.5-	.1-
23 099	3,063	695	22.7	309.4	10.1	385.6	12.6
23 100	2,322	442	19.0	192.7	8.3	249.3	10.7
23 101	2,151	268	12.5	159.2	7.4	108.8	5.1
23 102	2,442	222	9.1	239.3	9.8	17.3-	.7-
23 103	2,154	0	.0	146.5	6.8	146.5-	6.8-
23	17,636	2,802	15.9	1,860.1	10.5	941.9	5.4
24 104	259	37	14.3	85.0	32.8	48.0-	18.5-
24 105	777	37	4.8	27.2	3.5	9.8	1.3
24 106	409	41	10.0	59.3	14.5	18.3-	4.5-
24 107	964	148	15.4	98.3	10.2	49.7	5.2
24 108	2,190	111	5.1	168.6	7.7	57.6-	2.6-
24 109	1,459	149	10.2	23.3	1.6	125.7	8.6
24 110	3,151	296	9.4	397.0	12.6	101.0-	3.2-
24 111	2,356	149	6.3	190.8	8.1	41.8-	1.8-
24 112	1,870	75	4.0	102.9	5.5	27.9-	1.5-
24 113	1,010	0	.0	20.2	2.0	20.2-	2.0-
24	14,445	1,043	7.2	1,172.6	8.1	129.6-	.9-
25 115	585	0	.0	79.0	13.5	79.0-	13.5-
25 116	569	219	38.5	85.4	15.0	133.6	23.5
25 117	1,326	79	6.0	145.9	11.0	66.9-	5.0-
25 118	853	222	26.0	45.2	5.3	176.8	20.7
25 119	1,117	154	13.8	134.0	12.0	20.0	1.8
25 120	852	0	.0	31.5	3.7	31.5-	3.7-
25 121	1,808	157	8.7	157.3	8.7	.3-	.0
25	7,110	831	11.7	678.3	9.5	152.7	2.2
26 122	535	223	41.7	63.7	11.9	159.3	29.8
26 123	1,161	207	17.8	176.5	15.2	30.5	2.6
26 124	351	0	.0	40.4	11.5	40.4-	11.5-
26 125	151	0	.0	17.4	11.5	17.4-	11.5-
26 127	1,981	343	17.3	200.1	10.1	142.9	7.2
26 128	731	0	.0	36.6	5.0	36.6-	5.0-
26	4,910	773	15.7	534.7	10.9	238.3	4.8
27 129	1,473	0	.0	297.5	20.2	297.5-	20.2-
27 130	768	192	25.0	136.7	17.8	55.3	7.2
27 131	1,783	110	6.2	221.1	12.4	111.1-	6.2-
27 132	3,678	222	6.0	312.6	8.5	90.6-	2.5-
27 133	1,343	0	.0	43.0	3.2	43.0-	3.2-
27	9,045	524	5.8	1,010.9	11.2	486.9-	5.4-
28 134	2,735	306	11.2	429.4	15.7	123.4-	4.5-
28 135	568	38	6.7	38.6	6.8	.6-	.1-
28 136	3,061	198	6.5	434.7	14.2	236.7-	7.7-
28 137	2,234	38	1.7	145.2	6.5	107.2-	4.8-
28 138	2,456	416	16.9	280.0	11.4	136.0	5.5
28 139	1,755	39	2.2	50.9	2.9	11.9-	.7-
28	12,809	1,035	8.1	1,378.8	10.8	343.8-	2.7-
29 140	1,613	192	11.9	259.7	16.1	67.7-	4.2-
29 141	2,801	152	5.4	179.3	6.4	27.3-	1.0-
29 142	3,884	39	1.0	198.1	5.1	159.1-	4.1-
29 143	3,224	629	19.5	261.1	8.1	367.9	11.4
29 144	2,121	78	3.7	248.2	11.7	170.2-	8.0-
29	13,643	1,090	8.0	1,146.4	8.4	56.4-	.4-
31 145	1,568	77	4.9	9.4	.6	67.6	4.3
31 146	4,027	0	.0	32.2	.8	32.2-	.8-
31 147	1,725	47	2.7	41.4	2.4	5.6	.3
31 148	2,678	0	.0	8.0	.3	8.0-	.3-
31 149	2,332	0	.0	.0	.0	.0	.0
31 150	1,380	0	.0	.0	.0	.0	.0
31 151	548	0	.0	.0	.0	.0	.0
31 152	1,440	0	.0	7.2	.5	7.2-	.5-
31 153	222	0	.0	.0	.0	.0	.0
31	15,920	124	.8	98.2	.6	25.8	.2
32 154	720	152	21.1	74.9	10.4	77.1	10.7
32 155	2,262	76	3.4	294.1	13.0	218.1-	9.6-
32 156	1,206	0	.0	25.3	2.1	25.3-	2.1-

Appendix A (continued)

32	157	2,945	274	9.3	179.6	6.1	94.4	3.2
32	158	4,300	490	11.4	176.3	4.1	313.7	7.3
32	159	3,409	113	3.3	61.4	1.8	51.6	1.5
32	160	2,411	151	6.3	62.7	2.6	88.3	3.7
32	161	5,082	110	2.2	172.8	3.4	62.8-	1.2-
32	162	585	0	.0	.0	.0	.0	.0
32	163	1,469	0	.0	5.9	.4	5.9-	.4-
32	164	537	0	.0	.0	.0	.0	.0
32		24,926	1,366	5.5	1,053.0	4.2	313.0	1.3
33	165	1,876	181	9.6	127.6	6.8	53.4	2.8
33	166	1,702	76	4.5	148.1	8.7	72.1-	4.2-
33	167	3,097	336	10.8	80.5	2.6	255.5	8.2
33	168	2,353	41	1.7	80.0	3.4	39.0-	1.7-
33	169	2,524	38	1.5	.0	.0	38.0	1.5
33	170	4,104	190	4.6	57.5	1.4	132.5	3.2
33	171	3,212	232	7.2	61.0	1.9	171.0	5.3
33	172	4,684	307	6.6	65.6	1.4	241.4	5.2
33	173	4,185	151	3.6	46.0	1.1	105.0	2.5
33	174	3,327	38	1.1	20.0	.6	18.0	.5
33		31,064	1,590	5.1	686.3	2.2	903.7	2.9
34	175	1,231	39	3.2	46.8	3.8	7.8-	.6-
34	176	1,932	37	1.9	30.9	1.6	6.1	.3
34	177	150	0	.0	.8	.5	.8-	.5-
34	178	1,018	196	19.3	.0	.0	196.0	19.3
34	179	2,371	154	6.5	4.7	.2	149.3	6.3
34	180	374	0	.0	.0	.0	.0	.0
34	181	594	0	.0	.0	.0	.0	.0
34	182	1,327	0	.0	.0	.0	.0	.0
34	183	1,912	0	.0	.0	.0	.0	.0
34	184	902	0	.0	1.8	.2	1.8-	.2-
34		11,811	426	3.6	85.0	.7	341.0	2.9
35	185	445	0	.0	4.5	1.0	4.5-	1.0-
35	186	4,698	233	5.0	126.8	2.7	106.2	2.3
35	187	2,079	114	5.5	58.2	2.8	55.8	2.7
35	188	2,504	193	7.7	10.0	.4	183.0	7.3
35	189	833	0	.0	.8	.1	.8-	.1-
35	190	1,016	0	.0	1.0	.1	1.0-	.1-
35	191	1,528	0	.0	.0	.0	.0	.0
35	192	182	0	.0	.0	.0	.0	.0
35	193	292	0	.0	.3	.1	.3-	.1-
35		13,577	540	4.0	201.6	1.5	338.4	2.5
36	194	1,993	37	1.9	117.6	5.9	80.6-	4.0-
36	195	3,052	38	1.2	180.1	5.9	142.1-	4.7-
36	196	4,350	152	3.5	95.7	2.2	56.3	1.3
36	197	2,838	417	14.7	158.9	5.6	258.1	9.1
36	198	4,340	37	.9	17.4	.4	19.6	.5
36	199	1,873	73	3.9	30.0	1.6	43.0	2.3
36	200	1,401	0	.0	.0	.0	.0	.0
36	201	3,413	38	1.1	.0	.0	38.0	1.1
36	202	865	72	8.3	.0	.0	72.0	8.3
36		24,125	864	3.6	599.7	2.5	264.3	1.1
37	203	2,082	74	3.6	16.7	.8	57.3	2.8
37	204	3,193	111	3.5	63.9	2.0	47.1	1.5
37	205	1,554	111	7.1	7.8	.5	103.2	6.6
37	206	592	0	.0	.0	.0	.0	.0
37	207	679	0	.0	.0	.0	.0	.0
37	208	1,121	0	.0	.0	.0	.0	.0
37	209	1,850	0	.0	24.1	1.3	24.1-	1.3-
37	210	925	0	.0	.0	.0	.0	.0
37	211	1,702	0	.0	.0	.0	.0	.0
37		13,698	296	2.2	112.5	.8	183.5	1.4
38	212	2,233	228	10.2	151.8	6.8	76.2	3.4
38	213	1,827	41	2.2	56.6	3.1	15.6-	.9-
38	214	2,290	38	1.7	22.9	1.0	15.1	.7
38	215	530	0	.0	6.4	1.2	6.4-	1.2-
38	216	455	0	.0	.5	.1	.5-	.1-
38	217	755	0	.0	9.1	1.2	9.1-	1.2-
38	219	530	0	.0	.0	.0	.0	.0
38	220	1,421	0	.0	8.5	.6	8.5-	.6-
38		10,041	307	3.1	255.8	2.5	51.2	.6
39	221	1,131	0	.0	36.2	3.2	36.2-	3.2-
39	222	2,262	156	6.9	147.0	6.5	9.0	.4
39	223	3,626	76	2.1	192.2	5.3	116.2-	3.2-
39	224	156	0	.0	2.0	1.3	2.0-	1.3-
39	225	2,379	156	6.6	157.0	6.6	1.0-	.0
39	226	78	0	.0	.8	1.0	.8-	1.0-
39	228	2,031	0	.0	93.4	4.6	93.4-	4.6-
39	229	702	0	.0	7.7	1.1	7.7-	1.1-
39		12,365	388	3.1	636.3	5.1	248.3-	2.0-
41	230	112	0	.0	.0	.0	.0	.0
41	231	464	0	.0	.0	.0	.0	.0
41	232	300	0	.0	.0	.0	.0	.0
41	234	853	0	.0	.0	.0	.0	.0
41	236	150	0	.0	.0	.0	.0	.0
41	237	180	0	.0	.0	.0	.0	.0
41	238	410	0	.0	.0	.0	.0	.0
41	240	325	0	.0	.0	.0	.0	.0
41	241	180	0	.0	.0	.0	.0	.0
41	242	253	0	.0	.0	.0	.0	.0
41	243	108	0	.0	.0	.0	.0	.0
41		3,335	0	.0	.0	.0	.0	.0
42	244	451	0	.0	.0	.0	.0	.0
42	245	1,737	0	.0	19.1	1.1	19.1-	1.1-
42	246	218	0	.0	.0	.0	.0	.0
42	247	181	0	.0	.0	.0	.0	.0
42	248	2,281	0	.0	.0	.0	.0	.0
42	250	1,338	0	.0	1.3	.1	1.3-	.1-
42	251	588	0	.0	.0	.0	.0	.0
42	253	181	0	.0	.0	.0	.0	.0
42	254	1,410	0	.0	.0	.0	.0	.0
42		8,385	0	.0	20.4	.2	20.4-	.2-
43	261	1,254	0	.0	1.3	.1	1.3-	.1-
43	262	3,862	0	.0	.0	.0	.0	.0
43	263	567	0	.0	.0	.0	.0	.0
43	264	2,175	0	.0	.0	.0	.0	.0
43	265	1,044	0	.0	12.5	1.2	12.5-	1.2-
43	266	1,269	0	.0	7.6	.6	7.6-	.6-
43	268	398	0	.0	.0	.0	.0	.0
43	269	1,482	38	2.6	16.3	1.1	21.7	1.5
43	270	948	0	.0	.0	.0	.0	.0
43	271	547	0	.0	.0	.0	.0	.0
43	273	181	0	.0	.0	.0	.0	.0
43	274	145	0	.0	.0	.0	.0	.0
43	275	72	0	.0	.0	.0	.0	.0
43	276	1,152	0	.0	.0	.0	.0	.0
43	277	252	0	.0	.0	.0	.0	.0
43	278	144	0	.0	.0	.0	.0	.0
43	279	648	0	.0	.0	.0	.0	.0
43		16,140	38	.2	37.7	.2	.3	.0
44	280	1,230	0	.0	.0	.0	.0	.0
44	281	292	0	.0	.0	.0	.0	.0
44	282	1,404	0	.0	.0	.0	.0	.0
44	283	1,314	0	.0	.0	.0	.0	.0
44	284	665	0	.0	.0	.0	.0	.0
44	285	462	0	.0	.0	.0	.0	.0
44	286	540	0	.0	.0	.0	.0	.0
44	287	1,584	0	.0	.0	.0	.0	.0
44	288	548	0	.0	.0	.0	.0	.0
44	289	1,722	0	.0	.0	.0	.0	.0
44	290	951	0	.0	.0	.0	.0	.0
44	291	468	0	.0	.0	.0	.0	.0
44		11,180	0	.0	.0	.0	.0	.0
45	292	1,223	0	.0	.0	.0	.0	.0
45	293	1,143	0	.0	.0	.0	.0	.0
45	294	144	0	.0	.0	.0	.0	.0
45	295	648	0	.0	.0	.0	.0	.0
45	296	180	0	.0	.0	.0	.0	.0
45	297	898	0	.0	.0	.0	.0	.0
45	298	1,152	0	.0	.0	.0	.0	.0
45	299	72	0	.0	.0	.0	.0	.0
45	300	72	0	.0	.0	.0	.0	.0
45		5,532	0	.0	.0	.0	.0	.0
46	301	592	0	.0	.0	.0	.0	.0
46	302	222	0	.0	.0	.0	.0	.0
46	303	296	0	.0	.0	.0	.0	.0
46	304	481	0	.0	.0	.0	.0	.0
46	305	1,739	0	.0	.0	.0	.0	.0
46	306	222	0	.0	.0	.0	.0	.0
46	307	584	0	.0	.0	.0	.0	.0
46	308	251	0	.0	.0	.0	.0	.0
46	309	885	0	.0	.0	.0	.0	.0
46	310	144	0	.0	.0	.0	.0	.0
46	311	72	0	.0	.0	.0	.0	.0
46	312	1,366	0	.0	.0	.0	.0	.0
46	313	827	0	.0	.0	.0	.0	.0
46		7,681	0	.0	.0	.0	.0	.0
47	314	629	0	.0	.0	.0	.0	.0
47	316	144	0	.0	.0	.0	.0	.0
47	317	503	0	.0	.0	.0	.0	.0
47	319	36	0	.0	.0	.0	.0	.0
47	320	216	0	.0	.0	.0	.0	.0
47	321	360	0	.0	.0	.0	.0	.0
47	322	575	0	.0	.0	.0	.0	.0
47	323	144	0	.0	.0	.0	.0	.0
47	324	144	0	.0	.0	.0	.0	.0
47		2,751	0	.0	.0	.0	.0	.0
48	326	156	0	.0	.0	.0	.0	.0
48	327	495	0	.0	.0	.0	.0	.0
48	328	273	0	.0	1.4	.5	1.4-	.5-
48	329	264	0	.0	.0	.0	.0	.0
48	330	468	0	.0	.0	.0	.0	.0
48	331	39	0	.0	.2	.5	.2-	.5-
48	332	673	0	.0	.0	.0	.0	.0
48	334	156	0	.0	.8	.5	.8-	.5-
48	335	117	0	.0	3.0	2.6	3.0-	2.6-
48	336	1,016	0	.0	1.0	.1	1.0-	.1-
48		3,657	0	.0	6.4	.2	6.4-	.2-
49	337	390	0	.0	21.5	5.5	21.5-	5.5-
49	338	1,755	0	.0	40.4	2.3	40.4-	2.3-
49	339	1,461	42	2.9	.0	.0	42.0	2.9
49	340	608	41	6.7	51.1	8.4	10.1-	1.7-
49	341	1,762	0	.0	146.2	8.3	146.2-	8.3-
49	342	351	0	.0	.0	.0	.0	.0
49	343	1,326	0	.0	9.3	.7	9.3-	.7-
49	344	1,313	0	.0	23.6	1.8	23.6-	1.8-
49	345	117	0	.0	.0	.0	.0	.0
49	346	301	0	.0	2.4	.8	2.4-	.8-
49	347	702	0	.0	18.3	2.6	18.3-	2.6-
49		10,086	83	.8	312.8	3.1	229.8-	2.3-
55	390	214	0	.0	.0	.0	.0	.0
55	391	427	0	.0	.0	.0	.0	.0
55	392	786	0	.0	.0	.0	.0	.0
55	393	1,892	0	.0	.0	.0	.0	.0
55	394	179	0	.0	.0	.0	.0	.0
55	395	1,689	0	.0	20.3	1.2	20.3-	1.2-
55	396	2,589	71	2.7	.0	.0	71.0	2.7
55	397	692	0	.0	.0	.0	.0	.0
55	398	71	0	.0	.0	.0	.0	.0
55	399	1,320	0	.0	.0	.0	.0	.0
55	400	937	0	.0	.0	.0	.0	.0
55	402	286	0	.0	.0	.0	.0	.0
55	403	643	0	.0	4.5	.7	4.5-	.7-
55		11,725	71	.6	24.8	.2	46.2	.4
REGION TOTALS		383,332	28,186		27,448.8		737.2	

Appendix A (continued)

MILWAUKEE HOME INTERVIEW AREA — HOME-BASED OTHER

DIST ZONE	O-D SURVEY TOTAL TRIPS	O-D SURVEY TRANSIT TRIPS	O-D SURVEY PERCENT TRANSIT	MODEL TRANSIT TRIPS	MODEL PERCENT TRANSIT	DIFFERENCE TRANSIT TRIPS	DIFFERENCE PER-CENT
00 003	397	397	100.0	100.8	25.4	296.2	74.6
00	397	397	100.0	100.8	25.4	296.2	74.6
01 007	2,214	656	29.6	801.5	36.2	145.5-	6.6-
01	2,214	656	29.6	801.5	36.2	145.5-	6.6-
02 011	1,271	492	38.7	368.6	29.0	123.4	9.7
02 012	881	143	16.2	265.2	30.1	122.2-	13.9-
02 013	1,353	82	6.1	308.5	22.8	226.5-	16.7-
02	3,505	717	20.5	942.3	26.9	225.3-	6.4-
03 015	868	0	.0	273.4	31.5	273.4-	31.5-
03 016	491	192	39.1	151.2	30.8	40.8	8.3
03 017	1,801	997	55.4	457.5	25.4	539.5	30.0
03	3,160	1,189	37.6	882.1	27.9	306.9	9.7
04 018	342	0	.0	102.9	30.1	102.9-	30.1-
04 020	1,027	86	8.4	300.9	29.3	214.9-	20.9-
04 021	3,635	900	24.8	1,065.1	29.3	165.1-	4.5-
04	5,004	986	19.7	1,468.9	29.4	482.9-	9.7-
06 022	87	0	.0	27.1	31.2	27.1-	31.2-
06 024	144	0	.0	37.9	26.3	37.9-	26.3-
06	231	0	.0	65.0	28.1	65.0-	28.1-
09 029	72	72	100.0	23.0	32.0	49.0	68.0
09 030	1,063	590	55.5	323.2	30.4	266.8	25.1
09 031	505	0	.0	156.6	31.0	156.6-	31.0-
09 032	1,154	288	25.0	335.8	29.1	47.8-	4.1-
09	2,794	950	34.0	838.6	30.0	111.4	4.0
11 034	984	236	24.0	252.9	25.7	16.9-	1.7-
11 035	1,893	236	12.5	399.4	21.1	163.4-	8.6-
11 036	1,471	0	.0	189.8	12.9	189.8-	12.9-
11 037	1,757	416	23.7	335.6	19.1	80.4	4.6
11 038	532	76	14.3	63.3	11.9	12.7	2.4
11 039	2,353	414	17.6	411.8	17.5	2.2	.1
11 040	2,049	155	7.6	266.4	13.0	111.4-	5.4-
11	11,039	1,533	13.9	1,919.2	17.4	386.2-	3.5-
12 041	1,659	657	39.6	376.6	22.7	280.4	16.9
12 042	1,146	379	33.1	253.3	22.1	125.7	11.0
12 043	946	355	37.5	200.6	21.2	154.4	16.3
12 044	1,654	235	14.2	373.8	22.6	138.8-	8.4-
12 045	1,959	845	43.1	385.9	19.7	459.1	23.4
12 046	2,041	440	21.6	330.6	16.2	109.4	5.4
12 047	2,879	319	11.1	397.3	13.8	78.3-	2.7-
12	12,284	3,230	26.3	2,318.1	18.9	911.9	7.4
13 048	2,552	520	20.4	528.3	20.7	8.3-	.3-
13 049	4,934	775	15.7	848.6	17.2	73.6-	1.5-
13 050	2,954	1,022	34.6	564.2	19.1	457.8	15.5
13 051	1,442	304	21.1	261.0	18.1	43.0	3.0
13 052	4,224	444	10.5	566.0	13.4	122.0-	2.9-
13 053	2,764	418	15.1	464.4	16.8	46.4-	1.7-
13 054	1,365	76	5.6	221.1	16.2	145.1-	10.6-
13	20,235	3,559	17.6	3,453.6	17.1	105.4	.5
14 055	1,663	222	13.3	382.5	23.0	160.5-	9.7-
14 056	4,046	1,252	30.9	999.4	24.7	252.6	6.2
14 057	2,443	815	33.4	486.2	19.9	328.8	13.5
14 058	2,491	831	33.4	610.3	24.5	220.7	8.9
14 059	500	111	22.2	93.0	18.6	18.0	3.6
14	11,143	3,231	29.0	2,571.4	23.1	659.6	5.9
16 061	130	0	.0	16.4	12.6	16.4-	12.6-
16 062	3,670	759	20.7	616.6	16.8	142.4	3.9
16 063	2,433	320	13.2	355.2	14.6	35.2-	1.4-
16 064	3,710	273	7.4	604.7	16.3	331.7-	8.9-
16 065	1,381	84	6.1	281.7	20.4	197.7-	14.3-
16	11,324	1,436	12.7	1,874.6	16.6	438.6-	3.9-
17 066	1,893	216	11.4	424.0	22.4	208.0-	11.0-
17 067	2,354	240	10.2	473.2	20.1	233.2-	9.9-
17 068	2,274	160	7.0	425.2	18.7	265.2-	11.7-
17 069	1,959	410	20.9	288.0	14.7	122.0	6.2
17 070	2,460	451	18.3	430.5	17.5	20.5	.8
17	10,940	1,477	13.5	2,040.9	18.7	563.9-	5.2-
18 071	1,391	171	12.3	377.0	27.1	206.0-	14.8-
18 073	3,390	759	22.4	586.5	17.3	172.5	5.1
18 074	447	45	10.1	92.1	20.6	47.1-	10.5-
18 075	3,085	273	8.8	515.2	16.7	242.2-	7.9-
18 076	5,317	974	18.3	834.8	15.7	139.2	2.6
18	13,630	2,222	16.3	2,405.6	17.6	183.6-	1.3-
19 078	663	234	35.3	121.3	18.3	112.7	17.0
19 079	6,098	870	14.3	676.9	11.1	193.1	3.2
19	6,761	1,104	16.3	798.2	11.8	305.8	4.5
21 080	4,835	765	15.8	512.5	10.6	252.5	5.2
21 081	5,841	312	5.3	479.0	8.2	167.0-	2.9-
21 082	246	0	.0	13.5	5.5	13.5-	5.5-
21 083	3,147	172	5.5	305.3	9.7	133.3-	4.2-
21 084	2,389	43	1.8	78.8	3.3	35.8-	1.5-
21 085	744	0	.0	55.1	7.4	55.1-	7.4-
21 086	2,977	225	7.6	223.3	7.5	1.7	.1
21 087	4,335	316	7.3	299.1	6.9	16.9	.4
21	24,514	1,833	7.5	1,966.6	8.0	133.6-	.5-
22 088	2,432	541	22.2	301.6	12.4	239.4	9.8
22 089	2,412	497	20.6	395.6	16.4	101.4	4.2
22 090	1,777	296	16.7	252.3	14.2	43.7	2.5
22 091	2,861	320	11.2	346.2	12.1	26.2-	.9-
22 092	6,250	796	12.7	750.0	12.0	46.0	.7
22 093	8,200	706	8.6	688.8	8.4	17.2	.2
22 094	1,621	170	10.5	207.5	12.8	37.5-	2.3-
22 095	3,171	200	6.3	237.8	7.5	37.8-	1.2-
22	28,724	3,526	12.3	3,179.8	11.1	346.2	1.2
23 096	6,259	814	13.0	738.6	11.8	75.4	1.2
23 097	1,854	155	8.4	179.8	9.7	24.8-	1.3-
23 098	3,939	663	16.8	366.3	9.3	296.7	7.5
23 099	6,781	727	10.7	542.5	8.0	184.5	2.7
23 100	5,016	372	7.4	381.2	7.6	9.2-	.2-
23 101	4,913	346	7.0	363.6	7.4	17.6-	.4-
23 102	3,441	148	4.3	295.9	8.6	147.9-	4.3-
23 103	6,251	326	5.2	406.3	6.5	80.3-	1.3-
23	38,454	3,551	9.2	3,274.2	8.5	276.8	.7
24 104	666	185	27.8	141.2	21.2	43.8	6.6
24 105	852	0	.0	24.7	2.9	24.7-	2.9-
24 106	694	0	.0	67.3	9.7	67.3-	9.7-
24 107	1,445	148	10.2	122.8	8.5	25.2	1.7
24 108	5,163	222	4.3	402.7	7.8	180.7-	3.5-
24 109	2,321	0	.0	78.9	3.4	78.9-	3.4-
24 110	4,703	703	14.9	442.1	9.4	260.9	5.5
24 111	4,560	260	5.7	378.5	8.3	118.5-	2.6-
24 112	2,689	335	12.5	207.1	7.7	127.9	4.8
24 113	3,550	75	2.1	188.2	5.3	113.2-	3.2-
24	26,643	1,928	7.2	2,053.5	7.7	125.5-	.5-
25 115	2,399	421	17.5	220.7	9.2	200.3	8.3
25 116	790	88	11.1	73.5	9.3	14.5	1.8
25 117	1,727	201	11.6	139.9	8.1	61.1	3.5
25 118	3,409	111	3.3	201.1	5.9	90.1-	2.6-
25 119	2,737	154	5.6	243.6	8.9	89.6-	3.3-
25 120	1,983	0	.0	109.1	5.5	109.1-	5.5-
25 121	5,114	433	8.5	429.6	8.4	3.4	.1
25	18,159	1,408	7.8	1,417.5	7.8	9.5-	.0
26 122	1,561	45	2.9	124.9	8.0	79.9-	5.1-
26 123	3,395	290	8.5	356.5	10.5	66.5-	2.0-
26 124	1,015	0	.0	82.2	8.1	82.2-	8.1-
26 125	152	0	.0	12.8	8.4	12.8-	8.4-
26 127	3,424	266	7.8	280.8	8.2	14.8-	.4-
26 128	2,904	0	.0	156.8	5.4	156.8-	5.4-
26	12,451	601	4.8	1,014.0	8.1	413.0-	3.3-
27 129	2,185	420	19.2	284.1	13.0	135.9	6.2
27 130	1,872	672	35.9	207.8	11.1	464.2	24.8
27 131	3,241	147	4.5	282.0	8.7	135.0-	4.2-
27 132	5,530	332	6.0	398.2	7.2	66.2-	1.2-
27 133	3,115	36	1.2	140.2	4.5	104.2-	3.3-
27	15,943	1,607	10.1	1,312.3	8.2	294.7	1.9
28 134	5,500	459	8.3	594.0	10.8	135.0-	2.5-
28 135	341	0	.0	21.5	6.3	21.5-	6.3-
28 136	5,144	80	1.6	514.4	10.0	434.4-	8.4-
28 137	6,812	418	6.1	415.5	6.1	2.5	.0
28 138	4,275	340	8.0	333.5	7.8	6.5	.2
28 139	4,134	117	2.8	128.2	3.1	11.2-	.3-
28	26,206	1,414	5.4	2,007.1	7.7	593.1-	2.3-
29 140	4,101	115	2.8	422.4	10.3	307.4-	7.5-
29 141	4,200	114	2.7	210.0	5.0	96.0-	2.3-
29 142	4,750	0	.0	242.3	5.1	242.3-	5.1-
29 143	6,803	629	9.2	381.0	5.6	248.0	3.6
29 144	5,004	351	7.0	420.3	8.4	69.3-	1.4-
29	24,858	1,209	4.9	1,676.0	6.7	467.0-	1.8-
31 145	2,396	79	3.3	24.0	1.0	55.0	2.3
31 146	5,979	261	4.4	101.6	1.7	159.4	2.7
31 147	3,866	421	10.9	119.8	3.1	301.2	7.8
31 148	5,350	132	2.5	64.2	1.2	67.8	1.3
31 149	2,719	0	.0	.0	.0	.0	.0
31 150	2,359	89	3.8	.0	.0	89.0	3.8
31 151	73	0	.0	.7	.9	.7-	.9-
31 152	2,416	0	.0	26.6	1.1	26.6-	1.1-
31 153	336	0	.0	.0	.0	.0	.0
31	25,494	982	3.9	336.9	1.3	645.1	2.6
32 154	2,156	265	12.3	191.9	8.9	73.1	3.4
32 155	4,713	490	10.4	466.6	9.9	23.4	.5
32 156	1,206	0	.0	36.2	3.0	36.2-	3.0-
32 157	6,056	157	2.6	363.4	6.0	206.4-	3.4-
32 158	9,506	303	3.2	494.3	5.2	191.3-	2.0-
32 159	4,612	302	6.5	175.3	3.8	126.7	2.7
32 160	4,638	377	8.1	199.4	4.3	177.6	3.8
32 161	7,718	257	3.3	308.7	4.0	51.7-	.7-
32 162	365	0	.0	4.4	1.2	4.4-	1.2-
32 163	1,434	0	.0	15.8	1.1	15.8-	1.1-
32 164	1,651	0	.0	3.3	.2	3.3-	.2-
32	44,055	2,151	4.9	2,259.3	5.1	108.3-	.2-
33 165	5,823	328	5.6	407.6	7.0	79.6-	1.4-
33 166	2,690	190	7.1	228.7	8.5	38.7-	1.4-
33 167	7,691	488	6.3	330.7	4.3	157.3	2.0
33 168	7,026	246	3.5	274.0	3.9	28.0-	.4-

MILWAUKEE HOME INTERVIEW AREA NON HOME-BASED

DIST	ZONE	O-D SURVEY TOTAL TRIPS	O-D SURVEY TRANSIT TRIPS	O-D SURVEY PERCENT TRANSIT	MODEL TRANSIT TRIPS	MODEL PERCENT TRANSIT	DIFFERENCE TRANSIT TRIPS	DIFFERENCE PER-CENT
33	169	3,543	226	6.4	67.3	1.9	158.7	4.5
33	170	7,030	342	4.9	210.9	3.0	131.1	1.9
33	171	4,759	308	6.5	161.8	3.4	146.2	3.1
33	172	7,221	77	1.1	216.6	3.0	139.6-	1.9-
33	173	6,561	38	.6	144.3	2.2	106.3-	1.6-
33	174	7,680	152	2.0	192.0	2.5	40.0-	.5-
33		60,024	2,395	4.0	2,233.9	3.7	161.1	.3
34	175	4,090	39	1.0	196.3	4.8	157.3-	3.8-
34	176	5,910	148	2.5	301.4	5.1	153.4-	2.6-
34	177	187	0	.0	3.9	2.1	3.9-	2.1-
34	178	2,425	78	3.2	65.5	2.7	12.5	.5
34	179	7,047	386	5.5	56.4	.8	329.6	4.7
34	180	1,534	0	.0	50.6	3.3	50.6-	3.3-
34	181	707	0	.0	14.8	2.1	14.8-	2.1-
34	182	4,051	0	.0	.0	.0	.0	.0
34	183	2,724	0	.0	.0	.0	.0	.0
34	184	945	0	.0	14.2	1.5	14.2-	1.5-
34		29,620	651	2.2	703.1	2.4	52.1-	.2-
35	185	297	0	.0	8.0	2.7	8.0-	2.7-
35	186	6,447	466	7.2	187.0	2.9	279.0	4.3
35	187	4,920	266	5.4	167.3	3.4	98.7	2.0
35	188	5,202	39	.7	98.8	1.9	59.8-	1.2-
35	189	1,591	0	.0	22.3	1.4	22.3-	1.4-
35	190	2,148	0	.0	34.4	1.6	34.4-	1.6-
35	191	3,518	76	2.2	35.2	1.0	40.8	1.2
35	192	410	0	.0	2.1	.5	2.1-	.5-
35	193	397	0	.0	6.7	1.7	6.7-	1.7-
35		24,930	847	3.4	561.8	2.3	285.2	1.1
36	194	3,497	155	4.4	209.8	6.0	54.8-	1.6-
36	195	6,075	0	.0	358.4	5.9	358.4-	5.9-
36	196	6,510	341	5.2	221.3	3.4	119.7	1.8
36	197	4,466	76	1.7	281.4	6.3	205.4-	4.6-
36	198	7,445	146	2.0	163.8	2.2	17.8-	.2-
36	199	3,758	146	3.9	112.7	3.0	33.3	.9
36	200	3,405	0	.0	40.9	1.2	40.9-	1.2-
36	201	5,872	114	1.9	58.7	1.0	55.3	.9
36	202	2,177	181	8.3	.0	.0	181.0	8.3
36		43,205	1,159	2.7	1,447.0	3.3	288.0-	.6-
37	203	3,254	36	1.1	61.8	1.9	25.8-	.8-
37	204	5,676	72	1.3	158.9	2.8	86.9-	1.5-
37	205	2,294	0	.0	39.0	1.7	39.0-	1.7-
37	206	2,442	296	12.1	14.7	.6	281.3	11.5
37	207	897	0	.0	5.4	.6	5.4-	.6-
37	208	2,053	0	.0	20.5	1.0	20.5-	1.0-
37	209	3,959	0	.0	75.2	1.9	75.2-	1.9-
37	210	2,257	0	.0	15.8	.7	15.8-	.7-
37	211	2,146	111	5.2	12.9	.6	98.1	4.6
37		24,978	515	2.1	404.2	1.6	110.8	.5
38	212	3,141	76	2.4	150.8	4.8	74.8-	2.4-
38	213	2,272	122	5.4	63.6	2.8	58.4	2.6
38	214	2,698	76	2.8	37.8	1.4	38.2	1.4
38	215	76	0	.0	.9	1.2	.9-	1.2-
38	216	985	0	.0	12.8	1.3	12.8-	1.3-
38	217	1,362	76	5.6	32.7	2.4	43.3	3.2
38	218	381	0	.0	.4	.1	.4-	.1-
38	219	909	0	.0	.0	.0	.0	.0
38	220	2,779	294	10.6	30.6	1.1	263.4	9.5
38		14,603	644	4.4	329.6	2.3	314.4	2.1
39	221	2,964	0	.0	91.9	3.1	91.9-	3.1-
39	222	4,368	546	12.5	244.6	5.6	301.4	6.9
39	223	3,597	114	3.2	176.3	4.9	62.3-	1.7-
39	224	546	39	7.1	8.2	1.5	30.8	5.6
39	225	4,797	468	9.8	239.9	5.0	228.1	4.8
39	226	1,053	0	.0	5.3	.5	5.3-	.5-
39	227	580	0	.0	7.5	1.3	7.5-	1.3-
39	228	3,703	80	2.2	148.1	4.0	68.1-	1.8-
39	229	2,847	0	.0	17.1	.6	17.1-	.6-
39		24,455	1,247	5.1	938.9	3.8	308.1	1.3
41	230	298	0	.0	.0	.0	.0	.0
41	231	2,940	0	.0	.0	.0	.0	.0
41	232	932	75	8.0	.0	.0	75.0	8.0
41	234	1,705	0	.0	.0	.0	.0	.0
41	236	112	0	.0	.0	.0	.0	.0
41	237	1,426	0	.0	.0	.0	.0	.0
41	238	971	0	.0	.0	.0	.0	.0
41	239	75	0	.0	.0	.0	.0	.0
41	240	722	0	.0	1.4	.2	1.4-	.2-
41	241	1,303	0	.0	.0	.0	.0	.0
41	242	905	0	.0	.0	.0	.0	.0
41	243	289	0	.0	.0	.0	.0	.0
41		11,678	75	.6	1.4	.0	73.6	.6
42	244	984	0	.0	7.9	.8	7.9-	.8-
42	245	2,748	0	.0	351.7	12.8	351.7-	12.8-
42	246	686	0	.0	.0	.0	.0	.0
42	247	216	0	.0	7.8	3.6	7.8-	3.6-
42	248	1,806	0	.0	50.6	2.8	50.6-	2.8-
42	250	4,049	0	.0	149.8	3.7	149.8-	3.7-
42	251	588	0	.0	8.8	1.5	8.8-	1.5-
42	252	1,159	0	.0	.0	.0	.0	.0
42	253	468	0	.0	.0	.0	.0	.0
42	254	1,988	0	.0	2.0	.1	2.0-	.1-
42	256	72	0	.0	.0	.0	.0	.0
42	258	253	0	.0	.3	.1	.3-	.1-
42	259	109	0	.0	.0	.0	.0	.0
42		15,126	0	.0	578.9	3.8	578.9-	3.8-
43	261	2,850	0	.0	54.2	1.9	54.2-	1.9-
43	262	6,265	78	1.2	106.5	1.7	28.5-	.5-
43	263	1,258	0	.0	3.8	.3	3.8-	.3-
43	264	3,366	0	.0	.0	.0	.0	.0
43	265	2,089	0	.0	18.8	.9	18.8-	.9-
43	266	2,985	37	1.2	32.8	1.1	4.2	.1
43	267	36	0	.0	2.1	5.9	2.1-	5.9-
43	268	830	0	.0	.0	.0	.0	.0
43	269	4,104	228	5.6	32.8	.8	195.2	4.8
43	270	1,739	0	.0	1.7	.1	1.7-	.1-
43	271	2,272	0	.0	.0	.0	.0	.0
43	272	433	0	.0	.0	.0	.0	.0
43	273	180	0	.0	3.2	1.8	3.2-	1.8-
43	275	1,194	0	.0	.0	.0	.0	.0
43	276	1,836	0	.0	.0	.0	.0	.0
43	277	540	0	.0	.0	.0	.0	.0
43	278	72	0	.0	.0	.0	.0	.0
43	279	2,196	0	.0	112.0	5.1	112.0-	5.1-
43		34,245	343	1.0	367.9	1.1	24.9-	.1-
44	280	1,405	0	.0	.0	.0	.0	.0
44	281	1,155	0	.0	.0	.0	.0	.0
44	282	1,908	0	.0	.0	.0	.0	.0
44	283	1,355	0	.0	.0	.0	.0	.0
44	284	1,409	0	.0	.0	.0	.0	.0
44	285	1,079	0	.0	2.2	.2	2.2-	.2-
44	286	648	0	.0	1.9	.3	1.9-	.3-
44	287	3,888	0	.0	.0	.0	.0	.0
44	288	1,333	0	.0	.0	.0	.0	.0
44	289	3,293	0	.0	.0	.0	.0	.0
44	290	800	0	.0	.0	.0	.0	.0
44	291	1,296	0	.0	.0	.0	.0	.0
44		19,569	0	.0	4.1	.0	4.1-	.0
45	292	2,769	0	.0	.0	.0	.0	.0
45	293	1,523	0	.0	9.1	.6	9.1-	.6-
45	294	288	0	.0	1.7	.6	1.7-	.6-
45	295	2,802	36	1.3	.0	.0	36.0	1.3
45	296	359	0	.0	.0	.0	.0	.0
45	297	2,731	0	.0	.0	.0	.0	.0
45	298	1,620	0	.0	.0	.0	.0	.0
45	299	288	72	25.0	.0	.0	72.0	25.0
45	300	216	0	.0	.0	.0	.0	.0
45		12,596	108	.9	10.8	.1	97.2	.8
46	301	962	0	.0	.0	.0	.0	.0
46	302	111	0	.0	.0	.0	.0	.0
46	303	370	37	10.0	.0	.0	37.0	10.0
46	304	1,332	0	.0	.0	.0	.0	.0
46	305	3,182	0	.0	.0	.0	.0	.0
46	306	259	0	.0	.0	.0	.0	.0
46	307	472	0	.0	.0	.0	.0	.0
46	308	1,085	0	.0	.0	.0	.0	.0
46	309	1,429	0	.0	.0	.0	.0	.0
46	310	431	0	.0	.0	.0	.0	.0
46	311	252	0	.0	.0	.0	.0	.0
46	312	1,927	0	.0	.0	.0	.0	.0
46	313	934	0	.0	10.3	1.1	10.3-	1.1-
46		12,746	37	.3	10.3	.1	26.7	.2
47	314	962	0	.0	8.7	.9	8.7-	.9-
47	316	359	0	.0	.0	.0	.0	.0
47	317	503	0	.0	2.5	.5	2.5-	.5-
47	318	108	0	.0	.0	.0	.0	.0
47	319	431	0	.0	.0	.0	.0	.0
47	320	72	0	.0	.0	.0	.0	.0
47	321	432	0	.0	.0	.0	.0	.0
47	322	719	0	.0	2.2	.3	2.2-	.3-
47	323	467	0	.0	.0	.0	.0	.0
47	324	108	0	.0	.0	.0	.0	.0
47		4,161	0	.0	13.4	.3	13.4-	.3-
48	326	117	0	.0	.5	.4	.5-	.4-
48	327	271	0	.0	.5	.2	.5-	.2-
48	328	741	0	.0	.0	.0	.0	.0
48	330	156	0	.0	.0	.0	.0	.0
48	331	390	0	.0	.0	.0	.0	.0
48	332	716	0	.0	1.4	.2	1.4-	.2-
48	334	546	0	.0	.5	.1	.5-	.1-
48	335	936	0	.0	4.7	.5	4.7-	.5-
48	336	2,063	0	.0	.0	.0	.0	.0
48		5,936	0	.0	7.6	.1	7.6-	.1-
49	337	390	0	.0	5.9	1.5	5.9-	1.5-
49	338	3,780	78	2.1	30.2	.8	47.8	1.3
49	339	4,421	0	.0	.0	.0	.0	.0
49	340	2,028	0	.0	.0	.0	.0	.0
49	341	3,884	135	3.5	15.5	.4	119.5	3.1
49	342	1,287	78	6.1	.0	.0	78.0	6.1
49	343	3,237	0	.0	.0	.0	.0	.0
49	344	5,259	40	.8	.0	.0	40.0	.8
49	345	195	0	.0	.0	.0	.0	.0
49	346	1,113	86	7.7	.0	.0	86.0	7.7
49	347	3,120	0	.0	6.2	.2	6.2-	.2-
49		28,714	417	1.5	57.8	.2	359.2	1.3
55	390	285	0	.0	.0	.0	.0	.0
55	391	1,429	0	.0	.0	.0	.0	.0
55	392	2,570	0	.0	.0	.0	.0	.0
55	393	3,821	0	.0	.0	.0	.0	.0
55	394	1,072	0	.0	.0	.0	.0	.0
55	395	7,819	110	1.4	.0	.0	110.0	1.4
55	396	5,025	107	2.1	.0	.0	107.0	2.1
55	397	530	0	.0	.0	.0	.0	.0
55	398	571	0	.0	.0	.0	.0	.0
55	399	3,815	0	.0	.0	.0	.0	.0
55	400	3,417	41	1.2	.0	.0	41.0	1.2
55	402	1,248	71	5.7	.0	.0	71.0	5.7
55	403	1,926	36	1.9	.0	.0	36.0	1.9
55		33,528	365	1.1	.0	.0	365.0	1.1
REGION TOTALS		800,276	51,700		50,648.7		1,051.3	

Appendix A (continued)

55		20,613	74	.4	.0	.0	.	.4
00	003	4,732	823	17.4	681.4	14.4	141.6	3.0
00		4,732	823	17.4	681.4	14.4	141.6	3.0
01	007	5,475	841	15.4	985.5	18.0	144.5-	2.6-
01	009	210	0	.0	21.4	10.2	21.4-	10.2-
01		5,685	841	14.8	1,006.9	17.7	165.9-	2.9-
02	010	412	47	11.4	53.6	13.0	6.6-	1.6-
02	011	1,744	389	22.3	184.9	10.6	204.1	11.7
02	012	394	78	19.8	51.2	13.0	26.8	6.8
02	013	1,223	116	9.5	110.1	9.0	5.9	.5
02		3,773	630	16.7	399.8	10.6	230.2	6.1
03	014	1,653	187	11.3	248.0	15.0	61.0-	3.7-
03	015	1,293	42	3.2	182.3	14.1	140.3-	10.9-
03	016	1,311	153	11.7	183.5	14.0	30.5-	2.3-
03	017	1,199	118	9.8	115.1	9.6	2.9	.2
03		5,456	500	9.2	728.9	13.4	228.9-	4.2-
04	018	1,079	39	3.6	160.8	14.9	121.8-	11.3-
04	020	3,002	686	22.9	402.3	13.4	283.7	9.5
04	021	1,659	245	14.8	219.0	13.2	26.0	1.6
04		5,740	970	16.9	782.1	13.6	187.9	3.3
06	022	1,636	237	14.5	255.2	15.6	18.2-	1.1-
06	024	1,001	38	3.8	115.1	11.5	77.1-	7.7-
06		2,637	275	10.4	370.3	14.0	95.3-	3.6-
09	029	2,045	468	22.9	329.2	16.1	138.8	6.8
09	030	2,230	224	10.0	347.9	15.6	123.9-	5.6-
09	031	1,664	228	13.7	249.6	15.0	21.6-	1.3-
09	032	679	83	12.2	93.7	13.8	10.7-	1.6-
09		6,618	1,003	15.2	1,020.4	15.4	17.4-	.2-
11	034	515	0	.0	50.0	9.7	50.0-	9.7-
11	035	680	0	.0	52.4	7.7	52.4-	7.7-
11	036	1,172	82	7.0	63.3	5.4	18.7	1.6
11	037	2,635	191	7.2	195.0	7.4	4.0-	.2-
11	038	585	37	6.3	30.4	5.2	6.6	1.1
11	039	1,068	38	3.6	79.0	7.4	41.0-	3.8-
11	040	613	0	.0	38.0	6.2	38.0-	6.2-
11		7,268	348	4.8	508.1	7.0	160.1-	2.2-
12	041	2,818	530	18.8	250.8	8.9	279.2	9.9
12	042	694	40	5.8	59.7	8.6	19.7-	2.8-
12	043	2,363	75	3.2	200.9	8.5	125.9-	5.3-
12	044	583	114	19.6	51.3	8.8	62.7	10.8
12	045	738	0	.0	56.8	7.7	56.8-	7.7-
12	046	1,000	0	.0	75.0	7.5	75.0-	7.5-
12	047	666	0	.0	42.6	6.4	42.6-	6.4-
12		8,862	759	8.6	737.1	8.3	21.9	.3
13	048	1,625	114	7.0	139.8	8.6	25.8-	1.6-
13	049	1,479	0	.0	115.4	7.8	115.4-	7.8-
13	050	1,071	77	7.2	82.5	7.7	5.5-	.5-
13	051	787	39	5.0	59.8	7.6	20.8-	2.6-
13	052	1,530	47	3.1	101.0	6.6	54.0-	3.5-
13	053	2,216	111	5.0	155.1	7.0	44.1-	2.0-
13	054	3,970	232	5.8	285.8	7.2	53.8-	1.4-
13		12,678	620	4.9	939.4	7.4	319.4-	2.5-
14	055	1,110	145	13.1	95.5	8.6	49.5	4.5
14	056	3,197	167	5.2	294.1	9.2	127.1-	4.0-
14	057	1,431	185	12.9	107.3	7.5	77.7	5.4
14	058	2,408	192	8.0	216.7	9.0	24.7-	1.0-
14	059	651	36	5.5	52.7	8.1	16.7-	2.6-
14		8,797	725	8.2	766.3	8.7	41.3-	.5-
16	061	155	38	24.5	9.5	6.1	28.5	18.4
16	062	1,543	38	2.5	108.0	7.0	70.0-	4.5-
16	063	1,244	79	6.4	83.3	6.7	4.3-	.3-
16	064	1,051	0	.0	71.5	6.8	71.5-	6.8-
16	065	554	117	21.1	46.0	8.3	71.0	12.8
16		4,547	272	6.0	318.3	7.0	46.3-	1.0-
17	066	1,357	123	9.1	112.6	8.3	10.4	.8
17	067	3,112	316	10.2	242.7	7.8	73.3	2.4
17	068	5,843	624	10.7	444.1	7.6	179.9	3.1
17	069	3,845	39	1.0	265.3	6.9	226.3-	5.9-
17	070	1,551	39	2.5	113.2	7.3	74.2-	4.8-
17		15,708	1,141	7.3	1,177.9	7.5	36.9-	.2-
18	071	3,755	353	9.4	364.2	9.7	11.2-	.3-
18	073	1,210	41	3.4	83.5	6.9	42.5-	3.5-
18	074	1,278	0	.0	103.5	8.1	103.5-	8.1-
18	075	1,159	39	3.4	80.0	6.9	41.0-	3.5-
18	076	1,812	120	6.6	128.7	7.1	8.7-	.5-
18		9,214	553	6.0	759.9	8.2	206.9-	2.2-
19	078	1,048	129	12.3	82.8	7.9	46.2	4.4
19	079	3,342	160	4.8	197.2	5.9	37.2-	1.1-
19		4,390	289	6.6	280.0	6.4	9.0	.2
21	080	2,606	157	6.0	159.0	6.1	2.0-	.1-
21	081	3,218	246	7.6	167.3	5.2	78.7	2.4
21	082	495	40	8.1	21.3	4.3	18.7	3.8
21	083	3,362	222	6.6	188.3	5.6	33.7	1.0
21	084	792	128	16.2	10.3	1.3	117.7	14.9
21	085	2,989	123	4.1	131.5	4.4	8.5-	.3-
21	086	3,740	133	3.6	168.3	4.5	35.3-	.9-
21	087	1,361	133	9.8	64.0	4.7	69.0	5.1
21		18,563	1,182	6.4	910.0	4.9	272.0	1.5
22	088	423	39	9.2	27.5	6.5	11.5	2.7
22	089	1,125	117	10.4	86.6	7.7	30.4	2.7
22	090	697	47	6.7	48.8	7.0	1.8-	.3-
22	091	1,540	74	4.8	100.1	6.5	26.1-	1.7-
22	092	1,110	0	.0	71.0	6.4	71.0-	6.4-
22	093	2,524	154	6.1	136.3	5.4	17.7	.7
22	094	1,740	187	10.7	116.6	6.7	70.4	4.0
22	095	883	119	13.5	44.2	5.0	74.8	8.5
22		10,042	737	7.3	631.1	6.3	105.9	1.0
23	096	3,357	230	6.9	198.1	5.9	31.9	1.0
23	097	2,241	48	2.1	116.5	5.2	68.5-	3.1-
23	098	4,560	205	4.5	259.9	5.7	54.9-	1.2-
23	099	2,415	187	7.7	128.0	5.3	59.0	2.4
23	100	4,080	306	7.5	204.0	5.0	102.0	2.5
23	101	2,782	39	1.4	122.4	4.4	83.4-	3.0-
23	102	2,783	251	9.0	133.6	4.8	117.4	4.2
23	103	3,286	111	3.4	134.7	4.1	23.7-	.7-
23		25,504	1,377	5.4	1,297.2	5.1	79.8	.3
24	104	1,127	37	3.3	95.8	8.5	58.8-	5.2-
24	105	225	0	.0	1.4	.6	1.4-	.6-
24	106	710	0	.0	35.5	5.0	35.5-	5.0-
24	107	1,086	37	3.4	48.9	4.5	11.9-	1.1-
24	108	1,566	75	4.8	72.0	4.6	3.0	.2
24	109	1,279	38	3.0	16.6	1.3	21.4	1.7
24	110	1,917	75	3.9	99.7	5.2	24.7-	1.3-
24	111	1,270	74	5.8	68.6	5.4	5.4	.4
24	112	2,211	0	.0	103.9	4.7	103.9-	4.7-
24	113	2,263	38	1.7	24.9	1.1	13.1	.6
24		13,654	374	2.7	567.3	4.2	193.3-	1.5-
25	115	1,646	79	4.8	77.4	4.7	1.6	.1
25	116	1,730	117	6.8	90.0	5.2	27.0	1.6
25	117	956	39	4.1	39.2	4.1	.2-	.0
25	118	779	0	.0	28.8	3.7	28.8-	3.7-
25	119	2,560	0	.0	110.1	4.3	110.1-	4.3-
25	120	386	0	.0	6.6	1.7	6.6-	1.7-
25	121	8,588	156	1.8	326.3	3.8	170.3-	2.0-
25		16,645	391	2.3	678.4	4.1	287.4-	1.8-
26	122	1,001	120	12.0	51.1	5.1	68.9	6.9
26	123	1,337	118	8.8	78.9	5.9	39.1	2.9
26	124	395	38	9.6	20.9	5.3	17.1	4.3
26	125	1,335	38	2.8	57.4	4.3	19.4-	1.5-
26	127	1,692	0	.0	72.8	4.3	72.8-	4.3-
26	128	1,037	0	.0	45.6	4.4	45.6-	4.4-
26		6,797	314	4.6	326.7	4.8	12.7-	.2-
27	129	1,066	48	4.5	67.2	6.3	19.2-	1.8-
27	130	1,756	350	19.9	108.9	6.2	241.1	13.7
27	131	4,446	234	5.3	235.6	5.3	1.6-	.0
27	132	2,570	262	10.2	128.5	5.0	133.5	5.2
27	133	6,601	120	1.8	204.6	3.1	84.6-	1.3-
27		16,439	1,014	6.2	744.8	4.5	269.2	1.7
28	134	2,259	0	.0	133.3	5.9	133.3-	5.9-
28	135	1,287	39	3.0	61.8	4.8	22.8-	1.8-
28	136	3,082	194	6.3	169.5	5.5	24.5	.8
28	137	3,021	38	1.3	129.9	4.3	91.9-	3.0-
28	138	1,287	0	.0	63.1	4.9	63.1-	4.9-
28	139	2,024	0	.0	48.6	2.4	48.6-	2.4-
28		12,960	271	2.1	606.2	4.7	335.2-	2.6-
29	140	2,199	117	5.3	131.9	6.0	14.9-	.7-
29	141	1,781	37	2.1	74.8	4.2	37.8-	2.1-
29	142	1,389	116	8.4	44.4	3.2	71.6	5.2
29	143	1,155	39	3.4	53.1	4.6	14.1-	1.2-
29	144	1,165	77	6.6	64.1	5.5	12.9	1.1
29		7,689	386	5.0	368.3	4.8	17.7	.2
31	145	1,430	38	2.7	.0	.0	38.0	2.7
31	146	1,783	0	.0	.0	.0	.0	.0
31	147	1,349	41	3.0	4.0	.3	37.0	2.7
31	148	9,285	44	.5	.0	.0	44.0	.5
31	149	1,647	0	.0	.0	.0	.0	.0
31	150	868	0	.0	.0	.0	.0	.0
31	151	229	0	.0	.0	.0	.0	.0
31	152	730	0	.0	.0	.0	.0	.0
31	153	358	0	.0	.0	.0	.0	.0
31		17,679	123	.7	4.0	.0	119.0	.7
32	154	3,239	117	3.6	158.7	4.9	41.7-	1.3-
32	155	1,649	0	.0	67.6	4.1	67.6-	4.1-
32	156	1,037	38	3.7	.0	.0	38.0	3.7
32	157	4,374	112	2.6	43.7	1.0	68.3	1.6
32	158	2,796	153	5.5	.0	.0	153.0	5.5
32	159	2,678	117	4.4	.0	.0	117.0	4.4
32	160	2,623	0	.0	.0	.0	.0	.0
32	161	3,333	125	3.8	.0	.0	125.0	3.8
32	162	2,544	0	.0	.0	.0	.0	.0
32	163	2,117	0	.0	.0	.0	.0	.0
32	164	239	0	.0	.0	.0	.0	.0
32		26,629	662	2.5	270.0	1.0	392.0	1.5
33	165	1,950	0	.0	66.3	3.4	66.3-	3.4-
33	166	1,739	0	.0	40.0	2.3	40.0-	2.3-
33	167	3,541	0	.0	.0	.0	.0	.0
33	168	1,747	36	2.1	21.0	1.2	15.0	.9
33	169	10,551	337	3.2	.0	.0	337.0	3.2
33	170	4,734	47	1.0	.0	.0	47.0	1.0
33	171	1,267	0	.0	.0	.0	.0	.0
33	172	2,825	0	.0	.0	.0	.0	.0

Appendix A (continued)

33	173	2,551	0	.0	.0	.0	.0	.0
33	174	2,416	39	1.6	.0	.0	39.0	1.6
33		33,321	459	1.4	127.3	.4	331.7	1.0
34	175	1,584	39	2.5	34.8	2.2	4.2	.3
34	176	422	0	.0	.0	.0	.0	.0
34	177	1,642	78	4.8	.0	.0	78.0	4.8
34	178	1,514	38	2.5	.0	.0	38.0	2.5
34	179	1,990	50	2.5	.0	.0	50.0	2.5
34	180	648	0	.0	.0	.0	.0	.0
34	181	459	0	.0	.0	.0	.0	.0
34	182	346	0	.0	.0	.0	.0	.0
34	183	4,262	37	.9	.0	.0	37.0	.9
34	184	1,309	79	6.0	.0	.0	79.0	6.0
34		14,176	321	2.3	34.8	.2	286.2	2.1
35	185	454	0	.0	.0	.0	.0	.0
35	186	2,187	39	1.8	.0	.0	39.0	1.8
35	187	1,868	40	2.1	.0	.0	40.0	2.1
35	188	3,267	0	.0	.0	.0	.0	.0
35	189	534	0	.0	.0	.0	.0	.0
35	190	1,801	0	.0	.0	.0	.0	.0
35	191	578	0	.0	.0	.0	.0	.0
35	192	187	0	.0	.0	.0	.0	.0
35	193	43	0	.0	.5	1.2	.5-	1.2-
35		10,919	79	.7	.5	.0	78.5	.7
36	194	1,609	76	4.7	64.4	4.0	11.6	.7
36	195	2,368	79	3.3	92.4	3.9	13.4-	.6-
36	196	2,489	84	3.4	32.4	1.3	51.6	2.1
36	197	1,693	0	.0	76.2	4.5	76.2-	4.5-
36	198	2,389	0	.0	9.6	.4	9.6-	.4-
36	199	394	0	.0	.0	.0	.0	.0
36	200	738	0	.0	.0	.0	.0	.0
36	201	1,278	0	.0	.0	.0	.0	.0
36	202	48	0	.0	.0	.0	.0	.0
36		13,006	239	1.8	275.0	2.1	36.0-	.3-
37	203	769	37	4.8	.8	.1	36.2	4.7
37	204	1,302	0	.0	14.3	1.1	14.3-	1.1-
37	205	304	0	.0	.0	.0	.0	.0
37	206	347	0	.0	.0	.0	.0	.0
37	207	573	0	.0	.0	.0	.0	.0
37	208	571	0	.0	.0	.0	.0	.0
37	209	1,532	0	.0	.0	.0	.0	.0
37	210	339	0	.0	.0	.0	.0	.0
37	211	272	0	.0	.0	.0	.0	.0
37		6,009	37	.6	15.1	.3	21.9	.3
38	212	1,316	40	3.0	23.7	1.8	16.3	1.2
38	213	876	0	.0	.0	.0	.0	.0
38	214	363	0	.0	.4	.1	.4-	.1-
38	215	1,121	39	3.5	.0	.0	39.0	3.5
38	216	237	0	.0	.0	.0	.0	.0
38	217	1,786	0	.0	.0	.0	.0	.0
38	218	113	0	.0	.0	.0	.0	.0
38	219	39	0	.0	.0	.0	.0	.0
38	220	434	0	.0	.0	.0	.0	.0
38		6,285	79	1.3	24.1	.4	54.9	.9
39	221	1,303	0	.0	26.1	2.0	26.1-	2.0-
39	222	1,281	39	3.0	57.6	4.5	18.6-	1.5-
39	223	719	0	.0	25.9	3.6	25.9-	3.6-
39	224	1,516	0	.0	19.7	1.3	19.7-	1.3-
39	225	2,718	36	1.3	95.1	3.5	59.1-	2.2-
39	226	77	0	.0	.4	.5	.4-	.5-
39	227	946	0	.0	13.2	1.4	13.2-	1.4-
39	228	2,489	0	.0	97.1	3.9	97.1-	3.9-
39	229	39	0	.0	.3	.8	.3-	.8-
39		11,088	75	.7	335.4	3.0	260.4-	2.3-
41	230	272	0	.0	.0	.0	.0	.0
41	231	420	0	.0	.0	.0	.0	.0
41	232	78	0	.0	.0	.0	.0	.0
41	234	756	0	.0	.0	.0	.0	.0
41	235	146	0	.0	.0	.0	.0	.0
41	236	123	0	.0	.0	.0	.0	.0
41	237	222	0	.0	.0	.0	.0	.0
41	239	120	0	.0	.0	.0	.0	.0
41	240	47	0	.0	.1	.3	.1-	.3-
41	241	121	0	.0	.0	.0	.0	.0
41	242	222	0	.0	.0	.0	.0	.0
41		2,527	0	.0	.1	.0	.1-	.0
42	244	405	0	.0	13.8	3.4	13.8-	3.4-
42	245	1,530	0	.0	165.2	10.8	165.2-	10.8-
42	246	189	0	.0	.0	.0	.0	.0
42	247	669	0	.0	14.0	2.1	14.0-	2.1-
42	248	1,265	0	.0	.0	.0	.0	.0
42	249	742	0	.0	.0	.0	.0	.0
42	250	583	0	.0	21.0	3.6	21.0-	3.6-
42	251	342	0	.0	1.7	.5	1.7-	.5-
42	252	112	0	.0	.0	.0	.0	.0
42	253	83	0	.0	.0	.0	.0	.0
42	254	195	0	.0	.2	.1	.2-	.1-
42	255	72	0	.0	.0	.0	.0	.0
42	257	75	0	.0	.0	.0	.0	.0
42	258	36	0	.0	.0	.1	.0	.1-
42	259	36	0	.0	.0	.0	.0	.0
42		6,334	0	.0	215.9	3.4	215.9-	3.4-
43	261	766	0	.0	.0	.0	.0	.0
43	262	2,754	77	2.8	.0	.0	77.0	2.8
43	263	988	37	3.7	.0	.0	37.0	3.7
43	264	210	0	.0	.0	.0	.0	.0
43	265	1,009	0	.0	.0	.0	.0	.0
43	266	752	0	.0	.0	.0	.0	.0
43	267	621	0	.0	.0	.0	.0	.0
43	268	1,011	0	.0	.0	.0	.0	.0
43	269	656	0	.0	.0	.0	.0	.0
43	270	1,940	0	.0	.0	.0	.0	.0
43	271	920	0	.0	.0	.0	.0	.0
43	272	418	0	.0	.0	.0	.0	.0
43	273	77	0	.0	.0	.0	.0	.0
43	274	43	0	.0	.0	.0	.0	.0
43	276	433	0	.0	.0	.0	.0	.0
43	277	4	0	.0	.0	.0	.0	.0
43	278	194	0	.0	.0	.0	.0	.0
43	279	119	0	.0	.0	.0	.0	.0
43		12,915	114	.9	.0	.0	114.0	.9
44	280	1,708	0	.0	.0	.0	.0	.0
44	281	1,230	0	.0	.0	.0	.0	.0
44	282	1,674	0	.0	.0	.0	.0	.0
44	283	195	0	.0	.0	.0	.0	.0
44	284	229	0	.0	.0	.0	.0	.0
44	285	350	0	.0	3.2	.9	3.2-	.9-
44	286	1,062	0	.0	.0	.0	.0	.0
44	287	1,215	0	.0	.0	.0	.0	.0
44	288	717	0	.0	.0	.0	.0	.0
44	289	429	0	.0	.0	.0	.0	.0
44	290	425	0	.0	.0	.0	.0	.0
44	291	352	0	.0	.0	.0	.0	.0
44		9,586	0	.0	3.2	.0	3.2-	.0
45	292	666	0	.0	.0	.0	.0	.0
45	293	274	0	.0	2.5	.9	2.5-	.9-
45	294	700	0	.0	5.6	.8	5.6-	.8-
45	295	491	0	.0	.0	.0	.0	.0
45	296	159	0	.0	.0	.0	.0	.0
45	297	2,117	0	.0	.0	.0	.0	.0
45	298	119	0	.0	.0	.0	.0	.0
45	299	79	0	.0	.0	.0	.0	.0
45	300	41	0	.0	.0	.0	.0	.0
45		4,646	0	.0	8.1	.2	8.1-	.2-
46	301	152	0	.0	.0	.0	.0	.0
46	302	42	0	.0	.0	.0	.0	.0
46	303	425	0	.0	.0	.0	.0	.0
46	304	614	0	.0	.0	.0	.0	.0
46	305	3,983	0	.0	.0	.0	.0	.0
46	306	78	0	.0	.0	.0	.0	.0
46	307	233	0	.0	.0	.0	.0	.0
46	308	5	0	.0	.0	.0	.0	.0
46	309	1,620	0	.0	.0	.0	.0	.0
46	310	8	0	.0	.0	.0	.0	.0
46	311	182	0	.0	.0	.0	.0	.0
46	312	545	0	.0	.0	.0	.0	.0
46	313	48	0	.0	.0	.1	.0	.1-
46		7,935	0	.0	.0	.0	.0	.0
47	314	572	0	.0	.0	.0	.0	.0
47	315	77	0	.0	.0	.0	.0	.0
47	317	36	0	.0	.0	.0	.0	.0
47	318	147	0	.0	.0	.0	.0	.0
47	319	46	0	.0	.0	.0	.0	.0
47	320	37	0	.0	.0	.0	.0	.0
47	321	227	0	.0	.0	.0	.0	.0
47	322	422	0	.0	.0	.0	.0	.0
47	323	75	0	.0	.0	.0	.0	.0
47	324	111	0	.0	.0	.0	.0	.0
47		1,750	0	.0	.0	.0	.0	.0
48	326	246	0	.0	.0	.0	.0	.0
48	327	275	0	.0	.0	.0	.0	.0
48	328	162	0	.0	.0	.0	.0	.0
48	329	492	0	.0	.0	.0	.0	.0
48	330	51	0	.0	.0	.0	.0	.0
48	331	1,345	0	.0	.0	.0	.0	.0
48	332	186	0	.0	.0	.0	.0	.0
48	334	512	0	.0	.0	.0	.0	.0
48	335	303	0	.0	.0	.0	.0	.0
48	336	135	0	.0	.0	.0	.0	.0
48		3,707	0	.0	.0	.0	.0	.0
49	337	497	0	.0	9.9	2.0	9.9-	2.0-
49	338	405	0	.0	8.5	2.1	8.5-	2.1-
49	339	947	0	.0	.0	.0	.0	.0
49	340	1,815	0	.0	43.6	2.4	43.6-	2.4-
49	341	3,654	79	2.2	91.4	2.5	12.4-	.3-
49	342	156	0	.0	.0	.0	.0	.0
49	343	600	0	.0	.0	.0	.0	.0
49	344	1,010	0	.0	.0	.0	.0	.0
49	346	122	0	.0	.0	.0	.0	.0
49	347	284	0	.0	.0	.0	.0	.0
49		9,490	79	.8	153.4	1.6	74.4-	.8-
55	390	41	0	.0	.0	.0	.0	.0
55	391	801	0	.0	.0	.0	.0	.0
55	392	1,278	0	.0	.0	.0	.0	.0
55	393	1,246	0	.0	.0	.0	.0	.0
55	394	111	0	.0	.0	.0	.0	.0
55	395	3,994	0	.0	.0	.0	.0	.0
55	396	9,457	37	.4	.0	.0	37.0	.4
55	397	424	37	8.7	.0	.0	37.0	8.7
55	398	37	0	.0	.0	.0	.0	.0
55	399	1,805	0	.0	.0	.0	.0	.0
55	400	730	0	.0	.0	.0	.0	.0
55	401	5	0	.0	.0	.0	.0	.0
55	402	291	0	.0	.0	.0	.0	.0
55	403	393	0	.0	.0	.0	.0	.0
REGION TOTALS		453,013	18,136		18,073.7		11.7-	

RACINE AND KENOSHA HOME INTERVIEW AREAS

HOME-BASED WORK

DIST ZONE	O-D SURVEY TOTAL TRIPS	O-D SURVEY TRANSIT TRIPS	O-D SURVEY PERCENT TRANSIT	MODEL TRANSIT TRIPS	MODEL PERCENT TRANSIT	DIFFERENCE TRANSIT TRIPS	DIFFERENCE PER-CENT

59 417	778	0	.0	5.4	.7	5.4-	.7-
59 418	1,166	23	2.0	12.8	1.1	10.2	.9
59 419	1,320	12	.9	56.8	4.3	44.8-	3.4-
59 420	339	0	.0	.0	.0	.0	.0
59	3,603	35	1.0	75.0	2.1	40.0-	1.1-
69 470	5,844	394	6.7	245.4	4.2	148.6	2.5
69 471	1,070	12	1.1	1.1	.1	10.9	1.0
69 472	4,142	219	5.3	223.7	5.4	4.7-	.1-
69 473	6,669	640	9.6	406.8	6.1	233.2	3.5
69 474	1,050	0	.0	1.1	.1	1.1-	.1-
69 475	821	24	2.9	24.6	3.0	.6-	.1-
69 476	2,631	158	6.0	152.6	5.8	5.4	.2
69 477	3,187	418	13.1	318.7	10.0	99.3	3.1
69 478	3,338	278	8.3	217.0	6.5	61.0	1.8
69 479	522	75	14.4	66.8	12.8	8.2	1.6
69 480	755	247	32.7	89.1	11.8	157.9	20.9
69 481	2,964	197	6.6	246.0	8.3	49.0-	1.7-
69 482	1,251	36	2.9	3.8	.3	32.2	2.6
69 483	6,794	468	6.9	353.3	5.2	114.7	1.7
69 484	4,730	341	7.2	326.4	6.9	14.6	.3
69 485	2,894	173	6.0	228.6	7.9	55.6-	1.9-
69 486	12	0	.0	.0	.4	.0	.4-
69 487	4,410	157	3.6	220.5	5.0	63.5-	1.4-
69 488	5,878	483	8.2	299.8	5.1	183.2	3.1
69 489	2,487	121	4.9	174.1	7.0	53.1-	2.1-
69 490	1,163	12	1.0	17.4	1.5	5.4-	.5-
69 491	3,102	48	1.5	121.0	3.9	73.0-	2.4-
69 492	431	23	5.3	2.2	.5	20.8	4.8
69	66,145	4,524	6.8	3,740.0	5.7	784.0	1.1
79 554	541	0	.0	22.7	4.2	22.7-	4.2-
79 555	47	12	25.5	.0	.1	12.0	25.4
79 556	1,165	0	.0	32.6	2.8	32.6-	2.8-
79 557	1,650	76	4.6	69.3	4.2	6.7	.4
79 558	234	0	.0	.2	.1	.2-	.1-
79 559	1,294	24	1.9	42.7	3.3	18.7-	1.4-
79 560	4,280	387	9.0	235.4	5.5	151.6	3.5
79 561	605	24	4.0	6.7	1.1	17.3	2.9
79 562	4,205	202	4.8	180.8	4.3	21.2	.5
79 563	4,527	298	6.6	307.8	6.8	9.8-	.2-
79 564	839	24	2.9	55.4	6.6	31.4-	3.7-
79 565	447	56	12.5	46.9	10.5	9.1	2.0
79 566	1,509	0	.0	.0	.0	.0	.0
79 567	2,816	60	2.1	101.4	3.6	41.4-	1.5-
79 568	5,254	230	4.4	346.8	6.6	116.8-	2.2-
79 569	2,707	61	2.3	138.1	5.1	77.1-	2.8-
79 570	652	0	.0	.0	.0	.0	.0
79 571	5,029	269	5.3	166.0	3.3	103.0	2.0
79 572	4,398	108	2.5	175.9	4.0	67.9-	1.5-
79 573	1,143	12	1.0	34.3	3.0	22.3-	2.0-
79	43,342	1,843	4.3	1,963.0	4.5	120.0-	.2-
89 616	1,297	12	.9	37.6	2.9	25.6-	2.0-
89	1,297	12	.9	37.6	2.9	25.6-	2.0-
REGION TOTALS	114,387	6,414		5,815.6		598.4	

RACINE AND KENOSHA HOME INTERVIEW AREAS

HOME-BASED OTHER

DIST ZONE	O-D SURVEY TOTAL TRIPS	O-D SURVEY TRANSIT TRIPS	O-D SURVEY PERCENT TRANSIT	MODEL TRANSIT TRIPS	MODEL PERCENT TRANSIT	DIFFERENCE TRANSIT TRIPS	DIFFERENCE PER-CENT
59 417	1,397	0	.0	.0	.0	.0	.0
59 418	1,663	12	.7	1.7	.1	10.3	.6
59 419	3,063	12	.4	36.8	1.2	24.8-	.8-
59 420	1,079	0	.0	.0	.0	.0	.0
59	7,202	24	.3	38.5	.5	14.5-	.2-
69 470	14,432	160	1.1	115.5	.8	44.5	.3
69 471	1,883	0	.0	.0	.0	.0	.0
69 472	7,704	158	2.1	154.1	2.0	3.9	.1
69 473	11,667	283	2.4	315.0	2.7	32.0-	.3-
69 474	2,429	0	.0	.0	.0	.0	.0
69 475	2,109	24	1.1	12.7	.6	11.3	.5
69 476	4,707	378	8.0	122.4	2.6	255.6	5.4
69 477	4,662	208	4.5	191.1	4.1	16.9	.4
69 478	6,955	207	3.0	187.8	2.7	19.2	.3
69 479	654	12	1.8	45.1	6.9	33.1-	5.1-
69 480	953	46	4.8	52.4	5.5	6.4-	.7-
69 481	5,180	136	2.6	145.0	2.8	9.0-	.2-
69 482	2,165	0	.0	.0	.0	.0	.0
69 483	15,196	382	2.5	349.5	2.3	32.5	.2
69 484	10,291	218	2.1	277.9	2.7	59.9-	.6-
69 485	4,798	111	2.3	134.3	2.8	23.3-	.5-
69 486	220	0	.0	.0	.0	.0	.0
69 487	8,912	133	1.5	196.1	2.2	63.1-	.7-
69 488	11,997	209	1.7	287.9	2.4	78.9-	.7-
69 489	6,054	230	3.8	163.5	2.7	66.5	1.1
69 490	1,954	12	.6	3.9	.2	8.1	.4
69 491	6,028	61	1.0	72.3	1.2	11.3-	.2-
69 492	728	12	1.6	.0	.0	12.0	1.6
69	131,678	2,980	2.3	2,826.5	2.1	153.5	.2
79 554	729	25	3.4	13.9	1.9	11.1	1.5
79 555	234	0	.0	.2	.1	.2-	.1-
79 556	2,107	0	.0	16.9	.8	16.9-	.8-
79 557	4,479	176	3.9	98.5	2.2	77.5	1.7
79 558	363	0	.0	.0	.0	.0	.0
79 559	3,144	60	1.9	40.9	1.3	19.1	.6
79 560	9,191	326	3.5	229.8	2.5	96.2	1.0
79 561	2,255	23	1.0	6.8	.3	16.2	.7
79 562	8,885	101	1.1	142.2	1.6	41.2-	.5-
79 563	11,420	309	2.7	319.8	2.8	10.8-	.1-
79 564	1,118	12	1.1	31.3	2.8	19.3-	1.7-
79 565	948	56	5.9	48.3	5.1	7.7	.8
79 566	2,449	12	.5	.0	.0	12.0	.5
79 567	4,405	85	1.9	44.1	1.0	40.9	.9
79 568	10,877	97	.9	271.9	2.5	174.9-	1.6-
79 569	7,052	61	.9	183.4	2.6	122.4-	1.7-
79 570	2,155	0	.0	.0	.0	.0	.0
79 571	11,591	97	.8	69.5	.6	27.5	.2
79 572	11,629	278	2.4	151.2	1.3	126.8	1.1
79 573	2,623	24	.9	26.2	1.0	2.2-	.1-
79	97,654	1,742	1.8	1,694.9	1.7	47.1	.1
89 616	3,183	0	.0	.0	.0	.0	.0
89	3,183	0	.0	.0	.0	.0	.0
REGION TOTALS	239,717	4,746		4,559.9		186.1	

RACINE AND KENOSHA HOME INTERVIEW AREAS

NON-HOME BASED

DIST ZONE	O-D SURVEY TOTAL TRIPS	O-D SURVEY TRANSIT TRIPS	O-D SURVEY PERCENT TRANSIT	MODEL TRANSIT TRIPS	MODEL PERCENT TRANSIT	DIFFERENCE TRANSIT TRIPS	DIFFERENCE PER-CENT
59 417	318	0	.0	.0	.0	.0	.0
59 418	506	0	.0	.5	.1	.5-	.1-
59 419	906	12	1.3	6.3	.7	5.7	.6
59 420	349	0	.0	.0	.0	.0	.0
59	2,079	12	.6	6.8	.3	5.2	.3
69 470	3,097	98	3.2	15.5	.5	82.5	2.7
69 471	559	0	.0	.0	.0	.0	.0
69 472	3,430	132	3.8	27.4	.8	104.6	3.0
69 473	4,420	36	.8	44.2	1.0	8.2-	.2-
69 474	550	0	.0	.0	.0	.0	.0
69 475	289	0	.0	1.2	.4	1.2-	.4-
69 476	1,814	24	1.3	18.1	1.0	5.9	.3
69 477	2,993	0	.0	56.9	1.9	56.9-	1.9-
69 478	2,021	0	.0	24.3	1.2	24.3-	1.2-
69 479	2,353	48	2.0	58.8	2.5	10.8-	.5-
69 480	9,966	193	1.9	229.2	2.3	36.2-	.4-
69 481	2,694	12	.4	43.1	1.6	31.1-	1.2-
69 482	2,741	0	.0	.0	.0	.0	.0
69 483	3,512	12	.3	31.6	.9	19.6-	.6-
69 484	4,715	61	1.3	61.3	1.3	.3-	.0
69 485	4,342	153	3.5	60.8	1.4	92.2	2.1
69 486	466	0	.0	.0	.0	.0	.0
69 487	3,111	24	.8	31.1	1.0	7.1-	.2-
69 488	3,676	49	1.3	33.1	.9	15.9	.4
69 489	2,573	0	.0	36.0	1.4	36.0-	1.4-
69 490	3,581	24	.7	3.6	.1	20.4	.6
69 491	1,435	0	.0	10.0	.7	10.0-	.7-
69 492	101	0	.0	.1	.1	.1-	.1-
69	64,439	866	1.3	786.3	1.2	79.7	.1
79 554	482	0	.0	3.9	.8	3.9-	.8-
79 556	318	0	.0	1.9	.6	1.9-	.6-
79 557	732	0	.0	7.3	1.0	7.3-	1.0-
79 558	147	0	.0	.0	.0	.0	.0
79 559	1,108	12	1.1	5.5	.5	6.5	.6
79 560	2,612	13	.5	26.1	1.0	13.1-	.5-
79 561	252	0	.0	.3	.1	.3-	.1-
79 562	2,172	25	1.2	15.2	.7	9.8	.5
79 563	3,598	25	.7	61.2	1.7	36.2-	1.0-
79 564	1,314	0	.0	19.7	1.5	19.7-	1.5-
79 565	7,448	195	2.6	163.9	2.2	31.1	.4
79 566	458	0	.0	.0	.0	.0	.0
79 567	1,045	0	.0	6.3	.6	6.3-	.6-
79 568	6,020	60	1.0	72.2	1.2	12.2-	.2-
79 569	1,985	48	2.4	17.9	.9	30.1	1.5
79 570	130	0	.0	.0	.0	.0	.0
79 571	3,647	12	.3	7.3	.2	4.7	.1
79 572	2,472	12	.5	17.3	.7	5.3-	.2-
79 573	784	0	.0	3.9	.5	3.9-	.5-
79	36,724	402	1.1	429.9	1.2	27.9-	.1-
89 616	509	0	.0	.0	.0	.0	.0
89	509	0	.0	.0	.0	.0	.0
REGION TOTALS	103,751	1,280		1,223.0		57.0	

THIS IS SOUTHEASTERN WISCONSIN

Important vital statistics on the Region and percent of totals for the State of Wisconsin.

Land and Water Area (sq. mi.)	2,688	5%
Population (1960)	1,573,620	40%
Resident Employment (1960)	612,723	42%
Resident Unemployment (1960)	24,174	41%
Resident Labor Force (1960)	636,897	42%
Resident Man'f. Employment (1960)	253,292	52%
Resident Non-Man'f. Employment (1960)	359,431	37%
Disposable Personal Income (1960)	$3,572,000,000	46%
Retail Establishments (1958)	15,780	33%
Retail Sales (1960)	$2,045,000,000	42%
Property Value (1960)	$8,726,000,000	46%
Total Shared Tax (1960)	$62,777,000	54%
Total State Aids (1960)	$35,474,000	26%
Total Property Tax Levy	$239,380,000	50%
Total Long Term Public Debt	$378,592,000	55%
Total Highway (miles) (1960)	8,740.45	8.9%
Value of Mineral & Non-Metal Production (1961)	$15,494,487	20.08%
Total Vehicle Registration (1962-1963)	633,540	36.8%
Auto Vehicle Registration (1962-1963)	551,188	40%
Truck Registration (1962-1963)	55,950	23%
State Parks & Forest Areas (acres) (1963)	12,546	3.02%

KENOSHA · MILWAUKEE · OZAUKEE · RACINE · WALWORTH · WASHINGTON · WAUKESHA

SOUTHEASTERN
WISCONSIN
REGIONAL
PLANNING
COMMISSION