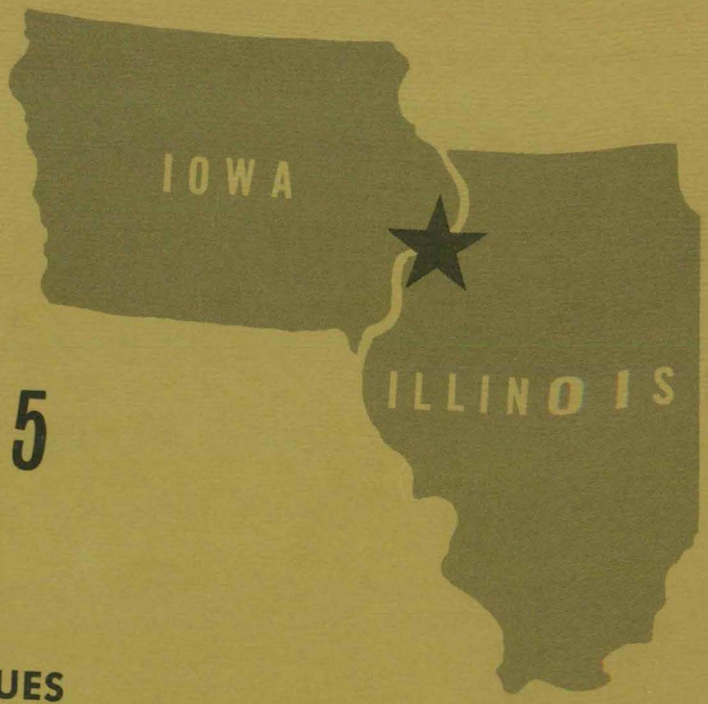
# DAVENPORT – ROCK ISLAND – MOLINE URBANIZED AREA TRANSPORTATION STUDY






## INTERIM REPORT NUMBER 5

## TRAFFIC MODEL AND ASSIGNMENT TECHNIQUES

# PRELIMINARY



DE LEUW, CATHER & COMPANY · CONSULTING ENGINEERS
CHICAGO

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Interim Report Number 5

# TRAFFIC MODEL AND ASSIGNMENT TECHNIQUES

Item 1-2

Prepared for

CITY OF DAVENPORT
CITY OF BETTENDORF
TOWN OF RIVERDALE
SCOTT COUNTY

BI-STATE METROPOLITAN PLANNING COMMISSION
IOWA STATE HIGHWAY COMMISSION

in cooperation with the

UNITED STATES DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
BUREAU OF PUBLIC ROADS

SEPTEMBER 1969

Prepared by:

DE LEUW, CATHER & COMPANY
CHICAGO, ILLINOIS

# TABLE OF CONTENTS

# CHAPTER I

## CONSOLIDATION OF ORIGIN-DESTINATION DATA

The Davenport-Rock Island-Moline Urbanized Area Transportation Study is unique insofar as it involves the consolidation of two similar--but not identical--origin-destination studies; one of which was made in 1961 and the other in 1964. It was necessary early in the study, therefore, to define some of the procedures to be used in consolidating these data. The general methodology, where it is not specifically defined in accepted manuals covering this type of work, is set forth in identical agreements entered into between the Consultant and both the Illinois and Iowa study groups. Coordination of the study has since been assigned to the Bi-State Metropolitan Planning Commission, which is composed of representatives of metropolitan area governments in both the Illinois and Iowa portions of the study area.

This chapter of the report outlines in detail the procedures used in consolidating data from the two studies to assemble a joint trip table for purposes of traffic assignment as well as to develop the various other travel summaries required in the process of calibrating a synthetic model.

## STUDY AREA AND TRAFFIC ZONE BOUNDARIES

The Iowa origin-destination study was made first in 1961. Home interview studies were made in an area encompassing most of Davenport and Bettendorf (1961 city limits) but not in the Illinois communities comprising the remainder of the metropolitan area. In retrospect, it is obvious that the Iowa Highway Commission foresaw the necessity of an areawide transportation plan. Traffic zone boundaries were drawn in portions of Rock Island, Moline, and East Moline, Illinois. Trips to and from these communities reported in the home interview and external roadside surveys made by the Iowa Highway Commission were coded to the appropriate Illinois traffic zone.

When the Illinois origin-destination study was undertaken in 1964, the Illinois Division of Highways also made a concerted effort to achieve compatibility with the earlier Iowa study. Boundaries of traffic zones in Iowa were unchanged but zone numbers were revised. It was found, however, that Illinois traffic zones defined earlier in the 1961 study were far too large for purposes of the Illinois study. In addition, the cordon line established by the Iowa Highway Commission three years earlier for the Illinois portion of the study area included less than one-half of the urbanized area within which the State was now desirous of making home interviews. An entirely new zone system was defined, therefore, in the Illinois portion of the study area.

Figure 1 shows a comparison of the traffic zone boundaries and zone numbers established in each of the origin-destination studies. Traffic zone boundaries in Iowa are identical but the zone numbers are different. It is important to note, however, that trips to and from the portion of the Illinois study area outside of the 1961 Iowa cordon line (area shaded in Figure 1) were coded only to "Rock Island County" in the 1961 study.

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## ZONE MAP

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LEGEND

*1961 IOWA O.D. STUDY*

— — — ZONE BOUNDARY

000 ZONE NUMBER

*1964 ILLINOIS O.D. STUDY*

——— ZONE BOUNDARY

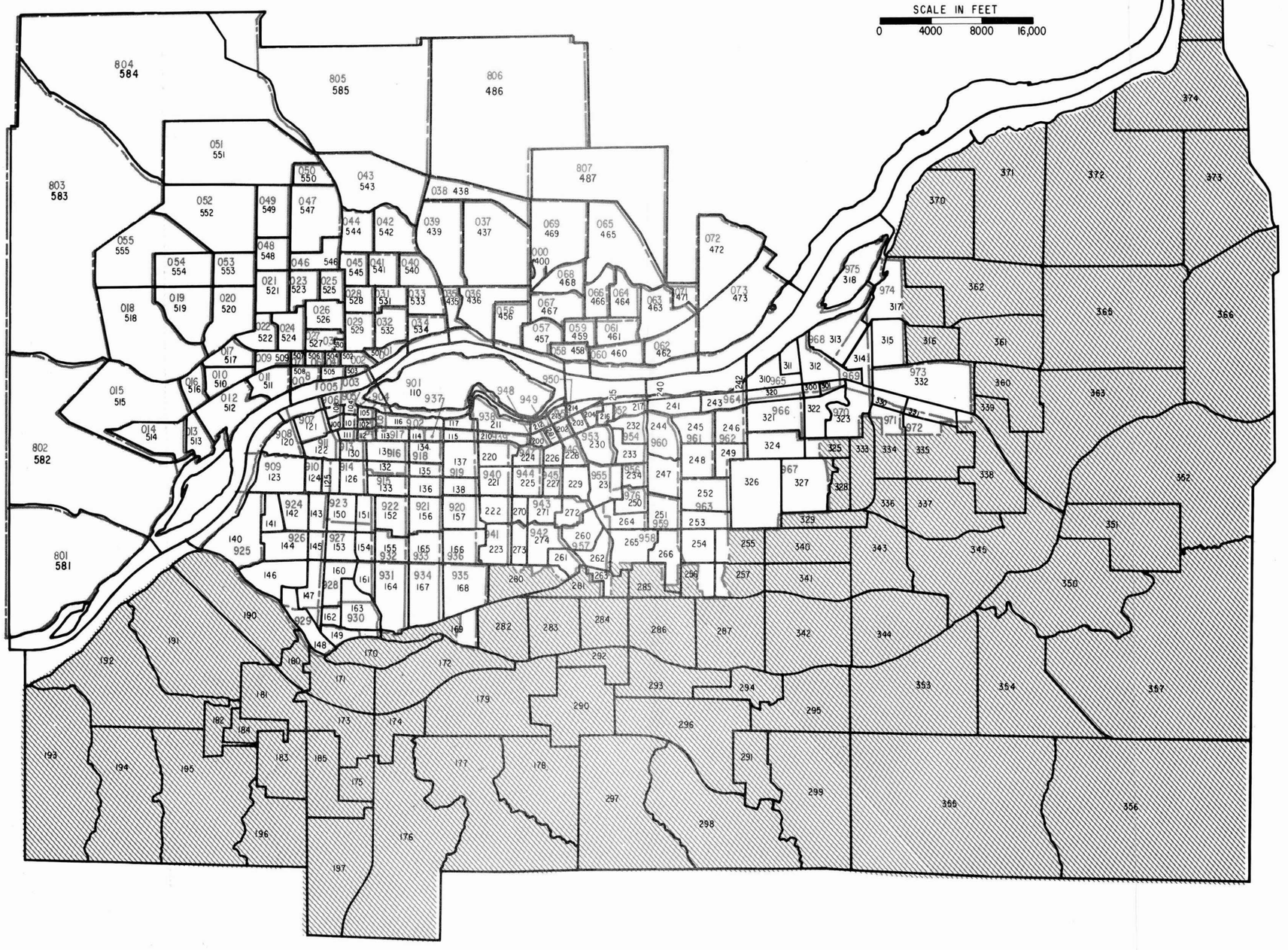
000 ZONE NUMBER

▨ AREA NOT INCLUDED IN 1961 IOWA O.D. STUDY

N

SCALE IN FEET

0 4000 8000 16,000



## BASIC DECISIONS

Recognizing that some of the study data would be incompatible, as cited earlier, it was agreed before work commenced that the following general guidelines would be followed:

a) The traffic zone system to be used in combining the survey data would be that defined in the 1964 Illinois origin-destination study. This required renumbering Iowa zones of origin and destination on 1961 trip records but no recoding of survey data was necessary.

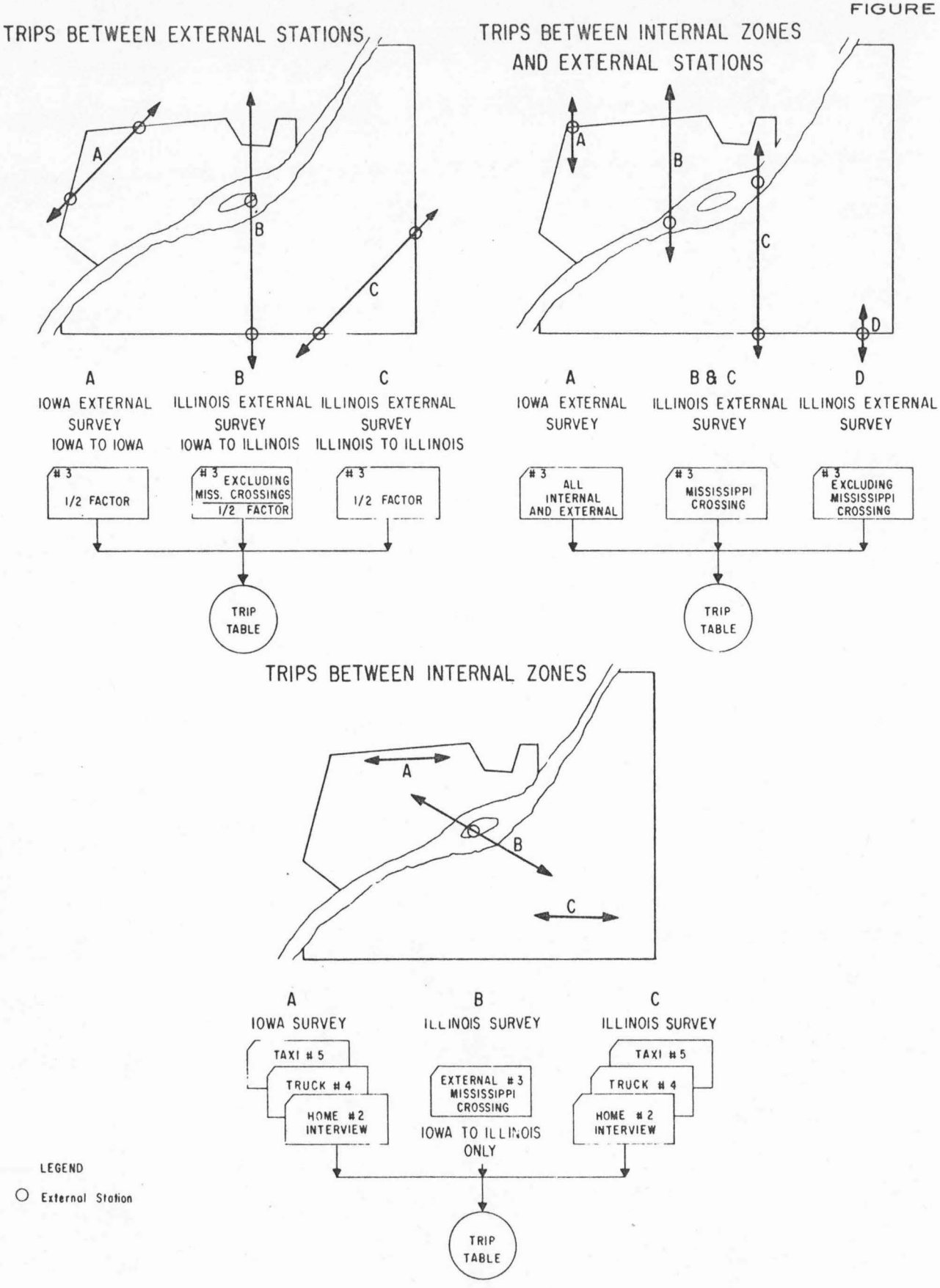
b) Trips wholly within Iowa (both internal-internal and internal-external) would be taken from the 1961 Iowa origin-destination study.

c) Trips wholly within Illinois (internal-internal and internal-external) would be taken from the 1964 Illinois origin-destination study.

d) All trips between Illinois and Iowa, whether internal-internal, internal-external, or through trips, would be taken from the 1964 Illinois external (roadside) interview studies.

Figure 2 graphically illustrates the sources of data used in consolidating the two origin-destination studies. In the figure, as

FIGURE 2

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# DATA SOURCES FOR TRIP MOVEMENTS

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well as in later discussions of survey data, the following commonly-accepted nomenclature is used in referring to various data files:

| | |
|---|---|
| Card No. 1 | Dwelling unit information |
| Card No. 2 | Internal trip report (home interview) |
| Card No. 3 | External trip report (roadside interview) |
| Card No. 4 | Truck trip report |
| Card No. 5 | Taxi trip report |

## PROCEDURES

Figure 3 is a flow chart illustrating the actual step-by-step process used in consolidating the orgin-destination data from both studies into a single trip table and a combined summary of trip productions and attractions.

The following is a brief description of various steps involved in building the trip table, including special data handling:

a) Through trips. Trips between two external stations in Iowa were taken from the 1961 Iowa external survey. Similarly, trips between two Illinois external stations were taken from the 1964 Illinois external survey. Through trips crossing the Mississippi River (trips between an Illinois external station and an Iowa external station) were taken from the Illinois external survey. The latter required special handling, however, since Illinois survey data indicated which Mississippi River bridge was crossed and the zone of origin or destination in Iowa but did not show the external Iowa station to which the trip now had to be assigned. Through trips between Iowa and Illinois were manually allocated to Iowa external stations, therefore, based on the zone of origin or destination in Iowa and taking into consideration the volume of traffic at each Iowa external station reported

in the 1961 study. All through trips had been "half factored" by the respective highway departments before these data were given to the Consultant. Half factoring is required since each through trip would theoretically have been intercepted at two external stations.

b) Trips Between Internal Zones and External Stations. Trips between internal zones and external stations in Iowa were taken from the 1961 Iowa external survey. Traffic zone numbers in Iowa were recoded to the Illinois zone numbering system. Trips between internal zones and external stations in Illinois were taken from the Illinois external survey. Trips between internal Iowa zones and Illinois external stations were taken from the Illinois external survey, as were trips between internal Illinois zones and external stations in Iowa. For the latter, however, it was necessary to manually assign the external station numbers in Iowa, as before, based on location of the trip end and the recorded traffic volume through each external station in Iowa.

c) Trips Between Internal Zones. Trips between two internal traffic zones in Illinois were taken from the 1964

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# CONSOLIDATION OF SURVEY DATA

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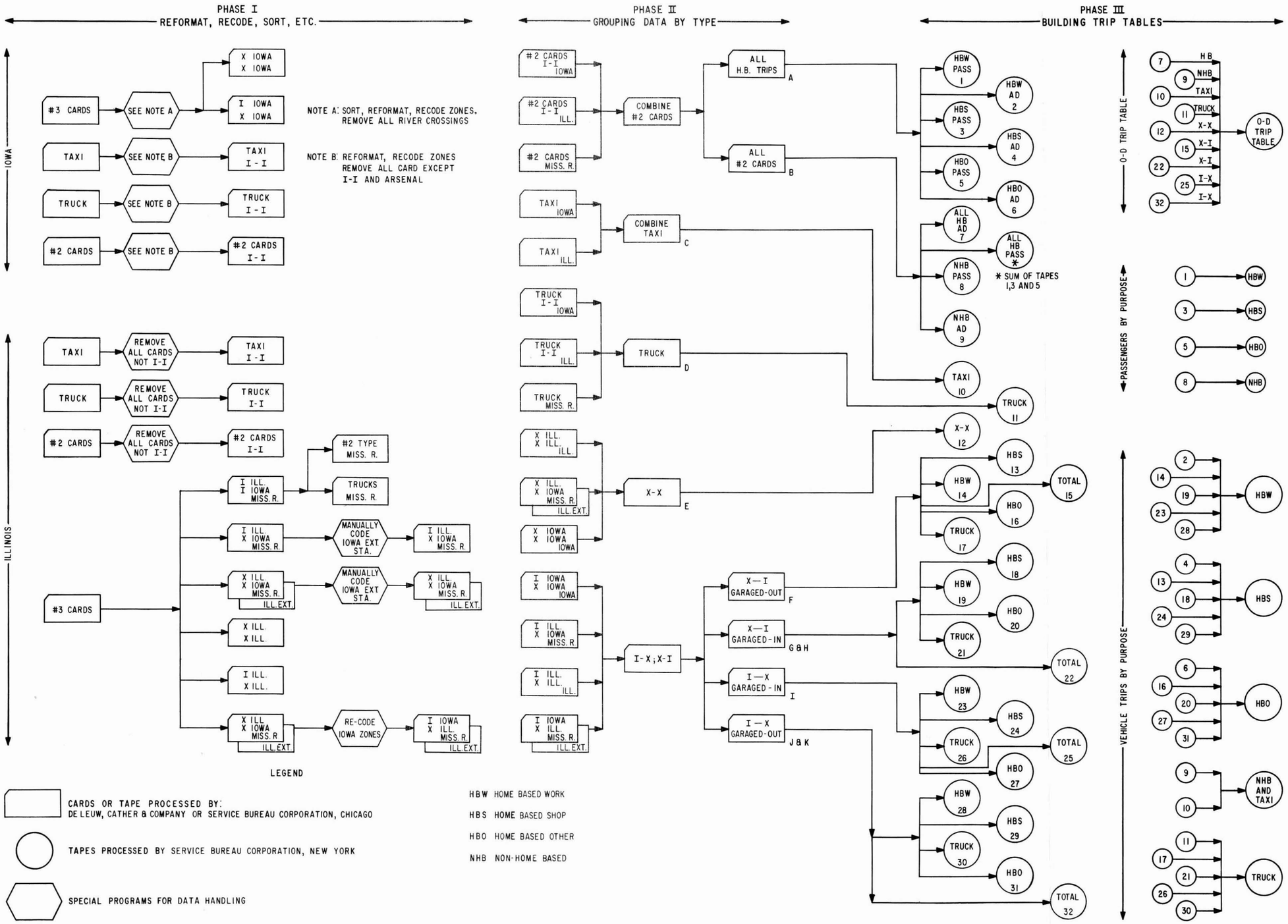

Illinois home interview survey. Trips between two internal zones in Iowa were taken from the 1961 Iowa home interview survey. Iowa survey data were recoded to the Illinois zone numbering system. Trips between an internal zone in Iowa and an internal zone in Illinois were obtained from external roadside interviews made in 1964 at bridges across the Mississippi River.

The procedures described above resulted in a combined origin-destination vehicular trip table, as shown in the upper right-hand corner of Figure 3. This trip table, which was intended for use in traffic assignment, is in "true" origin-destination form rather than in terms of productions and attractions. The latter would have required a theoretical split of zone-to-zone interchanges (usually 50/50) which is an accepted procedure but is less desirable than a true origin to destination distribution in comparing actual and assigned traffic volumes.

Most procedures used in determination of productions and attractions and in stratification of trips by category for model development exactly followed those specified in the various technical manuals. Clarification is warranted, however, with regard to the two following classifications of trips:

A. External-Internal Trips. External stations were treated as fictitious traffic zones which both produce and attract trips. Data from both the Iowa and Illinois external (roadside) studies indicated whether the vehicle was

owned or garaged inside or outside of the cordon line. Determination of whether trips through external stations were productions or attractions at the cordon line crossing was based on the location at which the vehicle was owned or garaged. Trips by vehicles owned or garaged outside of the study area were considered productions at the external station and trips by vehicles owned or garaged within the study area were considered attractions at the external station. Since external interviews in both the Illinois and Iowa surveys indicated only the single primary purpose, rather than "purpose from" and "purpose to," all external-internal auto trips were categorized as "home based."

B. Internal Travel Between Illinois and Iowa (Mississippi River Crossings). As described earlier, it was agreed at the outset of the study that internal travel between Illinois and Iowa would be determined from 1964 Illinois external surveys made at Mississippi River bridges. It was necessary to re-format these data and re-number Iowa internal zones but, otherwise, this presented no problem in building the origin-destination trip table.

Determination of the zone of production or attraction of trips crossing the Mississippi River was made on

the basis of the location at which the vehicle was owned or garaged. This was recorded in the survey as follows:

1. Within cordon[1]
2. Outside cordon at origin
3. Outside cordon at destination
4. Other

Trips falling in category one above were considered to be produced in Illinois and attracted to Iowa. Those in categories two and three were treated as productions in Iowa and attractions in Illinois. Trips by vehicles in category four were assumed to be produced at the origin zone and attracted at the destination zone.

Non-home based trips by Iowa residents, by definition, would have fallen into category four above. There were 803 auto driver trips in this category. After intensive study of data available, however, it was concluded that a further stratification of trips by Illinois residents into classifications of home based and non-home based was impractical.[2] While it was recognized that some

(1)-Cordon refers to boundary of Illinois internal study area.
(2)-Only primary purpose of travel was obtained in the roadside surveys, rather than "purpose from" and "purpose to."

trips across the river by Illinois residents were non-home based, there were no data on the trip record which could be used to distinguish these from home based travel. A distinction, if made, would have been based largely on broad assumptions with little factual basis.

Assuming that the proportion of non-home based to home based travel by Illinois residents was similar to that for Iowa residents, there would have been, at most, 2000 non-home based trips by Illinois residents crossing the Mississippi River. Of all other internal-internal auto trips, approximately 343,000, or 72 percent, were home based and only 102,000, or 28 percent, were non-home based. It was decided, therefore, that the safest assumption under the circumstances was that all trips by Illinois residents crossing the Mississippi River were home based. This offered the least likelihood of causing an error which would have a significant effect in the trip generation or distribution models.

Classification of internal-internal auto trips crossing the Mississippi River based on the procedure described above follows:

| | Number of Auto Trips |
|---|---|
| Home Based Work | 14,430 |
| Home Based Shop | 2,523 |
| Home Based Other | 12,015 |
| Non-Home Based | 803 |
| Total | 29,771 |

## TRIP TABLE SUMMARIES

Daily vehicle trips by type obtained from the joint trip table and developed in true origin-destination form are as follows:

| Type of Trip | Number of Vehicle Trips |
|---|---|
| Auto driver (internal-internal) | 477,206 |
| Taxi (internal-internal) | 5,673 |
| Truck (internal-internal) | 65,122 |
| Internal-external | 29,641 |
| External-internal | 30,934 |
| Through trips | 4,915 |
| Total | 613,491 |

Total daily vehicle and person trips by purpose in categories required for model calibration are as follows:

| Classification | Number of Vehicle Trips | Number of Person Trips |
|---|---|---|
| Home based work | 124,331 | 161,108 |
| Home based shop | 74,608 | 117,062 |
| Home based other | 232,955 | 407,005 |
| Non-home based | 102,852 | 146,582 |
| Truck trips | 73,798 | - |
| Through trips | 4,915 | - |
| Total | 613,459(1) | 831,757 |

(1)-Differences between vehicle trips by type and by purpose are due to rounding.

# CHAPTER II

## TRAFFIC ASSIGNMENT

Traffic assignment is an important and complex phase of the transportation planning process. It provides the engineer with a systematic and reproducible technique that enables him to predict the probable traffic loads on each segment of a transportation network. The economic and operational impact of various system designs can be compared and evaluated and, after proper analyses, the results may be utilized to prescribe changes that would improve the system.

Traffic assignment may be defined as the process of allocating a given set of trip interchanges to a specific transportation system.[1] Although the process may be used to estimate the traffic loads on various sections of a system for a future year, the procedures are identical for simulation of present conditions. The two inputs to the traffic assignment process are (1) a complete description of the transportation system, and (2) a trip volume matrix of the interzonal traffic movements.

The traffic assignment procedure is based essentially on the selection by an electronic computer of a minimum time-path between

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(1)-Traffic Assignment Manual, U. S. Department of Commerce, Bureau of Public Roads, Office of Planning, Urban Planning Division, Washington, D. C., June 1964.

zones. To accomplish this task, a description of the network is coded, keypunched, and stored in the memory of the computer. After selecting the minimum time-path between zones, the computer proceeds to assign the trips to these routes. Traffic volumes are thus calculated for each route section.

For coding purposes, the route sections are considered to be the one-way part of a route lying between two intersections. They are referred to as "links." Intersections are points at which two or more route sections meet, allowing the possibility of a change in the travel direction. The intersections are referred to as "nodes." The nodes at which trips are generated are called "centroids." There is one centroid for each traffic assignment zone and external station in the study area.

The selection of the quickest route from each zone to all others is the key to the assignment procedure. A minimum time-path is the shortest route from one centroid to another centroid. This route is determined by the computer. All minimum time-path routes from one centroid to all others are referred to as a "tree."

Using the minimum time-path route and the trip volume matrix of interzonal traffic movements, the computer loads the trips on the individual route sections comprising the minimum path routes between zones. The procedure is repeated sequentially until all trips from all centroids have been loaded on the route sections. At this point it is possible to examine the loads on each section and, if necessary, adjust the assignment network.

## NETWORK SYSTEM

The street or network system was based on the 1961-1964 functionally classified street system developed by the participating governmental agencies and the Consultant and subsequently approved by the Technical Committee.[1] All freeways, expressways and major and collector streets were included in the system. Local streets were added as necessary to fill gaps which otherwise would have distorted assigned travel patterns.

A map showing traffic zones in the internal study area was presented earlier (Figure 1). The traffic assignment process requires that all zones be numbered consecutively, starting with one, and arranged in low to high order with the external survey stations represented by numbers at the high order end of the list. Zones and external stations were renumbered, therefore, before coding the assignment network. Table A-1 in the Appendix is a zone-centroid equivalent table showing the corresponding centroid number for each traffic zone and external station. A block of numbers falling between the

(1)-Functional classification of streets and highways in the study area is described in detail in interim reports entitled "Transportation Facilities Inventory," for both the Illinois and Iowa portions of the study area.

highest numbered internal zone and the lowest numbered external station was reserved for future traffic zones to be incorporated later into the Iowa portion of the study area as well as for later subdivision of existing zones, if necessary.

The traffic assignment process requires that each zone be represented by a centroid located at the approximate center of the trip ends for that area. All trips to and from each traffic zone are loaded onto the network from the centroid. The approximate centroid of each traffic zone was determined through local reconnaissance and use of aerial photography.

Each street intersection on the network system was represented by a node and given a number according to the procedures required by the traffic assignment programs. Table 1 shows the range of numbers given centroids and nodes in various locations and for different functional classifications of streets and highways.

Distances between nodes were scaled from the most accurate maps available for each jurisdiction in the study area. Travel times on each link were calculated from field surveys made in other phases of the study. The travel times used represent a weighted average of peak and off-peak driving speeds. Travel time on streets not covered in the field surveys were approximated from those on other routes of similar character. Travel times on centroid connectors were estimated on the basis of the type of area in which each zone was located.

TABLE 1

RANGE OF CENTROID AND NODE NUMBERS

| | |
|---|---|
| **Centroids** | |
| Internal Zones (Illinois) | 1-217 |
| Internal Zones (Iowa) | 218-290 |
| Intermediate Zones (Iowa) | 291-297 |
| Numbers Reserved for Future Zones | 298-320 |
| External Stations (Iowa) | 321-339 |
| External Stations (Illinois) | 340-355 |
| **Arterials and Collectors** | |
| Rock Island | 400-799 |
| Moline | 800-1199 |
| East Moline | 1200-1399 |
| Rock Island and Henry County | 1400-1999 |
| Iowa Study Area | 2000-3499 |
| **Freeways** | |
| Entire Study Area | 3500-3999 |

Speeds assigned to centroid connectors ranged from 5 to 20 miles per hour with an average of about 10 miles per hour.

Each link in the system was coded with the required data as shown in Figure 4.

The traffic assignment system was then built through use of a series of programs developed by the Bureau of Public Roads for transportation studies. A flow diagram illustrating the sequence of all programs used during the traffic assignment process is shown in Figure 5. Following is a brief description of programs used in the building and checking of the traffic assignment network.

PR-6--Build Network Description

This program converts the link data cards into a binary record for use by the other traffic assignment programs. The program also edits these data for various types of errors and the indicated errors can be corrected on the link data card deck.

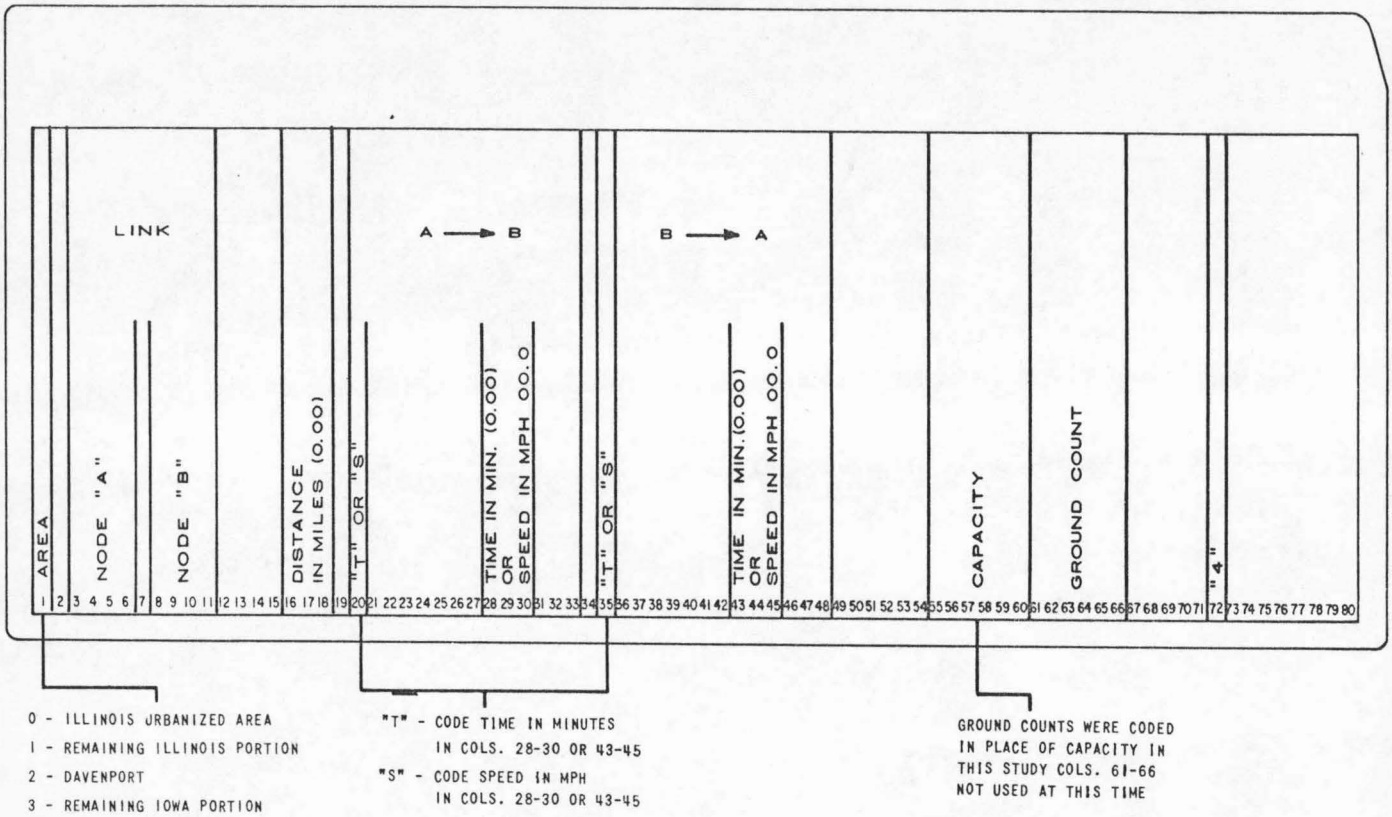
PR-12--Format Link Data

This program prints the network description each time PR-6 is run. Analysis of each link or node is easily accomplished from the printout, a sample of which is shown in Figure 6.

PR-1--Build Trees

This program determines the minimum time-path from one centroid to all other centroids. Trees can be built for a few centroids to check the routings on a system or all trees can be built.

# TRAFFIC ASSIGNMENT NETWORK DESCRIPTION CARD LAYOUT

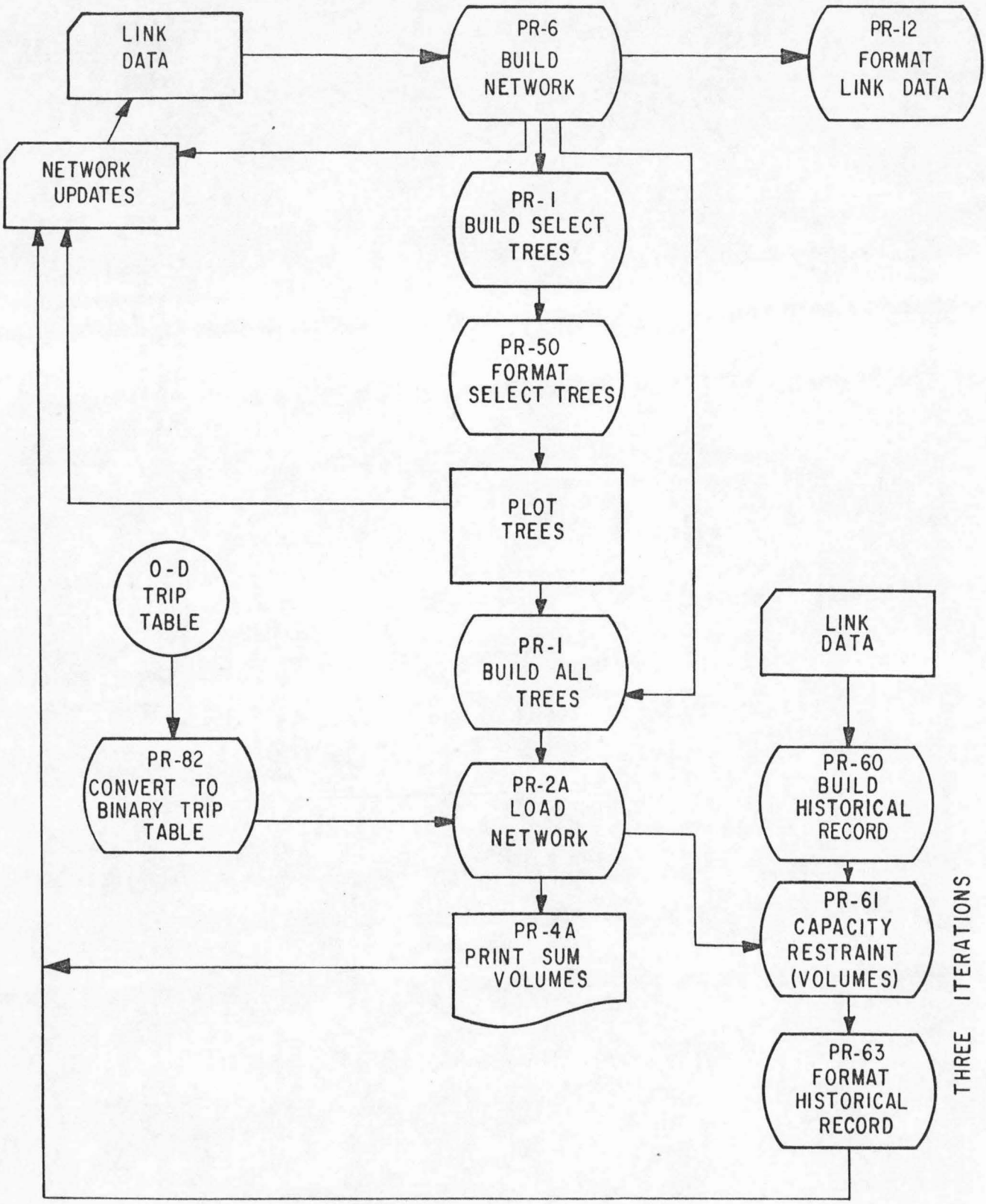



0 - ILLINOIS URBANIZED AREA
1 - REMAINING ILLINOIS PORTION
2 - DAVENPORT
3 - REMAINING IOWA PORTION

"T" - CODE TIME IN MINUTES IN COLS. 28-30 OR 43-45
"S" - CODE SPEED IN MPH IN COLS. 28-30 OR 43-45

GROUND COUNTS WERE CODED IN PLACE OF CAPACITY IN THIS STUDY COLS. 61-66 NOT USED AT THIS TIME

FIGURE 5




TRAFFIC ASSIGNMENT PROGRAMS

# FIGURE 6

# SAMPLE OUTPUT OF IBM 7090/7094 TRAFFIC ASSIGNMENT PROGRAMS

DRIM TRAV STUDY 08/23/67 LINK DATA

| NODE | J NODE SF | D | T | V | J NODE SF | D | T | V | J NODE SF | D | T | V | J NODE SF | D | T | V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1605) | 1(1604) | 100 | 155 | 39 | 1(1495) | 50 | 80 | 38 | 1(1489) | 45 | 70 | 39 | | | | |
| (1606) | 1(1427) | 115 | 175 | 39 | 1( 352) | 0 | 0 | -- | | | | | | | | |
| (1607) | 1(1608) | 70 | 105 | 40 | 1( 353) | 0 | 0 | -- | | | | | | | | |
| (1608) | 1(1607) | 70 | 105 | 40 | 1(1425) | 15 | 30 | 30 | 1(1424) | 75 | 90 | 50 | | | | |
| (1609) | (2146) | 35 | 110 | 19 | ( 590) | 10 | 35 | 17 | | | | | | | | |
| (1610) | (1402) | 5 | 25 | 12 | (1400) | 5 | 25 | 12 | | | | | | | | |
| (1611) | (1402) | 5 | 25 | 12 | (1401) | 5 | 20 | 15 | | | | | | | | |
| (1612) | (2327) | 20 | 110 | 11 | ( 588) | 25 | 120 | 13 | | | | | | | | |
| (1613) | (1464) | 70 | 190 | 22 | (1457) | 95 | 285 | 20 | | | | | | | | |
| (1614) | (1401) | 40 | 170 | 14 | ( 7) | 10 | 50 | 12 | | | | | | | | |
| (1615) | ( 987) | 45 | 205 | 13 | ( 7) | 45 | 180 | 15 | | | | | | | | |
| (1616) | 1(1432) | 25 | 80 | 19 | 1(1419) | 20 | 50 | 24 | 1(1418) | 35 | 85 | 25 | 1( 60) | 10 | 50 | 12 |

## PR-12 LINK DATA

TREE NO. 122 RANS STUDY 1964 NETWORK MAR 1967 WR 1011 1

| NODE | TIME | NODE | TIME | NODE | TIME | NODE | TIME | NODE | TIME | NODE | TIME | NODE | TIME |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 17.55 | 419 | 17.55 | 420 | 17.35 | 421 | 17.05 | 422 | 16.90 | 423 | 16.75 | 424 | 16.45 |
| 425 | 16.00 | 426 | 15.55 | 437 | 15.25 | 438 | 14.85 | 448 | 14.60 | 449 | 14.00 | 450 | 13.45 |
| 451 | 13.10 | 592 | 12.80 | 458 | 12.60 | 459 | 12.35 | 460 | 12.00 | 833 | 11.20 | 834 | 11.05 |
| 835 | 10.40 | 836 | 10.20 | 837 | 9.90 | 858 | 9.65 | 881 | 9.40 | 882 | 8.85 | 883 | 8.70 |
| 884 | 8.20 | 885 | 7.95 | 886 | 7.70 | 887 | 7.25 | 900 | 6.55 | 914 | 6.15 | 933 | 5.30 |
| 953 | 4.50 | 954 | 3.80 | 955 | 3.50 | 956 | 2.70 | 957 | 1.95 | 958 | 1.20 | 122 | .00 |
| 2 | 16.75 | 433 | 16.75 | 434 | 16.50 | 435 | 16.25 | 436 | 15.75 | 437 | 15.25 | | |
| 3 | 15.75 | 436 | 15.75 | | | | | | | | | | |

## PR-50 FORMAT OF TREES

HISTORICAL RECORD OF TRAFFIC ASSIGAMENTS DRIM TRAV STUDY 08/04/67

| | | INPUT DATA | | | | TRIAL 1 | | | TRIAL 2 | | | TRIAL 3 | | | TRIAL 4 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NODE A | NODE B | COUNT CAPACITY | DIST | TIME | SPEED | ASGND VOL | SPEED AT ASGND VOL | SPEED FOR NEXT TRIAL | ASGND VOL | SPEED AT ASGND VOL | SPEED FOR NEXT TRIAL | ASGND VOL | SPEED AT ASGND VOL | SPEED FOR NEXT TRIAL | ASGND VOL | SPEED AT ASGND VOL | SPEED FOR NEXT TRIAL |
| 415 | 427 | 9000 | .08 | .25 | 19.0 | 4601 | 19.2 | 19.2 | 3638 | 20.8 | 19.2 | 4306 | 20.0 | 19.2 | | | |
| 427 | 415 | 9000 | .08 | .25 | 19.0 | 4361 | 19.2 | 19.2 | 3636 | 20.8 | 19.2 | 4093 | 20.0 | 19.2 | | | |
| 415 | 439 | 1650 | .31 | .93 | 20.0 | 434 | 21.1 | 20.2 | 1141 | 16.6 | 19.1 | 434 | 22.4 | 19.7 | | | |
| 439 | 415 | 1650 | .31 | .93 | 20.0 | 1005 | 21.1 | 20.2 | 938 | 16.6 | 19.1 | 620 | 22.4 | 19.7 | | | |
| 416 | 417 | 3800 | .23 | .66 | 21.0 | 954 | 24.2 | 21.5 | 990 | 24.2 | 22.2 | 1113 | 24.2 | 22.6 | | | |
| 417 | 416 | 3800 | .23 | .66 | 21.0 | 159 | 24.2 | 21.5 | 167 | 24.2 | 22.2 | 243 | 24.2 | 22.6 | | | |

## PR-63 HISTORICAL RECORD OF CAPACITY RESTRAINT

DRIM TRAV STUDY 0 DIRECTIONAL

| ANODE | BNODE | VOLUME | BNODE | VOLUME | BNODE | VOLUME | BNODE | VOLUME |
|---|---|---|---|---|---|---|---|---|
| 909 | ( 927) | 470 | ( 910) | 521 | ( 908) | 337 | ( 898) | 398 |
| | NONDIR | 546 | | 1180 | | 543 | | 1183 |
| 910 | ( 928) | 3754 | ( 911) | 6051 | ( 909) | 659 | ( 883) | 6247 |
| | NONDIR | 8835 | | 11644 | | 1180 | | 11763 |
| 911 | ( 912) | 5661 | ( 910) | 5593 | ( 102) | 2969 | | |
| | NONDIR | 11205 | | 11644 | | 5597 | | |
| 912 | ( 930) | 698 | ( 913) | 5597 | ( 911) | 5544 | ( 899) | 230 |
| | NONDIR | 1070 | | 11190 | | 11205 | | 673 |
| 913 | ( 914) | 5278 | ( 912) | 5593 | ( 105) | 1045 | ( 104) | 1994 |
| | NONDIR | 10212 | | 11190 | | 2113 | | 4305 |
| 914 | ( 933) | 11864 | ( 915) | 1396 | ( 913) | 4934 | ( 900) | 10582 |
| | NONDIR | 24004 | | 3004 | | 10212 | | 20332 |
| 915 | ( 934) | 1090 | ( 916) | 306 | ( 914) | 1608 | | |
| | NONDIR | 2273 | | 731 | | 3004 | | |
| 916 | ( 917) | 306 | ( 915) | 425 | ( 106) | 0 | | |
| | NONDIR | 731 | | 731 | | 0 | | |

## PR-4A LOADED NETWORK

The total number of trees in the initial traffic assignment system was 332, including external stations.

PR-50--Format Selected Trees

Selected trees are printed for analysis through use of this program. A sample of the computer printout is shown in Figure 6. The following seven sample trees were built and formatted for analyses: 1, 85, 159, 202, 227, 242, and 286. These minimum time-path trees were plotted on copies of the traffic assignment network. The tree traces were then examined to insure that the path of travel from the "home" centroid to all other centroids in the network formed logical routings. They were used, in addition, to uncover errors in the network which were then corrected. Figures 7 and 8 are examples of the minimum time-path tree trace over the existing street and highway network from centroid 85 (downtown Moline) and centroid 242 (downtown Davenport), respectively.

FIGURE 7

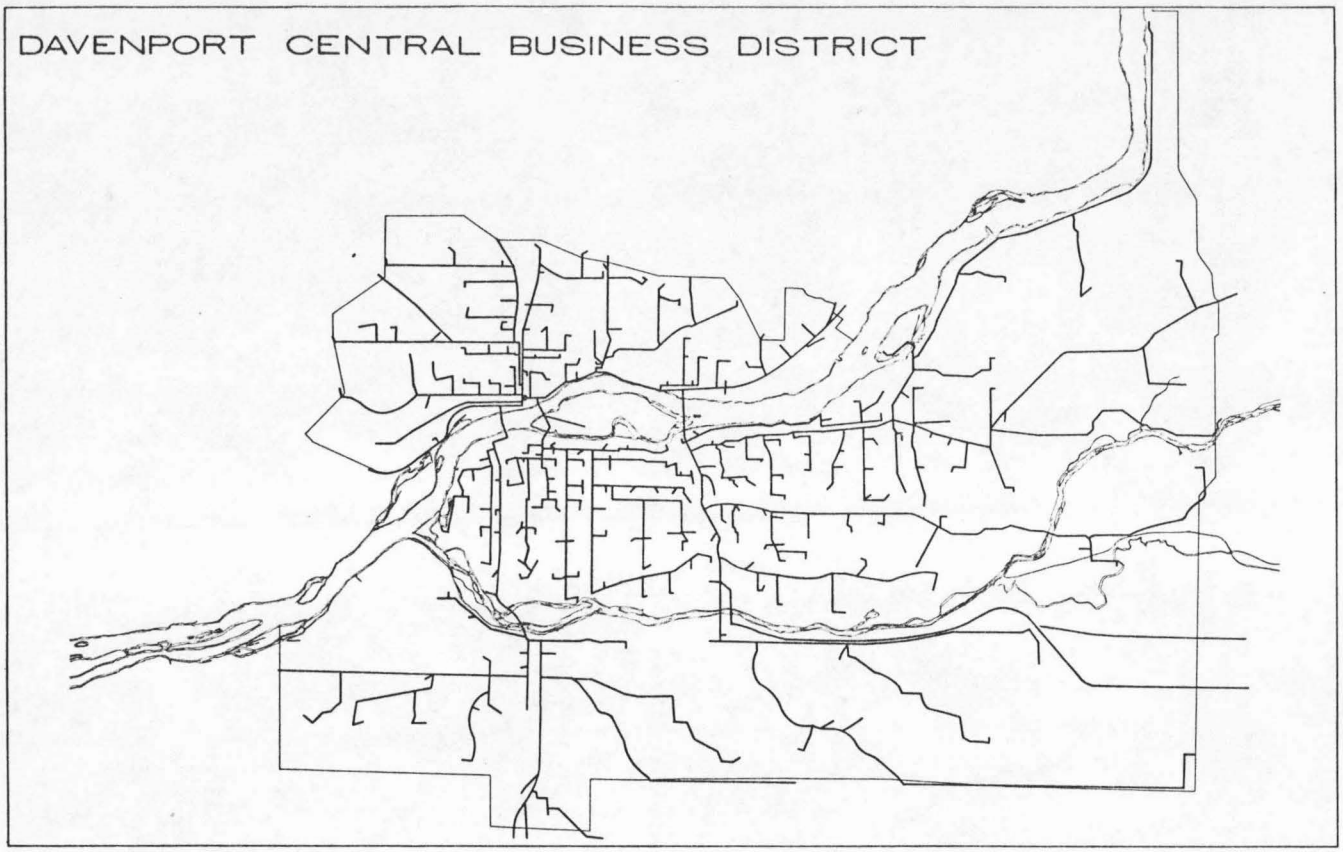
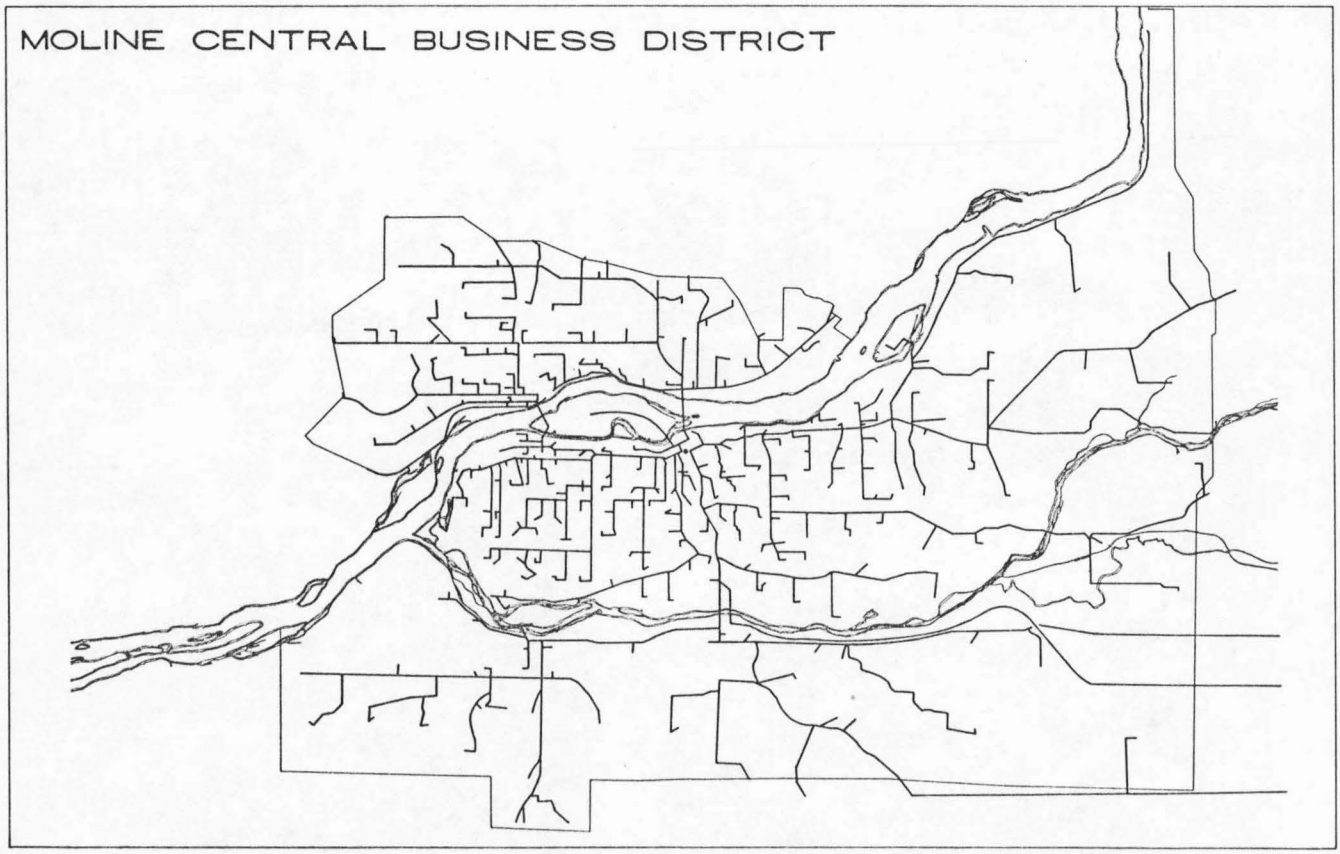



FIGURE 8




DAVENPORT · ROCK ISLAND · MOLINE
URBANIZED AREA TRANSPORTATION STUDY
MINIMUM TRAVEL TIME PATH TRACE
DE LEUW, CATHER & COMPANY · CONSULTING ENGINEERS · CHICAGO

## INITIAL TRAFFIC ASSIGNMENT

Upon completion of coding and checking the traffic assignment network, trips from the consolidated 1961-1964 origin-destination studies (see Chapter I) were loaded onto the system. The standard Bureau of Public Roads programs used in this phase of the study are described briefly below.

PR-82--Build Trip Volumes

The vehicular trips obtained from the O-D survey were converted into a trip table in binary form. This trip table is often referred to as "Memory J."

PR-2A--Load Minimum Paths

This program loads the trips on all trees. The product of this program is referred to as the "Loaded Network" and is ready for various types of analyses.

PR-4A--Sum Volumes and Turns

This program produces the printout, shown in Figure 6, which indicates the volumes of trips by direction of travel for each link. It is automatically run after completion of Program PR-2A described above and at the user's option will also indicate the turns at each node. In preliminary calibration of the traffic assignment

network, however, only directional and non-directional volumes on each link were printed. Program PR-4A also gives a summary of vehicle-miles and vehicle-hours by street and area classification.

## ADJUSTMENT OF THE ASSIGNMENT NETWORK

The purpose of adjusting the assignment network is to calibrate the system to simulate actual conditions. This calibration simply means that the "Assignment Model" must be adjusted so that it can reproduce the vehicular travel that is taking place on the existing transportation network as accurately as possible. It is then assumed that the same type of assignment procedure may be used to allocate projected trip interchanges to a future transportation system in a reasonable manner. This adjustment is accomplished by changing the speeds (and thereby the time) on links until a reasonable match is obtained.

The adjustment of link speeds can be made either manually, by carefully examining assigned link volumes and corresponding ground counts and estimating the speed change that should be made on each link, or by using a computerized technique referred to as "Capacity Restraint." After inspection of the initial assignment, it was decided that most adjustments could be made efficiently through means of manual alterations to the network. The capacity restraint technique was used as an intermediate step in the adjustment process. Actual counted volumes were substituted for capacity, however, since the purpose of the adjustment was to develop a network which would

simulate actual counted traffic volumes rather than one which would assign travel according to the present capacity of existing streets and highways. A total of ten assignments were made, three of which were included in one series of volume restraint.

Table 2 summarizes daily vehicle-hours and vehicle-miles of travel for the initial and adjusted traffic assignment networks. A local street as shown in Table 2 is actually the hypothetical link from a centroid to the arterial system. The vehicle-miles and vehicle-hours of travel on local streets, therefore, are approximate figures. The table shows that the travel time, miles and average speed for local streets is relatively low. Arterial streets in the table include both collectors and arterials as determined from functional classification of the system. Arterial streets account for most of the time and miles of travel--about 85 percent. Ramps are the links between the arterials and the freeways and expressways. As expected, the time and miles of travel on ramps were small in comparison to the other street classifications. Freeways and expressways with their faster speeds developed a higher percent of the vehicle-miles of travel and a relatively lower percent of the vehicle-hours of travel.

Table 2 also shows the average speed by street classification both before and after adjustment. The adjustments resulted in a decrease of approximately nine percent in average speed over the total system.

TABLE 2

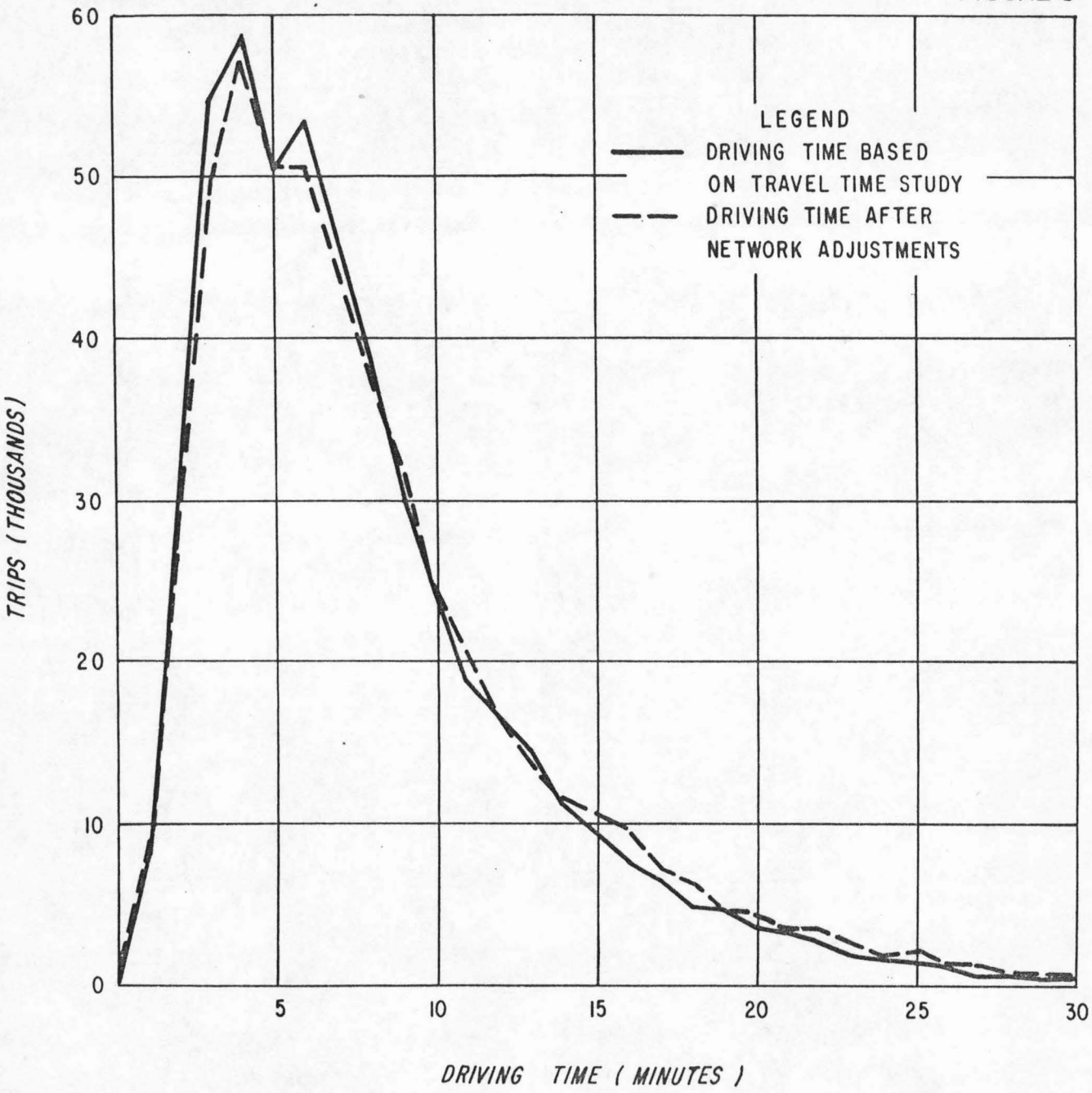
SUMMARY OF DAILY VEHICLE-HOURS AND VEHICLE-MILES OF TRAVEL FOR UNRESTRAINED AND ADJUSTED NETWORKS

| Street Classification | Vehicle-Hours | | Vehicle-Miles | | | Average Speed (Miles per Hour) |
|---|---|---|---|---|---|---|
| | Number | Precent | Number | Percent | | |
| Unrestrained Network | | | | | | |
| Local | 11,343 | 14.3 | 122,859 | 5.9 | | 10.83 |
| Arterial* | 66,053 | 83.0 | 1,836,811 | 88.9 | | 27.81 |
| Ramps | 836 | 1.0 | 33,042 | 1.6 | | 39.52 |
| Freeways and Expressways | 1,364 | 1.7 | 74,284 | 3.6 | | 54.46 |
| Total | 79,596 | 100.0 | 2,066,996 | 100.0 | | 25.97 |
| Adjusted Network | | | | | | |
| | | | | | 1985 VMT | |
| Local | 14,360 | 16.5 | 124,542 | 6.0 | 267,799 | 8.67 |
| Arterial* | 71,132 | 81.7 | 1,854,030 | 90.0 | 3,360,684 | 26.06 |
| Ramps | 521 | 0.6 | 21,434 | 1.1 | 85,550 | 41.14 |
| Freeways and Expressways | 1,032 | 1.2 | 58,964 | 2.9 | 1,269,935 | 57.13 |
| Total | 87,045 | 100.0 | 2,058,970 | 100.0 | 4,983,968 | 23.65 |

*-Includes collectors

Figure 9 illustrates the number of vehicle trips by one-minute increments based on driving time from the initial speed study and after adjustments were made. The average vehicular trip after network adjustment took 9.1 minutes and was 3.58 miles in length. For through trips only the portion within the internal study area is included. In addition, the summary is based on driving time only and does not include terminal time such as walking to the car or looking for a parking space.

FIGURE 9




# VEHICLE TRIP DRIVING TIME DISTRIBUTION-INTERNAL TRIPS

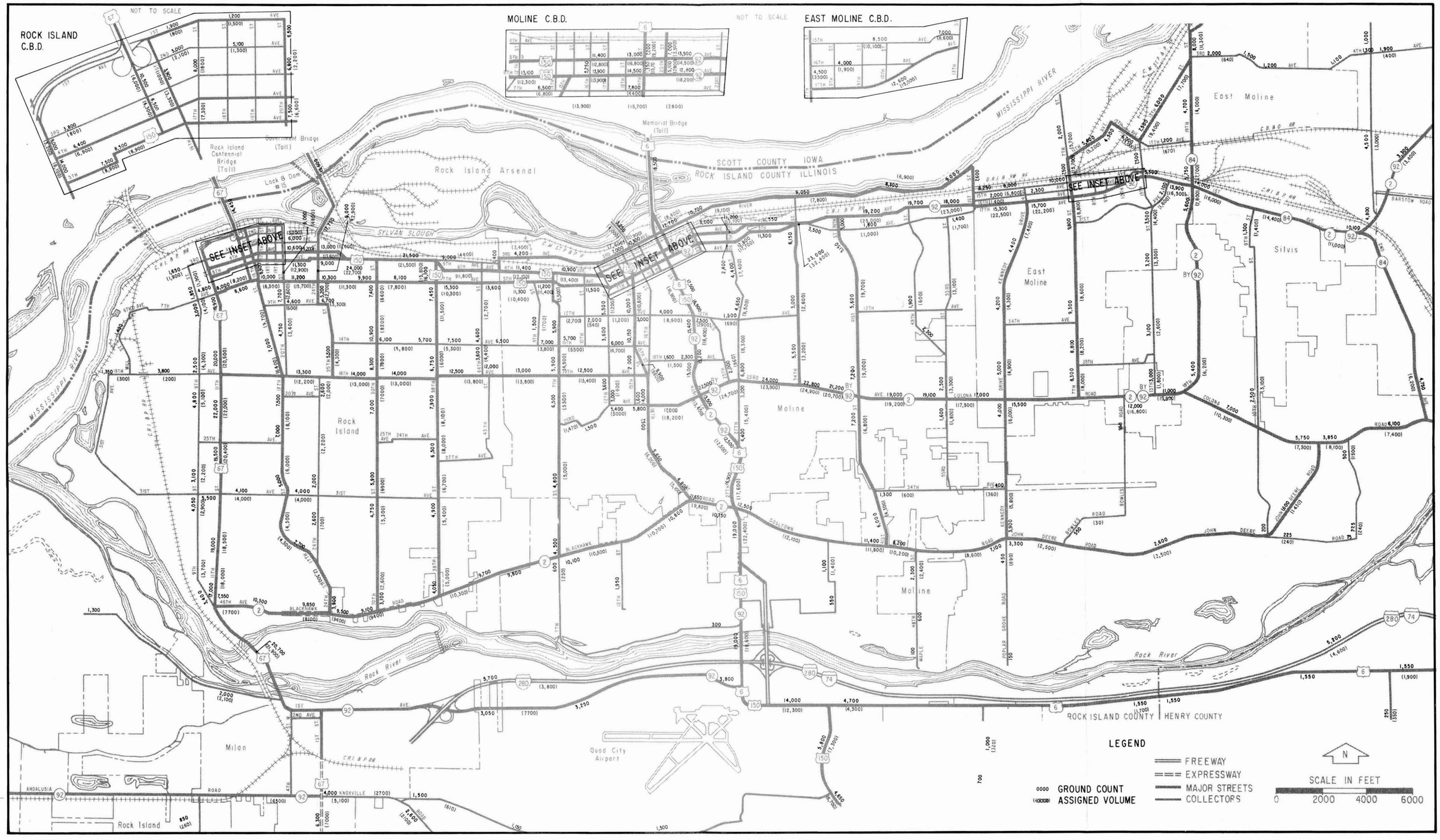
## ANALYSIS OF THE ADJUSTED ASSIGNMENT NETWORK

In general, three methods were used in analysis of the effectiveness of the adjusted assignment network in simulating actual traffic counts. These were:

1. Visual comparison of assigned and counted traffic on a map of the area;
2. Comparison of assigned and counted traffic across screen lines; and
3. Statistical analyses to determine the deviation of assigned and counted traffic by volume groups.

Figures 10 and 11 show a comparison of assigned and counted traffic (after network adjustments) on the street system in the study area. Extensive coverage counts were made in 1964 on the functionally classified street system in the Illinois portion of the study area. Direct comparison of actual to assigned traffic could be made on almost all segments of the system. See Figure 10. The 1961 counts in the Iowa portion of the study area were less complete, however, and afforded fewer opportunites for direct comparison. See Figure 11.

With some relatively minor exceptions, the traffic assignment corresponds well with ground counts. The discrepancies may be a result of the "all-or-nothing" traffic assignment process which allocates all trips between two traffic zones to the single minimum time-path.

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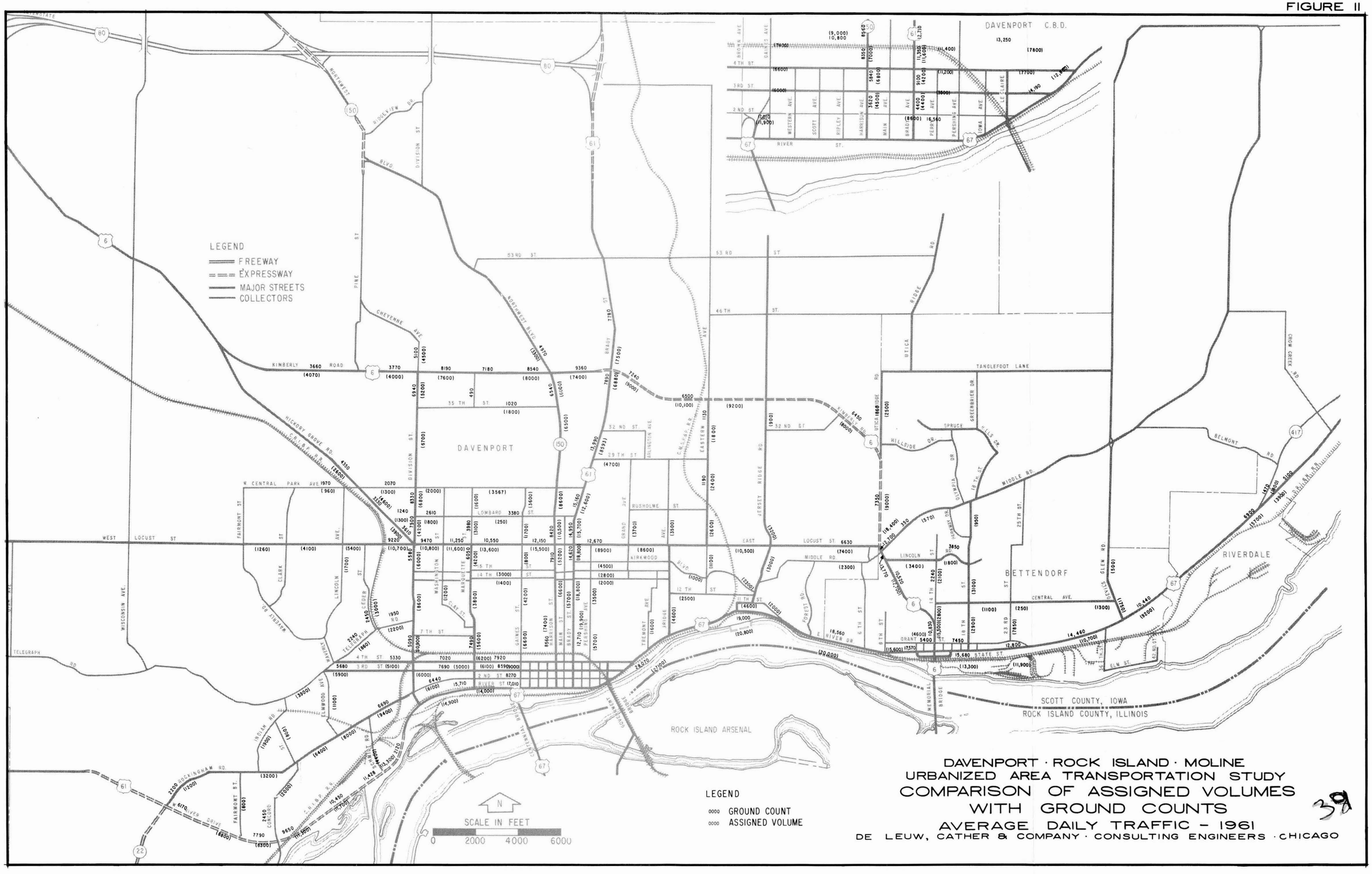
# COMPARISON OF ASSIGNED VOLUMES WITH GROUND COUNTS
AVERAGE DAILY TRAFFIC - 1964

There are also wide fluctuations in assigned traffic where trips are loaded into or out of a centroid at a single point. It is also possible, of course, that origin-destination data may be slightly in error in particular segments of the system or that ground counts may not be exactly correct. In addition, as mentioned earlier, the comparison was made more difficult by the lack of complete ground count coverage in the Iowa portion of the study area.

Tables 3 through 15 show comparisons of assigned to actual traffic across screen lines. Screen lines are imaginary lines which are drawn through the area for analysis purposes only. The location of 13 screen lines used in the comparison of assigned to actual traffic is shown in Figures 12 and 13. The percentage of assigned to actual traffic across each of the screen lines fell in the range between 90 and 110 percent, indicating less than a ten percent discrepancy between actual and simulated travel throughout the area. A summary of differences between ground counts and assigned traffic on the entire network system is shown graphically in Figure 14.

Statistical analyses of ground counts to assigned O-D volumes showing the standard deviation and the root mean square (RMS) error by traffic volume group are presented in Tables 16 through 21. These analyses were made on the traffic capacity network developed for this study using only those links where ground counts were available. There were 844 links in the Illinois portion of the study area and 243 in the Iowa

FIGURE 11

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# COMPARISON OF ASSIGNED VOLUMES WITH GROUND COUNTS

AVERAGE DAILY TRAFFIC – 1961

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FIGURE 12

NOT TO SCALE

NOT TO SCALE

Rock Island Centennial Bridge (Toll)

Government Bridge (Toll)

Memorial Bridge (Toll)

"D"

"III.-3"

"III.-5"

"III.-4"

"A"

"III.-2"

"B"

"III.-1"

SCOTT COUNTY IOWA
ROCK ISLAND COUNTY ILLINOIS

MISSISSIPPI RIVER

Rock Island Arsenal

SYLVAN SLOUGH

Rock Island

Moline

East Moline

Silvis

Milan

Quad City Airport

Rock River

ROCK ISLAND COUNTY | HENRY COUNTY

FREEWAY
EXPRESSWAY
MAJOR STREETS
COLLECTORS

N

SCALE IN FEET
0 2000 4000 6000

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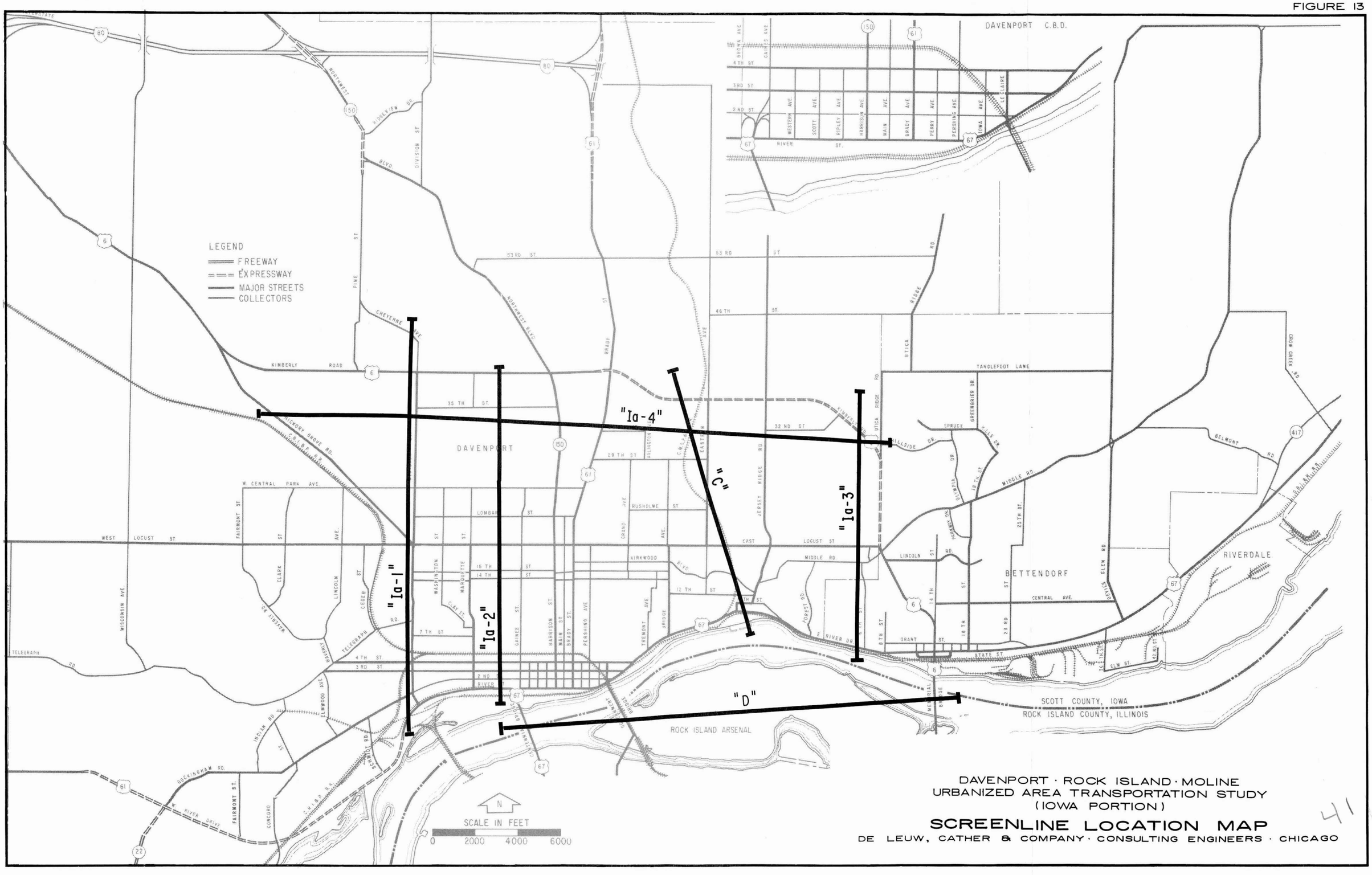
# SCREENLINE LOCATION MAP

40

FIGURE 13




DAVENPORT · ROCK ISLAND · MOLINE
URBANIZED AREA TRANSPORTATION STUDY
(IOWA PORTION)

## SCREENLINE LOCATION MAP

DE LEUW, CATHER & COMPANY · CONSULTING ENGINEERS · CHICAGO

TABLE 3

SCREEN LINE COMPARISON CHECK

SCREEN LINE "A"
(Rock Island-Moline)

| LOCATION | GROUND COUNT | ASSIGN VOLUME |
|---|---|---|
| 1st Avenue | - | - |
| 3rd Avenue | 4,200 | 3,364 |
| 4-A Avenue | - | - |
| 4th Avenue | 11,400 | 12,115 |
| 5th Avenue | 11,300 | 10,391 |
| 6th Avenue | - | - |
| 7th Avenue | - | - |
| 16th Avenue | 6,500 | 3,380 |
| 19th Avenue | 13,000 | 13,821 |
| Blackhawk Road | 9,800 | 10,342 |
| I-74 | 5,700 | 3,883 |
| Ill.-92 | 3,050 | 7,692 |
| CH-JJ | 1,150 | 608 |
| CH-7 | 850 | 847 |
| | 66,950 | 66,443 |

$$100 \times \frac{\text{ASSIGNED VOL.}}{\text{COUNTED VOL.}} = 100 \times \frac{66,443}{66,950} = 99.4\%$$

TABLE 4

SCREEN LINE COMPARISON CHECK

SCREEN LINE "B"
(Moline-East Moline)

| LOCATION | GROUND COUNT | ASSIGN VOLUME |
|---|---|---|
| River Road | 9,000 | 6,925 |
| 4th Avenue | 18,000 | 22,894 |
| 5th Avenue | 1,400 | 1,742 |
| Colona Road | - | - |
| 23rd Avenue | 17,000 | 17,519 |
| 34th Avenue | 400 | 361 |
| Coaltown Road | 7,100 | 8,663 |
| I-74 | 5,200 | 4,654 |
| US-6 | 4,700 | 4,349 |
| Local Road | - | 0 |
| US-150 | 4,500 | 6,238 |
| | 67,300 | 73,345 |

$$100 \times \frac{\text{ASSIGNED VOL.}}{\text{COUNTED VOL.}} = 100 \times \frac{73,345}{67,300} = 109.0\%$$

TABLE 5

SCREEN LINE COMPARISON CHECK

SCREEN LINE "C"
(Iowa)

| LOCATION | GROUND COUNT | ASSIGN VOLUME |
|---|---|---|
| River Street | 16,391 | 20,882 |
| 11th Street | 637 | - |
| 12th Street | 2,023 | 2,620 |
| 13th Street | 340 | - |
| Kirkwood Boulevard | 2,408 | 1,802 |
| Locust Street | 10,007 | 10,553 |
| Elm Street | 1,809 | - |
| Eastern Avenue | 2,183 | 2,164 |
| 29th Street | 1,176 | 1,242 |
| Kimberly Road | 8,290 | 10,135 |
| 39th Street | 374 | - |
| Mound Street | 4,996 | 4,685 |
| River Drive | 2,129 | 2,036 |
| | 52,763 | 56,119 |

$$100 \times \frac{\text{ASSIGNED VOL.}}{\text{COUNTED VOL.}} = 100 \times \frac{56,119}{52,763} = 106.5\%$$

TABLE 6

SCREEN LINE COMPARISON CHECK

SCREEN LINE "D"
(River Crossings)

| LOCATION | GROUND COUNT | ASSIGN VOLUME |
|---|---|---|
| Memorial Bridge | 18,500 | 19,153 |
| Government Bridge | 19,600 | 18,667 |
| Centennial Bridge | 14,450 | 11,540 |
| | 52,550 | 49,360 |

$$100 \times \frac{\text{ASSIGNED VOL.}}{\text{COUNTED VOL.}} = 100 \times \frac{49,360}{52,550} = 93.8\%$$

TABLE 7

SCREEN LINE COMPARISON CHECK

SCREEN LINE "Ill. -1"
(Illinois)

| LOCATION | GROUND COUNT | ASSIGN VOLUME |
|---|---|---|
| U. S. 67 | 20,700 | 21,541 |
| 27th Street | 19,000 | 18,564 |
| I-74 | - | 2,982 |
| | 39,700 | 43,087 |

$$100 \times \frac{\text{ASSIGNED VOL.}}{\text{COUNTED VOL.}} = 100 \times \frac{43,087}{39,700} = 108.7\%$$

TABLE 8

SCREEN LINE COMPARISON CHECK

SCREEN LINE "Ill. -2"
(Illinois)

| LOCATION | GROUND COUNT | ASSIGN VOLUME |
|---|---|---|
| 9th Street | 3,400 | 3,700 |
| 11th Street | 19,000 | 18,000 |
| 24th Street | 3,900 | 2,284 |
| 30th Street | 3,100 | 2,565 |
| 38th Street | 4,050 | 5,001 |
| 7th Street | 4,500 | 3,413 |
| 14th Street | - | 168 |
| 16th Street | 4,800 | 5,100 |
| 27th Street | 16,900 | 17,596 |
| 41st Street | 6,000 | 3,726 |
| 49th Street | - | 129 |
| Kennedy Drive | 3,900 | 5,800 |
| Bowles Road | 550 | 30 |
| 10th Street | 200 | 0 |
| John Deere Road | 1,600 | 1,432 |
| River Road | 225 | 241 |
| | 72,125 | 69,185 |

$$100 \times \frac{\text{ASSIGNED VOL.}}{\text{COUNTED VOL.}} = 100 \times \frac{69,185}{72,125} = 95.9\%$$

TABLE 9

SCREEN LINE COMPARISON CHECK

SCREEN LINE "Ill.-3"
(Illinois)

| LOCATION | GROUND COUNT | ASSIGN VOLUME |
|---|---|---|
| 9th Street | 4,800 | 3,708 |
| 11th Street | 22,000 | 21,062 |
| 17th Street | 7,000 | 8,075 |
| 24th Street | 2,000 | 2,186 |
| 26th Street | - | 157 |
| 30th Street | 7,000 | 9,090 |
| 38th Street | 7,900 | 8,149 |
| 45th Street | - | 1,090 |
| 7th Street | 6,500 | 5,521 |
| 12th Street | 3,000 | 1,461 |
| 15th Street | 1,600 | 0 |
| 16th Street | 14,000 | 16,477 |
| 19th Street | 15,000 | 19,053 |
| 25th Street | 2,000 | 858 |
| 27th Street | 6,800 | 8,310 |
| 29th Street | 1,500 | - |
| 34th Street | 5,500 | 3,247 |
| 41st Street | 7,200 | 8,993 |
| 53rd Street | 2,500 | 3,324 |
| Kennedy Drive | 5,000 | 4,916 |
| 7th Street | 8,300 | 8,005 |
| 13th Street | 3,000 | 1,795 |
| 19th Street | 5,400 | 6,163 |
| 10th Street | 2,500 | 2,014 |
| Ill.-84 | 4,750 | 6,193 |
| | 145,250 | 149,847 |

$$100 \times \frac{\text{ASSIGNED VOL.}}{\text{COUNTED VOL.}} = 100 \times \frac{149,847}{145,250} = 103.1\%$$

TABLE 10

SCREEN LINE COMPARISON CHECK

SCREEN LINE "Ill.-4"
(Illinois)

| LOCATION | GROUND COUNT | ASSIGN VOLUME |
|---|---|---|
| Knoxville Road | 4,000 | 2,707 |
| Ill.-92 | 8,750 | 11,575 |
| Blackhawk Road | 9,100 | 9,420 |
| 31st Avenue | 4,000 | 3,510 |
| 21st Avenue | - | 1,443 |
| 18th Avenue | 14,000 | 12,961 |
| 14th Avenue | 2,150 | 321 |
| 13th Avenue | 2,300 | - |
| 7th Avenue | 9,900 | 10,726 |
| 5th Avenue | 24,000 | 22,708 |
| | 78,200 | 75,371 |

$$100 \times \frac{\text{ASSIGNED VOL.}}{\text{COUNTED VOL.}} = 100 \times \frac{75,371}{78,200} = 96.3\%$$

TABLE 11

SCREEN LINE COMPARISON CHECK

SCREEN LINE "Ill.-5"
(Illinois)

| LOCATION | GROUND COUNT | ASSIGN VOLUME |
|---|---|---|
| U.S. 6 | 1,550 | 1,719 |
| Int.-280 | 5,200 | 4,654 |
| John Deere Road | 2,600 | 1,646 |
| Colona Road | 7,000 | 10,256 |
| 20th Avenue | - | 424 |
| Ill.-84 | 14,000 | 15,993 |
| 3rd Avenue | 2,000 | 637 |
| Ill.-84 | 8,000 | 7,357 |
| | 40,350 | 42,686 |

$$100 \times \frac{\text{ASSIGNED VOL.}}{\text{COUNTED VOL.}} = 100 \times \frac{42,686}{40,350} = 105.8\%$$

TABLE 12

SCREEN LINE COMPARISON CHECK

SCREEN LINE "Ia-1"
(Iowa)

| LOCATION | GROUND COUNT | ASSIGN VOLUME |
|---|---|---|
| River Road | 12,820 | 13,260 |
| Rockingham Road | 6,690 | 9,440 |
| 3rd Street | 5,680 | 5,886 |
| 4th Street | 5,330 | 5,121 |
| Telegraph Road | 1,950 | 2,169 |
| Locust Street | 9,220 | 10,748 |
| Hickory Grove Road | 3,610 | 3,875 |
| Lombard Street | 1,240 | 1,260 |
| Central Park Avenue | 2,070 | 1,249 |
| Kimberly Road | 3,770 | 3,978 |
| Cheyenne Avenue | 5,100 | 4,510 |
| | 57,480 | 61,496 |

$$100 \times \frac{\text{ASSIGNED VOL.}}{\text{COUNTED VOL.}} = 100 \times \frac{61,498}{57,480} = 107.0\%$$

TABLE 13

SCREEN LINE COMPARISON CHECK

SCREEN LINE "Ia-2"
(Iowa)

| LOCATION | GROUND COUNT | ASSIGN VOLUME |
|---|---|---|
| River Road | 17,010 | 13,993 |
| 2nd Street | 8,270 | 9,013 |
| 3rd Street | 8,590 | 6,168 |
| 4th Street | 7,920 | 6,261 |
| 7th Street | - | 2,390 |
| 14th Street | - | 1,266 |
| 15th Street | - | 2,725 |
| Locust Street | 10,550 | 13,627 |
| Lombard Street | 3,380 | 251 |
| Central Park | 2,100 | 3,567 |
| 35th Street | 1,020 | 1,813 |
| Kimberly Road | 7,180 | 7,563 |
| | 66,020 | 68,637 |

$$100 \times \frac{\text{ASSIGNED VOL.}}{\text{COUNTED VOL.}} = 100 \times \frac{68,637}{66,020} = 103.8\%$$

TABLE 14

SCREEN LINE COMPARISON CHECK

SCREEN LINE "Ia-3"
(Iowa)

| LOCATION | GROUND COUNT | ASSIGN VOLUME |
|---|---|---|
| River Road | 18,560 | 20,097 |
| Middle Road | 2,920 | 2,313 |
| Locust Street | 6,630 | 7,405 |
| Kimberly Road | 6,450 | 7,975 |
| | 34,560 | 37,790 |

$$100 \times \frac{\text{ASSIGNED VOL.}}{\text{COUNTED VOL.}} = 100 \times \frac{37,790}{34,560} = 109.4\%$$

TABLE 15

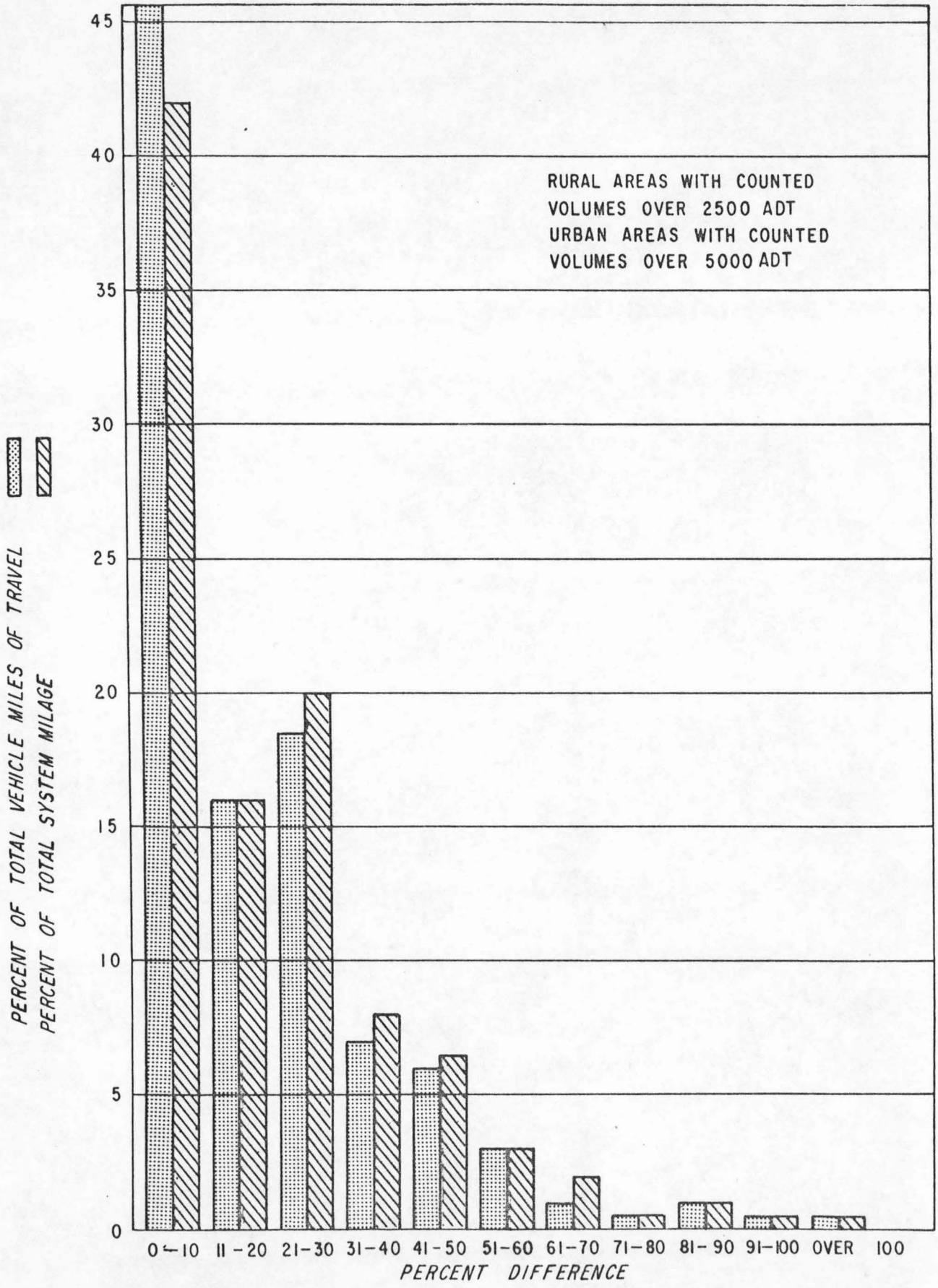
SCREEN LINE COMPARISON CHECK

SCREEN LINE "Ia-4"
(Iowa)

| LOCATION | GROUND COUNT | ASSIGN VOLUME |
|---|---|---|
| Hickory Grove Road | 1,810 | 2,615 |
| Division Street | 6,940 | 6,757 |
| Harrison Street | 6,540 | 6,522 |
| Brady Street | 13,910 | 8,533 |
| Eastern Avenue | 1,130 | 1,787 |
| Jersey Ridge Road | - | 954 |
| Kimberly Road | 6,450 | 7,975 |
| Utica Ridge Road | 1,860 | 2,542 |
| | 38,640 | 37,685 |

$$100 \times \frac{\text{ASSIGNED VOL.}}{\text{COUNTED VOL.}} = 100 \times \frac{37,685}{38,640} = 97.5\%$$

FIGURE 14




SUMMARY OF DIFFERENCES BETWEEN GROUND COUNTS AND ASSIGNED TRAFFIC

TABLE 16

DAVENPORT-ROCK ISLAND-MOLINE URBANIZED AREA TRANSPORTATION STUDY

STATISTICAL ANALYSIS OF ASSIGNMENT VERSUS ACTUAL GROUND COUNTS
ALL FACILITIES-ILLINOIS AND IOWA

| Volume Group | Number of Count Locations | Average Counted Volume | Average Assigned Volume | Difference Of Assigned And Counted | Standard Deviation | Standard Deviation As Percent of Average Counted Volume | Percent Total Volume In Group | Weighted Standard Deviation |
|---|---|---|---|---|---|---|---|---|
| 0- 500 | 15 | 286.6 | 386.6 | 100.0 | 648.0 | 226.07 | 0.05 | 0.11 |
| 500- 1,000 | 31 | 677.4 | 1012.9 | 335.5 | 1260.8 | 186.12 | 0.25 | 0.48 |
| 1,000- 2,000 | 99 | 1424.2 | 1600.0 | 175.8 | 1989.9 | 139.72 | 1.73 | 2.42 |
| 2,000- 3,000 | 85 | 2315.2 | 1825.8 | -489.4 | 1817.1 | 78.48 | 2.43 | 1.89 |
| 3,000- 5,000 | 183 | 3905.4 | 4758.4 | 853.0 | 3537.2 | 90.57 | 8.80 | 7.96 |
| 5,000-10,000 | 376 | 6982.7 | 6460.3 | -522.4 | 2586.6 | 37.04 | 32.31 | 11.96 |
| 0,000-15,000 | 183 | 11949.1 | 11881.4 | -67.7 | 3421.3 | 28.63 | 26.91 | 7.69 |
| 5,000-20,000 | 77 | 17441.5 | 15800.0 | -1641.5 | 4249.9 | 24.36 | 16.52 | 4.02 |
| 0,000-25,000 | 28 | 21885.7 | 23135.7 | 1250.0 | 2987.5 | 13.65 | 7.54 | 1.02 |
| 5,000-30,000 | 10 | 28100.0 | 26650.0 | -1450.0 | 831.6 | 2.95 | 3.46 | 0.10 |
| 0,000 OR MORE | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| LL VOLUME GROUPS | 1087 | 7476.3 | 7319.1 | -157.2 | 2919.3 | 39.04 | 100.00 | 37.65 |

TABLE 17

DAVENPORT-ROCK ISLAND-MOLINE URBANIZED AREA TRANSPORTATION STUDY

STATISTICAL ANALYSIS OF ASSIGNMENT VERSUS ACTUAL GROUND COUNTS
ALL FACILITIES - ILLINOIS

| Volume Group | Number of Count Locations | Average Counted Volume | Average Assigned Volume | Difference Of Assigned And Counted | Standard Deviation | Standard Deviation As Percent of Average Counted Volume | Percent Total Volume In Group | Weighted Standard Deviation |
|---|---|---|---|---|---|---|---|---|
| 0- 500 | 14 | 278.5 | 392.8 | 114.3 | 670.0 | 240.54 | 0.06 | 0.16 |
| 500- 1,000 | 29 | 686.2 | 868.9 | 182.7 | 815.0 | 118.77 | 0.34 | 0.41 |
| 1,000- 2,000 | 96 | 1434.3 | 1605.2 | 170.9 | 2013.5 | 140.37 | 2.41 | 3.38 |
| 2,000- 3,000 | 67 | 2297.0 | 1773.1 | -523.9 | 2011.8 | 87.58 | 2.70 | 2.36 |
| 3,000- 5,000 | 167 | 3915.5 | 4844.3 | 928.8 | 3654.5 | 93.33 | 11.46 | 10.69 |
| 5,000-10,000 | 270 | 6826.2 | 6445.9 | -380.3 | 2651.0 | 38.83 | 32.30 | 12.54 |
| 10,000-15,000 | 132 | 11770.4 | 11836.3 | 65.9 | 3146.6 | 26.73 | 27.23 | 7.27 |
| 15,000-20,000 | 42 | 17826.1 | 17230.9 | -595.2 | 4525.9 | 25.38 | 13.12 | 3.33 |
| 20,000-25,000 | 27 | 21918.5 | 23237.0 | 1318.5 | 3021.9 | 13.78 | 10.38 | 1.42 |
| 25,000-30,000 | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 30,000 OR MORE | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| ALL VOLUME GROUPS | 844 | 6761.3 | 6832.3 | 71.0 | 2914.0 | 43.09 | 100.00 | 41.56 |

TABLE 18

DAVENPORT-ROCK ISLAND-MOLINE URBANIZED AREA TRANSPORTATION STUDY

STATISTICAL ANALYSIS OF ASSIGNMENT VERSUS ACTUAL GROUND COUNTS
ALL FACILITIES-IOWA

| Volume Group | Number of Count Locations | Average Counted Volume | Average Assigned Volume | Difference Of Assigned And Counted | Standard Deviation | Standard Deviation As Percent of Average Counted Volume | Percent Total Volume In Group | Weighted Standard Deviation |
|---|---|---|---|---|---|---|---|---|
| 0- 500 | 2 | 450.0 | 150.00 | -300.0 | 282.8 | 62.85 | 0.03 | 0.02 |
| 500- 1,000 | 2 | 800.0 | 3100.0 | 2300.0 | 4666.9 | 583.36 | 0.06 | 0.38 |
| 1,000- 2,000 | 4 | 1575.0 | 1875.0 | 300.0 | 976.3 | 61.99 | 0.26 | 0.16 |
| 2,000- 3,000 | 16 | 2431.2 | 2075.0 | -356.2 | 779.7 | 32.07 | 1.60 | 0.51 |
| 3,000- 5,000 | 18 | 3933.3 | 3833.3 | -100.0 | 1767.0 | 44.92 | 2.92 | 1.31 |
| 5,000-10,000 | 104 | 7426.9 | 6552.8 | -874.1 | 2411.1 | 32.46 | 31.93 | 10.36 |
| 10,000-15,000 | 52 | 12461.5 | 12069.2 | -392.3 | 4024.7 | 32.29 | 26.78 | 8.64 |
| 15,000-20,000 | 34 | 17038.2 | 14035.2 | -3003.0 | 3560.7 | 20.89 | 23.94 | 5.00 |
| 20,000-25,000 | 1 | 21000.0 | 20400.0 | -600.0 | 0.0 | 0.00 | 0.86 | 0.00 |
| 25,000-30,000 | 10 | 28100.0 | 26650.0 | -1450.0 | 831.6 | 2.95 | 11.62 | 0.34 |
| 30,000 OR MORE | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| ALL VOLUME GROUPS | 243 | 9959.6 | 9009.8 | -949.8 | 2828.7 | 28.40 | 100.00 | 26.72 |

TABLE 19

DAVENPORT-ROCK ISLAND-MOLINE URBANIZED AREA TRANSPORTATION STUDY

STATISTICAL ANALYSIS OF ASSIGNMENT VERSUS ACTUAL GROUND COUNTS
ALL FACILITIES-ILLINOIS

| Volume Group | Number of Count Location | Average Counted Volume | Assignment RMS Error ① | Sample Rate RMS Error ② | $(①^2 - ②^2)$ | $\sqrt{①^2 - ②^2}$ Effective RMS Error |
|---|---|---|---|---|---|---|
| 0- 500 | 14 | 278 | 235.3 | 37.0 | 54022 | 232.4 |
| 500- 1,000 | 29 | 686 | 119.7 | 21.0 | 13888 | 117.8 |
| 1,000- 2,000 | 97 | 1429 | 140.0 | 16.0 | 19354 | 139.1 |
| 2,000- 3,000 | 67 | 2297 | 89.8 | 13.0 | 7907 | 88.9 |
| 3,000- 5,000 | 167 | 3915 | 96.0 | 9.0 | 9140 | 95.6 |
| 5,000-10,000 | 270 | 6826 | 39.1 | 6.5 | 1491 | 38.6 |
| 10,000-15,000 | 132 | 11770 | 26.6 | 5.5 | 679 | 26.0 |
| 15,000-20,000 | 42 | 17826 | 25.3 | 4.5 | 620 | 24.9 |
| 20,000-25,000 | 27 | 21918 | 14.8 | 3.8 | 204 | 14.3 |
| 25,000-30,000 | 0 | 0 | 0.0 | 3.5 | 0 | 0.0 |
| 30,000 OR MORE | 0 | 0 | 0.0 | 3.3 | 0 | 0.0 |
| ALL VOLUME GROUPS | 845 | 6754 | 43.8 | | | |

TABLE 20

DAVENPORT-ROCK ISLAND-MOLINE URBANIZED AREA TRANSPORTATION STUDY

STATISTICAL ANALYSIS OF ASSIGNMENT VERSUS ACTUAL GROUND COUNTS
ALL FACILITIES-IOWA

| Volume Group | Number of Count Location | Average Counted Volume | Assignment RMS Error ① | Sample Rate RMS Error ② | $(①^2 - ②^2)$ | $\sqrt{①^2 - ②^2}$ Effective RMS Error |
|---|---|---|---|---|---|---|
| 0- 500 | 2 | 450 | 80.1 | 43.0 | 4569 | 67.5 |
| 500- 1,000 | 1 | 600 | 933.2 | 27.0 | 870237 | 932.8 |
| 1,000- 2,000 | 4 | 1575 | 56.9 | 18.0 | 2920 | 54.0 |
| 2,000- 3,000 | 16 | 2431 | 34.3 | 14.0 | 982 | 31.3 |
| 3,000- 5,000 | 18 | 3933 | 43.7 | 11.0 | 1791 | 42.3 |
| 5,000-10,000 | 104 | 7426 | 34.3 | 8.2 | 1115 | 33.3 |
| 10,000-15,000 | 52 | 12461 | 32.1 | 6.8 | 986 | 31.4 |
| 15,000-20,000 | 34 | 17038 | 27.1 | 5.5 | 704 | 26.5 |
| 20,000-25,000 | 1 | 21000 | 2.8 | 4.9 | -15 | 3.9 |
| 25,000-30,000 | 10 | 28100 | 5.8 | 4.4 | 15 | 3.8 |
| 30,000 OR MORE | 0 | 0 | 0.0 | 3.8 | 0 | 0.0 |
| ALL VOLUME GROUPS | 242 | 9996 | 31.2 | | | |

TABLE 21

SUMMARY OF
STATISTICAL ANALYSIS OF THE TRAFFIC ASSIGNMENT

| FACILITIES | NUMBER OF LINKS | VEHICLE - MILES (COUNTED VOLUME) | VEHICLE - MILES (ASSIGNED VOLUME) | PERCENT DIFFERENCE | AVERAGE STANDARD DEVIATION |
|---|---|---|---|---|---|
| All Facilities | 1087 | 1,687,575 | 1,688,579 | +0.1 | 39.04 |
| All Illinois | 844 | 1,279,558 | 1,308,679 | +2.1 | 43.09 |
| All Iowa | 243 | 408,017 | 379,900 | -7.2 | 28.40 |
| Functional Classification | | | | | |
| Freeways and Expressways | 42 | 113,586 | 116,715 | +2.8 | 37.11 |
| Major Streets | 662 | 1,322,816 | 1,377,220 | +4.1 | 31.52 |
| Collector Streets | 383 | 251,173 | 194,644 | -22.5 | 54.85 |
| Type of Area | | | | | |
| Downtown | 188 | 134,345 | 110,379 | -21.9 | 29.11 |
| Fringe | 210 | 307,205 | 329,398 | +7.2 | 46.12 |
| Outlying Business | 111 | 212,556 | 229,823 | +8.0 | 28.69 |
| Residential | 508 | 803,325 | 796,594 | -0.8 | 33.92 |
| Rural | 70 | 230,144 | 222,385 | -3.2 | 25.94 |
| Location | | | | | |
| Rock Island | 240 | 323,797 | 293,500 | -9.1 | 30.16 |
| Moline | 278 | 379,075 | 387,013 | +2.2 | 39.04 |
| East Moline | 96 | 122,698 | 147,194 | +20.0 | 66.29 |
| Remainder of Rock Island and Henry County | 229 | 455,088 | 478,410 | +5.0 | 41.40 |
| Davenport | 196 | 317,870 | 300,862 | -5.2 | 29.04 |
| Remainder of Scott County | 46 | 88,527 | 79,038 | -10.1 | 23.23 |

portion, for a total of 1,087 links. Total percent standard deviation for the entire study area was 39.0. This compares favorably with the results of similar statistical analyses made in other studies. For example, in ten such studies reported on in a recent publication[1] the total percent standard deviation was less in only two areas (30.9 and 38.0); was the same in one area; and was greater in the remaining seven areas--two of which had total standard deviations of over 50 percent.

Some of the errors occurring in the assignment process must be attributed to the sampling error in the O-D surveys. Figure 15 is a chart developed by A. Sosslau and G. Brokke[2] showing the relation of percent root mean square (RMS) error and volume for various dwelling unit sampling rates. For example, with a ten percent sample, as used in the Illinois O-D survey, the sampling error could account for about 13 percent RMS error on links carrying 2,000 vehicles, a nine percent RMS error on links carrying 4,000 vehicles, and a six percent RMS error on links carrying 10,000 vehicles. Thus the effective RMS error (approximately equal to percent standard deviation) shown in Tables 19 and 20 is slightly less when the inherent sampling error in the O-D surveys is accounted for.

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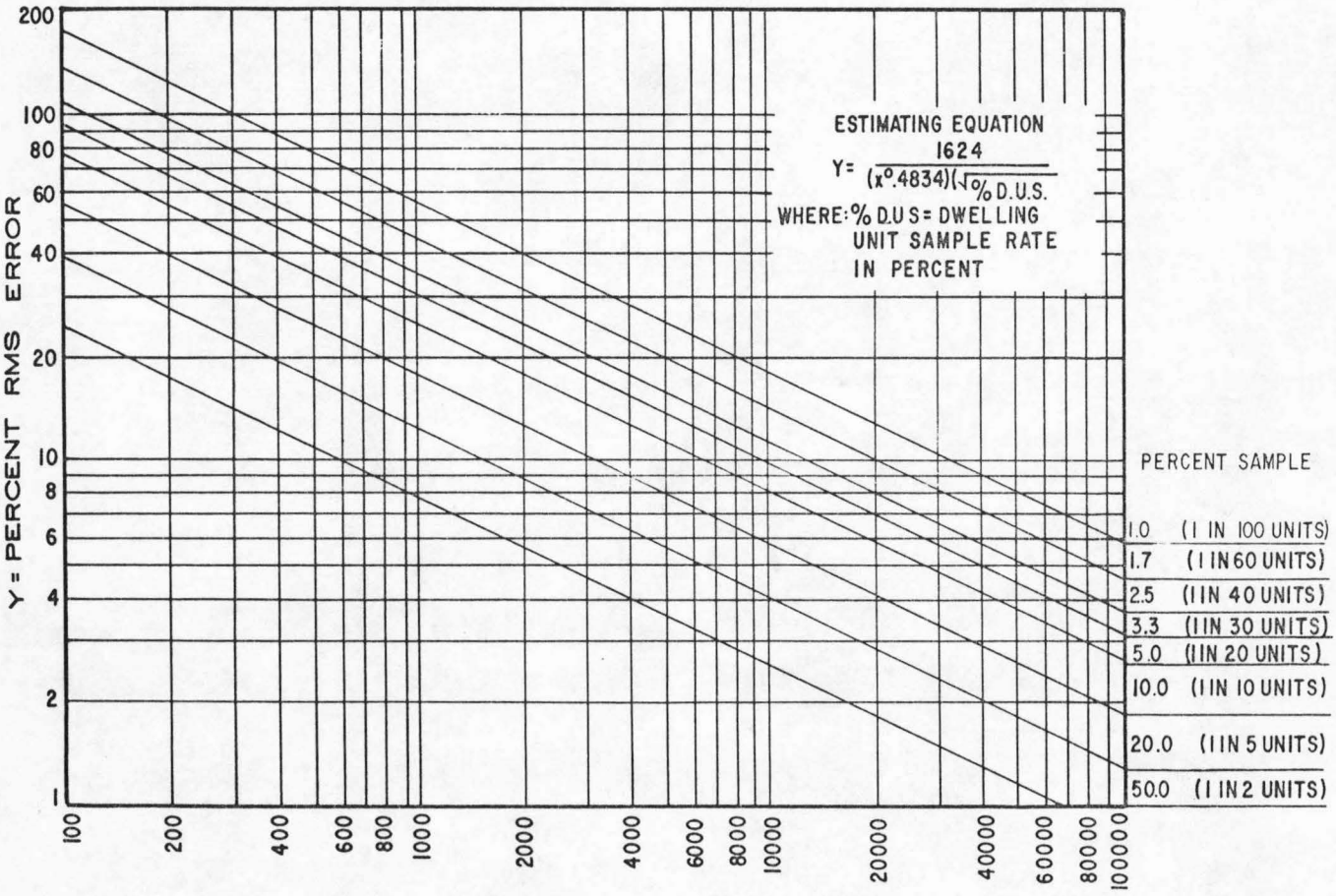
(1)-A report on the Accuracy of Traffic Assignment When Using Capacity Restraint, Thomas F. Humphrey, Highway Research Record No. 181, Table 6, Highway Research Board, National Research Council, Washington, D. C. 1967.

(2)-Calibrating and Testing a Gravity Model for Any Size Urban Area, Urban Planning Division, Office of Planning, U. S. Bureau of Public Roads, Washington, D. C. October 1965, Figure 15.

# RELATION OF PERCENT ROOT-MEAN-SQUARE ERROR AND VOLUME FOR VARIOUS DWELLING UNIT SAMPLE RATES




SOURCE- CALIBRATING AND TESTING A GRAVITY MODEL FOR ANY SIZE URBAN AREA. URBAN PLANNING DIVISION OFFICE OF PLANNING, U.S. BUREAU OF PUBLIC ROADS; OCTOBER, 1965

# CONCLUSION

On the basis of analyses of the adjusted assignment network, described above, it is concluded that a reasonable comparison has been achieved between actual and assigned traffic on the network system. An assignment model has been calibrated which compares favorably with those developed in other studies using similar techniques. Further adjustment of the assignment network would not significantly improve the result.

# CHAPTER III

## TRIP DISTRIBUTION

Trip distribution provides the planner with a systematic procedure capable of estimating zonal trip interchanges for alternative plans of both land use and transportation facilities. These zonal interchanges constitute a basic part of the travel information necessary for transportation planning.

This chapter describes a traffic distribution model which synthesizes origin-destination zonal trip interchanges in the Davenport-Rock Island-Moline internal transportation study area. Techniques used in developing the trip distribution procedures as well as statistical tests of the calibrated model are also set forth.

## DESCRIPTION OF THE MODEL

In accordance with the Work Programs established at the outset of the transportation study, the so-called "gravity model" was used in trip distribution. Theory and application of the model are described in the Bureau of Public Roads Manual "Calibrating and Testing a Gravity Model for Any Size Urban Area," and are restated, as necessary, in this report.

### General Theory

To date, the gravity model is the most widely used method of trip distribution and through extensive research has been shown to be a reliable tool in transportation planning. As the name implies, this model adapts the gravitational concept, as advanced by Newton in 1686, to the problem of distributing traffic throughout an urban area. The gravity model has been the most widely used formula mainly because it is simple in concept and because it has been well documented.

In essence, the gravity model says that the trip interchange between zones is directly proportional to the relative attraction of each of the zones and inversely proportional to some function of the spatial separation between zones. This function of spatial separation adjusts the relative attraction of each zone for the ability, desire or necessity of the trip maker to overcome the spatial separation involved.

Mathematically, the gravity model is stated as follows:

$$T_{ij} = P_i \quad \frac{\dfrac{A_j}{d_{ij}^{\,b}}}{\dfrac{A_1}{d_{i1}^{\,b}} + \dfrac{A_2}{d_{i2}^{\,b}} + \text{+-----+} + \dfrac{An}{d_{in}^{\,b}}}$$

Where: $T_{ij}$ = trips produced in zone i and attracted to zone j

$P_i$ = trips produced in zone i

$A_j$ = trips attracted by zone j

$d_{ij}$ = spatial separation between zone i and j. This is generally expressed as total travel time ($t_{ij}$) between zones i and j

b = an empirically determined exponent which expresses <u>average</u> <u>areawide</u> effect of spatial separation between zones on trip interchange

n = the number of zones in the study area

In actual application of the gravity model formula, it is necessary to develop the parameters in the formula for each urban area individually. Furthermore, these parameters are developed for each separate trip purpose. Past experience has demonstrated that the exponent of travel time is not constant for all intervals of time. Thus it is necessary to work with a gravity model formula which differs from that shown previously.

This revised formula is expressed as follows:

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

Where: $F_{ij}$ = empirically derived travel time factor which expresses the average areawide effect of spatial separation on trip interchange between zones which are $t_{ij}$ apart. This factor approximates $\frac{1}{t^b}$ where b would vary according to the value of t, and where t is the travel time between zones.

$K_{ij}$ = a specific zone-to-zone adjustment factor to allow for the incorporation of the effect on travel patterns of defined social or economic linkages not otherwise accounted for in the gravity model formulation.

And where: $T_{ij}$, $P_i$ and $A_j$ are the same as previously described.

The use of a set of travel time factors to express the effect of spatial separation on zonal trip interchange, rather than the traditional inverse exponential function of time, simplifies the computational requirements of the model. It also takes account of the fact that the spatial separation on trip making generally increases in a more complex manner than can be expressed by the single exponent.

Definition of Parameters

From the gravity model formula shown earlier, it can be seen that four separate parameters are required before trip interchange ($T_{ij}$) can be computed. These are defined as follows:

1. Trip Production and Trip Attraction. --The number of trips produced ($P_i$) and the number of trips attracted ($A_j$) by each traffic zone in the study area are related to the use of land and to the socio-economic characteristics of the people who make trips. The gravity model distributes trips from production zone to attraction zone.

   To demonstrate the production and attraction definition, it is first necessary to class all trips as home based or non-home based. Home based trips always have one end at the residence of the trip maker. Non-home based trips have neither end at the residence of the trip maker.

   Home based trips are always produced by the zone of residence of the trip maker whether the trip begins or ends in that zone and are always attracted at the non-residential end of the trip.

Non-home based trips are always produced by the zone of origin and attracted by the zone of destination. Truck trips are also considered to be non-home based.

2. Spatial Separation Between Zones. --The spatial separation between zones ($d_{ij}$) is measured in terms of total travel time. It is the sum of the minimum path travel time between zones plus the terminal times at both ends of the trip. Terminal times are added in order to allow for variations in parking and walking times caused by differences in congestion and parking facilities. This provides a more realistic measure of the actual spatial separation (in time) between zones as it is likely to influence motorists in their decisions as to places to work, shop, etc.

Intra-zonal driving times, the average driving times of those trips that start and end within the same zone, must also be estimated. Terminal times are added to intra-zonal driving time to arrive at intra-zonal travel time.

3. Travel Time Factors. --Travel time factors, sometimes referred to as "friction factors" ($F_{ij}$) express the effect that spatial separation exerts on trip interchange. They indicate impedance to any essential travel due to spatial separation between zones. In effect, these factors measured the probability of trip making at each one-minute increment of travel time. Travel time factors are arrived at through a process of trial and adjustment. Today's travel time factors are assumed to remain the same in the future.

4. Zone-to-Zone Adjustment Factors. --The remaining input into the gravity model formula reflects the effect on travel patterns of social and economic characteristics of particular zones or portions of the study area. These are represented by the zone-to-zone adjustment factor ($K_{ij}$). These factors reflect the effects on travel patterns of social, economic and other characteristics which are not elsewhere accounted for in the use of the model.

## BASIC DECISIONS

It was decided at the outset of the study that a five-purpose vehicle trip model would be used to forecast travel in the Davenport-Rock Island-Moline urbanized area. Modal split is determined later in a separate phase after trip generation analysis. Only vehicle trips are distributed by the gravity model.

Separate gravity models were calibrated for the following classifications of trips:

1. Home Based Work. --Those trips between a person's place of residence and his place of employment for the purpose of work.
2. Home Based Shop. --Those trips between a person's place of residence and a commercial establishment for the purpose of shopping.
3. Home Based Other. --All other trips between a person's place of residence and some form of land use for any other trip purpose.
4. Non-Home Based. --Any trip which has neither origin nor destination at home regardless of its purpose.
5. Truck Trips. --All truck trips.

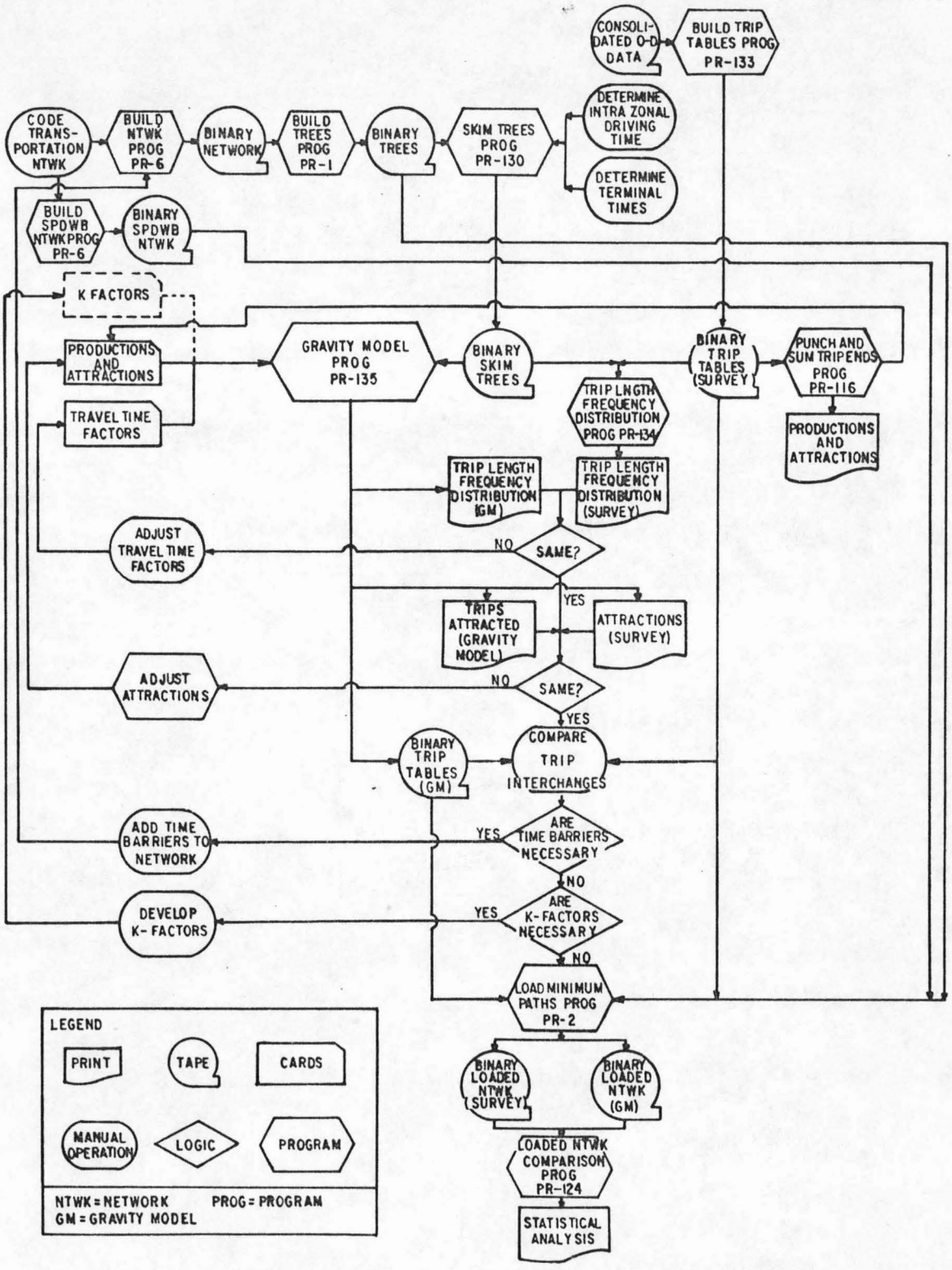
With regard to external trips having one end inside the cordon and one external end, the external cordon stations have been considered as fictitious zones and have been assumed to produce and attract trips in a manner similar to the internal zones. A manual check at district level indicated that this worked out satisfactorily and special zone-to-zone adjustment factors were not necessary. Through trips, those with both ends outside the cordon, are forecasted separately through use of a growth factor technique based on successive approximations.

## CALIBRATION OF THE GRAVITY MODEL

The phases involved in calibrating the gravity model trip distribution formula as well as those concerned with testing the calibrated model are shown in Figure 16. Consolidation of origin-destination data and calibration of the traffic assignment network have been discussed in the first two chapters. The only phases of basic data preparation not described earlier are determination of terminal times and intra-zonal driving times together with building and formating the "spider web" network.

Zone-to-zone travel time is the sum of over-the-road driving time between zones and the terminal times within the origin and destination zones. Consequently, it is necessary to develop a measure of terminal time for each zone in the study area to be combined with the information on driving time, described earlier in the chapter on Traffic Assignment, in order to determine the spatial separation between zones.

FIGURE 16




GRAVITY MODEL CALIBRATION AND TESTING PROCESS

Terminal times may result from the following conditions:

1. The time spent in looking for a parking space at the non-home end of a trip.
2. The time spent in walking from a parking place to the actual destination of a trip.
3. The time spend in walking from the actual trip origin to the parking place.
4. The time spent in getting from the parking place to the street system at the origin end of the trip.

The initial terminal times were estimated on the basis of location of the zone (such as CBD, fringe, outlying commercial, residential and rural as defined in interim reports on transportation facilities inventories) using personal judgement and first-hand knowledge of the study area as to the relative measure of congestion in each zone. Terminal times at the external cordon stations were assigned according to relative average length of trips passing through the station. Thus, interstate and U. S. marked routes had the longest terminal times.

Intra-zonal driving times were estimated at approximately one-half of the average driving time from each zone to all adjoining zones.

Later in the analysis, both terminal times and intra-zonal driving times were modified slightly to bring intra-zonal trips predicted by the gravity model into balance with those from the O-D study. Final terminal times used in the assignment network are shown in Table 22. Adjusted intra-zonal driving times are given in Table 23.

The spider web or zone centroid network is a simplified series of direct connections between zone centroids. It is needed for analytical purposes during development of the model and is used extensively in testing the validity of the model. The spider web network was coded in exactly the same manner as the traffic assignment network described in Chapter II, except that a constant speed of 60 mph was given to each link. Distances were scaled on a straight line between zone centroids. When the network is loaded, as discussed later in the report, it produces a facsimile of trip desire lines since trips between any pair of centroids are routed on a path that is essentially a straight line.

Analysis of Basic Data

The next phase in calibration of the gravity model was determination of zone-to-zone movements for each of the five trip purpose categories specified earlier and derivation of trip length frequencies of O-D trip by purpose. See Figure 16. Following is a brief description of the computer programs used in this phase of the analysis:

Table 22

TERMINAL TIMES

| Centroid | Terminal Time (Minutes) | Centroid | Terminal Time (Minutes) | Centroid | Terminal Time (Minutes) |
|---|---|---|---|---|---|
| 1 | 2 | 51 | 3 | 101 | 3 |
| 2 | 3 | 52 | 2 | 102 | 3 |
| 3 | 3 | 53 | 2 | 103 | 3 |
| 4 | 3 | 54 | 2 | 104 | 3 |
| 5 | 3 | 55 | 2 | 105 | 3 |
| 6 | 3 | 56 | 2 | 106 | 3 |
| 7 | 3 | 57 | 2 | 107 | 3 |
| 8 | 3 | 58 | 2 | 108 | 2 |
| 9 | 3 | 59 | 2 | 109 | 2 |
| 10 | 3 | 60 | 2 | 110 | 2 |
| 11 | 3 | 61 | 1 | 111 | 2 |
| 12 | 3 | 62 | 2 | 112 | 3 |
| 13 | 3 | 63 | 1 | 113 | 2 |
| 14 | 2 | 64 | 0 | 114 | 3 |
| 15 | 2 | 65 | 0 | 115 | 2 |
| 16 | 3 | 66 | 0 | 116 | 2 |
| 17 | 2 | 67 | 0 | 117 | 2 |
| 18 | 1 | 68 | 1 | 118 | 2 |
| 19 | 2 | 69 | 1 | 119 | 2 |
| 20 | 2 | 70 | 0 | 120 | 2 |
| 21 | 3 | 71 | 0 | 121 | 3 |
| 22 | 3 | 72 | 0 | 122 | 2 |
| 23 | 3 | 73 | 0 | 123 | 2 |
| 24 | 2 | 74 | 0 | 124 | 2 |
| 25 | 3 | 75 | 0 | 125 | 2 |
| 26 | 2 | 76 | 0 | 126 | 2 |
| 27 | 3 | 77 | 0 | 127 | 1 |
| 28 | 3 | 78 | 0 | 128 | 1 |
| 29 | 3 | 79 | 0 | 129 | 2 |
| 30 | 3 | 80 | 0 | 130 | 2 |
| 31 | 1 | 81 | 0 | 131 | 2 |
| 32 | 1 | 82 | 0 | 132 | 2 |
| 33 | 1 | 83 | 3 | 133 | 3 |
| 34 | 2 | 84 | 3 | 134 | 2 |
| 35 | 1 | 85 | 3 | 135 | 1 |
| 36 | 3 | 86 | 3 | 136 | 2 |
| 37 | 1 | 87 | 3 | 137 | 3 |
| 38 | 2 | 88 | 3 | 138 | 3 |
| 39 | 2 | 89 | 2 | 139 | 2 |
| 40 | 2 | 90 | 3 | 140 | 2 |
| 41 | 3 | 91 | 2 | 141 | 2 |
| 42 | 2 | 92 | 3 | 142 | 1 |
| 43 | 3 | 93 | 2 | 143 | 1 |
| 44 | 2 | 94 | 3 | 144 | 1 |
| 45 | 1 | 95 | 3 | 145 | 1 |
| 46 | 2 | 96 | 3 | 146 | 1 |
| 47 | 3 | 97 | 3 | 147 | 1 |
| 48 | 2 | 98 | 3 | 148 | 1 |
| 49 | 2 | 99 | 1 | 149 | 1 |
| 50 | 1 | 100 | 3 | 150 | 0 |

Table 22--Continued

TERMINAL TIMES

| Centroid | Terminal Time (Minutes) | Centroid | Terminal Time (Minutes) | Centroid | Terminal Time (Minutes) |
|---|---|---|---|---|---|
| 151 | 2 | 201 | 0 | 251 | 3 |
| 152 | 2 | 202 | 0 | 252 | 1 |
| 153 | 1 | 203 | 0 | 253 | 1 |
| 154 | 0 | 204 | 1 | 254 | 1 |
| 155 | 0 | 205 | 1 | 255 | 1 |
| 156 | 0 | 206 | 0 | 256 | 1 |
| 157 | 0 | 207 | 0 | 257 | 2 |
| 158 | 0 | 208 | 0 | 258 | 0 |
| 159 | 3 | 209 | 0 | 259 | 1 |
| 160 | 3 | 210 | 1 | 260 | 1 |
| 161 | 2 | 211 | 0 | 261 | 3 |
| 162 | 2 | 212 | 0 | 262 | 2 |
| 163 | 2 | 213 | 0 | 263 | 3 |
| 164 | 2 | 214 | 1 | 264 | 2 |
| 165 | 2 | 215 | 0 | 265 | 3 |
| 166 | 1 | 216 | 0 | 266 | 3 |
| 167 | 1 | 217 | 0 | 267 | 3 |
| 168 | 0 | 218 | 1 | 268 | 3 |
| 169 | 0 | 219 | 2 | 269 | 3 |
| 170 | 2 | 220 | 2 | 270 | 3 |
| 171 | 2 | 221 | 1 | 271 | 3 |
| 172 | 2 | 222 | 1 | 272 | 2 |
| 173 | 2 | 223 | 2 | 273 | 2 |
| 174 | 2 | 224 | 1 | 274 | 2 |
| 175 | 2 | 225 | 2 | 275 | 2 |
| 176 | 2 | 226 | 1 | 276 | 2 |
| 177 | 2 | 227 | 2 | 277 | 2 |
| 178 | 2 | 228 | 1 | 278 | 2 |
| 179 | 0 | 229 | 1 | 279 | 2 |
| 180 | 2 | 230 | 1 | 280 | 2 |
| 181 | 2 | 231 | 0 | 281 | 2 |
| 182 | 0 | 232 | 0 | 282 | 1 |
| 183 | 2 | 233 | 0 | 283 | 2 |
| 184 | 2 | 234 | 1 | 284 | 1 |
| 185 | 1 | 235 | 2 | 285 | 2 |
| 186 | 2 | 236 | 0 | 286 | 1 |
| 187 | 1 | 237 | 0 | 287 | 1 |
| 188 | 1 | 238 | 0 | 288 | 2 |
| 189 | 1 | 239 | 0 | 289 | 1 |
| 190 | 1 | 240 | 0 | 290 | 0 |
| 191 | 1 | 241 | 2 | 291 | 1 |
| 192 | 0 | 242 | 3 | 292 | 1 |
| 193 | 0 | 243 | 3 | 293 | 1 |
| 194 | 0 | 244 | 3 | 294 | 1 |
| 195 | 0 | 245 | 3 | 295 | 1 |
| 196 | 1 | 246 | 3 | 296 | 1 |
| 197 | 1 | 247 | 3 | 297 | 1 |
| 198 | 0 | 248 | 3 | | |
| 199 | 0 | 249 | 2 | | |
| 200 | 0 | 250 | 2 | | |

Table 22--Concluded

TERMINAL TIMES

| Centroid | Terminal Time (Minutes) | Centroid | Terminal Time (Minutes) | Centroid | Terminal Time (Minutes) |
|---|---|---|---|---|---|
| 298 | 1 | 321 | 3 | 340 | 3 |
| 299 | 1 | 322 | 2 | 341 | 2 |
| 300 | 1 | 323 | 2 | 342 | 2 |
| 301 | 1 | 324 | 2 | 343 | 3 |
| 302 | 1 | 325 | 2 | 344 | 2 |
| 303 | 1 | 326 | 2 | 345 | 2 |
| 304 | 1 | 327 | 2 | 346 | 3 |
| 305 | 1 | 328 | 4 | 347 | 5 |
| 306 | 1 | 329 | 3 | 348 | 2 |
| 307 | 1 | 330 | 2 | 349 | 3 |
| 308 | 1 | 331 | 5 | 350 | 2 |
| 309 | 1 | 332 | 2 | 351 | 2 |
| 310 | 1 | 333 | 2 | 352 | 2 |
| 311 | 1 | 334 | 2 | 353 | 2 |
| 312 | 1 | 335 | 2 | 354 | 3 |
| 313 | 1 | 336 | 3 | 355 | 3 |
| 314 | 1 | 337 | 3 | | |
| 315 | 1 | 338 | 2 | | |
| 316 | 1 | 339 | 2 | | |
| 317 | 1 | | | | |
| 318 | 1 | | | | |
| 319 | 1 | | | | |
| 320 | 1 | | | | |

| CATEGORY | CENTROIDS |
|---|---|
| Internal Zones (Illinois) | 1-217 |
| Internal Zones (Iowa) | 218-290 |
| Intermediate Zones (Iowa) | 291-297 |
| Numbers Reserved for Future Zones | 298-320 |
| External Cordon Stations (Iowa) | 321-339 |
| External Cordon Stations (Illinois) | 340-355 |

Table 23

INTRAZONAL TRAVEL TIMES

| Centroid | Intrazonal Travel Time (Minutes) | Centroid | Intrazonal Travel Time (Minutes) | Centroid | Intrazonal Travel Time (Minutes) |
|---|---|---|---|---|---|
| 1 | 2 | 51 | 2 | 101 | 1 |
| 2 | 1 | 52 | 2 | 102 | 2 |
| 3 | 2 | 53 | 1 | 103 | 3 |
| 4 | 2 | 54 | 1 | 104 | 2 |
| 5 | 2 | 55 | 1 | 105 | 1 |
| 6 | 2 | 56 | 1 | 106 | 2 |
| 7 | 3 | 57 | 2 | 107 | 1 |
| 8 | 2 | 58 | 3 | 108 | 2 |
| 9 | 2 | 59 | 3 | 109 | 2 |
| 10 | 2 | 60 | 1 | 110 | 2 |
| 11 | 2 | 61 | 1 | 111 | 2 |
| 12 | 2 | 62 | 1 | 112 | 1 |
| 13 | 3 | 63 | 3 | 113 | 2 |
| 14 | 2 | 64 | 2 | 114 | 2 |
| 15 | 3 | 65 | 2 | 115 | 1 |
| 16 | 3 | 66 | 3 | 116 | 2 |
| 17 | 2 | 67 | 2 | 117 | 1 |
| 18 | 1 | 68 | 3 | 118 | 2 |
| 19 | 2 | 69 | 2 | 119 | 2 |
| 20 | 2 | 70 | 2 | 120 | 2 |
| 21 | 2 | 71 | 2 | 121 | 1 |
| 22 | 2 | 72 | 1 | 122 | 2 |
| 23 | 1 | 73 | 1 | 123 | 3 |
| 24 | 2 | 74 | 3 | 124 | 3 |
| 25 | 1 | 75 | 3 | 125 | 2 |
| 26 | 2 | 76 | 2 | 126 | 2 |
| 27 | 2 | 77 | 2 | 127 | 2 |
| 28 | 2 | 78 | 3 | 128 | 2 |
| 29 | 2 | 79 | 3 | 129 | 3 |
| 30 | 1 | 80 | 3 | 130 | 3 |
| 31 | 3 | 81 | 2 | 131 | 3 |
| 32 | 2 | 82 | 3 | 132 | 3 |
| 33 | 2 | 83 | 2 | 133 | 1 |
| 34 | 1 | 84 | 2 | 134 | 3 |
| 35 | 3 | 85 | 2 | 135 | 2 |
| 36 | 1 | 86 | 1 | 136 | 2 |
| 37 | 2 | 87 | 2 | 137 | 1 |
| 38 | 1 | 88 | 1 | 138 | 2 |
| 39 | 2 | 89 | 1 | 139 | 3 |
| 40 | 2 | 90 | 1 | 140 | 2 |
| 41 | 1 | 91 | 1 | 141 | 2 |
| 42 | 2 | 92 | 2 | 142 | 2 |
| 43 | 1 | 93 | 2 | 143 | 3 |
| 44 | 2 | 94 | 2 | 144 | 3 |
| 45 | 2 | 95 | 2 | 145 | 2 |
| 46 | 1 | 96 | 2 | 146 | 2 |
| 47 | 1 | 97 | 1 | 147 | 2 |
| 48 | 1 | 98 | 3 | 148 | 1 |
| 49 | 3 | 99 | 2 | 149 | 1 |
| 50 | 2 | 100 | 2 | 150 | 1 |

Table 23--Concluded

INTRAZONAL TRAVEL TIMES

| Centroid | Intrazonal Travel Time (Minutes) | Centroid | Intrazonal Travel Time (Minutes) | Centroid | Intrazonal Travel Time (Minutes) |
|---|---|---|---|---|---|
| 151 | 2 | 201 | 1 | 251 | 2 |
| 152 | 1 | 202 | 3 | 252 | 1 |
| 153 | 2 | 203 | 3 | 253 | 2 |
| 154 | 2 | 204 | 2 | 254 | 1 |
| 155 | 3 | 205 | 3 | 255 | 2 |
| 156 | 3 | 206 | 2 | 256 | 2 |
| 157 | 1 | 207 | 1 | 257 | 1 |
| 158 | 3 | 208 | 3 | 258 | 2 |
| 159 | 1 | 209 | 3 | 259 | 2 |
| 160 | 2 | 210 | 1 | 260 | 2 |
| 161 | 2 | 211 | 3 | 261 | 1 |
| 162 | 2 | 212 | 2 | 262 | 2 |
| 163 | 2 | 213 | 2 | 263 | 2 |
| 164 | 3 | 214 | 1 | 264 | 2 |
| 165 | 1 | 215 | 2 | 265 | 1 |
| 166 | 1 | 216 | 2 | 266 | 1 |
| 167 | 2 | 217 | 2 | 267 | 1 |
| 168 | 3 | 218 | 2 | 268 | 1 |
| 169 | 2 | 219 | 1 | 269 | 2 |
| 170 | 1 | 220 | 1 | 270 | 2 |
| 171 | 1 | 211 | 1 | 271 | 1 |
| 172 | 1 | 222 | 2 | 272 | 2 |
| 173 | 1 | 223 | 1 | 273 | 1 |
| 174 | 3 | 224 | 2 | 274 | 1 |
| 175 | 3 | 225 | 1 | 275 | 2 |
| 176 | 1 | 226 | 2 | 276 | 1 |
| 177 | 1 | 227 | 1 | 277 | 1 |
| 178 | 2 | 228 | 3 | 278 | 1 |
| 179 | 3 | 229 | 1 | 279 | 1 |
| 180 | 1 | 230 | 2 | 280 | 1 |
| 181 | 1 | 231 | 2 | 281 | 2 |
| 182 | 2 | 232 | 3 | 282 | 3 |
| 183 | 3 | 233 | 3 | 283 | 2 |
| 184 | 1 | 234 | 2 | 284 | 1 |
| 185 | 3 | 235 | 2 | 285 | 2 |
| 186 | 2 | 236 | 2 | 286 | 1 |
| 187 | 3 | 237 | 2 | 287 | 3 |
| 188 | 1 | 238 | 2 | 288 | 1 |
| 189 | 2 | 239 | 2 | 289 | 1 |
| 190 | 2 | 240 | 3 | 290 | 2 |
| 191 | 2 | 241 | 2 | 291 | 3 |
| 192 | 2 | 242 | 2 | 292 | 3 |
| 193 | 3 | 243 | 2 | 293 | 3 |
| 194 | 2 | 244 | 1 | 294 | 3 |
| 195 | 3 | 245 | 2 | 295 | 5 |
| 196 | 3 | 246 | 2 | 296 | 4 |
| 197 | 2 | 247 | 2 | 297 | 3 |
| 198 | 3 | 248 | 2 | | |
| 199 | 3 | 249 | 1 | | |
| 200 | 3 | 250 | 1 | | |

PR-133--Build Trip Tables

The basic input to this program is the binary table of O-D zone-to-zone trips. The program converts survey zone numbers to zone centroid numbers; determines the zone of production and zone of attraction for each trip record; classifies each trip record into the appropriate purpose category; determines the number of trips between each zone of production and every attraction zone by purpose category; and accumulates the number of trips produced and attracted by each zone in the study area for each trip purpose classification.

PR-166--Punch and Sum Trip Ends

This program prepares printed tables of trip productions and attractions as well as zonal parameter cards for input to the gravity model program.

PR-134--Trip Length Distribution

This program accumulates the number of trips between each pair of zones according to the travel time between the zones and produces the number and percentage of total trips in each one-minute increment of travel time.

Samples of computer printouts from each of these programs are shown in Figure 17.

# FIGURE 17
# SAMPLE OUTPUT OF IBM 7090/7094
# GRAVITY MODEL PROGRAMS

DRIM TRAV STUDY TRIP END SUMMARY BY PURPOSE VEHICLE TAPE UNIT B1 PAGE 1

| ZONE | TRIPS FROM OTHER ZONES | TRIPS TO OTHER ZONES | INTRAZONAL TRIPS | TOTAL TRIPS RECEIVED | TOTAL TRIPS SENT | TOTAL TRIP ENDS |
|---|---|---|---|---|---|---|
| 1 | 1519 | 168 | 0 | 1519 | 168 | 1687 |
| 2 | 5511 | 271 | 0 | 5511 | 271 | 5782 |
| 3 | 1154 | 78 | 0 | 1154 | 78 | 1232 |
| 4 | 1013 | 65 | 0 | 1013 | 65 | 1078 |
| 5 | 549 | 76 | 0 | 549 | 76 | 625 |
| 6 | 72 | 13 | 0 | 72 | 13 | 85 |
| 7 | 1857 | 36 | 0 | 1857 | 36 | 1893 |
| 8 | 1037 | 255 | 23 | 1060 | 278 | 1338 |
| 9 | 236 | 619 | 0 | 236 | 619 | 855 |
| 10 | 600 | 725 | 0 | 600 | 725 | 1325 |
| 11 | 1109 | 374 | 0 | 1109 | 374 | 1483 |
| 12 | 254 | 587 | 0 | 254 | 587 | 841 |
| 13 | 723 | 78 | 0 | 723 | 78 | 801 |
| 14 | 763 | 183 | 0 | 763 | 183 | 946 |

PUNCH DRIM TRAV STUDY TRIP END SUMMARY BY PURPOSE VEHICLE

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 168 | 36 | 175 | 808 | 367 | 0 | 1519 | 166 | 1436 | 768 | 357 | 0 |
| 2 | 2 | 271 | 74 | 285 | 3009 | 1022 | 0 | 5511 | 2154 | 2303 | 3345 | 1040 | 0 |
| 3 | 3 | 78 | 51 | 74 | 518 | 399 | 0 | 1154 | 74 | 734 | 295 | 402 | 0 |
| 4 | 4 | 65 | 24 | 32 | 678 | 143 | 0 | 1013 | 257 | 302 | 527 | 150 | 0 |
| 5 | 5 | 76 | 43 | 75 | 648 | 295 | 0 | 549 | 471 | 531 | 340 | 303 | 0 |
| 6 | 6 | 13 | 0 | 14 | 228 | 173 | 0 | 72 | 52 | 138 | 81 | 169 | 0 |
| 7 | 7 | 36 | 0 | 48 | 1279 | 193 | 0 | 1857 | 3 | 7136 | 863 | 228 | 0 |
| 8 | 8 | 278 | 103 | 167 | 591 | 443 | 0 | 1060 | 96 | 760 | 442 | 385 | 0 |
| 9 | 9 | 619 | 173 | 236 | 350 | 159 | 0 | 236 | 42 | 298 | 224 | 153 | 0 |
| 10 | 10 | 725 | 356 | 428 | 236 | 207 | 0 | 600 | 1036 | 86 | 570 | 207 | 0 |
| 11 | 11 | 374 | 218 | 177 | 412 | 150 | 0 | 1109 | 25 | 233 | 189 | 147 | 0 |
| 12 | 12 | 587 | 264 | 262 | 179 | 213 | 0 | 254 | 0 | 399 | 238 | 209 | 0 |
| 13 | 13 | 78 | 8 | 134 | 448 | 713 | 0 | 723 | 58 | 1045 | 317 | 696 | 0 |
| 14 | 14 | 183 | 90 | 213 | 573 | 347 | 0 | 763 | 0 | 4141 | 267 | 362 | 0 |
| 15 | 15 | 637 | 101 | 382 | 344 | 420 | 0 | 488 | 6 | 765 | 334 | 441 | 0 |
| 16 | 16 | 685 | 262 | 547 | 382 | 444 | 0 | 602 | 111 | 513 | 362 | 419 | 0 |
| 17 | 17 | 1805 | 510 | 857 | 755 | 513 | 0 | 1190 | 388 | 310 | 1042 | 523 | 0 |
| 18 | 18 | 1366 | 223 | 817 | 905 | 596 | 0 | 1465 | 54 | 1432 | 643 | 609 | 0 |
| 19 | 19 | 1005 | 144 | 482 | 424 | 250 | 0 | 1160 | 46 | 66 | 381 | 245 | 0 |
| 20 | 20 | 1481 | 578 | 844 | 301 | 244 | 0 | 780 | 94 | 110 | 346 | 257 | 0 |

PR-116 PUNCH AND SUM TRIP ENDS

DRIM TRAV STUDY

TRIP LENGTH DISTRIBUTION - PURPOSE NO. 1 PAGE 11

| TRIP LENGTH (MINUTES) | TRIPS | PERCENT OF TOTAL | ACCUMULATED PERCENTAGE |
|---|---|---|---|
| 0 | 0 | 0.000 | 0.000 |
| 1 | 123 | 0.099 | 0.099 |
| 2 | 794 | 0.639 | 0.738 |
| 3 | 1.831 | 1.473 | 2.211 |
| 4 | 3.790 | 3.048 | 5.259 |
| 5 | 4.466 | 3.592 | 8.851 |
| 6 | 5.012 | 4.031 | 12.882 |
| 7 | 8.329 | 6.698 | 19.580 |
| 8 | 9.121 | 7.335 | 26.915 |
| 9 | 9.190 | 7.391 | 34.306 |
| 10 | 9.422 | 7.577 | 41.883 |

TOTAL TRIPS FOR THIS PURPOSE 124.342

TOTAL PERSON HOURS OF TRAVEL 30.030

AVERAGE TRIP LENGTH, THIS PURPOSE 14.491 MINUTES

PR-134 TRIP LENGTH DISTRIBUTION

Development of Travel Time Factors

The initial set of travel time factors ($F_{ij}$) used in calibration of the gravity model was taken from another transportation study made in an area of comparable size. Initial travel time factors are of little consequence since output of the gravity model program is used to calculate new factors but fewer calibrations are required if the initial factors are reasonable.

Following is a description of the operation of the gravity model program (PR-135). Zonal trip interchanges are calculated using:

a) The initial set of travel time factors;

b) Zonal trip productions and attractions from the trip table builder program; and

c) Minimum path travel times for all zones including intra-zonal and terminal times.

Trips attracted to each zone in the study area are then compared with trip attractions to each zone as given by the trip table builder program. After making this comparison, zonal trip attraction factors are automatically adjusted (iterated) by the ratio of the O-D trip attraction factor to the gravity model results. The program then calculates an entirely new set of interchanges based on the adjusted attractions.

Travel time factors are adjusted after each gravity model calculation by multiplying the travel time factor used by the ratio of the percentage of survey trips to the percentage of gravity model trips. Mathematically, for each time increment

$$F_{adj.} = F_{used} \times \frac{OD\%}{GM\%}$$

where:

$F_{adj.}$ = Travel time factor to be used in next calibration

$F_{used}$ = Travel time factor used in the gravity model run being analyzed

OD% = Percentage of origin-destination survey trips

GM% = Percentage of gravity model trips from the run being analyzed

The adjusted travel time factors are then plotted against their respective travel time increments on log-log graph paper. This is done for each trip purpose category. A "line of best fit" is fitted to the distribution of the points with an attempt made to keep the line as smooth and as straight as possible while also keeping in mind that it should approximate the distribution of points. When the line of best fit has been drawn, a new set of travel time factors is selected from it.

The new sets of travel time factors are then used in the next calibration of the gravity model program. Zonal trip production ($P_i$) and trip attraction ($A_j$) values and the minimum path travel times ($T_{ij}$) between all zones are left unchanged. Successive calibrations result in other estimates of trip interchanges and in new trip length frequency distributions. The trial and adjustment procedure for determining travel time factors is repeated until a reasonable comparison is obtained between the O-D and gravity model trip length frequencies. Criteria for evaluating the comparison require that both curves be relatively close to one another when compared visually and that the difference between average trip lengths be within plus or minus three percent.

A sample computer printout of the gravity model program is shown in Figure 18. Approximately 12 gravity model calibrations were made during the course of the analysis.[1]

Adjusted final travel time factors derived in the analysis are shown graphically in Figure 19. Their values ($F_{ij}$) as finally entered in the gravity model program are given in Table 24.

---

(1)- This is an approximation of the total number of complete calibrations since numerous intermediate computer runs were made only for specific purpose categories. It also includes analyses of travel time penalties and zone-to-zone adjustment factors described later.

# FIGURE 18

# SAMPLE OUTPUT OF IBM 7090/7094 GRAVITY MODEL PROGRAMS

DRIM TRAV STUDY — ITERATION NO. 3

TABLE 1 – COMPARISON OF TRIP ATTRACTION TO TRIPS ATTRACTED – PURPOSE NO. 1 PAGE 1 OF 9

| DISTRICT | TRIP ATTRACTION | TRIPS ATTRACTED | DIFFERENCE | PERCENT DIFFERENCE | RATIO |
|---|---|---|---|---|---|
| 1 | 1.519 | 1.522 | 3 | .19 | .998 |
| 2 | 5.511 | 5.549 | 38 | .68 | .993 |
| 3 | 1.154 | 1.146 | -8 | -.69 | 1.007 |
| 4 | 1.013 | 1.028 | 15 | 1.48 | .985 |
| 5 | 549 | 554 | 5 | .91 | .991 |
| 6 | 72 | 75 | 3 | 4.16 | .960 |
| 7 | 1.857 | 1.852 | -5 | -.26 | 1.003 |
| 8 | 1.060 | 1.053 | -7 | -.66 | 1.007 |
| 9 | 236 | 250 | 14 | 5.93 | .944 |
| 10 | 600 | 594 | -6 | -1.00 | 1.010 |
| 11 | 1.109 | 1.123 | 14 | 1.26 | .988 |
| 12 | 254 | 252 | -2 | -.78 | 1.008 |
| 13 | 723 | 724 | 1 | .13 | .999 |
| 14 | 763 | 764 | 1 | .13 | .999 |
| 15 | 488 | 499 | 11 | 2.25 | .978 |

## PR-135 GRAVITY MODEL

DRIM TRAE STUDY — G-M VS. O-D LOADED SPIDER NETS

TABLE 1 – COMPARISON OF LINK VOLUMES

| ANODE | BNODE | NO.1 VOLUME | NO.2 VOLUME | DIFFERENCE |
|---|---|---|---|---|
| 1 | 499 | 6.044 | 5.800 | -244 |
| 2 | 3 | 4.940 | 4.920 | -20 |
| 2 | 5 | 9.364 | 7.888 | -1.476 |
| 2 | 8 | 8.812 | 8.140 | -672 |
| 2 | 499 | 12.760 | 11.488 | -1.272 |
| 3 | 2 | 30.496 | 28.100 | -2.396 |
| 3 | 6 | 12.628 | 12.040 | -588 |
| 3 | 9 | 5.792 | 5.916 | 124 |
| 3 | 10 | 5.852 | 5.388 | -464 |
| 4 | 5 | 15.136 | 12.988 | -2.148 |
| 4 | 245 | 6.416 | 5.840 | -576 |
| 4 | 499 | 11.960 | 12.280 | 320 |
| 4 | 571 | 2.128 | 2.008 | -120 |
| 5 | 2 | 4.908 | 4.932 | 24 |
| 5 | 4 | 9.704 | 9.572 | -132 |
| 5 | 6 | 8.924 | 6.712 | -2.212 |
| 5 | 536 | 13.584 | 10.780 | -2.804 |
| 6 | 3 | 7.004 | 6.572 | -432 |
| 6 | 5 | 7.944 | 6.928 | -1.016 |
| 6 | 536 | 4.544 | 4.180 | -364 |
| 6 | 569 | 17.640 | 15.024 | -2.616 |
| 7 | 536 | 12.280 | 11.216 | -1.064 |
| 7 | 537 | 12.784 | 12.716 | -68 |
| 7 | 539 | 528 | 928 | 400 |
| 7 | 565 | 21.680 | 19.424 | -2.256 |
| 8 | 2 | 19.836 | 17.432 | -2.404 |
| 8 | 9 | 4.012 | 5.708 | 1.696 |
| 8 | 16 | 2.356 | 2.704 | 348 |
| 8 | 575 | 7.552 | 6.232 | -1.320 |
| 9 | 3 | 35.728 | 33.416 | -2.312 |
| 9 | 8 | 7.052 | 6.544 | -508 |
| 9 | 23 | 5.860 | 7.596 | 1.736 |
| 9 | 575 | 4.348 | 4.072 | -276 |
| 10 | 3 | 13.240 | 12.624 | -616 |
| 10 | 11 | 16.532 | 15.832 | -700 |
| 10 | 13 | 3.928 | 5.520 | 1.592 |
| 10 | 23 | 8.524 | 7.888 | -636 |
| 11 | 10 | 18.004 | 16.452 | -1.552 |

TABLE 2 – FREQUENCY DISTRIBUTION AND ANALYSIS OF DIFFERENCES
VOLUME GROUP 500 TO 999

| DIFFERENCE | FREQUENCY | SUM OF DIFFERENCES |
|---|---|---|
| -10000 AND LESS | 0 | 0 |
| -7000 THRU -9999 | 0 | 0 |
| -5000 THRU -6999 | 0 | 0 |
| -4000 THRU -4999 | 0 | 0 |
| -3500 THRU -3999 | 0 | 0 |
| -3000 THRU -3499 | 0 | 0 |
| -2500 THRU -2999 | 0 | 0 |
| -2000 THRU -2499 | 0 | 0 |
| -1500 THRU -1999 | 0 | 0 |
| -1250 THRU -1499 | 0 | 0 |
| -1000 THRU -1249 | 0 | 0 |
| -750 THRU -999 | 0 | 0 |
| -500 THRU -749 | 1 | -628 |
| -300 THRU -499 | 5 | -1.896 |
| -100 THRU -299 | 24 | -4.052 |
| -1 THRU -99 | 13 | -648 |
| 0 THRU 99 | 11 | 608 |
| 100 THRU 299 | 27 | 5.096 |
| 300 THRU 499 | 23 | 8.664 |
| 500 THRU 749 | 10 | 5.920 |
| 750 THRU 999 | 4 | 3.228 |
| 1000 THRU 1249 | 1 | 1.080 |
| 1250 THRU 1499 | 0 | 0 |
| 1500 THRU 1999 | 0 | 0 |
| 2000 THRU 2499 | 0 | 0 |
| 2500 THRU 2999 | 0 | 0 |
| 3000 THRU 3499 | 0 | 0 |
| 3500 THRU 3999 | 0 | 0 |
| 4000 THRU 4999 | 0 | 0 |
| 5000 THRU 6999 | 0 | 0 |
| 7000 THRU 9999 | 0 | 0 |
| 10000 AND OVER | 0 | 0 |
| TOTALS | 119 | 17.372 |

SUM OF SQUARES = 13.670.320

MEAN DIFFERENCE = 146 STANDARD DEVIATION = 305

ROOT MEAN SQ. ERROR = 336 PER CENT R.M.S.ERROR = 46.80

TOTAL NO.1 TRIPS(B5)= 85.952 TOTAL NO.2 TRIPS (A6)= 103.324

## PR-124 COMPARISON PROGRAM

# TRAVEL TIME FACTORS VS. TRIP LENGTH

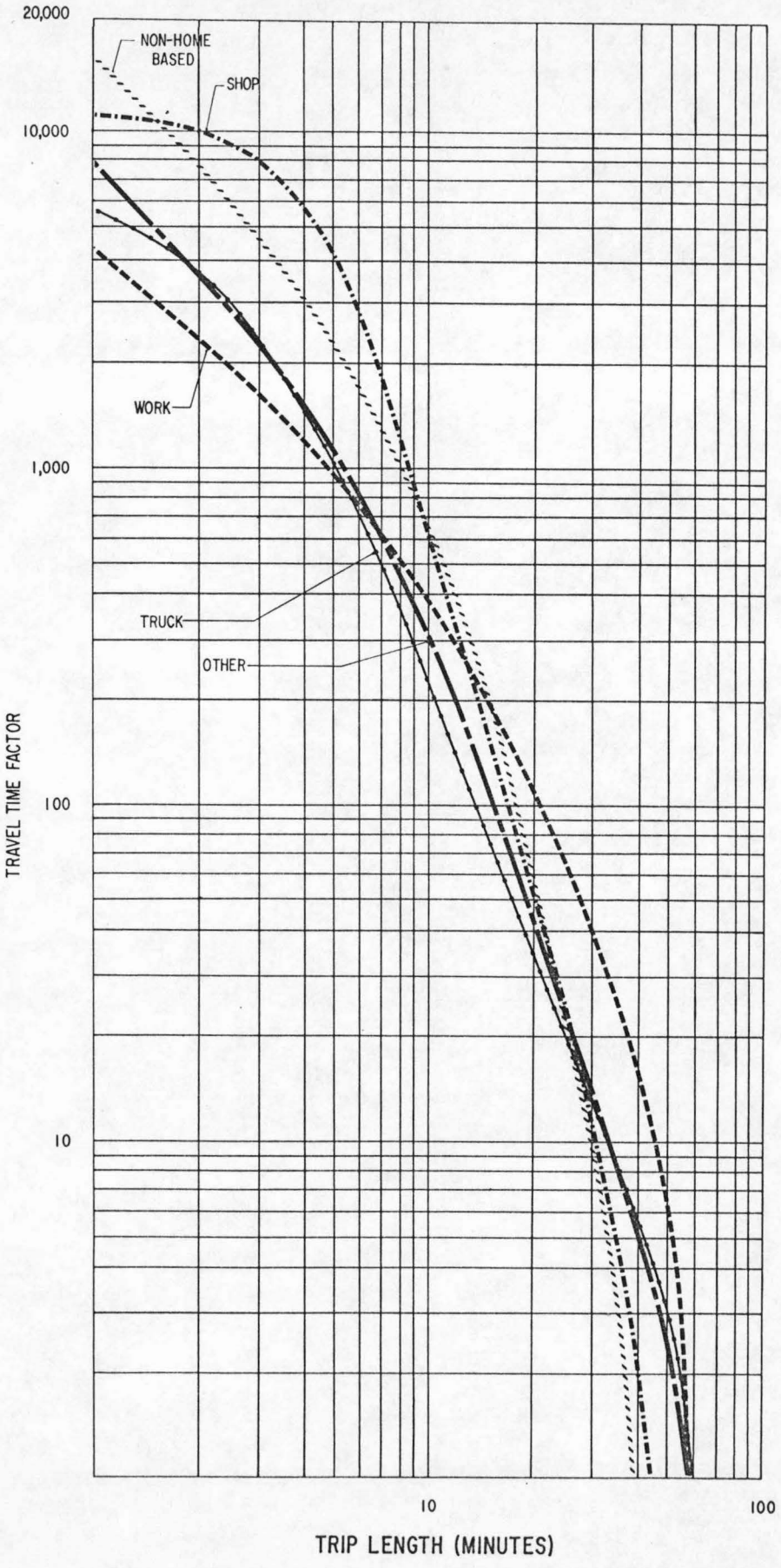


Table 24

FINAL TRAVEL TIME FACTORS

| Travel Time (Minutes) | Trip Purpose: Home Based Work | Home Based Shop | Home Based Other | Non-Home Based | Truck |
|---|---|---|---|---|---|
| 1 | 4400 | 11000 | 8000 | 16500 | 5650 |
| 2 | 2400 | 10000 | 3700 | 7900 | 3800 |
| 3 | 1600 | 8000 | 2300 | 4800 | 2400 |
| 4 | 1150 | 6000 | 1500 | 3200 | 1500 |
| 5 | 970 | 4400 | 1100 | 2400 | 1050 |
| 6 | 770 | 2800 | 840 | 1750 | 730 |
| 7 | 630 | 1800 | 630 | 1350 | 510 |
| 8 | 530 | 1150 | 480 | 1050 | 370 |
| 9 | 460 | 890 | 390 | 870 | 300 |
| 10 | 390 | 620 | 320 | 690 | 235 |
| 11 | 325 | 410 | 240 | 510 | 180 |
| 12 | 295 | 305 | 190 | 390 | 135 |
| 13 | 250 | 230 | 160 | 300 | 110 |
| 14 | 215 | 180 | 130 | 240 | 90 |
| 15 | 190 | 140 | 105 | 200 | 73 |
| 16 | 175 | 115 | 88 | 155 | 61 |
| 17 | 160 | 94 | 73 | 130 | 52 |
| 18 | 135 | 78 | 62 | 100 | 45 |
| 19 | 120 | 63 | 51 | 79 | 39 |
| 20 | 110 | 52 | 45 | 61 | 35 |
| 21 | 100 | 43 | 39 | 50 | 31 |
| 22 | 88 | 37 | 34 | 39 | 28 |
| 23 | 78 | 30 | 30 | 30 | 24 |
| 24 | 70 | 25 | 26 | 25 | 21 |
| 25 | 63 | 22 | 23 | 21 | 19 |
| 26 | 58 | 20 | 21 | 18 | 18 |
| 27 | 53 | 18 | 19 | 15 | 16 |
| 28 | 49 | 16 | 17 | 13 | 14 |
| 29 | 44 | 14 | 16 | 11 | 13 |
| 30 | 41 | 12 | 14 | 10 | 12 |
| 31 | 38 | 10 | 13 | 8 | 11 |
| 32 | 34 | 8 | 12 | 6 | 10 |
| 33 | 30 | 7 | 10 | 5 | 9 |
| 34 | 28 | 6 | 9 | 4 | 8 |
| 35 | 24 | 5 | 8 | 4 | 8 |
| 36 | 22 | 4 | 7 | 3 | 7 |
| 37 | 20 | 4 | 7 | 2 | 7 |
| 38 | 19 | 3 | 6 | 2 | 6 |
| 39 | 18 | 3 | 6 | 1 | 6 |
| 40 | 16 | 2 | 5 | 1 | 5 |
| 41 | 15 | 2 | 5 | 1 | 5 |
| 42 | 14 | 2 | 5 | 1 | 5 |
| 43 | 13 | 2 | 4 | 1 | 5 |
| 44 | 12 | 1 | 4 | 1 | 4 |
| 45 | 11 | 1 | 4 | 1 | 4 |
| 46 | 10 | 1 | 3 | 1 | 4 |
| 47 | 9 | 1 | 3 | 1 | 4 |
| 48 | 8 | 1 | 3 | 1 | 3 |
| 49 | 7 | 1 | 3 | 0 | 3 |
| 50 | 7 | 1 | 3 | 0 | 3 |
| 51 | 6 | 1 | 2 | 0 | 3 |
| 52 | 5 | 1 | 2 | 0 | 3 |
| 53 | 4 | 1 | 2 | 0 | 2 |
| 54 | 4 | 1 | 2 | 0 | 2 |
| 55 | 3 | 1 | 1 | 0 | 2 |
| 56 | 2 | 0 | 1 | 0 | 2 |
| 57 | 2 | 0 | 1 | 0 | 1 |
| 58 | 1 | 0 | 1 | 0 | 1 |
| 59 | 1 | 0 | 1 | 0 | 1 |

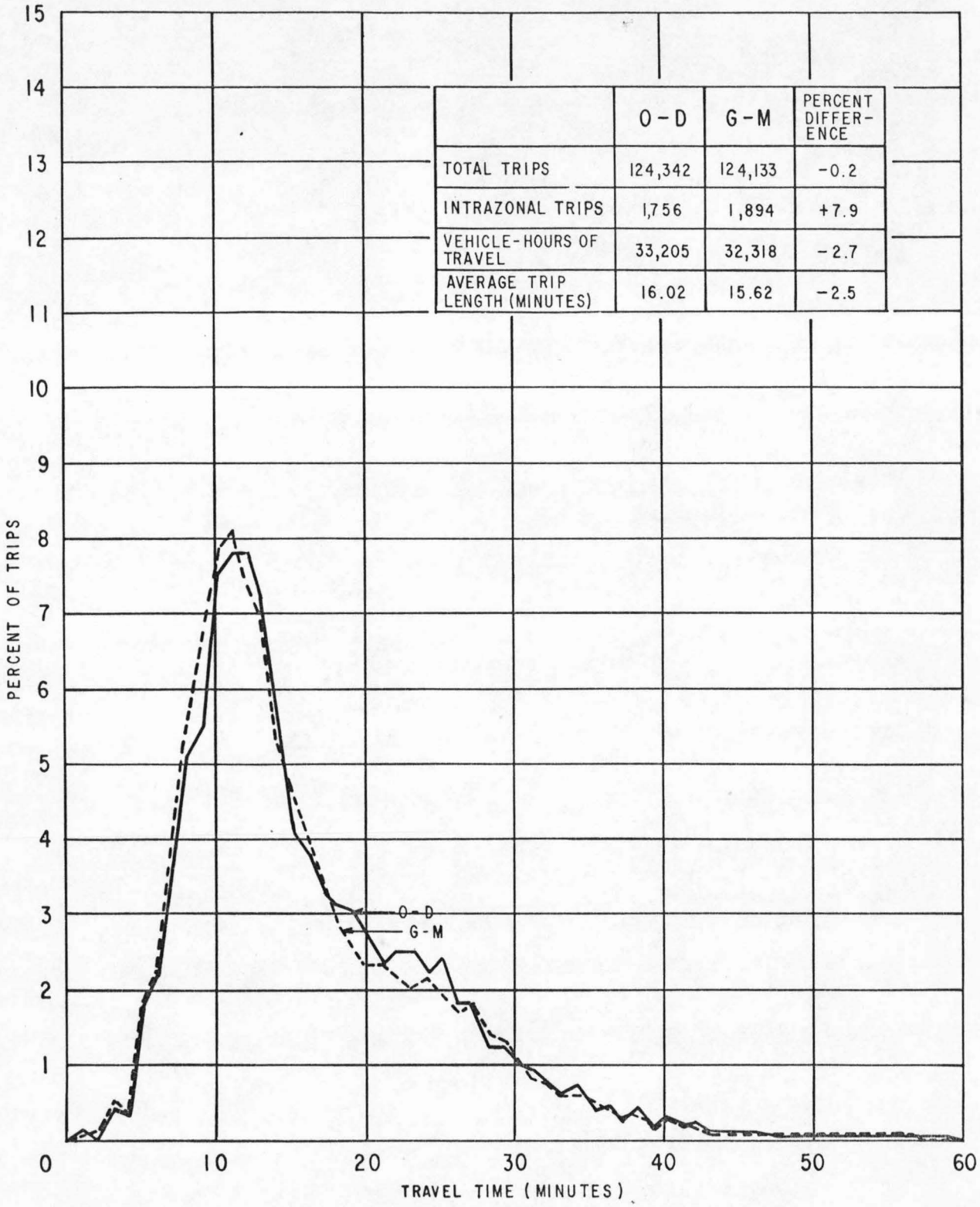
Curves showing the comparison between gravity model and O-D trip length frequencies for each trip purpose category are presented in Figures 20 through 24. Total number of trips, number of intra-zonal trips, vehicle-hours of travel and average trip lengths for both gravity model and O-D trips as well as the percent differences are also shown in the figures.

Topographical Barriers

Many of the gravity model studies conducted to date have shown that topographic barriers such as mountains, rivers, and large open spaces may cause some bias in the gravity model trip interchange estimates. This was also found to be true in this study with regard to trips crossing the Mississippi River. The impedance is compounded moreover by tolls charged on bridges across the river.

To correct for the effect of the Mississippi River topographical barrier, travel time penalties were inserted in each segment of the traffic assignment network crossing the river. After several trials, it was found that additional travel time of eight minutes on each link crossing the river simulated the effect of both the topographical barrier and tolls in inhibiting travel.

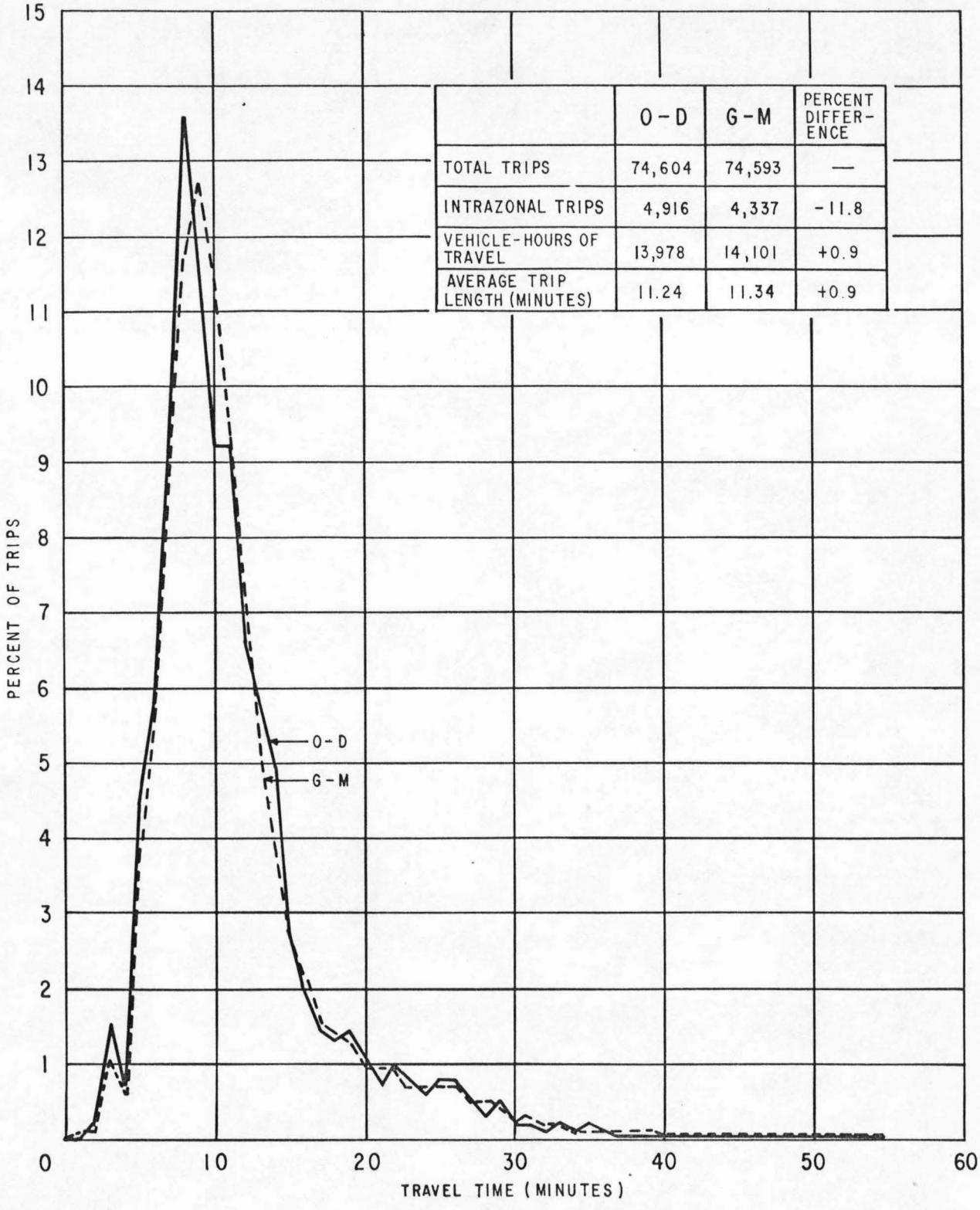
FIGURE 20




| | O-D | G-M | PERCENT DIFFERENCE |
|---|---|---|---|
| TOTAL TRIPS | 124,342 | 124,133 | -0.2 |
| INTRAZONAL TRIPS | 1,756 | 1,894 | +7.9 |
| VEHICLE-HOURS OF TRAVEL | 33,205 | 32,318 | -2.7 |
| AVERAGE TRIP LENGTH (MINUTES) | 16.02 | 15.62 | -2.5 |

TRIP LENGTH FREQUENCY COMPARISON
HOME BASED WORK TRIPS

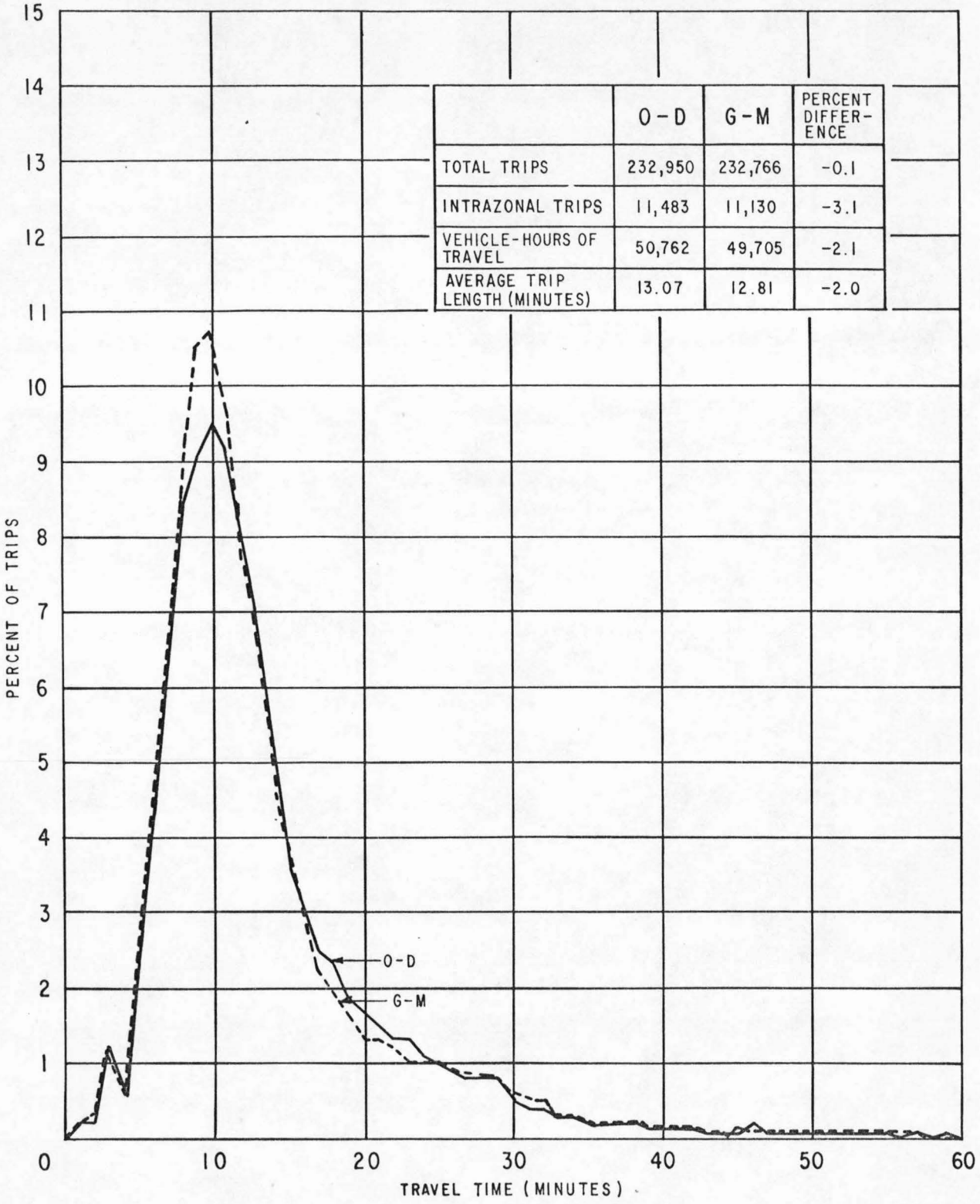
FIGURE 21




| | O-D | G-M | PERCENT DIFFERENCE |
|---|---|---|---|
| TOTAL TRIPS | 74,604 | 74,593 | — |
| INTRAZONAL TRIPS | 4,916 | 4,337 | -11.8 |
| VEHICLE-HOURS OF TRAVEL | 13,978 | 14,101 | +0.9 |
| AVERAGE TRIP LENGTH (MINUTES) | 11.24 | 11.34 | +0.9 |

TRIP LENGTH FREQUENCY COMPARISON
HOME BASED SHOP TRIPS

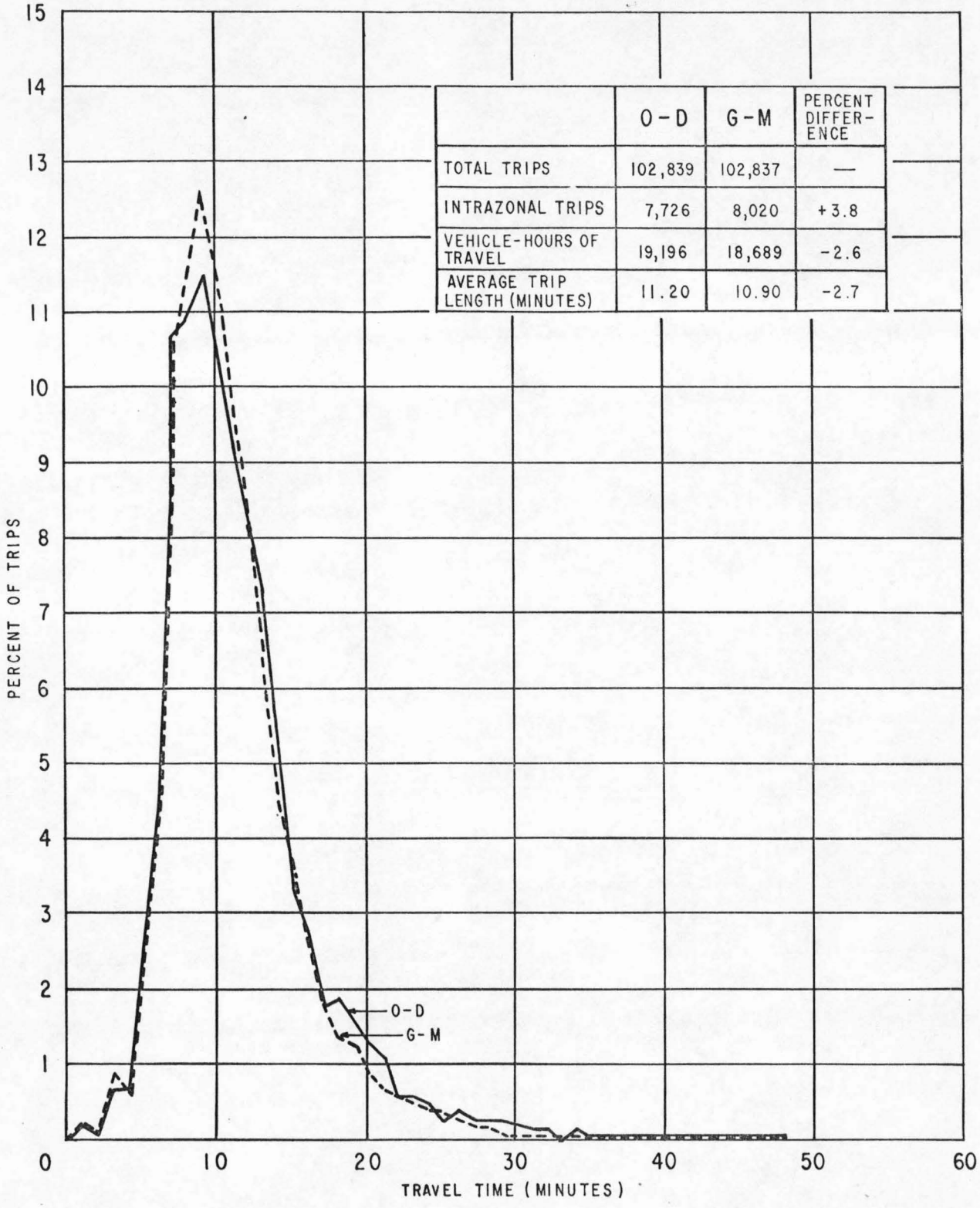
FIGURE 22




| | O-D | G-M | PERCENT DIFFERENCE |
|---|---|---|---|
| TOTAL TRIPS | 232,950 | 232,766 | -0.1 |
| INTRAZONAL TRIPS | 11,483 | 11,130 | -3.1 |
| VEHICLE-HOURS OF TRAVEL | 50,762 | 49,705 | -2.1 |
| AVERAGE TRIP LENGTH (MINUTES) | 13.07 | 12.81 | -2.0 |

TRIP LENGTH FREQUENCY COMPARISON
HOME BASED OTHER TRIPS

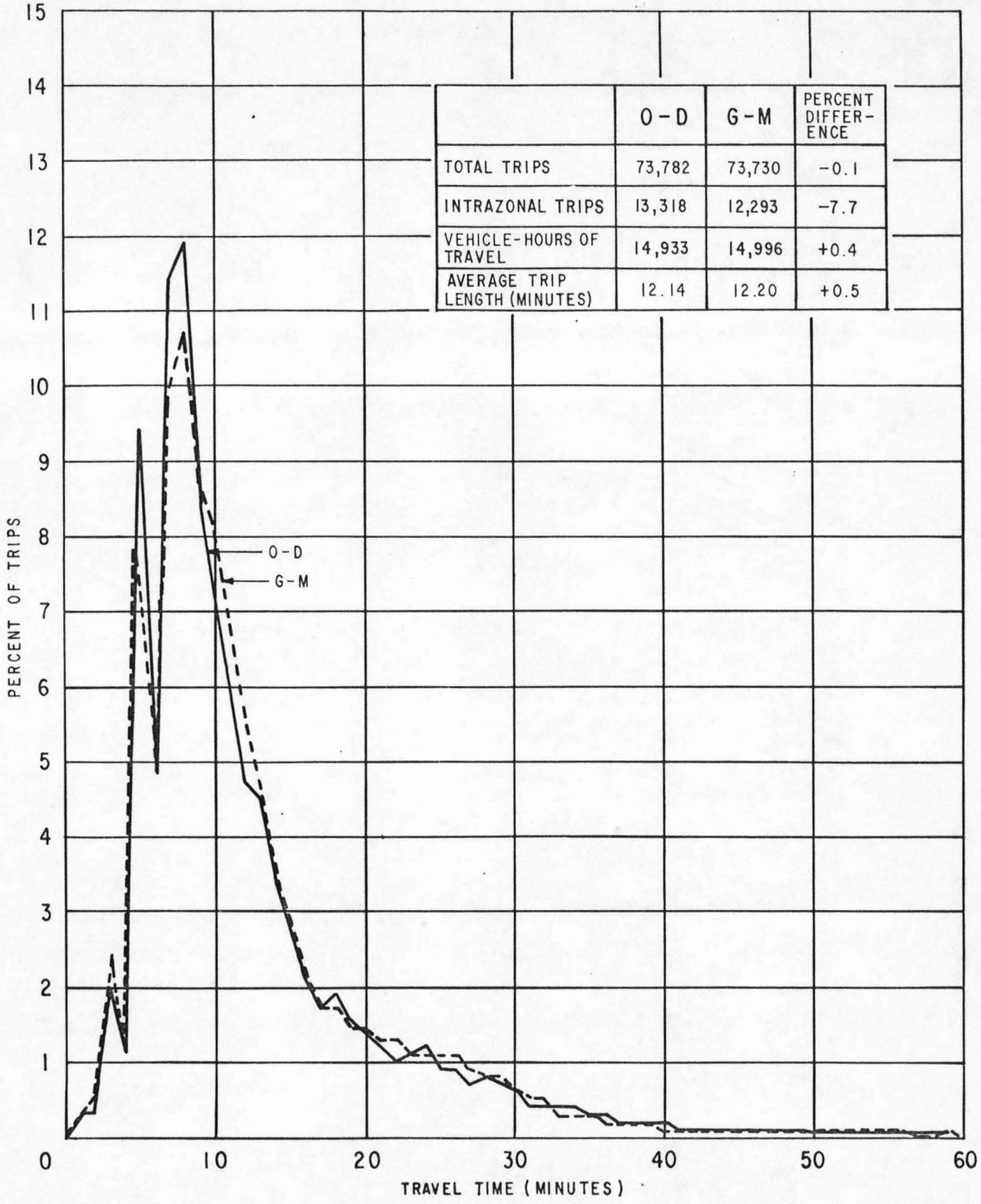
FIGURE 23




| | O-D | G-M | PERCENT DIFFERENCE |
|---|---|---|---|
| TOTAL TRIPS | 102,839 | 102,837 | — |
| INTRAZONAL TRIPS | 7,726 | 8,020 | +3.8 |
| VEHICLE-HOURS OF TRAVEL | 19,196 | 18,689 | -2.6 |
| AVERAGE TRIP LENGTH (MINUTES) | 11.20 | 10.90 | -2.7 |

TRIP LENGTH FREQUENCY COMPARISON
NON-HOME BASED TRIPS

FIGURE 24




| | O-D | G-M | PERCENT DIFFERENCE |
|---|---|---|---|
| TOTAL TRIPS | 73,782 | 73,730 | -0.1 |
| INTRAZONAL TRIPS | 13,318 | 12,293 | -7.7 |
| VEHICLE-HOURS OF TRAVEL | 14,933 | 14,996 | +0.4 |
| AVERAGE TRIP LENGTH (MINUTES) | 12.14 | 12.20 | +0.5 |

TRIP LENGTH FREQUENCY COMPARISON
TRUCK TRIPS

Zone-to-Zone Adjustment Factors

Zone-to-zone adjustment factors ($K_{ij}$) are often required in the gravity model calibration to account for various social and economic conditions which cannot be described mathematically in the gravity model formula. It was found after analysis of the initial gravity model trip distributions that zone-to-zone adjustment factors were required in the Davenport-Rock Island-Moline urbanized area to account for the following conditions:

1. Travel times used in the traffic assignment network represented a weighted average of peak and off-peak driving speeds. They cannot be expected to account for additional traffic impedance caused by congestion on Mississippi River bridges at peak periods. Adjustment factors were required, therefore, to compensate for this condition in all purpose categories except home based shop and truck trips which are more evenly distributed throughout the day than other types of trips. Home based work trips between the major cities and the Rock Island Arsenal also required adjustment.

2. The internal study area is made up essentially of five separate but closely related cities. There are some trips, obviously, which are made wholly within the confines of an individual city. These may include, among others, trips to schools, government offices and public buildings. It was also found that there was a bias in other trip categories indicating that a substantial number of people prefer to live in the same city in which they are employed, or tend to shop or transact business more in the city in which they reside than elsewhere. This condition is further amplified by the State line crossing the study area. Adjustment factors were applied by purpose category, therefore, to account for this situation.

3. Finally, adjustment factors were used in calibration of the gravity model to account for more intra-zonal travel by trucks than in other trip purpose categories.[1] This is common, however, since many trucks are used for multiple stop, pickup and delivery,

(1)-Intra-zonal trips are those with both origin and destination in the same traffic zone.

therefore, increasing their relative proportion of intra-zonal travel. The problem was not serious enough to justify building a separate set of skim trees just for the truck trips.

Figure 25 shows sectors into which the study area was divided for application of zone-to-zone adjustment factors described in (1) and (2) above. Adjustment factors, where needed, were determined by trial and error and were applied uniformly to every zone in the sector. Final zone-to-zone adjustment factors are shown in Table 25. Intra-zonal truck adjustment factors determined by trial and error for each zone are given in Table 26.

Insofar as the zone-to-zone adjustment factors used in calibrating the gravity model are readily explained by local conditions in the study area, there is no reason to doubt that they will be applicable in the future. They should be carefully examined when travel forecasts are made, however, to determine whether modifications are required to account for new bridges, elimination of tolls (and/or congestion) on existing bridges, or possible new high-speed thoroughfares between various municipalities in the study area.

Table 25

ZONE-TO-ZONE ADJUSTMENT FACTORS

| Between Sector | and Sector | Trip Purpose Category: Home Based Work | Home Based Shop | Home Based Other | Non-Home Based | Truck |
|---|---|---|---|---|---|---|
| 1 | 2 | 0.80 | - | - | - | - |
| 1 | 4 | 0.80 | - | - | - | - |
| 1 | 6 | 0.80 | - | - | - | - |
| 1 | 9 | 0.80 | - | - | - | - |
| 1 | 10 | 0.80 | - | - | - | - |
| 1 | 11 | 0.80 | - | - | - | - |
| 2 | 4 | 0.65 | 0.49 | 0.52 | 0.65 | 0.45 |
| 2 | 9 | 0.77 | - | 0.65 | 0.65 | - |
| 2 | 10 | 0.77 | - | 0.65 | 0.65 | - |
| 2 | 11 | 0.77 | - | 0.65 | 0.65 | - |
| 4 | 6 | 0.83 | 0.56 | 0.70 | - | 0.65 |
| 4 | 9 | 0.77 | - | 0.65 | 0.65 | - |
| 4 | 10 | 0.77 | - | 0.65 | 0.65 | - |
| 4 | 11 | 0.77 | - | 0.65 | 0.65 | - |
| 6 | 9 | 0.77 | - | 0.65 | 0.65 | - |
| 6 | 10 | 0.77 | - | 0.65 | 0.65 | - |
| 6 | 11 | 0.77 | - | 0.65 | 0.65 | - |

Note: See Figure 10 for sector boundaries.
Since external stations were treated as fictitious zones, an adjustment factor of 0.01 was also applied between stations and at each station to eliminate through and intrazonal trips.

Table 26

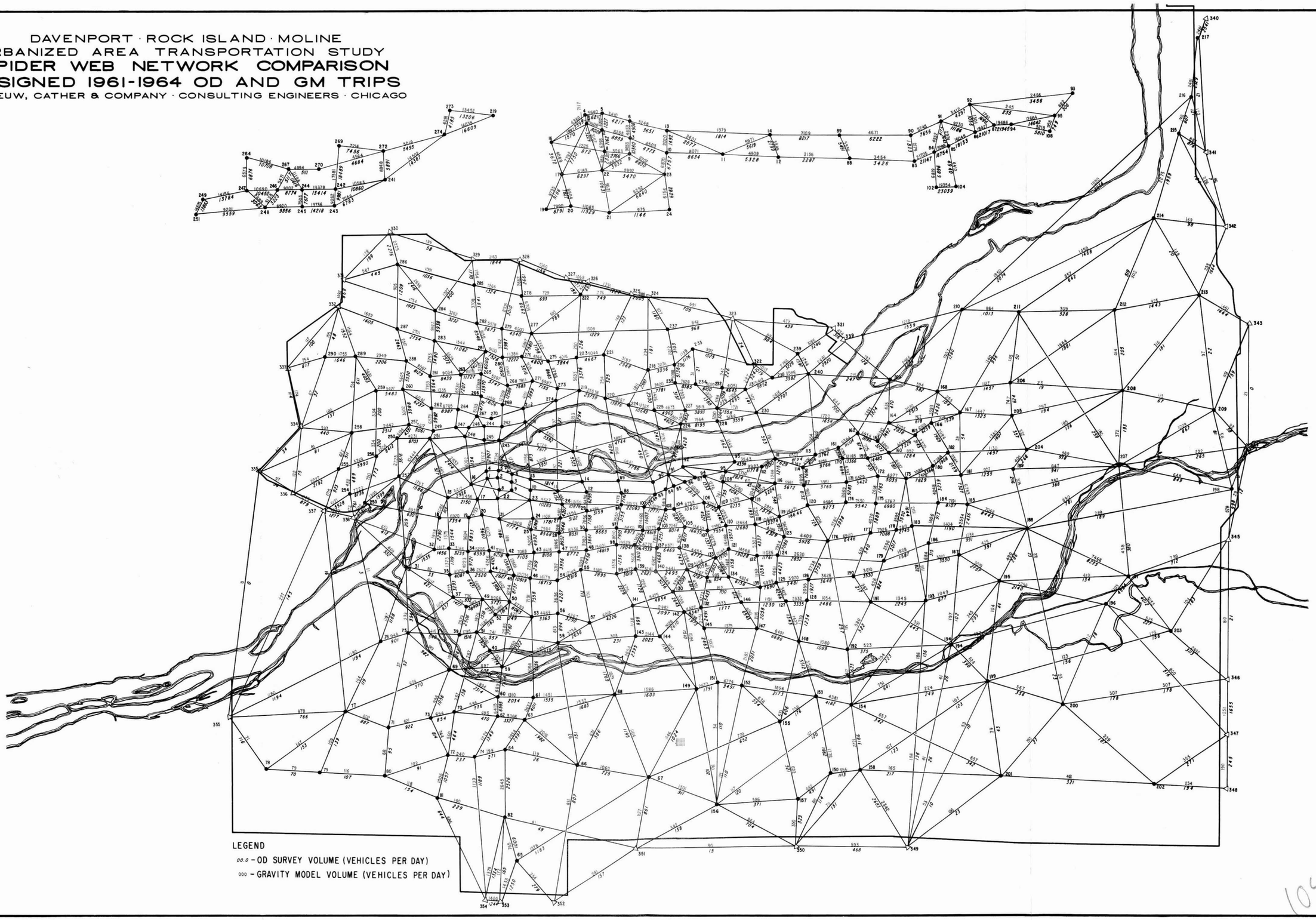
INTRAZONAL ADJUSTMENT FACTORS--TRUCK TRIPS

| Centroid | Adjustment Factor | Centroid | Adjustment Factor | Centroid | Adjustment Factor | Centroid | Adjustment Factor |
|---|---|---|---|---|---|---|---|
| 1 | 5.0 | 53 | 7.0 | 119 | 7.0 | 219 | 5.0 |
| 2 | 5.0 | 54 | 7.0 | 120 | 7.0 | 220 | 5.0 |
| 3 | 5.0 | 55 | 7.0 | 121 | 4.0 | 221 | 4.0 |
| 4 | 5.0 | 56 | 7.0 | 122 | 4.0 | 223 | 4.0 |
| 5 | 5.0 | 57 | 7.0 | 123 | 4.0 | 225 | 4.0 |
| 6 | 5.0 | 58 | 7.0 | 126 | 8.0 | 227 | 4.0 |
| 7 | 4.0 | 59 | 3.0 | 127 | 8.0 | 229 | 4.0 |
| 8 | 5.0 | 60 | 3.0 | 128 | 8.0 | 232 | 3.0 |
| 9 | 5.0 | 61 | 3.0 | 129 | 5.0 | 237 | 3.0 |
| 10 | 5.0 | 62 | 3.0 | 130 | 5.0 | 242 | 4.0 |
| 11 | 4.0 | 63 | 3.0 | 131 | 5.0 | 243 | 4.0 |
| 12 | 4.0 | 83 | 6.0 | 133 | 8.0 | 244 | 4.0 |
| 13 | 4.0 | 84 | 6.0 | 137 | 7.0 | 245 | 4.0 |
| 14 | 4.0 | 85 | 6.0 | 140 | 5.0 | 246 | 4.0 |
| 15 | 3.0 | 86 | 6.0 | 141 | 5.0 | 247 | 4.0 |
| 16 | 3.0 | 88 | 3.0 | 142 | 5.0 | 248 | 4.0 |
| 17 | 5.0 | 89 | 3.0 | 145 | 5.0 | 249 | 4.0 |
| 18 | 3.0 | 91 | 3.0 | 147 | 8.0 | 250 | 3.0 |
| 19 | 3.0 | 92 | 4.0 | 148 | 4.0 | 254 | 3.0 |
| 20 | 3.0 | 93 | 4.0 | 157 | 4.0 | 255 | 3.0 |
| 21 | 7.0 | 94 | 4.0 | 158 | 4.0 | 256 | 3.0 |
| 22 | 7.0 | 95 | 4.0 | 159 | 6.0 | 257 | 7.0 |
| 23 | 7.0 | 96 | 7.0 | 160 | 6.0 | 259 | 5.0 |
| 25 | 5.0 | 97 | 7.0 | 165 | 4.0 | 261 | 4.0 |
| 26 | 7.0 | 98 | 7.0 | 170 | 4.0 | 263 | 5.0 |
| 27 | 7.0 | 99 | 5.0 | 171 | 4.0 | 264 | 5.0 |
| 28 | 5.0 | 100 | 7.0 | 172 | 4.0 | 265 | 7.0 |
| 29 | 7.0 | 101 | 7.0 | 173 | 4.0 | 266 | 5.0 |
| 30 | 5.0 | 102 | 7.0 | 174 | 4.0 | 267 | 5.0 |
| 34 | 3.0 | 103 | 7.0 | 175 | 4.0 | 268 | 7.0 |
| 36 | 3.0 | 104 | 7.0 | 176 | 4.0 | 269 | 3.0 |
| 38 | 3.0 | 105 | 7.0 | 177 | 8.0 | 271 | 8.0 |
| 41 | 5.0 | 106 | 7.0 | 178 | 4.0 | 273 | 8.0 |
| 43 | 5.0 | 107 | 8.0 | 180 | 3.0 | 274 | 8.0 |
| 44 | 7.0 | 108 | 7.0 | 181 | 3.0 | 275 | 6.0 |
| 45 | 7.0 | 109 | 7.0 | 183 | 4.0 | 276 | 6.0 |
| 46 | 7.0 | 111 | 4.0 | 184 | 3.0 | 277 | 6.0 |
| 47 | 5.0 | 112 | 4.0 | 185 | 3.0 | 278 | 4.0 |
| 48 | 5.0 | 115 | 7.0 | 186 | 3.0 | 279 | 6.0 |
| 49 | 7.0 | 116 | 7.0 | 187 | 3.0 | 280 | 6.0 |
| 50 | 7.0 | 117 | 7.0 | 196 | 3.0 | 281 | 8.0 |
| 51 | 7.0 | 118 | 7.0 | 218 | 3.0 | 285 | 4.0 |
| 52 | 7.0 | | | | | | |

DAVENPORT · ROCK ISLAND · MOLINE
URBANIZED AREA TRANSPORTATION STUDY

# SPIDER WEB NETWORK COMPARISON ASSIGNED 1961-1964 OD AND GM TRIPS

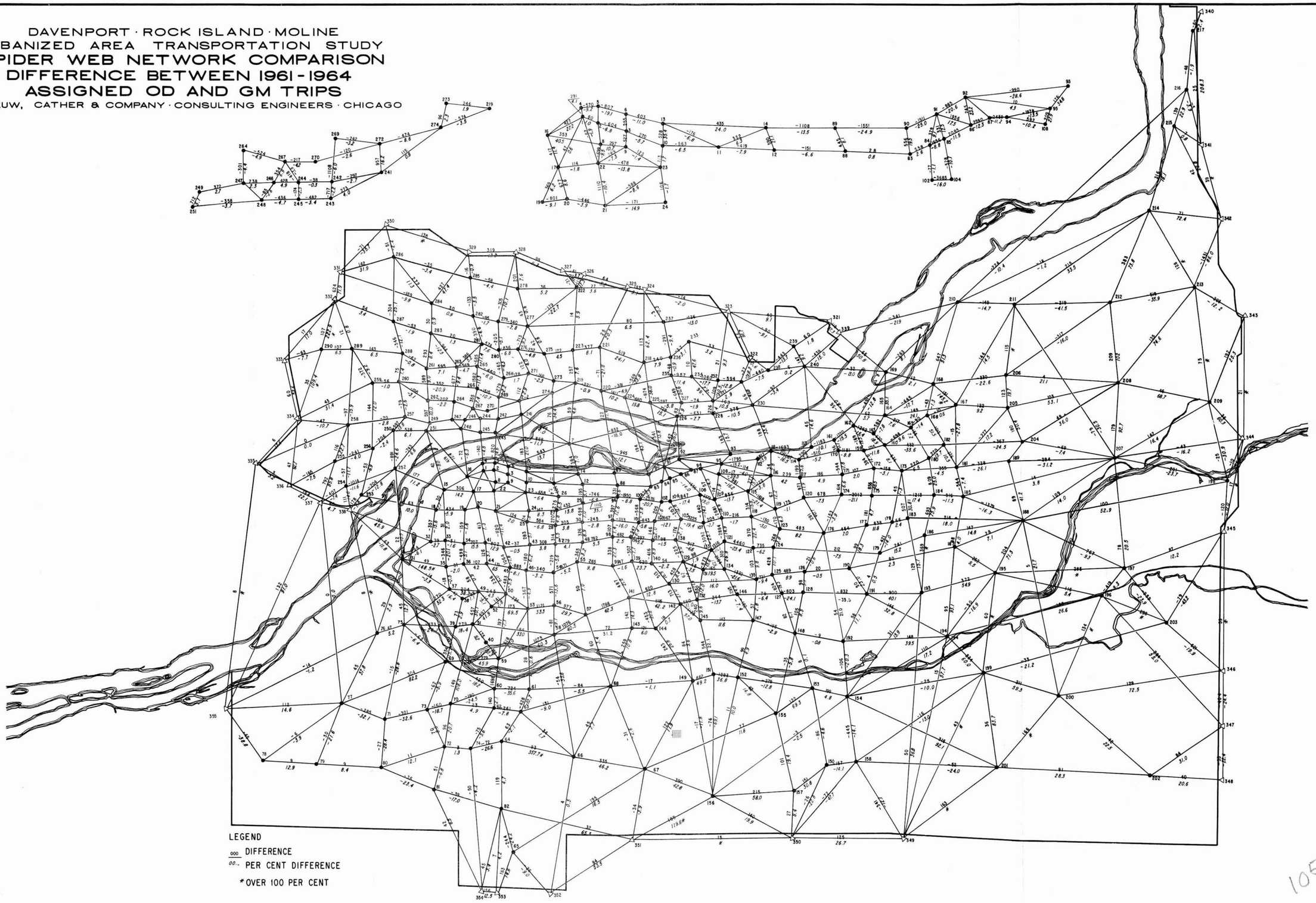
DE LEUW, CATHER & COMPANY · CONSULTING ENGINEERS · CHICAGO



DAVENPORT · ROCK ISLAND · MOLINE
URBANIZED AREA TRANSPORTATION STUDY

# SPIDER WEB NETWORK COMPARISON
# DIFFERENCE BETWEEN 1961 - 1964
# ASSIGNED OD AND GM TRIPS

DE LEUW, CATHER & COMPANY · CONSULTING ENGINEERS · CHICAGO



LEGEND

000 DIFFERENCE

00.% PER CENT DIFFERENCE

*OVER 100 PER CENT

## TESTING THE GRAVITY MODEL

Further comparisons were made to test the validity of the gravity model in simulating existing travel patterns. Analyses described in the prior section of the report were intended primarily to adjust the model for bias resulting from topographic barriers and socio-economic characteristics of the area.

Vehicular trips in all purpose categories were combined after application of the gravity model program and assigned to the spider web network. A similar assignment was made of consolidated trip data from the 1961-1964 origin-destination surveys. Figure 26 shows the comparison, by link, of O-D and GM vehicular traffic assigned to the spider web network. Differences between O-D and GM volumes on each link as well as the differences expressed as percentages of the assigned O-D volume are shown in Figure 27. Both absolute and percent differences should be weighed in review of Figure 27. High percent differences on low-volume links may have little significance while, on the other hand, travel on high-volume links may be considerably over- or under estimated with a relatively small percent difference.

Statistical comparisons of differences between O-D and GM assignments to the spider web network by volume group were also made. See Table 27. A sample of a similar comparison produced by program PR-124 (loaded network comparison) has been shown earlier in Figure 18. Complete "Table 2" of PR-124 is included in Table A-2 in the appendix. Statistical comparison of O-D and GM assignments to the spider web network by percent difference groups is shown in Table 28.

Table 29 is a comparison of total O-D and GM vehicular trips assigned to the spider web network showing the number, percent and cumulative percent of trips by one minute increments of travel time.

Finally, the validity of the model was tested by comparing O-D and GM trips across six screen lines and by making sector-to-sector trip comparisons. Results of the screen line comparisons are presented in Table 30. Locations of the screen lines are shown in Figure 28. The comparisons were made by summing O-D and GM trips assigned to each link of the spider web network crossing the screen lines. A sector-to-sector comparison of O-D and GM trip distribution is given in Table 31. See Figure 25 for definition of the sector boundaries.

Table 27

STATISTICAL ANALYSIS OF 1961-1964 O-D AND GM ASSIGNMENTS TO SPIDER WEB NETWORK

| Origin-Destination Volume Group | Number of Links | Average O-D Volume | Average GM Volume | Mean Difference | Root Mean Square (RMS) Error | Percent RMS Error(1) |
|---|---|---|---|---|---|---|
| 0- 499 | 149 | 185.3 | 241.7 | 56.4 | 104.0 | 56.1 |
| 500- 999 | 87 | 741.6 | 824.5 | 82.9 | 215.4 | 29.0 |
| 1,000- 2,999 | 188 | 1853.2 | 1897.4 | 44.2 | 355.8 | 19.1 |
| 3,000- 4,999 | 109 | 3828.3 | 3800.4 | -27.9 | 497.8 | 13.0 |
| 5,000- 6,999 | 70 | 5980.6 | 5860.4 | -120.2 | 539.8 | 9.0 |
| 7,000- 9,999 | 84 | 8118.3 | 7813.5 | -304.8 | 742.6 | 9.1 |
| 10,000-14,999 | 49 | 12499.2 | 11619.0 | -880.2 | 1345.4 | 10.7 |
| 15,000 or more | 20 | 19079.2 | 17422.2 | -1657.0 | 2177.9 | 11.4 |
| All Volume Groups | 756 | 3905.3 | 3787.1 | - | - | - |

(1) 100 (RMS Error/Average OD Volume)

Table 28

PERCENT DIFFERENCE OF 1961-1964 O-D AND GM ASSIGNMENTS TO SPIDER WEB NETWORK

| Percent Difference | Links | | | Link Volumes | | |
|---|---|---|---|---|---|---|
| | Number | Percent | Cummulative Percent | Total Volume | Percent | Cummulative Percent |
| 0-5 | 229 | 30.29 | 30.29 | 1,206,044 | 40.85 | 40.85 |
| 6-10 | 158 | 20.90 | 51.19 | 749,741 | 25.39 | 66.24 |
| 11-15 | 108 | 14.29 | 65.48 | 506,997 | 17.17 | 83.41 |
| 16-20 | 59 | 7.80 | 73.28 | 240,598 | 8.15 | 91.56 |
| 21-25 | 51 | 6.75 | 80.03 | 144,320 | 4.89 | 96.45 |
| 26-30 | 24 | 3.18 | 83.21 | 28,715 | 0.97 | 97.42 |
| 31-35 | 25 | 3.31 | 86.52 | 25,114 | 0.85 | 98.27 |
| 36-40 | 14 | 1.85 | 88.37 | 14,064 | 0.48 | 98.75 |
| 41-45 | 10 | 1.32 | 89.69 | 10,816 | 0.37 | 99.12 |
| 46-50 | 10 | 1.32 | 91.01 | 6,245 | 0.21 | 99.33 |
| Over 50 | 68 | 8.99 | 100.0 | 19,824 | 0.67 | 100.00 |
| Total | 756 | 100.00 | | 2,952,478 | 100.00 | |

Table 29

COMPARISON OF ORIGIN-DESTINATION AND GRAVITY MODEL TRIP LENGTHS
VEHICULAR TRIPS

| Trip Lengths (Minutes) | Vehicle Trips | | Percent of Total | | Cumulative Percent | |
|---|---|---|---|---|---|---|
| | O-D | GM | O-D | GM | O-D | GM |
| 1 | 1,118 | 924 | .2 | .2 | 0.2 | 0.2 |
| 2 | 960 | 1,247 | .1 | .2 | 0.3 | 0.4 |
| 3 | 6,603 | 6,958 | 1.1 | 1.1 | 1.4 | 1.5 |
| 4 | 3,709 | 3,795 | .6 | .6 | 2.0 | 2.1 |
| 5 | 21,469 | 19,423 | 3.5 | 3.2 | 5.6 | 5.3 |
| 6 | 25,356 | 24,810 | 4.2 | 4.1 | 9.7 | 9.4 |
| 7 | 46,179 | 44,396 | 7.6 | 7.3 | 17.3 | 16.7 |
| 8 | 56,100 | 56,532 | 9.2 | 9.3 | 26.5 | 26.0 |
| 9 | 55,100 | 61,840 | 9.1 | 10.2 | 35.6 | 36.2 |
| 10 | 54,493 | 60,965 | 9.0 | 10.0 | 44.6 | 46.2 |
| 11 | 51,391 | 54,344 | 8.4 | 8.9 | 53.9 | 55.1 |
| 12 | 45,139 | 45,389 | 7.4 | 7.5 | 60.4 | 62.6 |
| 13 | 39,434 | 38,126 | 6.5 | 6.3 | 66.9 | 68.9 |
| 14 | 30,257 | 27,961 | 5.0 | 4.6 | 71.9 | 73.5 |
| 15 | 21,344 | 21,803 | 3.5 | 3.6 | 75.4 | 77.1 |
| 16 | 17,221 | 17,577 | 2.8 | 2.9 | 78.2 | 80.0 |
| 17 | 14,188 | 13,690 | 2.3 | 2.2 | 80.5 | 82.2 |
| 18 | 13,625 | 11,877 | 2.2 | 1.9 | 82.8 | 84.1 |
| 19 | 12,157 | 10,287 | 2.0 | 1.7 | 84.8 | 85.8 |
| 20 | 10,555 | 8,693 | 1.7 | 1.4 | 86.5 | 87.2 |
| 21 | 9,062 | 8,140 | 1.5 | 1.3 | 88.0 | 88.5 |
| 22 | 8,308 | 7,705 | 1.4 | 1.3 | 89.4 | 89.8 |
| 23 | 8,181 | 6,681 | 1.3 | 1.1 | 90.7 | 90.9 |
| 24 | 7,163 | 6,738 | 1.2 | 1.1 | 91.9 | 92.0 |
| 25 | 6,885 | 6,440 | 1.1 | 1.1 | 93.0 | 93.1 |
| 26 | 6,122 | 5,943 | 1.0 | 1.0 | 94.0 | 94.1 |
| 27 | 5,250 | 5,535 | .9 | .9 | 94.9 | 95.0 |
| 28 | 4,442 | 4,568 | .7 | .7 | 95.6 | 95.7 |
| 29 | 4,597 | 4,261 | .8 | .7 | 96.4 | 96.4 |
| 30 | 3,129 | 3,383 | .5 | .6 | 96.9 | 97.0 |
| 31 | 2,669 | 2,743 | .4 | .5 | 97.3 | 97.5 |
| 32 | 2,302 | 2,568 | .4 | .4 | 97.7 | 97.9 |
| 33 | 1,987 | 1,957 | .3 | .3 | 98.0 | 98.2 |
| 34 | 2,080 | 1,813 | .3 | .3 | 98.4 | 98.5 |
| 35 | 1,516 | 1,503 | .2 | .2 | 98.6 | 98.7 |
| 36 | 1,273 | 1,214 | .2 | .2 | 98.8 | 98.9 |
| 37 | 1,029 | 1,062 | .2 | .2 | 99.0 | 99.1 |
| 38 | 1,116 | 930 | .2 | .2 | 99.2 | 99.3 |
| 39 | 731 | 772 | .1 | .1 | 99.3 | 99.4 |
| 40 | 845 | 712 | .1 | .1 | 99.4 | 99.5 |
| 41 and Over | 3,432 | 2,754 | .6 | .5 | 100.0 | 100.0 |
| TOTAL | 608,517 | 608,059 | 100.0 | 100.0 | | |

Table 30

SCREEN LINE COMPARISON OF 1961-1964 ORIGIN-DESTINATION AND GRAVITY MODEL ASSIGNMENT TO SPIDER WEB NETWORK

| Screen Line | Total Trips | | Difference | |
|---|---|---|---|---|
| | Origin-Destination | Gravity Model | Trips | Percent |
| A | 68,191 | 65,434 | -2,757 | -4.0 |
| B | 52,604 | 52,296 | - 308 | -0.6 |
| C | 161,848 | 155,570 | -6,278 | -3.9 |
| D | 50,880 | 53,969 | +3,089 | +6.1 |
| E | 108,294 | 109,744 | +1,450 | +1.3 |
| F | 70,443 | 68,002 | -2,441 | -3.5 |

# Table 31

## SECTOR-TO-SECTOR COMPARISON OF 1961-1964 OD AND GM TRIP DISTRIBUTION

| From Sector | To Sector | Home Based Work | | Home Based Shop | | Home Based Other | | Non-Home Based | | Truck | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Origin-Destination | Gravity Model | Origin-Destination | Gravity Model | Origin-Destination | Gravity Model | Origin-Destination | Gravity Model | Origin-Destination | Gravity Model | Origin-Destination | Gravity Model |
| 1 | 1 | - | 6 | - | - | - | 1 | 62 | 36 | 8 | 9 | 70 | 52 |
| 1 | 2 | 1,507 | 1,628 | - | 3 | 463 | 546 | 721 | 630 | 168 | 111 | 2,859 | 2,918 |
| 1 | 3 | 309 | 308 | - | - | 7 | 47 | - | 11 | 34 | 8 | 350 | 374 |
| 1 | 4 | 1,053 | 1,350 | - | 1 | 579 | 414 | 548 | 527 | 57 | 97 | 2,237 | 2,389 |
| 1 | 5 | 189 | 164 | - | - | 44 | 21 | 90 | 9 | 3 | 6 | 326 | 200 |
| 1 | 6 | 447 | 347 | - | - | 154 | 108 | 82 | 45 | 15 | 22 | 698 | 522 |
| 1 | 7 | 65 | 130 | 1 | 1 | 66 | 19 | - | 2 | - | 2 | 132 | 154 |
| 1 | 8 | 48 | 126 | - | - | 8 | 24 | - | 2 | 14 | 4 | 70 | 156 |
| 1 | 9 | 555 | 422 | - | - | 149 | 99 | 84 | 85 | 21 | 15 | 809 | 621 |
| 1 | 10 | 1,350 | 1,347 | 1 | 1 | 221 | 345 | 316 | 563 | 28 | 92 | 1,916 | 2,348 |
| 1 | 11 | 1,661 | 1,349 | 1 | 1 | 202 | 267 | 177 | 191 | 65 | 48 | 2,106 | 1,856 |
| Sub-Total | | 7,184 | 7,177 | 3 | 7 | 1,893 | 1,891 | 2,080 | 2,101 | 413 | 414 | 11,573 | 11,590 |
| 2 | 2 | 10,089 | 10,655 | 11,028 | 10,849 | 33,358 | 33,673 | 18,866 | 18,682 | 11,344 | 11,339 | 84,685 | 85,198 |
| 2 | 3 | 2,767 | 2,767 | 1,319 | 1,341 | 5,665 | 5,687 | 1,383 | 1,832 | 2,430 | 2,145 | 13,564 | 13,772 |
| 2 | 4 | 7,056 | 6,994 | 3,816 | 3,839 | 12,752 | 12,792 | 7,196 | 7,015 | 2,481 | 2,479 | 33,301 | 33,119 |
| 2 | 5 | 788 | 863 | 135 | 215 | 986 | 1,346 | 281 | 302 | 256 | 443 | 2,446 | 3,169 |
| 2 | 6 | 3,230 | 2,849 | 106 | 490 | 3,405 | 3,347 | 1,291 | 694 | 897 | 947 | 8,929 | 8,327 |
| 2 | 7 | 479 | 512 | 15 | 80 | 547 | 743 | 76 | 31 | 219 | 188 | 1,336 | 1,554 |
| 2 | 8 | 604 | 400 | 83 | 41 | 611 | 562 | 73 | 21 | 325 | 175 | 1,696 | 1,199 |
| 2 | 9 | 1,109 | 1,028 | 412 | 203 | 714 | 747 | 95 | 132 | 299 | 321 | 2,629 | 2,431 |
| 2 | 10 | 3,451 | 2,974 | 891 | 891 | 3,561 | 2,877 | 239 | 797 | 1,087 | 1,250 | 9,229 | 8,789 |
| 2 | 11 | 2,906 | 2,687 | 221 | 387 | 2,787 | 2,482 | 127 | 483 | 911 | 1,061 | 6,952 | 7,100 |
| Sub-Total | | 32,479 | 31,729 | 18,026 | 18,336 | 64,386 | 64,256 | 29,627 | 29,989 | 20,249 | 20,348 | 164,767 | 164,658 |
| 3 | 3 | 1,243 | 975 | 1,366 | 1,082 | 3,700 | 3,129 | 1,138 | 875 | 1,760 | 1,999 | 9,207 | 8,060 |
| 3 | 4 | 1,187 | 1,746 | 405 | 976 | 2,335 | 2,928 | 574 | 718 | 737 | 990 | 5,238 | 7,358 |
| 3 | 5 | 358 | 403 | 96 | 159 | 474 | 910 | 196 | 195 | 503 | 364 | 1,627 | 2,031 |
| 3 | 6 | 744 | 686 | - | 114 | 814 | 676 | 198 | 77 | 246 | 290 | 2,002 | 1,843 |
| 3 | 7 | 83 | 171 | 6 | 37 | 194 | 280 | - | 14 | 75 | 91 | 358 | 593 |
| 3 | 8 | 85 | 71 | - | 18 | 52 | 107 | 55 | 2 | 214 | 57 | 406 | 255 |
| 3 | 9 | 218 | 191 | 14 | 35 | 129 | 127 | 2 | 15 | 94 | 68 | 457 | 436 |
| 3 | 10 | 466 | 519 | 118 | 120 | 473 | 490 | 18 | 42 | 211 | 203 | 1,286 | 1,374 |
| 3 | 11 | 459 | 445 | 24 | 52 | 340 | 411 | 10 | 38 | 240 | 189 | 1,073 | 1,135 |
| Sub-Total | | 4,843 | 5,207 | 2,029 | 2,593 | 8,511 | 9,058 | 2,191 | 1,976 | 4,080 | 4,251 | 21,654 | 23,085 |
| 4 | 4 | 10,323 | 9,870 | 16,633 | 16,574 | 33,344 | 33,355 | 20,278 | 20,319 | 10,368 | 9,854 | 90,946 | 89,972 |
| 4 | 5 | 1,278 | 1,383 | 1,181 | 1,050 | 2,855 | 2,910 | 758 | 996 | 823 | 804 | 6,895 | 7,143 |
| 4 | 6 | 6,743 | 6,373 | 3,088 | 3,066 | 9,992 | 9,993 | 6,620 | 6,388 | 2,464 | 2,437 | 28,907 | 28,257 |
| 4 | 7 | 977 | 926 | 450 | 602 | 1,849 | 1,701 | 275 | 224 | 239 | 350 | 3,790 | 3,803 |
| 4 | 8 | 1,051 | 889 | 516 | 416 | 1,741 | 1,506 | 331 | 160 | 463 | 414 | 4,102 | 3,385 |
| 4 | 9 | 1,330 | 1,528 | 663 | 357 | 1,042 | 1,225 | 336 | 313 | 367 | 512 | 3,738 | 3,935 |
| 4 | 10 | 1,854 | 2,051 | 540 | 476 | 1,905 | 1,949 | 141 | 340 | 515 | 841 | 4,955 | 5,657 |
| 4 | 11 | 1,547 | 1,527 | 116 | 205 | 1,310 | 1,349 | 48 | 190 | 535 | 561 | 3,556 | 3,832 |
| Sub-Total | | 25,103 | 24,547 | 23,187 | 22,746 | 54,038 | 53,988 | 28,787 | 28,930 | 15,774 | 15,773 | 146,889 | 145,984 |
| 5 | 5 | 289 | 294 | 332 | 344 | 1,834 | 1,495 | 429 | 422 | 720 | 790 | 3,604 | 3,345 |
| 5 | 6 | 753 | 585 | 53 | 86 | 552 | 663 | 265 | 116 | 237 | 227 | 1,860 | 1,677 |
| 5 | 7 | 170 | 190 | 111 | 56 | 512 | 544 | - | 36 | 103 | 115 | 896 | 941 |
| 5 | 8 | 67 | 59 | 1 | 5 | 138 | 109 | 33 | 1 | 62 | 38 | 301 | 212 |
| 5 | 9 | 166 | 156 | 22 | 26 | 125 | 106 | 8 | 9 | 88 | 35 | 409 | 332 |
| 5 | 10 | 233 | 186 | 32 | 23 | 285 | 174 | 43 | 10 | 117 | 68 | 710 | 461 |
| 5 | 11 | 145 | 138 | 6 | 7 | 231 | 124 | 10 | 13 | 97 | 51 | 489 | 333 |
| Sub-Total | | 1,823 | 1,608 | 557 | 547 | 3,677 | 3,215 | 788 | 607 | 1,424 | 1,324 | 8,269 | 7,301 |
| 6 | 6 | 6,125 | 6,611 | 5,972 | 5,940 | 16,785 | 16,904 | 8,252 | 8,461 | 6,648 | 6,346 | 43,782 | 44,262 |
| 6 | 7 | 1,559 | 1,394 | 481 | 452 | 2,417 | 2,403 | 416 | 564 | 321 | 396 | 5,194 | 5,209 |
| 6 | 8 | 1,995 | 2,148 | 693 | 787 | 3,822 | 3,812 | 482 | 772 | 896 | 966 | 7,888 | 8,485 |
| 6 | 9 | 538 | 600 | 118 | 95 | 171 | 360 | 15 | 55 | 114 | 164 | 956 | 1,274 |
| 6 | 10 | 833 | 750 | 153 | 108 | 494 | 598 | 25 | 39 | 207 | 278 | 1,712 | 1,773 |
| 6 | 11 | 747 | 572 | 19 | 25 | 398 | 396 | 11 | 47 | 133 | 202 | 1,308 | 1,242 |
| Sub-Total | | 11,797 | 12,075 | 7,436 | 7,407 | 24,087 | 24,473 | 9,201 | 9,938 | 8,319 | 8,352 | 60,840 | 62,245 |
| 7 | 7 | 214 | 185 | 699 | 637 | 2,084 | 2,065 | 600 | 496 | 461 | 393 | 4,058 | 3,776 |
| 7 | 8 | 102 | 169 | 22 | 88 | 639 | 668 | - | 50 | 195 | 197 | 958 | 1,172 |
| 7 | 9 | 107 | 118 | 19 | 8 | 64 | 84 | 5 | 1 | 42 | 16 | 237 | 227 |
| 7 | 10 | 168 | 146 | 48 | 16 | 210 | 167 | 2 | 4 | 65 | 41 | 493 | 374 |
| 7 | 11 | 89 | 83 | 7 | 5 | 151 | 101 | 2 | 1 | 89 | 36 | 338 | 226 |
| Sub-Total | | 680 | 701 | 795 | 754 | 3,148 | 3,085 | 609 | 552 | 852 | 683 | 6,084 | 5,775 |
| 8 | 8 | 397 | 444 | 456 | 483 | 2,709 | 2,787 | 206 | 182 | 481 | 634 | 4,249 | 4,530 |
| 8 | 9 | 121 | 126 | 19 | 13 | 69 | 88 | - | 3 | 65 | 41 | 274 | 271 |
| 8 | 10 | 131 | 143 | 50 | 20 | 141 | 189 | 2 | 8 | 63 | 62 | 387 | 422 |
| 8 | 11 | 82 | 69 | 6 | 4 | 107 | 113 | - | 15 | 80 | 38 | 275 | 239 |
| Sub-Total | | 731 | 782 | 531 | 520 | 3,026 | 3,177 | 208 | 208 | 689 | 775 | 5,185 | 5,462 |
| 9 | 9 | 3,551 | 3,452 | 2,728 | 2,642 | 4,876 | 4,473 | 2,249 | 2,188 | 1,667 | 1,745 | 15,071 | 14,500 |
| 9 | 10 | 4,215 | 4,624 | 2,047 | 2,405 | 5,650 | 6,396 | 2,637 | 2,773 | 1,330 | 1,550 | 15,879 | 17,748 |
| 9 | 11 | 3,012 | 2,817 | 497 | 588 | 2,827 | 2,381 | 904 | 766 | 1,004 | 604 | 8,244 | 7,156 |
| Sub-Total | | 10,778 | 10,893 | 5,272 | 5,635 | 13,353 | 13,250 | 5,790 | 5,727 | 4,001 | 3,899 | 39,194 | 39,404 |
| 10 | 10 | 8,390 | 8,135 | 6,141 | 5,704 | 17,050 | 17,538 | 9,310 | 9,021 | 7,254 | 6,783 | 48,145 | 47,181 |
| 10 | 11 | 11,419 | 12,075 | 5,993 | 6,059 | 22,016 | 20,219 | 8,527 | 7,892 | 4,647 | 5,033 | 52,602 | 51,278 |
| Sub-Total | | 19,809 | 20,210 | 12,134 | 11,763 | 39,066 | 37,757 | 17,837 | 16,913 | 11,901 | 11,816 | 100,747 | 98,459 |
| 11 | 11 | 9,115 | 9,204 | 4,634 | 4,285 | 17,765 | 18,616 | 5,721 | 5,896 | 6,080 | 6,095 | 43,315 | 44,096 |
| Sub-Total | | 9,115 | 9,204 | 4,634 | 4,285 | 17,765 | 18,616 | 5,721 | 5,896 | 6,080 | 6,095 | 43,315 | 44,096 |
| Grand Total | | 124,342 | 124,133 | 74,604 | 74,593 | 232,950 | 232,766 | 102,839 | 102,837 | 73,782 | 73,730 | 608,517 | 608,059 |

All statistical comparisons, except program PR-124 run, were made on the simplified spider web network as shown in Figures 26 and 27. Two-way links were grouped according to the total two-directional volumes. Program PR-124 input, however, consisted of the actual computer network description--one-way links with directional volumes. All of the statistics presented, of course, are from the final adjusted model.

# CONCLUSIONS

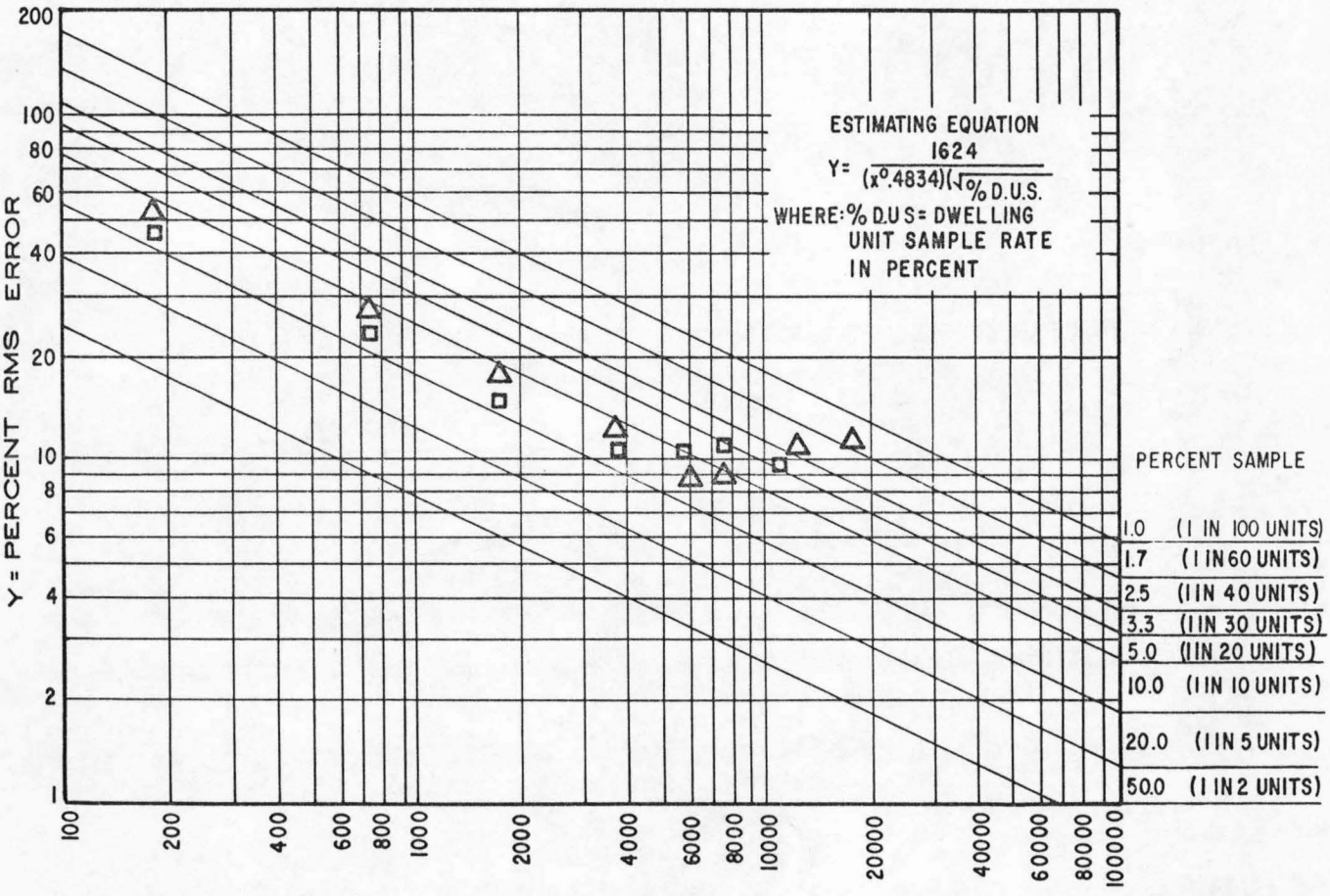
Analyses and tests described in the report indicate that the gravity model, as calibrated, adequately synthesizes origin-destination trip distribution. The following general statements are offered to support this conclusion:

1. Origin-destination and GM trip length frequency curves (Figures 20 through 24) are relatively close to one another when compared visually.

2. Differences between O-D and GM average trip lengths are within plus or minus three percent. Total vehicular trips, vehicle hours of travel and intra-zonal trips also compare favorably.

3. Assignments of O-D and GM trips to the spider web network correlate closely. Statistical analyses of the differences, which are plotted on Figure 29, indicate that the gravity model demonstrates an accuracy at each volume level close to that expected of the O-D survey data. Figure 29 is a chart which can be used to estimate the accuracy of survey volumes given the home interview sampling rate and the screen line expansion factors.

# RELATION OF PERCENT ROOT-MEAN-SQUARE ERROR AND VOLUME FOR VARIOUS DWELLING UNIT SAMPLE RATES




SOURCE - CALIBRATING AND TESTING A GRAVITY MODEL FOR ANY SIZE URBAN AREA. URBAN PLANNING DIVISION OFFICE OF PLANNING, U.S. BUREAU OF PUBLIC ROADS; OCTOBER, 1965

△ STATISTICAL COMPARISON OF RESULTS USING SIMPLIFIED SPIDER WEB NETWORK WITH TWO-WAY VOLUMES

□ STATISTICAL COMPARISON OF RESULTS USING PROGRAM PR-124

4. Screen line and sector-to-sector comparison of O-D and GM trips verify the effectiveness of the model in accurately synthesizing trip interchanges.

# CHAPTER IV

## TRIP GENERATION

The key to predicting future travel patterns is an understanding of the varied interacting relationships between travel characteristics and the surrounding urban environment. Trip generation is the term commonly used to denote the analysis of these relationships. It refers to the number of trips starting or ending in a particular area in relation to the land use or socio-economic characteristics of that area. A study of trip generation does not attempt to describe all of the characteristics of trips--that is, direction, length, or duration--but simply to identify and quantify the trip ends in a particular areal unit.

In early transportation studies, existing travel patterns were described by tables of trip origins and destinations by "desire lines." The desire lines indicated schematically the major spatial distribution of trips. Future urban travel volumes were forecasted by an extrapolation technique which extended the past rate of traffic growth into the future. Some transportation studies made no projections of any sort and emphasized only the correction of existing traffic problems.

In the late 1950's, analytical techniques were developed which attempted to quantify urban trip volumes in terms of measurable socio-economic characteristics of the persons making the trips as well as the land use associated with the trip ends. From the socio-economic and land use data recorded in the transportation study, mathematical techniques were used to develop relationships which accurately describe existing travel patterns. With the advent of digital computers, multiple regression equation analysis techniques were developed to determine these relationships which are referred to as existing trip generation.

Forecasts of future trip generation are based on existing relationships as well as projections of the independent variables (such as population, vehicle ownership, dwelling units, employment, etc.). This assumes, of course, that the basic relationships by travel purpose will not change in the future. The assumption of the stability of the relationships between trips and land use and socio-economic variables over time, is basic to forecasting and the significance of this assumption cannot be overemphasized.

No matter how well the estimated relationship corresponds to the observed data, considerable forecasting error may result unless the variables used can be forecasted within a reasonable degree of accuracy and the relationship, in fact, does remain constant. Because the assumption of time invariance is generally made when forecasting, it is extremely important that relationships be chosen that exhibit stability. The analysis must not become so involved in the mechanics of data fitting that it loses sight of the intended goal--meaningful forecasts.

The purpose of the trip generation analysis phase of the transportation study, therefore, is to provide a method of estimating the number of trips per average weekday that will begin or end in each areal unit which, in this study, comprises a traffic zone. Trip generation bridges the gap between land use and travel by providing the means with which the number of trips that begin or end in a given analysis unit can be related to the land use or socio-economic characteristic of that unit.

# METHODOLOGY[1]

The Davenport-Rock Island-Moline urbanized area transportation study is unique in that data from independent surveys made three years apart have been consolidated to represent a single study of the entire Bi-State urbanized area. Procedures used in the origin-destination survey of the Iowa portion of the study area in 1961 and that of the Illinois portion of the study area in 1964 were similar, but not identical. Some disparities between the studies were discussed earlier in connection with the methods used in merging the data. Other differences of particular significance to the trip generation analysis are as follows:

1. The area included in the Illinois home interview survey was much larger than that covered by the earlier Iowa study. As such, the proportion of traffic zones in the Illinois study area which exhibited rural or non-urbanized land use characteristics was much greater than in the Iowa study area. Prior research has shown that variations in intensity of land activity have a distinct impact on the number and type of trips that are generated in a particular area.[2] The number of trips per dwelling unit

(1)-Much of this chapter is taken from "Guidelines for Trip Generation Analysis," U. S. Department of Transportation, Federal Highway Administration, Bureau of Public Roads, June 1967.

(2)-Op cit, pages 7-9 reporting results of studies made in Pittsburgh, Pennsylvania and Washington, D. C.

generally shows a notable decrease as the number of dwelling units per residential acre increases. This accounts to a large extent, we believe, for significant differences between trip making rates in non-work categories in Illinois and Iowa.

2. Both origin-destination surveys were factored to adjust estimated travel from internal trip reports to ground counts made at screen lines bisecting the areas. In the Iowa study, trips for all purposes obtained in the internal study were increased by 25 percent. Illinois internal trip reports were factored for all purposes except "work". The factors ranged from 1.90 to 4.88.[1] It is obvious that variations in procedures used to adjust trip reports also contributed to different trip making rates for non-work purposes in Illinois and Iowa.

3. The Iowa study was made almost entirely during the summer months of 1961. The Illinois study began in

(1) - Davenport-Rock Island-Moline Urbanized Area Transportation Study (Illinois Portion) Interim Report Number 11, "Origin-Destination Studies", Illinois Division of Highways.

the summer of 1964 and extended into the autumn of 1964. This resulted in a discernible difference in generating rates of school trips and, to a lesser extent, social-recreation trips. Methods used in compensating for the differences are discussed in detail later in this report.

4. It was decided at the outset of the analysis that, if at all possible, trip generation relationships applicable to both the Illinois and Iowa portions of the study area would be established. Comparable socio-economic and land use data for each traffic zone are required for this purpose. The following is a tabulation of various factors known to affect trip generation showing their availability by traffic zone in both the Iowa and Illinois portions of the study area.

| Factor | Source or Availability by Traffic Zone | |
|---|---|---|
| | Illinois | Iowa |
| Population | O-D dwelling unit survey | O-D dwelling unit survey |
| Number of dwelling units | O-D dwelling unit survey | O-D dwelling unit survey |
| Residential density | O-D dwelling unit survey and land use inventory | Not available |
| Car ownership | O-D dwelling unit survey | O-D dwelling unit survey |
| Truck ownership | Truck survey | Not available |
| Employed residents | O-D dwelling unit survey | O-D dwelling unit survey |
| Personal or family income | Inventory of economic factors affecting development | Not available |
| Student residents | Not available | O-D dwelling unit survey |
| Employment | O-D dwelling unit survey or augmented employment security records | O-D dwelling unit survey |
| Land use | Land use inventory | Not available |
| School enrollment | Inventory of social and community value factors | O-D dwelling unit survey |

Regression Analysis Theory

Regression analysis is a statistical procedure applied to predict the value of a particular item (dependent variable) when one has knowledge concerning another item (independent variable) which is believed to have a causal relationship. When two or more

independent variables are used in the equation the statistical procedure is called multiple regression analysis.

The equation resulting from the analysis is of the form

$$\hat{Y} = a + b_1 x_1 + b_2 x_2 + \ldots + b_m x_m$$

in which $\hat{Y}$ (read, "Y hat") represents the expected value of the dependent variable, a is the equation constant, and the b's are the regression coefficients for the several x's or independent variables.

The procedure most often used to determine the parameters ($a, b_1, \ldots, b_m$) is the "least squares" method. This method is used to determine the constant and regression coefficients of the equation by minimizing the sum of the squares of the deviations. The function (Q) which is minimized has the following form:

$$Q = \sum_{i=1}^{n} (Y_i - \hat{Y}_i)^2$$

where: $Y_i$ = observed value of the dependent variable

$\hat{Y}_i$ = estimated value of the dependent variable

n = the total number of observations

The "least squares" technique develops a regression surface which must pass through the point represented by the means of the independent and dependent variables. Also, there are certain assumptions that are generally made regarding the nature of the distribution of a, b, and $\hat{Y}$. These assumptions are summarized below:

1. In the set of values $(X_i, Y_i)$, $Y_i$ is a random variable and $X_i$ is an observation without error where:

   $i = 1, \ldots, n$ observations

2. For a given value of an independent variable $(X_i)$ there is a corresponding set of $Y_i$'s which is normally and independently distributed.

Statistical Validity of the Regression Equation

Statistical validity implies a measurement of how well the regression equation explains the relationship between the independent variables in the equation and the dependent variable.

Coefficient of Determination ($R^2$)

The coefficient of multiple determination ($R^2$) is a measure of the amount of total variance in the dependent variable explained by the independent variables in the equation over that which could

be explained by the mean of the dependent variable alone. Figure 30 shows this for a two dimensional case.

It is easiest to calculate $R^2$ using the form

$$R^2 = \frac{\text{Total variance-Unexplained variance}}{\text{Total variance}}$$

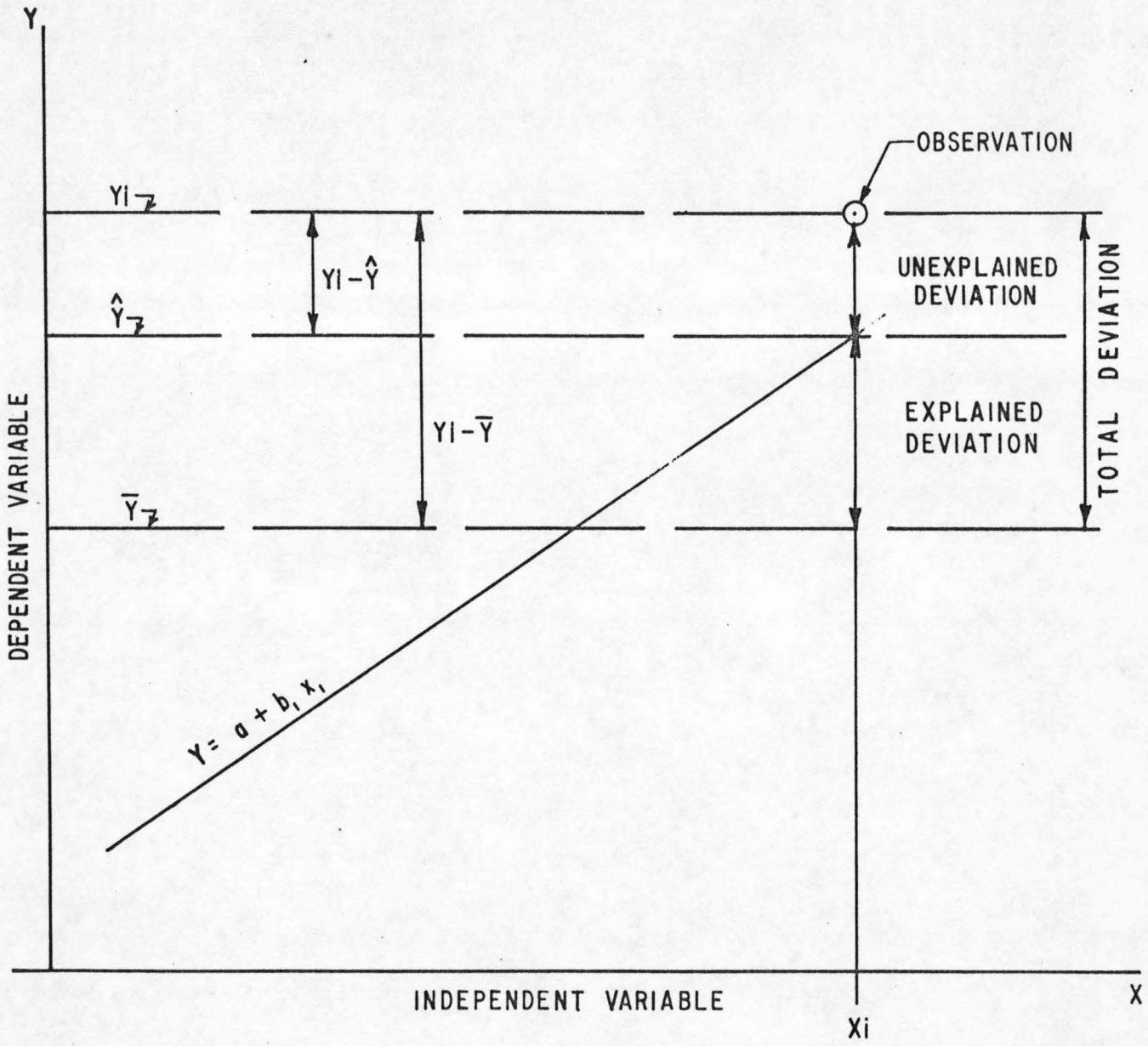
which can be written in terms of the symbols in Figure 30 as

$$R^2 = \frac{\Sigma(Y_i - \overline{Y})^2 - \Sigma(Y_i - \hat{Y}_i)^2}{\Sigma(Y_i - \overline{Y})^2}$$

The value of $R^2$ may fall between zero and one, and for the situation where $R^2 = 1$, there would be no variance left unexplained by independent variables used in the equation.

If there is only one independent variable, $R^2$ is called the coefficient of simple determination. The square root of the coefficient of determination is the correlation coefficient (R). Basically this is a measure of the degree of association between two variables (either two independent variables or one independent variable and one dependent variable). The display of simple correlation coefficients is usually in the form of a matrix, giving the correlation coefficients for all possible combinations of variables, both independent and dependent.

FIGURE 30




PARTITIONING OF THE TOTAL SUM OF SQUARES

Even though computed values of R or $R^2$ for a regression equation may be high, it should not be assumed that this indicates a high degree of dependence. Quite often too much reliance is placed on high values of these two statistical measures when evaluating estimating equations. A high degree of association does not eliminate the need to evaluate the reasonableness of the association.

Standard Error of Estimate

The standard error of estimate is actually a measure of the dispersion of the observed data points about the regression line. Mathematically, it is a measure of the error to be expected in predicting the dependent variable from the independent variables in the equation. It is most meaningful, however, to express the standard error as a percent of the mean observed value of the dependent variable. Numerically it is equal to:

$$\frac{\text{Standard error of estimate}}{\text{Mean of the dependent variable}} \times 100$$

The percent standard error is analogous to the coefficient of variation, which is the standard deviation of a set of points divided by the mean of the set.

The t-test

It is important to know whether the estimated regression coefficient is significantly different from some hypothesized value of the true regression coefficient ($b_i$). This hypothesized value ($b_i'$) is often taken as zero, and the test is then to determine the probability that a particular estimated regression coefficient could have been obtained by chance when the true value was actually zero.

The test statistic is the t-ratio:

$$t_{b_i} = \frac{(b_i - b_i')}{S_{b_i}}$$

where: $b_i$ = regression coefficient of $X_i$ ($i = 1, \ldots, m$)

$S_{b_i}$ = standard error of the regression coefficient

$b_i'$ = 0

Using a table of the percentage points of the t-distribution with n-(m+1) degrees of freedom, the null hypothesis ($b_i' = 0$) is rejected if the test statistic is equal to or greater than the "t"-value from the table. Thus, it can be stated very generally that if the regression coefficient exceeds approximately twice its standard error ($t = 2$), the analyst can be about 95 percent certain that the estimated regression coefficient is significantly different from $b_i'$ (or zero).

Plots of Observed Versus Estimated Trip Ends by Zone

This analytic tool should be used extensively in the analysis. Observations which contain unique characteristics become obvious when plotted in such a manner. These zones may then be deleted and given special treatment. Statistically poor regression equations will result in wide scattering on such plots. This is a good method to make an overall performance evaluation of an equation.

Large Equation Constants

A constant in a regression equation is considered large when it contributes the majority of the estimate of the dependent variable. This is indicated when the constant is large with respect to the mean observed value.

It is unsafe to make a generalization that large constants are always bad. However, the analyst should recognize the difficulty which results when there are small or zero values of the independent variables. In these cases reason may indicate that no trips should be estimated. However, the regression equation will, because of the magnitude of the constant, result in large values of the dependent variable. In such cases, examination of the relationships in the regression equation may indicate inconsistencies which should be alleviated.

Signs of Independent Variables

Logic must be considered when examining the positive or negative contribution of the independent variables in a regression equation. In many instances, the contribution to the estimate of the dependent variable is illogical. For example, in equations developed for home based vehicle trip productions, the characteristics of the dwelling units in that zone (population, car ownership, labor force, etc.) should be positively correlated to trip making. However, if this were a person trip model for transit trips, it may be logical to have car ownership enter the equation as a negative quantity. In this instance, it is logical to assume that transit trips will increase as car ownership decreases, or vice versa.

Computer Analysis

Trip generation was determined through use of the IBM System 1130 computer using the 1130 statistical system program (1130-CA-06X). This program performs stepwise linear regression analysis in the following manner: From sets of observations containing measures on a dependent variable y and m independent variables $x_1, x_2, \ldots x_m$, the stepwise linear regression analysis will determine the coefficients of a linear equation of the form

$$\hat{y} = a + b_1x_1 + b_2x_2 + \ldots b_mx_m$$

which best approximates the observations in the least squares sense. The program can analyze up to 499 observations and as many as 30 variables.

The independent variables $x_1$, $x_2$, ..., $x_m$ are entered into the equation on the basis of a variance criterion supplied by the user, which enables the program to determine which variable makes the greatest improvement in "goodness of fit".

The general method of solution to determine the coefficients a, $b_1$, ... $b_m$ is to compute the matrix of correlation coefficients from the source data. See Figure 31A. This matrix contains the correlations between all the independent variables and the dependent variable. By applying a Gaussian elimination inversion process, a stepwise inverse of the correlation matrix is computed. Multiplying this inverse by a vector containing the dependent variable correlated with each independent variable forms the normalized regression coefficients. The inversion process is carried out for one variable at a time. As each variable is processed, it is compared to the variance criterion to determine its significance. If the variable is to be entered, the coefficients for the equation containing a subset of the total number of variables in the analysis are computed and made

available for printout and use in the next step of the analysis. Because of the nature of the computational process, the elements of several subsidiary statistics are also available. If the user elects to print each regression step as it is computed, these statistics are printed with the regression coefficients.

Figures 31A, 31B and 31C illustrate a sample problem analyzed by stepwise linear regression. The program sequentially entered variables X2, X20 and X45, giving the summary statistics at each step of the analysis. In the summary statistics RESIDUAL STANDARD DEVIATION is analogous to standard error of estimate and MULTIPLE R and MULTIPLE RSQR are the correlation coefficient (R) and coefficient of simple determination ($R^2$), respectively. It can be seen in the example that the third variable entered, X45, did not significantly improve the equation.

An example of the comparison of actual and predicted values for each case is shown in Figure 31C.

Trip End Stratification

The trip generation analysis was made in terms of trip "productions" and "attractions". To demonstrate the production and attraction definition, it is first necessary to class all trips

available for printout and use in the next step of the analysis. Because of the nature of the computational process, the elements of several subsidiary statistics are also available. If the user elects to print each regression step as it is computed, these statistics are printed with the regression coefficients.

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# FIGURE 31A

EXAMPLE, HB SOCIAL-RECREATION ATTRACTIONS FEBRUARY 19, 1968 JOB 1350

| | |
|---|---|
| NUMBER OF VARIABLES | 6 |
| INPUT TYPE | 1 |
| SEQUENCE CHECK | 0 |
| VARIABLES ON CARD 1 | 1 |
| VARIABLES ON CARD 2 | 4 |
| VARIABLES ON CARD 3 | 1 |
| TRANSFORMATION SWITCH | 1 |
| OUTPUT RAW CROSS PRODUCTS | 0 |
| OUTPUT RESIDUAL CROSS PRODUCTS | 0 |
| PRINT PREDICTED VALUES | 3 |
| PRINT STEPS | 1 |
| POOLING OPTION | 0 |
| DEPENDENT VARIABLE | 6 |
| F-LEVEL TO REMOVE VARIABLES | 0.005 |
| F-LEVEL TO ENTER VARIABLES | 0.010 |
| TOLERANCE VALUE | 0.00010 |
| OUTPUT VARIANCE - COVARIANCE | 0 |
| OUTPUT CORRELATION | 1 |

(I3,I1,6X,F5.0)

(I3,I1,16X,F5.0,15X,F5.0,20X,2F5.0)

(I3,I1,26X,F5.0)

---

SUMMARY STATISTICS NO.OF CASES= 290

| | VARIABLE | LOW | HIGH | AVERAGE | STD. DEV. | VARIANCE |
|---|---|---|---|---|---|---|
| 1 | X2 | 0.00000E 00 | 0.15700E 04 | 0.26892E 03 | 0.24843E 03 | 0.61721E 05 |
| 2 | X16 | 0.00000E 00 | 0.49560E 04 | 0.14670E 03 | 0.58008E 03 | 0.33650E 06 |
| 3 | X20 | 0.00000E 00 | 0.15540E 04 | 0.49462E 02 | 0.12661E 03 | 0.16030E 05 |
| 4 | X25 | 0.00000E 00 | 0.67460E 04 | 0.32760E 03 | 0.76118E 03 | 0.57940E 06 |
| 5 | X45 | 0.00000E 00 | 0.33800E 04 | 0.13144E 03 | 0.30677E 03 | 0.94109E 05 |
| 6 | SORC | 0.00000E 00 | 0.39390E 04 | 0.46909E 03 | 0.50824E 03 | 0.25831E 06 |

---

MATRIX OF CORRELATION COEFFICIENTS

| VARIABLE | X2 | X16 | X20 | X25 | X45 | SORC |
|---|---|---|---|---|---|---|
| X2 | 0.10000E 01 | -0.12900E 00 | 0.58056E-01 | -0.48505E-01 | 0.99621E-01 | 0.43554E 00 |
| X16 | -0.12900E 00 | 0.10000E 01 | 0.39394E-01 | 0.85403E 00 | 0.21188E 00 | 0.16053E-02 |
| X20 | 0.58056E-01 | 0.39394E-01 | 0.10000E 01 | 0.46387E 00 | 0.66377E 00 | 0.55512E 00 |
| X25 | -0.48505E-01 | 0.85403E 00 | 0.46387E 00 | 0.10000E 01 | 0.67490E 00 | 0.28561E 00 |
| X45 | 0.99621E-01 | 0.21188E 00 | 0.66377E 00 | 0.67490E 00 | 0.10000E 01 | 0.47655E 00 |
| SORC | 0.43554E 00 | 0.16053E-02 | 0.55512E 00 | 0.28561E 00 | 0.47655E 00 | 0.10000E 01 |

# FIGURE 31B

EXAMPLE, HB SOCIAL-RECREATION ATTRACTIONS FEBRUARY 19, 1968 JOB 1350

REGRESSION ANALYSIS

| | |
|---|---|
| DEPENDENT VARIABLE | SORC |
| RESIDUAL STANDARD DEVIATION | 423.4729 |
| STANDARD ERROR OF THE MEAN | 24.8671 |
| MULTIPLE R | 0.5551 |
| MULTIPLE RSQR | 0.3081 |

VARIABLE ENTERED X20

| VARIABLE | B - COEF | STD ERROR OF B | PARTIAL-R | BETA-COEF | STD ERROR OF BETA |
|---|---|---|---|---|---|
| X20 | 2.2284 | 0.1967 | 0.5551 | 0.5551 | 0.0490 |

CONSTANT 358.8712

ANALYSIS OF VARIANCE TABLE

| SOURCE | D.F. | SUM OF SQUARES | MEAN SQUARE | F |
|---|---|---|---|---|
| MEAN | 1 | 0.63814E 08 | 0.63814E 08 | |
| REGRESSION | 1 | 0.23005E 08 | 0.23005E 08 | 0.12828E 03 |
| ERROR | 288 | 0.51646E 08 | 0.17932E 06 | |

---

REGRESSION ANALYSIS

| | |
|---|---|
| DEPENDENT VARIABLE | SORC |
| RESIDUAL STANDARD DEVIATION | 370.8091 |
| STANDARD ERROR OF THE MEAN | 21.7746 |
| MULTIPLE R | 0.6865 |
| MULTIPLE RSQR | 0.4713 |

VARIABLE ENTERED X2

| VARIABLE | B - COEF | STD ERROR OF B | PARTIAL-R | BETA-COEF | STD ERROR OF BETA |
|---|---|---|---|---|---|
| X2 | 0.8278 | 0.0879 | 0.4857 | 0.4046 | 0.0429 |
| X20 | 2.1341 | 0.1725 | 0.5896 | 0.5316 | 0.0429 |

CONSTANT 140.8979

ANALYSIS OF VARIANCE TABLE

| SOURCE | D.F. | SUM OF SQUARES | MEAN SQUARE | F |
|---|---|---|---|---|
| MEAN | 1 | 0.63814E 08 | 0.63814E 08 | |
| REGRESSION | 2 | 0.35190E 08 | 0.17595E 08 | 0.12796E 03 |
| ERROR | 287 | 0.39462E 08 | 0.13749E 06 | |

# FIGURE 31C

EXAMPLE, HB SOCIAL-RECREATION ATTRACTIONS FEBRUARY 19, 1968 JOB 1350

REGRESSION ANALYSIS.

| | |
|---|---|
| DEPENDENT VARIABLE | SORC |
| RESIDUAL STANDARD DEVIATION | 367.0376 |
| STANDARD ERROR OF THE MEAN | 21.5531 |
| MULTIPLE R | 0.6956 |
| MULTIPLE RSQR | 0.4838 |

VARIABLE ENTERED X45

| VARIABLE | B - COEF | STD ERROR OF B | PARTIAL-R | BETA-COEF | STD ERROR OF BETA |
|---|---|---|---|---|---|
| X2 | 0.8090 | 0.0873 | 0.4803 | 0.3954 | 0.0426 |
| X20 | 1.7365 | 0.2280 | 0.4106 | 0.4325 | 0.0568 |
| X45 | 0.2485 | 0.0944 | 0.1537 | 0.1500 | 0.0569 |

CONSTANT 132.9533

ANALYSIS OF VARIANCE TABLE

| SOURCE | D.F. | SUM OF SQUARES | MEAN SQUARE | F |
|---|---|---|---|---|
| MEAN | 1 | 0.63814E 08 | 0.63814E 08 | |
| REGRESSION | 3 | 0.36123E 08 | 0.12041E 08 | 0.89381E 02 |
| ERROR | 286 | 0.38528E 08 | 0.13471E 06 | |

PREDICTED VALUES

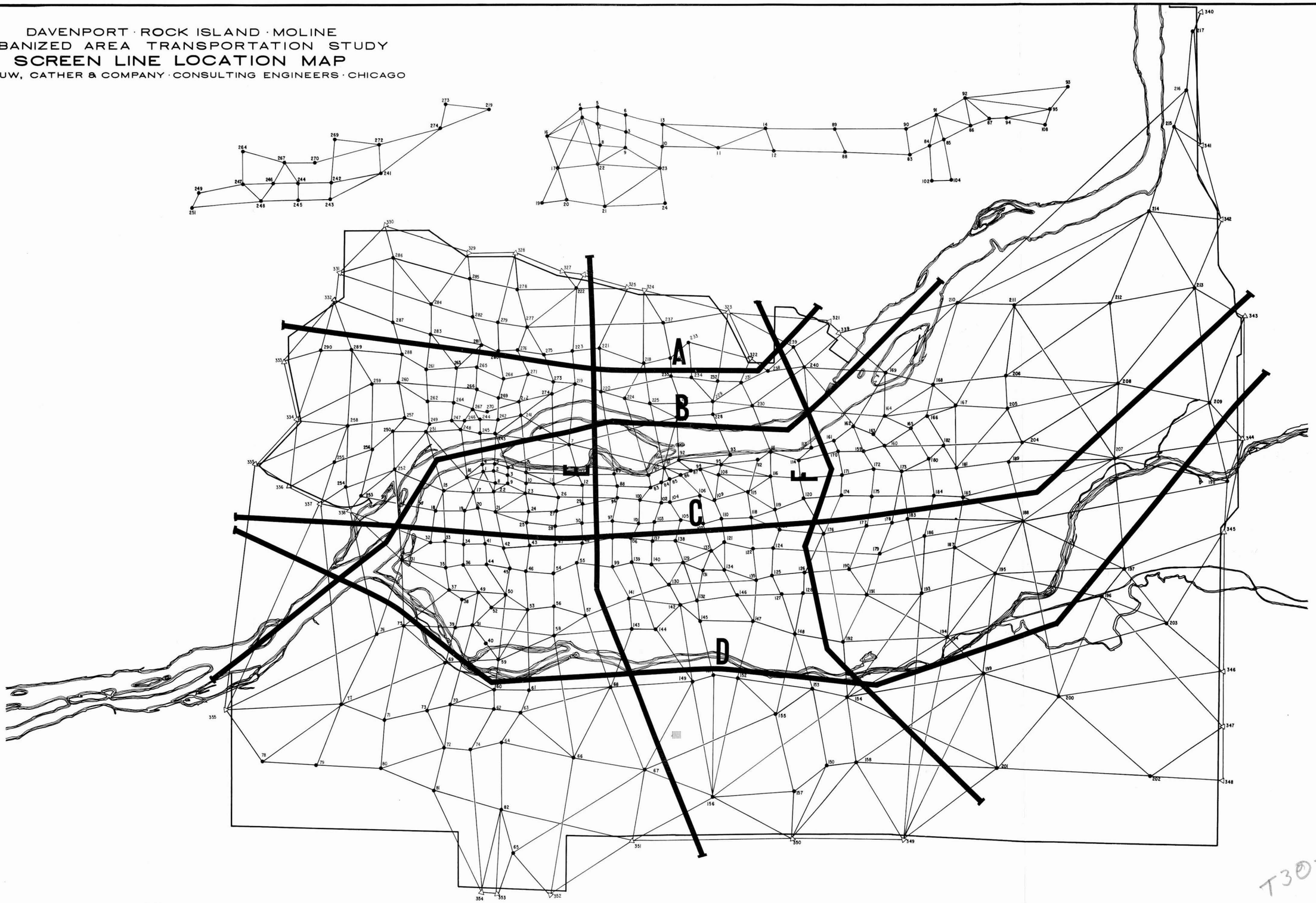
| CASE | ACTUAL | PREDICTED | RESIDUAL |
|---|---|---|---|
| 1 | 0.5460E 03 | 0.8627E 03 | -0.3167E 03 |
| 2 | 0.1453E 04 | 0.1579E 04 | -0.1261E 03 |
| 3 | 0.2550E 03 | 0.4270E 03 | -0.1720E 03 |
| 4 | 0.1260E 03 | 0.2401E 03 | -0.1141E 03 |
| 5 | 0.1510E 03 | 0.5307E 03 | -0.3797E 03 |
| 6 | 0.4200E 02 | 0.2111E 03 | -0.1691E 03 |
| 7 | 0.9720E 03 | 0.5778E 03 | 0.3941E 03 |
| 8 | 0.5280E 03 | 0.6475E 03 | -0.1195E 03 |
| 9 | 0.2100E 02 | 0.3390E 03 | -0.3180E 03 |
| 10 | 0.2660E 03 | 0.6718E 03 | -0.4058E 03 |
| 11 | 0.2100E 03 | 0.2817E 03 | -0.7175E 02 |
| 12 | 0.1160E 03 | 0.3790E 03 | -0.2630E 03 |
| 13 | 0.7300E 02 | 0.2979E 03 | -0.2249E 03 |
| 14 | 0.1790E 03 | 0.2035E 03 | -0.2455E 02 |
| 15 | 0.5840E 03 | 0.3806E 03 | 0.2033E 03 |
| 16 | 0.3340E 03 | 0.6763E 03 | -0.3423E 03 |
| 17 | 0.5830E 03 | 0.8472E 03 | -0.2642E 03 |
| 18 | 0.8490E 03 | 0.7632E 03 | 0.8575E 02 |
| 281 | 0.6840E 03 | 0.6633E 03 | 0.2068E 02 |
| 282 | 0.8110E 03 | 0.5506E 03 | 0.2603E 03 |
| 283 | 0.7890E 03 | 0.6954E 03 | 0.9351E 02 |
| 284 | 0.6090E 03 | 0.6180E 03 | -0.9006E 01 |
| 285 | 0.3470E 03 | 0.5562E 03 | -0.2092E 03 |
| 286 | 0.2420E 03 | 0.4823E 03 | -0.2403E 03 |
| 287 | 0.3430E 03 | 0.4860E 03 | -0.1430E 03 |
| 288 | 0.8610E 03 | 0.8033E 03 | 0.5763E 02 |
| 289 | 0.3550E 03 | 0.6264E 03 | -0.2714E 03 |
| 290 | 0.1470E 03 | 0.2510E 03 | -0.1040E 03 |

FIGURE 28

DAVENPORT · ROCK ISLAND · MOLINE
URBANIZED AREA TRANSPORTATION STUDY

# SCREEN LINE LOCATION MAP

DE LEUW, CATHER & COMPANY · CONSULTING ENGINEERS · CHICAGO




T30-31

as home based or non-home based. Home based trips always have one end at the residence of the trip maker. Non-home based trips have neither end at the residence of the trip maker.

Home based trips are always produced at the zone of residence of the trip maker whether the trip begins or ends in that zone and are always attracted at the non-residential end of the trip. Non-home based trips are always produced by the zone of origin and attracted by the zone of destination. Truck trips were also considered to be non-home based.

Trips were stratified into five classifications:

1. Home Based Work. --Those trips between a person's place of residence and his place of employment for the purpose of work.
2. Home Based Shop. --Those trips between a person's place of residence and a commercial establishment for the purpose of shopping.
3. Home Based Other. --All other trips between a person's place of residence and some form of land use for any other trip purpose.
4. Non-Home Based. --Any trip which has neither origin nor destination at home regardless of its purpose.

5. Truck Trips.

The areal unit of analysis is the traffic zone, a relatively homogeneous section of the study area to which all trip origins and destinations were coded and within which inventories of socio-economic and land use factors were made. Figure 32 is a zone map of the study area showing the numbers used to identify each traffic zone. The traffic assignment phase of the planning process requires that all zones be renumbered sequentially. The new number given each traffic zone is referred to as the centroid number. Appendix Table A-1 shows the equivalent centroid number for each traffic zone.

Appendix Table A-3 is a summary of observed trip productions and attractions, by category of trip, at each centroid. These data, derived directly from the consolidated origin-destination studies, are in terms of "person trips." All trips made on a weekday by residents of the area (except by walking) are included regardless of mode. Appendix Table A-4 is a summary of the land activity at each centroid as derived from the origin-destination studies. In the last phase of the analysis, described later in Chapter V, relationships will be developed to split total person trips into auto driver, auto passenger and transit trips. The trip generation analysis, however, is concerned with derivation of procedures to forecast person trip generation by all modes of travel.

Other Considerations in Forecasting[1]

Multiple regression is only as accurate and as useful as the validity of the assumptions that are made and the statistical significance of the results obtained. It is most important that detailed consideration be given to both the results and the statistical evaluations to determine their reality and logic. It is entirely possible to produce results which meet all of the various statistical criteria and yet offer no explanation of the causative relationships affecting trip generation.

Choice of Independent Variables. --Various socio-economic and land use factors available for the trip generation analysis have been discussed earlier in this section of the report. The selection of a few variables from all of those available, requires careful consideration. Certainly, variables which appear to be most reasonably related to the dependent variable should be considered for analysis. The simple correlation matrix is a useful tool in evaluating variables for logical and causative associations. The coefficient of simple correlation (R) is a measure of association

(1)-Much of this section of the report is taken from "Outline for the Evaluation of Multiple-Regression Trip Generation Analyses" by Norman Mueller and Sydney Robertson, U. S. Department of Transportation, Federal Highway Administration, Bureau of Public Roads, June 1966.

between two variables and the matrix gives the correlation coefficients for all possible combinations of variables. An R value of 1.000 indicates perfect correlation. A simple correlation matrix of the various dependent and independent variables applicable to this study is shown in Table 32.

Logic of Variables. --Only those variables which are reasonably related to the dependent variable should be permitted to enter the equations. For example, it is not realistic to have variables such as retail trade employment or manufacturing employment enter into an equation for home based work trip productions. In this case, the trip ends produced at the home for the purpose of work should be related to the characteristics of the dwelling units and occupants. Moreover, some independent variables may exhibit a close association with dependent variables merely by chance. It is important that completely illogical independent variables, even though they may show high correlation, be removed before the computerized equation development program begins.

Collinearity Among Variables. --Independent variables which are highly correlated should not be allowed to enter the same equation. Their collinearity indicates that they are

TABLE 32

DAVENPORT - ROCK ISLAND - MOLINE URBANIZED AREA TRANSPORTATION STUDY

SIMPLE CORRELATION MATRIX, 290 INTERNAL ZONES

| Variable | | X1 | X2 | X5 | X8 | X3 | X6 | X40 | X16 | X20 | X41 | X42 | X43 | X25 | X45 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | Y10 | Y11 | Y12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Population | X1 | 1.000 | 0.976 | 0.968 | 0.986 | 0.246 | 0.088 | 0.168 | -0.145 | -0.038 | -0.012 | -0.148 | -0.118 | -0.116 | 0.001 | 0.963 | 0.836 | 0.861 | 0.170 | 0.375 | -0.102 | 0.030 | 0.284 | 0.223 | 0.343 | 0.867 | 0.156 |
| Dwelling Units | X2 | 0.976 | 1.000 | 0.940 | 0.978 | 0.153 | 0.087 | 0.096 | -0.129 | 0.058 | 0.094 | -0.113 | -0.062 | -0.049 | 0.100 | 0.954 | 0.795 | 0.817 | 0.251 | 0.439 | -0.027 | 0.077 | 0.354 | 0.298 | 0.408 | 0.866 | 0.238 |
| Cars Owned | X5 | 0.968 | 0.940 | 1.000 | 0.967 | 0.241 | 0.198 | 0.269 | -0.165 | -0.081 | -0.067 | -0.177 | -0.158 | -0.161 | -0.054 | 0.959 | 0.873 | 0.901 | 0.152 | 0.332 | -0.148 | 0.037 | 0.263 | 0.212 | 0.300 | 0.883 | 0.130 |
| Employed Residents | X8 | 0.986 | 0.978 | 0.967 | 1.000 | 0.207 | 0.116 | 0.168 | -0.141 | -0.005 | 0.024 | -0.138 | -0.101 | -0.095 | 0.034 | 0.970 | 0.827 | 0.854 | 0.194 | 0.388 | -0.080 | 0.047 | 0.305 | 0.246 | 0.355 | 0.872 | 0.181 |
| Persons per Dwelling Unit | X3 | 0.246 | 0.153 | 0.241 | 0.207 | 1.000 | 0.307 | 0.709 | -0.207 | -0.244 | -0.288 | -0.252 | -0.288 | -0.310 | -0.277 | 0.191 | 0.252 | 0.269 | -0.206 | -0.137 | -0.300 | -0.159 | -0.114 | -0.163 | -0.151 | 0.144 | -0.221 |
| Cars Owned per Person | X6 | 0.088 | 0.087 | 0.198 | 0.116 | 0.307 | 1.000 | 0.799 | -0.211 | -0.158 | -0.206 | -0.238 | -0.260 | -0.270 | -0.204 | 0.115 | 0.186 | 0.188 | -0.074 | -0.138 | -0.252 | -0.061 | -0.033 | -0.040 | -0.149 | 0.117 | -0.123 |
| Cars Owned per Dwelling Unit | X40 | 0.168 | 0.096 | 0.269 | 0.168 | 0.709 | 0.799 | 1.000 | -0.267 | -0.313 | -0.367 | -0.325 | -0.369 | -0.397 | -0.352 | 0.161 | 0.276 | 0.291 | -0.238 | -0.265 | -0.389 | -0.151 | -0.148 | -0.187 | -0.283 | 0.133 | -0.272 |
| Manufacturing Employment | X16 | -0.145 | -0.129 | -0.165 | -0.141 | -0.207 | -0.211 | -0.267 | 1.000 | 0.039 | 0.174 | 0.977 | 0.907 | 0.854 | 0.212 | -0.107 | -0.177 | -0.169 | 0.145 | 0.226 | 0.816 | -0.041 | 0.046 | 0.051 | 0.274 | -0.074 | 0.282 |
| Retail Trade Employment | X20 | -0.038 | 0.058 | -0.081 | -0.005 | -0.244 | -0.158 | -0.313 | 0.039 | 1.000 | 0.821 | 0.250 | 0.318 | 0.464 | 0.664 | 0.020 | -0.106 | -0.073 | 0.715 | 0.617 | 0.535 | 0.615 | 0.636 | 0.710 | 0.611 | 0.225 | 0.764 |
| (Retail+Other)Employment | X41 | -0.012 | 0.094 | -0.067 | 0.024 | -0.288 | -0.206 | -0.367 | 0.174 | 0.821 | 1.000 | 0.342 | 0.561 | 0.661 | 0.972 | 0.039 | -0.100 | -0.076 | 0.659 | 0.599 | 0.684 | 0.387 | 0.626 | 0.611 | 0.595 | 0.209 | 0.723 |
| (Retail+Manufacturing)Employment | X42 | -0.148 | -0.113 | -0.177 | -0.138 | -0.252 | -0.238 | -0.325 | 0.977 | 0.250 | 0.342 | 1.000 | 0.946 | 0.926 | 0.346 | -0.099 | -0.194 | -0.179 | 0.292 | 0.349 | 0.904 | 0.091 | 0.179 | 0.200 | 0.394 | -0.024 | 0.435 |
| (Other+Manufacturing)Employment | X43 | -0.118 | -0.062 | -0.158 | -0.101 | -0.288 | -0.260 | -0.369 | 0.907 | 0.318 | 0.561 | 0.946 | 1.000 | 0.987 | 0.604 | -0.068 | -0.182 | -0.168 | 0.364 | 0.413 | 0.957 | 0.076 | 0.278 | 0.260 | 0.450 | 0.018 | 0.503 |
| Total Employment | X25 | -0.116 | -0.049 | -0.161 | -0.095 | -0.310 | -0.270 | -0.397 | 0.854 | 0.464 | 0.661 | 0.926 | 0.987 | 1.000 | 0.675 | -0.061 | -0.188 | -0.169 | 0.459 | 0.488 | 0.984 | 0.174 | 0.365 | 0.361 | 0.523 | 0.054 | 0.597 |
| Other Employment | X45 | 0.001 | 0.100 | -0.054 | 0.034 | -0.277 | -0.204 | -0.352 | 0.212 | 0.664 | 0.972 | 0.346 | 0.604 | 0.675 | 1.000 | 0.044 | -0.087 | -0.070 | 0.569 | 0.530 | 0.676 | 0.254 | 0.558 | 0.508 | 0.527 | 0.181 | 0.633 |
| Home Based Work Trip Productions | Y1 | 0.963 | 0.954 | 0.959 | 0.970 | 0.191 | 0.115 | 0.161 | -0.107 | 0.020 | 0.039 | -0.099 | -0.068 | -0.061 | 0.044 | 1.000 | 0.816 | 0.844 | 0.220 | 0.411 | -0.044 | 0.070 | 0.322 | 0.268 | 0.379 | 0.880 | 0.211 |
| Home Based Shop Trip Productions | Y2 | 0.836 | 0.795 | 0.873 | 0.827 | 0.252 | 0.186 | 0.276 | -0.177 | -0.106 | -0.100 | -0.194 | -0.182 | -0.188 | -0.087 | 0.816 | 1.000 | 0.842 | 0.133 | 0.256 | -0.176 | 0.048 | 0.261 | 0.194 | 0.229 | 0.831 | 0.117 |
| Home Based Other Trip Productions | Y3 | 0.861 | 0.817 | 0.901 | 0.854 | 0.269 | 0.188 | 0.291 | -0.169 | -0.073 | -0.076 | -0.179 | -0.168 | -0.169 | -0.070 | 0.844 | 0.842 | 1.000 | 0.152 | 0.310 | -0.152 | 0.034 | 0.308 | 0.213 | 0.283 | 0.907 | 0.147 |
| Non-Home Based Trip Productions | Y4 | 0.170 | 0.251 | 0.152 | 0.194 | -0.206 | -0.074 | -0.238 | 0.145 | 0.715 | 0.659 | 0.292 | 0.364 | 0.459 | 0.569 | 0.220 | 0.133 | 0.152 | 1.000 | 0.685 | 0.520 | 0.780 | 0.868 | 0.967 | 0.683 | 0.516 | 0.952 |
| Truck Trip Productions | Y5 | 0.375 | 0.439 | 0.332 | 0.388 | -0.137 | -0.138 | -0.265 | 0.226 | 0.617 | 0.599 | 0.349 | 0.413 | 0.488 | 0.530 | 0.411 | 0.256 | 0.310 | 0.685 | 1.000 | 0.534 | 0.393 | 0.665 | 0.680 | 0.994 | 0.588 | 0.729 |
| Home Based Work Trip Attractions | Y6 | -0.102 | -0.027 | -0.148 | -0.080 | -0.300 | -0.252 | -0.389 | 0.816 | 0.535 | 0.684 | 0.904 | 0.957 | 0.984 | 0.676 | -0.044 | -0.176 | -0.152 | 0.520 | 0.534 | 1.000 | 0.228 | 0.425 | 0.423 | 0.569 | 0.091 | 0.656 |
| Home Based Shop Trip Attractions | Y7 | 0.030 | 0.077 | 0.037 | 0.047 | -0.159 | -0.061 | -0.151 | -0.041 | 0.615 | 0.387 | -0.091 | 0.076 | 0.174 | 0.254 | 0.070 | 0.048 | 0.034 | 0.780 | 0.393 | 0.228 | 1.000 | 0.579 | 0.816 | 0.385 | 0.316 | 0.758 |
| Home Based Other Trip Attractions | Y8 | 0.284 | 0.354 | 0.263 | 0.305 | -0.114 | -0.033 | -0.148 | 0.046 | 0.636 | 0.626 | 0.179 | 0.278 | 0.365 | 0.558 | 0.322 | 0.261 | 0.308 | 0.868 | 0.665 | 0.425 | 0.579 | 1.000 | 0.855 | 0.658 | 0.597 | 0.903 |
| Non-Home Based Trip Attractions | Y9 | 0.223 | 0.298 | 0.212 | 0.246 | -0.163 | -0.040 | -0.187 | 0.051 | 0.710 | 0.611 | 0.200 | 0.260 | 0.361 | 0.508 | 0.268 | 0.194 | 0.213 | 0.967 | 0.680 | 0.423 | 0.816 | 0.855 | 1.000 | 0.674 | 0.557 | 0.933 |
| Truck Trip Attractions | Y10 | 0.343 | 0.408 | 0.300 | 0.355 | -0.151 | -0.149 | -0.283 | 0.274 | 0.611 | 0.595 | 0.394 | 0.450 | 0.523 | 0.527 | 0.379 | 0.229 | 0.283 | 0.683 | 0.994 | 0.569 | 0.385 | 0.658 | 0.674 | 1.000 | 0.562 | 0.734 |
| Total Trip Productions | Y11 | 0.867 | 0.866 | 0.883 | 0.872 | 0.144 | 0.117 | 0.133 | -0.074 | 0.225 | 0.209 | -0.024 | 0.018 | 0.054 | 0.181 | 0.880 | 0.831 | 0.907 | 0.516 | 0.588 | 0.091 | 0.316 | 0.597 | 0.557 | 0.562 | 1.000 | 0.498 |
| Total Trip Attractions | Y12 | 0.156 | 0.238 | 0.130 | 0.181 | -0.221 | -0.123 | -0.272 | 0.282 | 0.764 | 0.723 | 0.435 | 0.503 | 0.597 | 0.633 | 0.211 | 0.117 | 0.147 | 0.952 | 0.729 | 0.656 | 0.758 | 0.903 | 0.933 | 0.734 | 0.498 | 1.000 |

measures of the same characteristic. An indication of the presence of high collinearity between variables is obtained by examining the simple correlation matrix. If the correlation between two independent variables is extremely high, higher than the correlation between each independent variable and the dependent variable, then collinearity is likely to be present. Elimination of one of the variables from the equation is then desirable, since use of both in the same equation can often result in a degeneration of the least squares regression procedure and yield meaningless results.

Ability to Forecast Data. --Only those independent variables which can be forecasted within a reasonable degree of accuracy should be used in the trip generation equations. Since forecasts of independent variables generally come from other sources, it is often easy to forget that the trip generation estimating procedure is only as good as the quality of the future estimates of the independent variables. Because the assumption of stability over time is generally made when forecasting with regression equations, it is also extremely important that relationships which exhibit stability over time be chosen.

The variables for testing in this study were selected, taking into consideration their ability to be reasonably forecasted. Employment, for example, was divided into only three major categories (manufacturing, retail trade, and other) since it was agreed that stable projections could not be made to a finer breakdown. Similarly, other variables which are readily available from census data or other public records were used wherever possible.

Non-Urbanized Zones.--Since the trip generation equations attempt to describe urban travel, it would be illogical to include analysis zones which do not exhibit urban characteristics at the present time. These zones are usually located on the periphery of the study area and include largely undeveloped areas such as farm land.

While such zones are excluded from the development of trip generation equations, it may be assumed that when the development occurs, they will exhibit trip generation characteristics similar to other urbanized zones in the study area. Thus, when the future travel is forecast, trip generation equations may be applied to all zones which will be urbanized by the forecast year.

Zones with Zero or Few Trip Ends.--Stratification of the trip data sometimes results in a number of zones with no or few trips observed. After determination of the reasons for these low observations, it is logical to delete the zones from the analysis. For example,

if an equation is developed for shopping trip attractions to commercial land uses, it is likely that there will be a large number of zones primarily of residential character which will not attract any of these trips. This is only reasonable as these zones have nothing in common with the trip stratification. They are not appropriate, therefore, as observations in the data to be used to develop the equation for shopping trip attractions to commercial land.

Special Traffic Generators.--Zones which contain major single activity land uses, such as airports, major shopping centers, and other large facilities, must often be treated separately. Such major traffic generators generally have special characteristics which could unduly influence final equations if they are included in the regression analyses.

More meaningful estimates can be made for such zones if they are handled separately and given special consideration at the time of forecasting. Growth factor method may be the most reasonable way to forecast trip generation of the special generators.

## TRIP PRODUCTION AND ATTRACTION EQUATIONS

Methodology described earlier in the report was used to develop trip generation equations for each of the five categories of trip end stratification described on pages 137 and 138. With the exception of the equations for truck trip generation, all relationships are expressed in terms of person trips.

Initial equations were developed using data from all 290 traffic zones in the internal study area. Land activity measures, which were used in each of the estimating equations, are shown in Table 33. Productions and attractions included all trips which had either an origin or destination in the internal study area. The total number of internal trips in each trip purpose category is given in Table 34.

Later in the analysis the equations were refined by eliminating zones which are non-urban in character as well as those which produce or attract a few trips or have land activity not applicable to a specific trip purpose. The final equations developed for future trip generation in this study area are presented in Table 35.

Table 33

TRIP PRODUCTIONS AND ATTRACTIONS
VS.
LAND ACTIVITY MEASURES USED IN EQUATIONS

| Dependent Variables | Independent Variables: Population | Dwelling Units | Cars Owned | Employed Residents | Retail Employment | Manufacturing Employment | Other Employment | Total Employment | Enrolled Students Grades 1-8 | Enrolled Students Grades 9-12 | Enrolled Students College |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HB Work Person Productions | | | | X | | | | | | | |
| HB Work Person Attractions | | | | | | | | X | | | |
| HB Shop Person Productions | | | X | | | | | | | | |
| HB Shop Person Attractions | | | | | X | | | | | | |
| HB Other Person Productions | | | X | | | | | | | | |
| HB Other Person Attractions | | X | | | X | | X | | X | X | X |
| NHB Person Productions | | X | | | X | | X | | X | X | X |
| NHB Person Attractions | | X | | | X | | X | | X | X | X |
| Truck Vehicle Productions | | X | | | X | X | | | | | |
| Truck Vehicle Attractions | | X | | | X | X | | | | | |
| Total Productions | | | X | | X | | | | | | |

Table 34

INTERNAL TRIPS BY PURPOSE
ORIGIN-DESTINATION DATA

| Trip Purpose | Number of Trip Ends | Percent of Total | Cumulative Percent |
|---|---|---|---|
| Person Trips, Home Based: | | | |
| Work | 302,332 | 17.3 | |
| Shop | 228,066 | 13.1 | |
| Other | 786,139 | 44.9 | |
| Sub-Total Home Based Trips | 1,316,537 | | 75.3 |
| Person Trips, Non-Home Based: | 293,107 | 16.8 | |
| Sub-Total Person Trips | 1,609,644 | | 92.1 |
| Truck Trips | 138,697 | 7.9 | |
| Total Trips | 1,748,341 | | 100.0 |

Table 35

SUMMARY OF TRIP GENERATION EQUATIONS
PERSON TRIPS PER ZONE

2.52
.95
3.47 RET 1.22 OTEMP
0.70 DU.

ome Based Work

Productions = 41.85 + 1.58 (Emp Res)

Attractions = 62.84 + 1.51 (Tot Emp)

ome Based Shop

Productions = 64.17 + 1.13 (Cars)

Attractions

| | | |
|---|---|---|
| CBD | = | 1096.5 + 2.74 (Ret Emp) |
| Shopping Center | = | 821.9 + 16.72 (Ret Emp) |
| Strip Development | = | 14.4 (Ret Emp) |
| Other Areas | = | 4.3 (Ret Emp) |

otal (For control total checks only)

Productions = 596.83 + 7.13 (Cars) + 5.06 (Ret Emp)

ıere:

| | | |
|---|---|---|
| Emp Res | = | Employed Residents |
| Tot Emp | = | Total Employment |
| Ret Emp | = | Retail Employment |
| Mfg Emp | = | Manufacturing Employment |
| Oth Emp | = | Other Employment |

ote: Abbreviations apply to Tables 36 and 37 also.

Home Based Other

Productions = 45.74 + 4.72 (Cars)

Attractions

| | | |
|---|---|---|
| Personal Business | = | 485.7 + 2.52 (Ret Emp) + 0.98 (Oth Emp) |
| Social-Recreation | = | 325.1 + 0.70 (DU) + 0.95 (Ret Emp) + 0.24 (Oth Emp) |
| School (1-8) | = | 0.89 (Stu 1-8) |
| School (9-12) | = | 1.52 (Stu 9-12) |
| School (College) | = | 1.24 (Stu Col) |

Non-Home Based

Productions = Attractions = 80.0 + 0.25 (HBO Att + HBS Att)

Truck

Productions = Attractions = 75.14 + 0.33 (DU) + 0.13 (Mfg Emp) + 1.03 (Ret Emp)

| | | |
|---|---|---|
| Cars | = | Cars Owned |
| DU | = | Dwelling Units |
| Stu 1-8 | = | School Enrollment (1-8) |
| Stu 9-12 | = | School Enrollment (9-12) |
| Stu Col | = | School Enrollment (College) |

## DEVELOPMENT OF TRIP GENERATION EQUATIONS

Complete summaries of initial and final trip production and attraction estimating equations and statistical tests of each are shown in Tables 36 and 37, respectively. Statistical tests of the final estimating equations do not include zones classified as special traffic generators since these will be forecasted separately. Following is the list of basic cutoff points for zones eliminated from the final trip generation equation:[1]

Home Based Work Productions: Zones with less than 25 trips, rural areas with low residential densities or zones with zero employed residents.

Home Based Work Attractions: Zones with less than ten trips or zero employees.

Home Based Shop Productions: Zones with less than ten trips or zero cars owned.

Home Based Shop Attractions: Area classification based on retail employment trip rates.

Home Based Other Productions: Zones with less than 150 trips.

---

(1)-All zones with unexplainable characteristics (except zones classified as special generators) were also removed from the analysis. These zones would bias the estimating equations.

Table 36

SUMMARY OF STATISTICS FROM THE DEVELOPMENT OF PERSON TRIP PRODUCTION EQUATIONS

| | Number of Zones Used | Mean Observed | Standard Error of Estimate | Coefficient of Variation (Percent) | Coefficient of Determination ($R^2$) | "t" Test |
|---|---|---|---|---|---|---|
| **Home Based Work** | | | | | | |
| Initial Equation = 29.85 + 1.60 (Emp Res) | 290 | 503.2 | 108.8 | 21.6 | 0.941 | 67.8 (Emp Res) |
| Final Equation = 41.85 + 1.58 (Emp Res) | 236 | 600.3 | 117.6 | 19.6 | 0.929 | 55.4 (Emp Res) |
| **Home Based Shop** | | | | | | |
| Initial Equation = 40.55 + 1.11 (Cars) | 290 | 385.7 | 171.7 | 44.5 | 0.762 | 30.4 (Cars) |
| Final Equation = 64.17 + 1.13 (Cars) | 225 | 457.0 | 154.6 | 33.8 | 0.801 | 30.0 (Cars) |
| **Home Based Other** | | | | | | |
| Initial (Illinois) = 15.14 + 4.84 (Cars) | 217 | 1,280.7 | 472.5 | 36.9 | 0.854 | 35.5 (Cars) |
| Initial (Iowa) = 93.46 + 3.23 (Cars) | 73 | 1,570.6 | 271.8 | 17.3 | 0.941 | 33.8 (Cars) |
| Initial Equation = 130.46 + 3.93 (Cars) | 290 | 1,353.7 | 525.7 | 38.8 | 0.811 | 35.2 (Cars) |
| Final Equation = 45.74 + 4.72 (Cars) | 173 | 1,560.5 | 455.4 | 29.2 | 0.846 | 30.6 (Cars) |
| **Non-Home Based** | | | | | | |
| Initial (HBO Att & HBS Att) = 50.11 + 0.26 (HBO Att + HBS Att) | 290 | 505.3 | 226.7 | 44.9 | 0.882 | 47.1 (HBO Att + HBS Att) |
| Initial (Illinois - HBO & HBS Att) = 43.23 + 0.265 (HBO Att + HBS Att) | 217 | 469.3 | 241.2 | 51.5 | 0.871 | 38.4 (HBO Att + HBS Att) |
| Final (Illinois - HBO & HBS Att) = 78.97 + 0.26 (HBO Att + HBS Att) | 163 | 617.3 | 273.3 | 44.2 | 0.854 | 30.8 (HBO Att + HBS Att) |
| Initial (Independent Variables) = 147.91 + 0.64 (DU) + 3.76 (Ret Emp) | 290 | 505.4 | 443.3 | 87.8 | 0.571 | 6.07 (DU), 18.2 (Ret Emp) |
| Final (Independent Variables) = 360.75 + 0.32 (DU) + 3.47 (Ret Emp) | 194 | 726.8 | 515.7 | 71.0 | 0.505 | 2.20 (DU), 13.9 (Ret Emp) |
| Final Equation = 80.00 + 0.25 (HBO Att + HBS Att) | 232 | 626.0 | 249.2 | 39.8 | 0.869 | 39.6 (HBO Att + HBS Att) |
| **Truck** | | | | | | |
| Initial Equation = 84.82 + 0.35 (DU) + 0.10 (Mfg Emp) + 0.93 (Ret Emp) | 290 | 239.1 | 127.9 | 53.5 | 0.608 | 11.44 (DU), 7.6 (Mfg Emp), 15.63 (Ret Emp) |
| Final Equation = 75.14 + 0.33 (DU) + 0.13 (Mfg Emp) + 1.03 (Ret Emp) | 250 | 238.7 | 101.4 | 42.5 | 0.741 | 12.94 (DU), 8.97 (Mfg Emp), 20.30 (Ret Emp) |
| **Total Production Equation** | | | | | | |
| Initial Equation = 414.84 + 7.42 (Cars) + 5.33 (Ret Emp) | 290 | 2,985.9 | 822.7 | 27.8 | 0.869 | 41.2 (Cars), 13.9 (Ret Emp) |

## Table 37

## SUMMARY OF STATISTICS FROM THE DEVELOPMENT OF PERSON TRIP ATTRACTION EQUATIONS

| | Number of Zones Used | Mean Observed | Standard Error of Estimate | Coefficient of Variation (Percent) | Coefficient of Determination ($R^2$) | "t" Test |
|---|---|---|---|---|---|---|
| **Home Based Work** | | | | | | |
| Initial Equation = 46.02 + 1.51 (Tot Emp) | 290 | 539.3 | 210.4 | 39.1 | 0.967 | 94.1 (Tot Emp) |
| Final Equation = 62.84 + 1.51 (Tot Emp) | 226 | 675.7 | 214.7 | 31.8 | 0.972 | 88.9 (Tot Emp) |
| **Home Based Shop** | | | | | | |
| Initial Equation = 157.81 + 4.61 (Ret Emp) | 290 | 400.7 | 863.5 | 216.0 | 0.336 | 4.61 (Ret Emp) |
| CBD Rate Equation = 5.73 (Ret Emp) | 12 | 2,217.2 | 1,440.0 | 65.0 | 0.026 | -- |
| Final CBD Equation = 1096.5 + 2.74 (Ret Emp) | 12 | 2,217.2 | 857.8 | 38.7 | 0.655 | 4.35 (Ret Emp) |
| Shopping Center Rate Equation = 24.5 (Ret Emp) | 13 | 2,632.5 | 1,229.4 | 46.7 | 0.614 | -- |
| Final Shopping Center Equation = 821.86 + 16.72 (Ret Emp) | 13 | 2,632.5 | 920.1 | 35.1 | 0.784 | 6.32 (Ret Emp) |
| Final Strip Development Equation = 14.4 (Ret Emp) | 17 | 985.8 | 345.7 | 35.1 | 0.780 | 7.30 (Ret Emp) |
| Final Other Area Equation = 4.3 (Ret Emp) | 68 | 192.9 | 102.8 | 53.3 | 0.862 | 20.9 (Ret Emp) |
| **Home Based Other** | | | | | | |
| Initial Equation = 371.99 + 1.99 (DU) + 6.15 (Ret Emp) + 1.10 (Oth Emp) | 290 | 1,357.1 | 1,117.8 | 82.4 | 0.530 | 7.5 (DU), 8.92 (Ret Emp), 3.8 (Oth Emp) |
| Initial Personal Business = 325.06 + 3.46 (Ret Emp) + 0.96 (Oth Emp) | 290 | 622.9 | 517.9 | 83.3 | 0.629 | 10.77 (Ret Emp), 7.28 (Oth Emp) |
| Final Personal Business = 485.70 + 2.52 (Ret Emp) + 0.98 (Oth Emp) | 128 | 766.3 | 307.9 | 40.2 | 0.841 | 9.17 (Ret Emp), 8.67 (Oth Emp) |
| Initial Social-Recreation = 168.31 + 0.86 (DU) + 2.36 (Ret Emp) + 0.23 (Oth Emp) | 290 | 546.5 | 416.5 | 76.2 | 0.511 | 8.55 (DU), 9.13 (Ret Emp), 2.18 (Oth Emp) |
| Final Social-Recreation = 220.50 + 0.70 (DU) + 0.95 (Ret Emp) + 0.24 (Oth Emp) | 169 | 531.3 | 255.3 | 48.0 | 0.332 | 8.13 (DU), 2.50 (Ret Emp), 2.06 (Oth Emp) |
| Final School 1-8 grade = 0.89 (Stu 1-8) | 52 | | | | | |
| 9-12 grade = 1.52 (Stu 9-12) | 3 | | | | | |
| College = 1.24 (Stu Col) | 2 | | | | | |
| **Non-Home Based** | | | | | | |
| Attractions = Non-home-based productions | (for equations and statistics see Table 36) | | | | | |
| **Truck** | | | | | | |
| Attractions = Truck productions | (for equations and statistics see Table 36) | | | | | |

Home Based Other Attractions:

Personal-Business--Zones with less than 300 trips, few or zero retail and other employment.

Social-Recreation--Zones with less than 100 trips.

Non-Home Based Productions and Attractions:

Home Based Other and Shop Attractions--Zones with less than 50 trips.

Dwelling Units and Retail Employment--Zones with less than 150 trips.

Truck Productions and Attractions: Zones with less than ten trips. $\langle (P + A)\ 2 \rangle$

Total Productions: Zones with less than 400 trips.

All zones removed from each final equation have been indicated on separate zone maps and, in addition, all zones with special generators have been listed in Table A-5 in the Appendix. Plots of observed versus estimated trips are also included, using the base year data for each dependent variable.

Home Based Work Person Trip Equations

Productions of home based work person trips are closely associated with the population, number of dwelling units, number of cars owned and employed residents in each traffic zone. See Table 32. Because of the collinearity between these variables, however, only one could be used in the estimating equation. The number of employed residents was selected on the basis of both high statistical correlation and logic. Similarly, home based work person trip attractions were related to total employment at the zone of attraction.

Table 36 shows both the initial and final estimating equations for home based work person trip productions together with the appropriate statistical tests. Zones removed from the final estimating equation are shown in Figure 33. The 54 zones removed accounted for only 2.9 percent of total trip productions in this category. There are no special generators of home based work trip productions. Good results were obtained as indicated by the statistical tests and as shown in Figure 34, a plot of observed versus estimated trip ends.

The initial and final estimating equations for home based work person trip attractions together with statistical tests of both equations are shown in Table 37. Zones which were removed from the final estimating equation are shown in Figure 35. A plot of observed versus

estimated trip ends is shown in Figure 36. There were four zones which were removed and treated as special generators. The zones are shown in Figure 35. The final estimating equation represents 97.6 percent of the total home based work trip attractions and the special generators represent 1.6 percent of the total.

Complete summary of observed versus estimated home based work productions and attractions are given in Tables A-6 and A-7 of the Appendix.

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# ZONES REMOVED FROM FINAL EQUATION

HB WORK PRODUCTIONS

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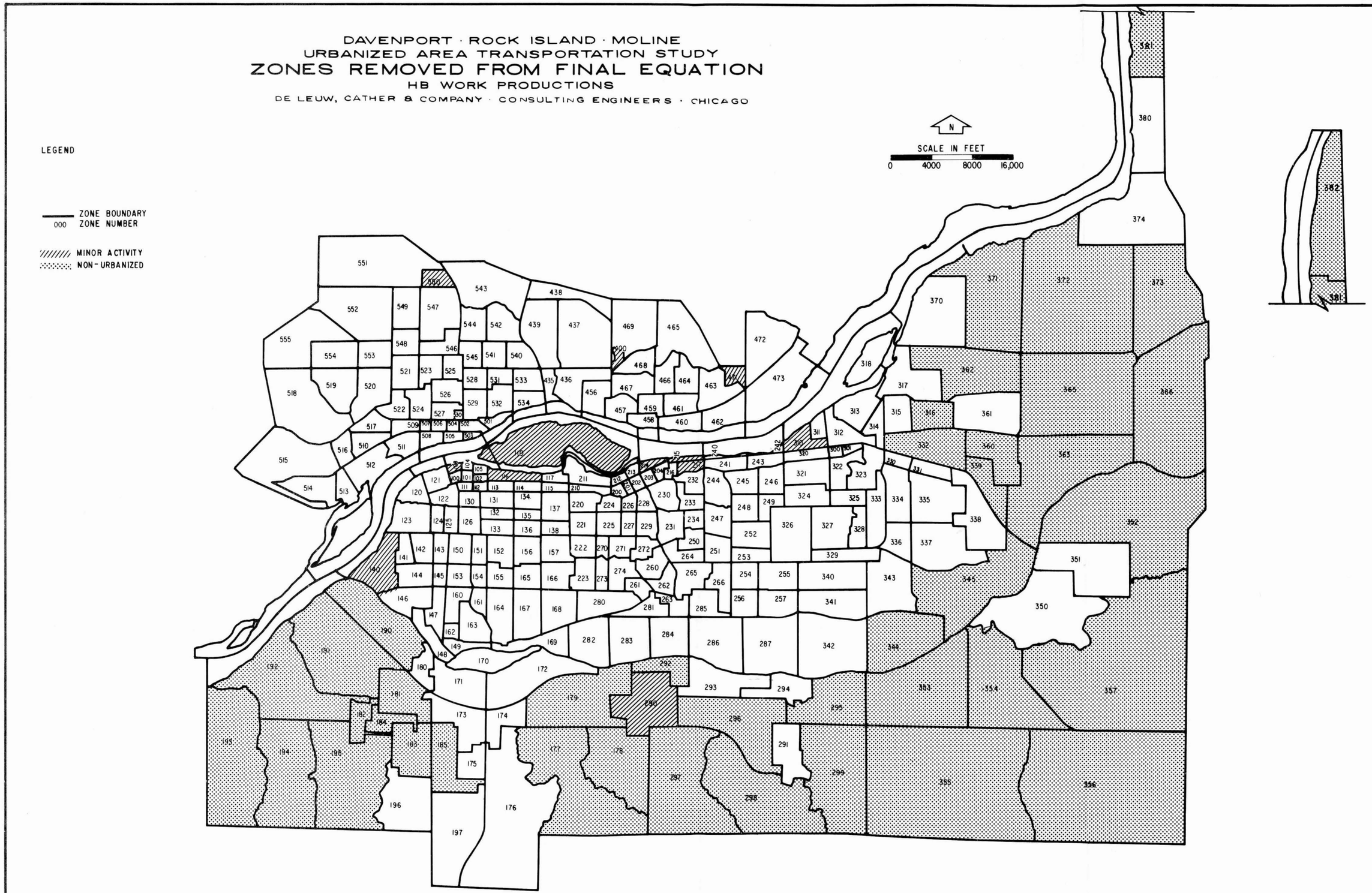
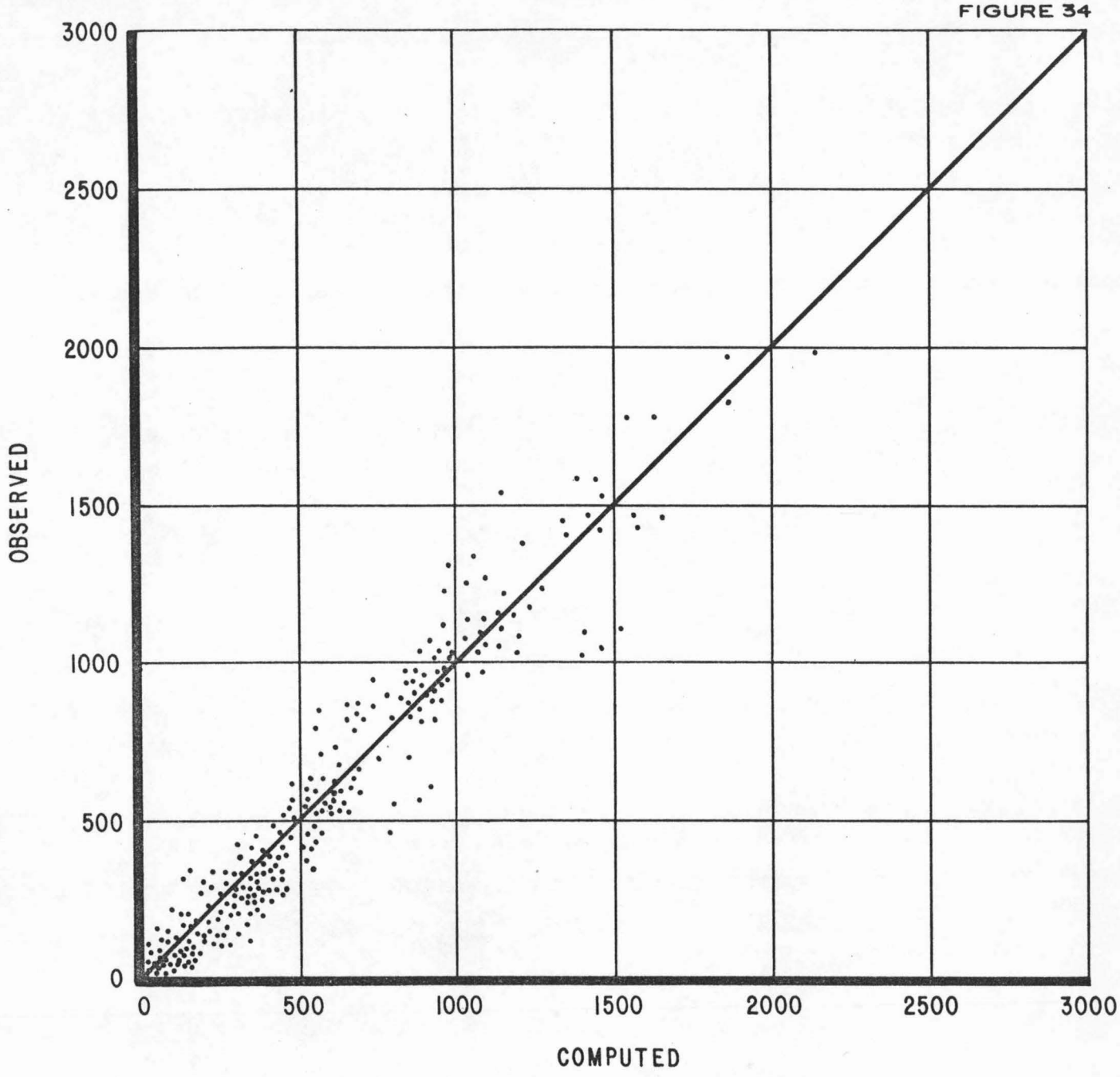


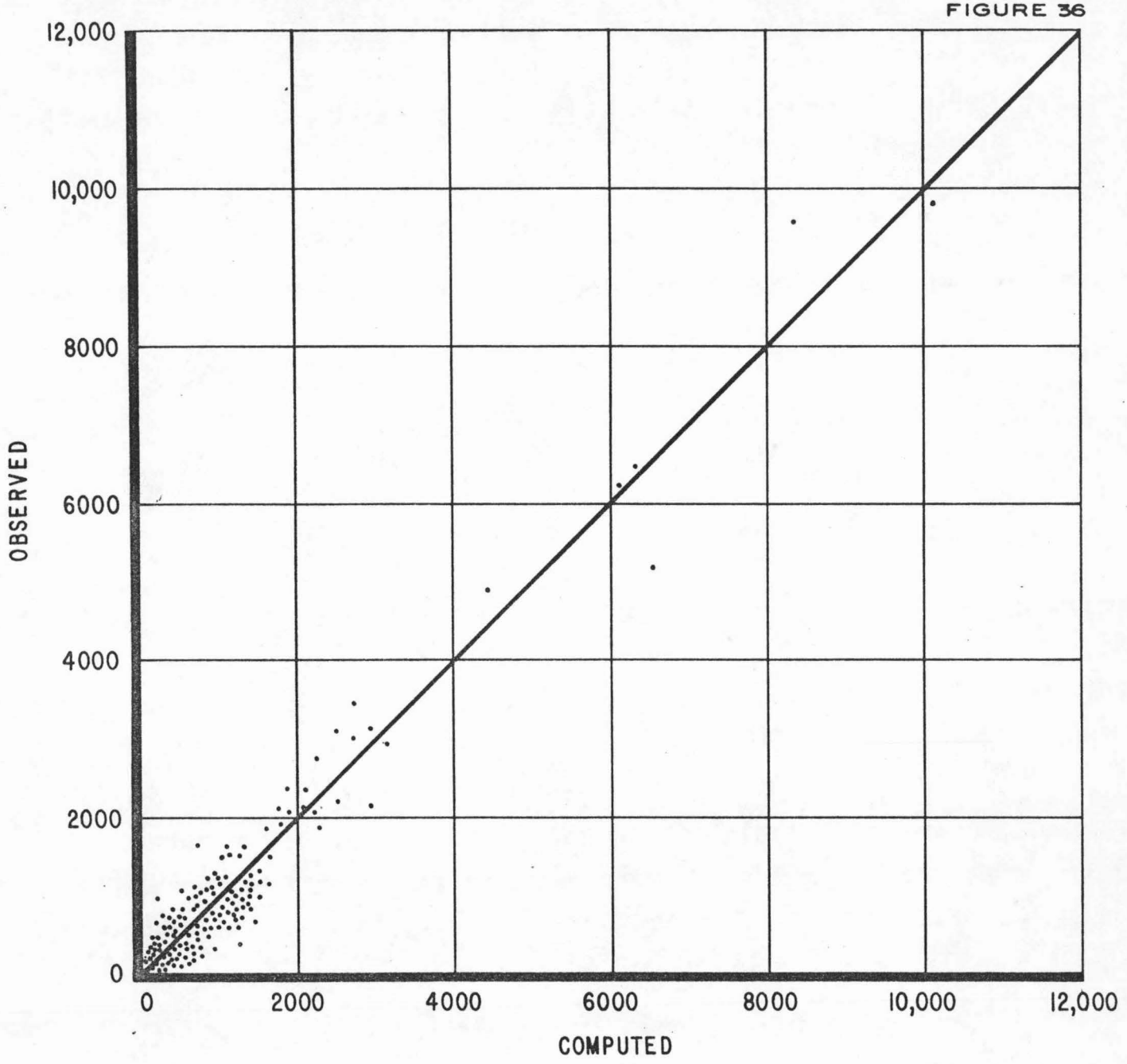
FIGURE 34




PLOT OF OBSERVED VS. ESTIMATED VALUES
OF THE DEPENDENT VARIABLE
HB WORK PRODUCTIONS

236 ZONES

FIGURE 36




PLOT OF OBSERVED VS. ESTIMATED VALUES
OF THE DEPENDENT VARIABLE
HB WORK ATTRACTIONS
226 ZONES

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# ZONES REMOVED FROM FINAL EQUATION

HB WORK ATTRACTIONS

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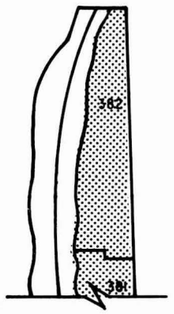
LEGEND

- ZONE BOUNDARY
- 000 ZONE NUMBER
- SPECIAL GENERATORS
- MINOR ACTIVITY
- NON-URBANIZED

N

SCALE IN FEET
0 4000 8000 16,000



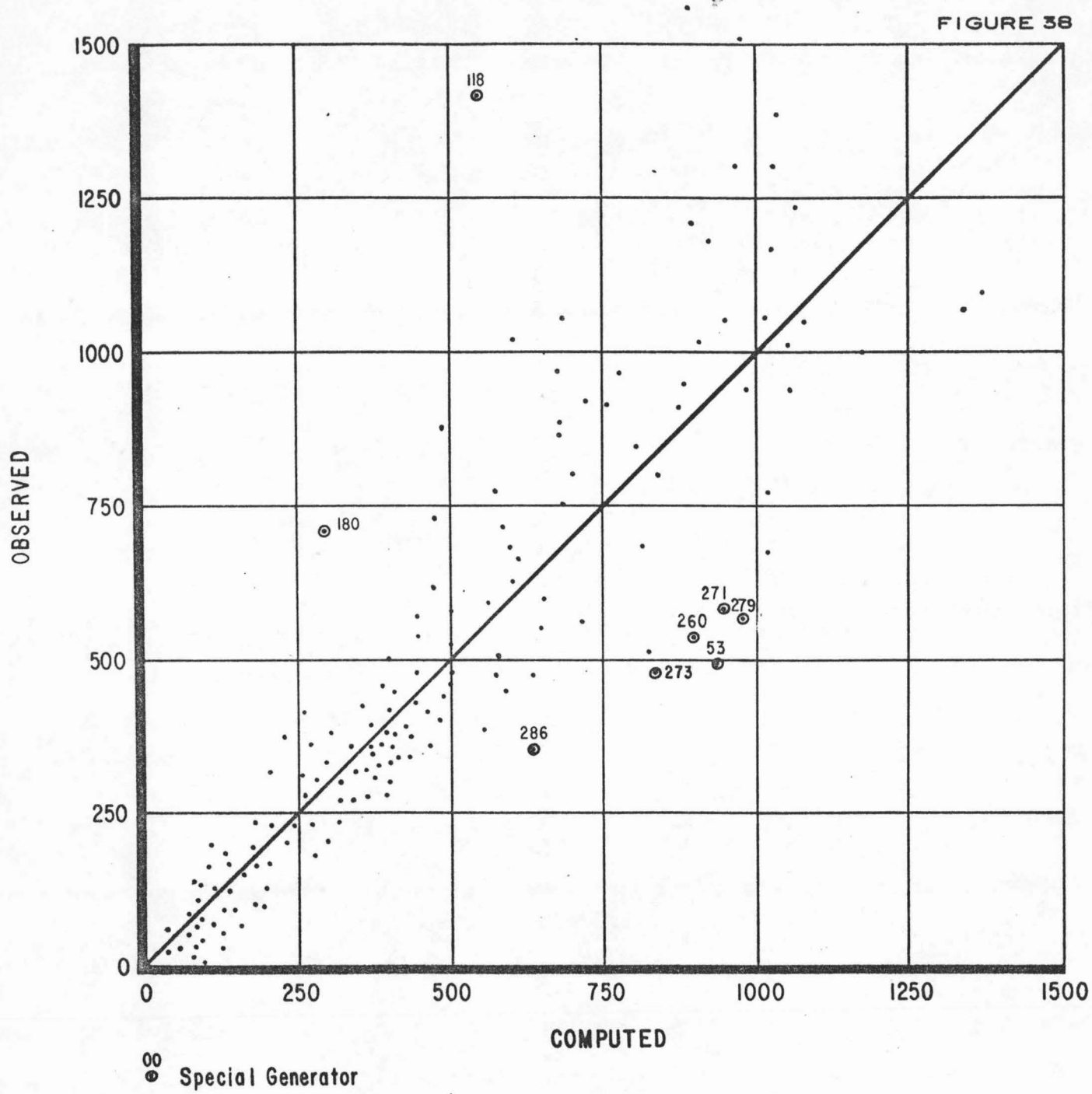
Home Based Shop Person Trip Equations

Home based shop trip productions were found to be correlated with the number of cars owned in a traffic zone. The statistics for initial equation and final estimating equation for home based shop productions are shown in Table 36. The number of families owning one, two, three or more cars was also tested as a possible independent variable. Statistical results were similar, but use of total cars owned per traffic zone gave the best results. In addition, total cars owned can be forecasted by traffic zone with greater reliability than the number of one-car families, two-car families, etc.

Eight zones, determined to have characteristics significantly different from the remainder, were removed and treated as special generators. These zones are shown in Figure 37 and are indicated by centroid number in Figure 38. The final estimating equation represents 91.9 percent of the total home based shop trip productions. Special generators make up 4.6 percent, bringing trips accounted for by the final estimating equation and the special generators to 96.5 percent of the total home based shop person trip productions. Table A-8 in the Appendix lists observed versus estimated home based shopping trip productions.

As shown earlier in Table 32, home based shop trip attractions were found to correlate best with the number of retail employees (retail trade employment) in each traffic zone. The initial equation tested (Table 37) indicated, however, that there was a wide variation in trip

FIGURE 38




PLOT OF OBSERVED VS. ESTIMATED VALUES
OF THE DEPENDENT VARIABLE
HB SHOP PRODUCTIONS

225 ZONES

making rates and that stratification would be required to establish satisfactory relationships.

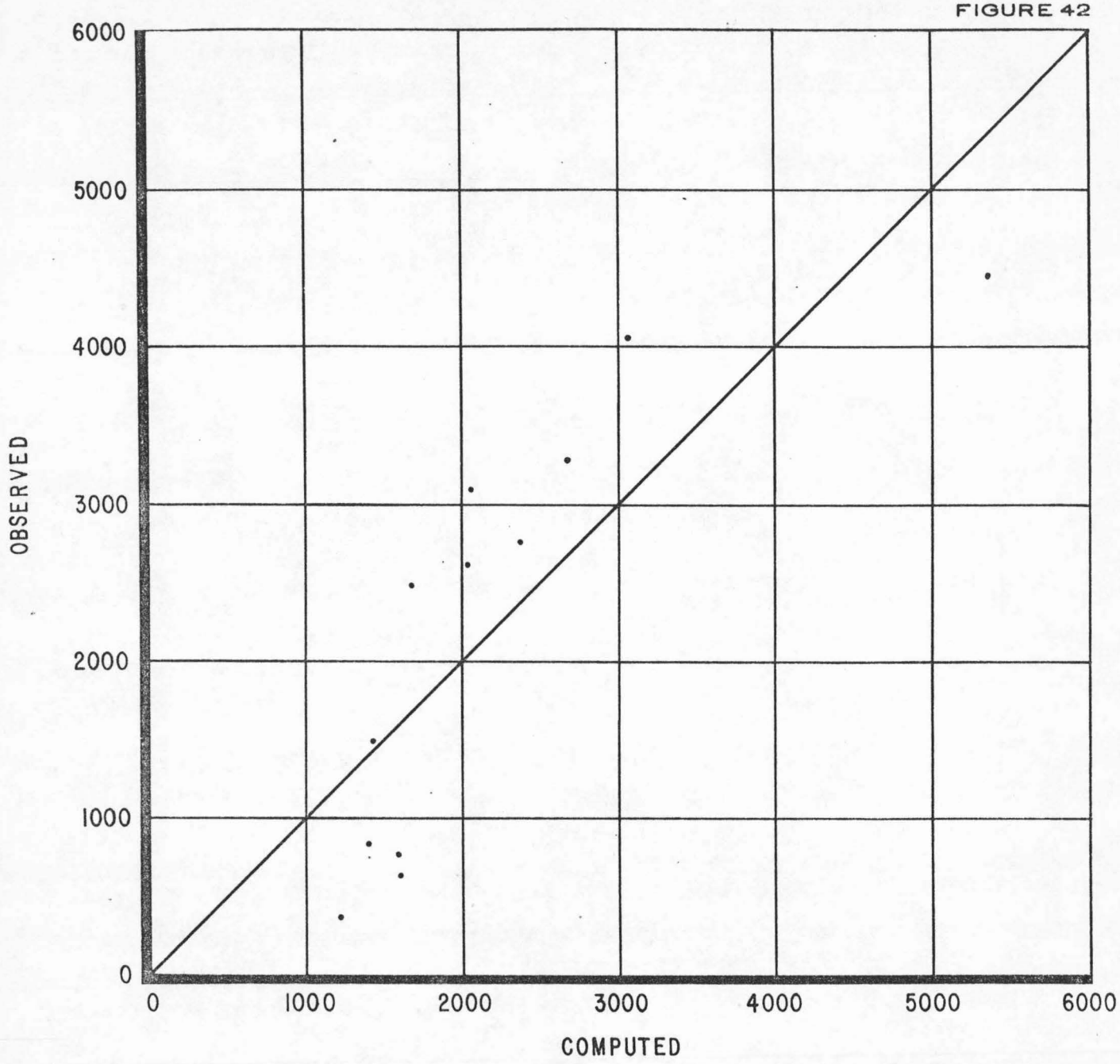
Analyses of the rate of shopping trip attraction per retail employee indicated that there were four distinct categories of retail activity with diverse trip making rates:

1. Shopping areas in the central business district;
2. Shopping centers and outlying business districts;
3. Strip commercial developments; and
4. Other areas.

The final trip attraction equations for each are given in Table 35. Locations of traffic zones to which the equations are applicable are shown in Figures 39 and 40. One shopping center zone and six zones in the "other" classification were treated as special generators. While the equations and special generators represent only 117 of 290 traffic zones in the internal study area, they account for 94.0 percent of total home based shop person trip attractions: 22.8 percent in central business district zones; 38.5 percent in shopping center and outlying business district zones; 14.4 percent in strip commercial area zones; and 18.3 percent in other zones. Locations of traffic zones removed from the analysis because they did not exhibit a relationship to retail activity are shown in Figure 41.

Figures 42 through 45A are plots of observed versus estimated trip ends for each home based shop trip attraction equation and graphic comparison of rate versus regression equations. The coefficient of simple determination ($R^2$) for the combination of the four equations and special generators

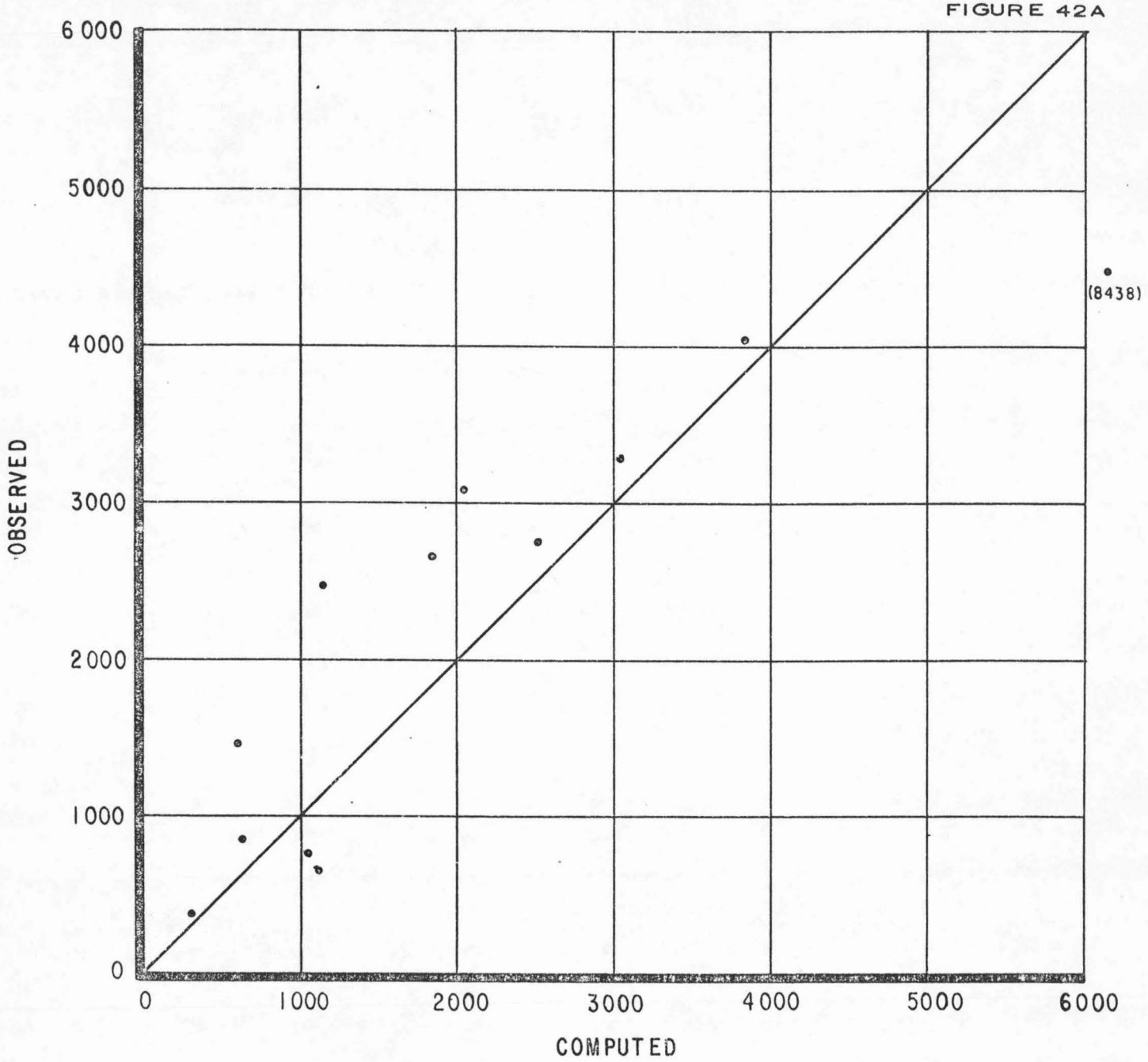
FIGURE 42




PLOT OF OBSERVED VS. ESTIMATED VALUES
OF THE DEPENDENT VARIABLE
HB SHOP ATTRACTIONS

CBD, 12 ZONES, REGRESSION EQUATION

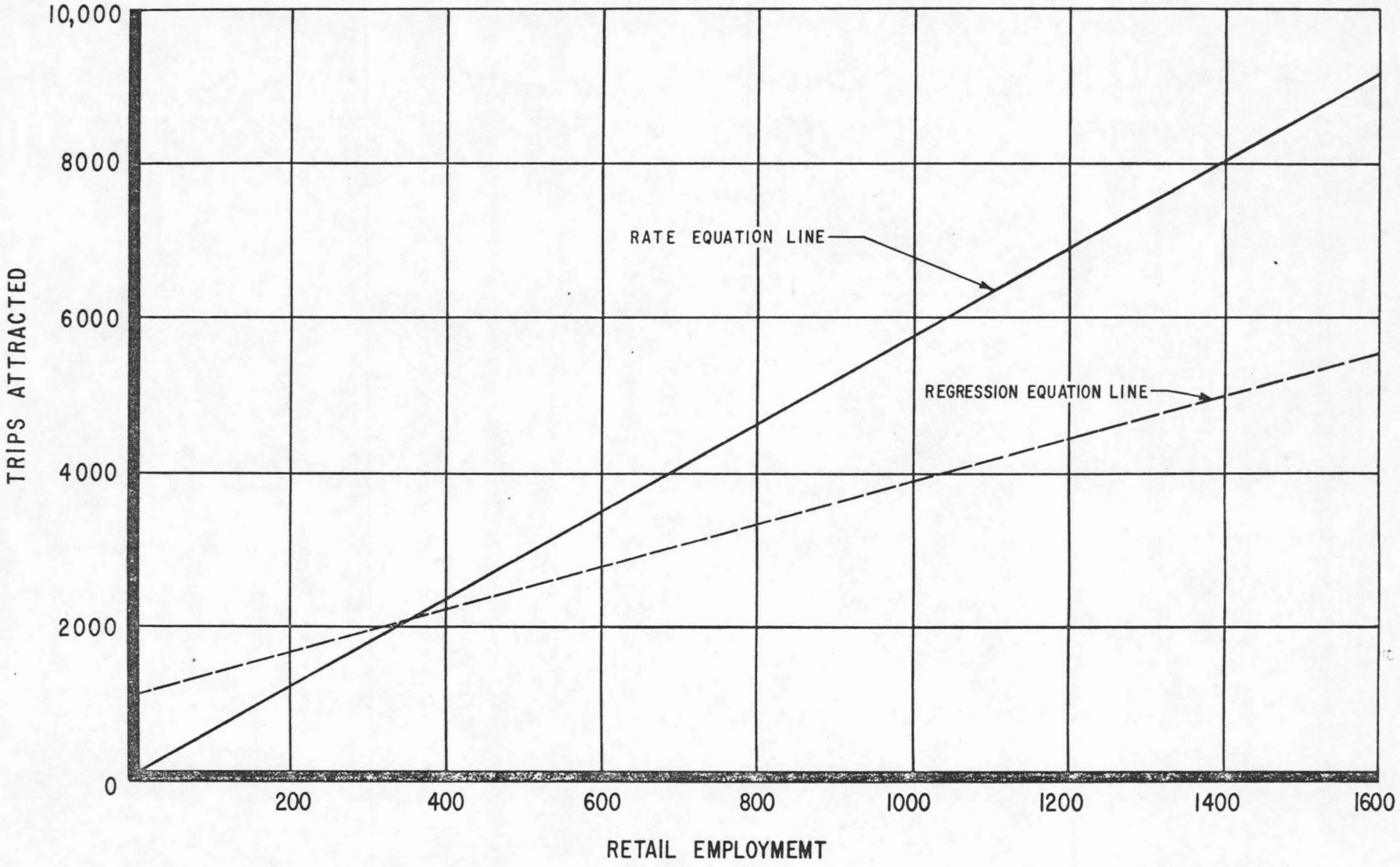
FIGURE 42A




PLOT OF OBSERVED VS. ESTIMATED VALUES
OF THE DEPENDENT VARIABLE
HB SHOP ATTRACTIONS

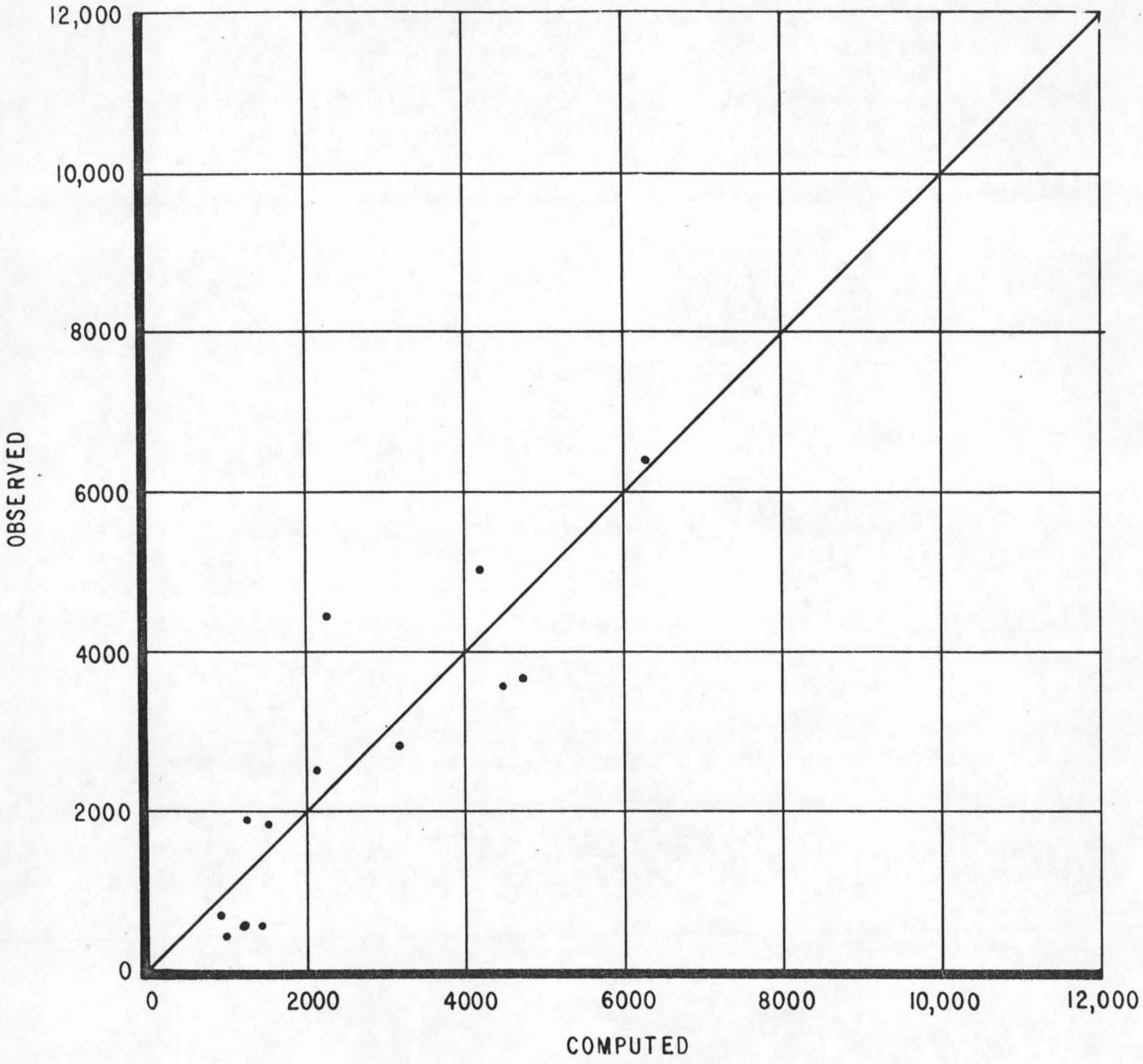
CBD, 12 ZONES, RATE EQUATION

FIGURE 42B




CBD HB SHOP TRIP ATTRACTIONS
COMPARISON OF REGRESSION AND RATE EQUATIONS

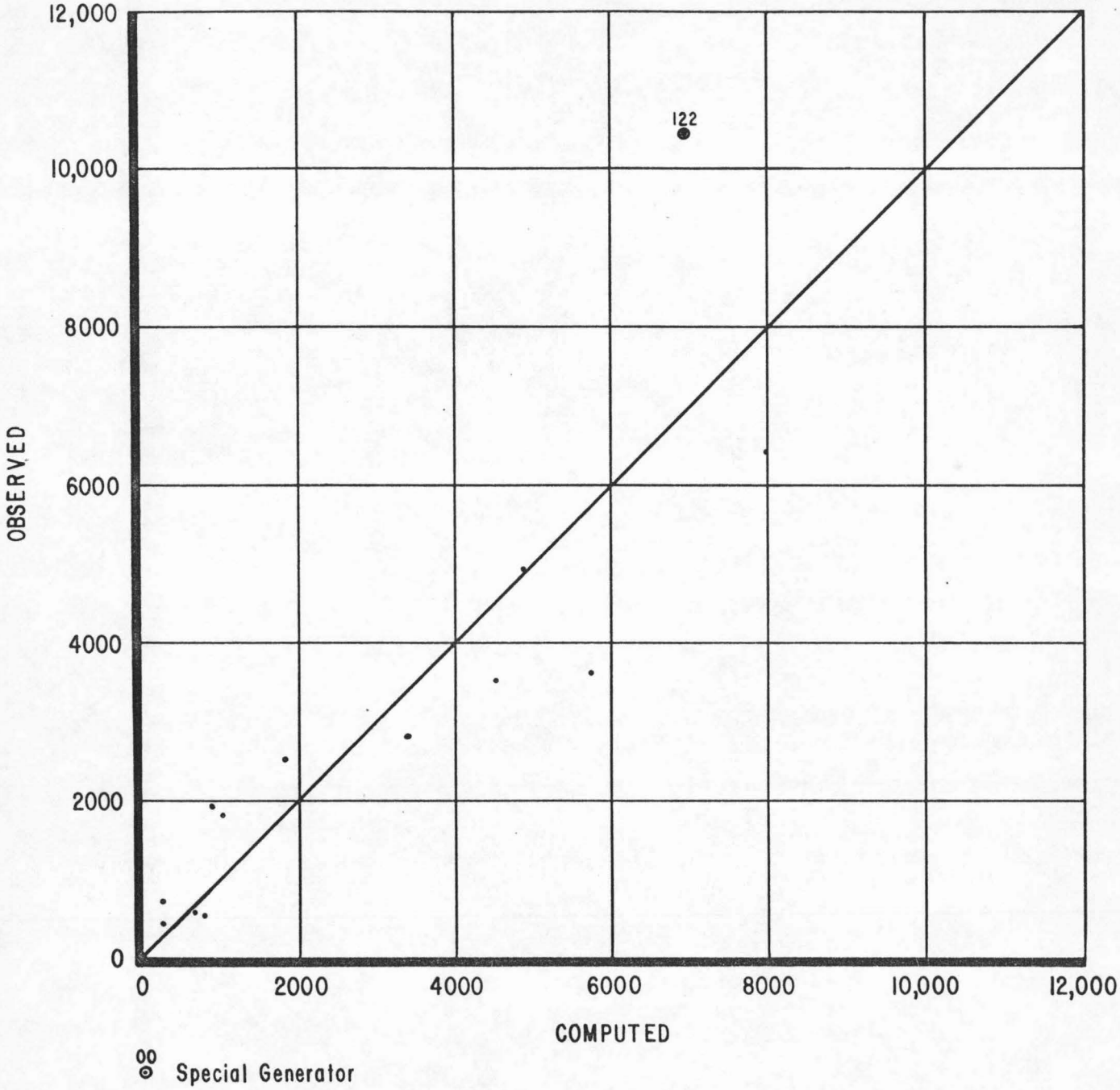
FIGURE 43




PLOT OF OBSERVED VS. ESTIMATED VALUES
OF THE DEPENDENT VARIABLE
HB SHOP ATTRACTIONS

SHOPPING CENTERS, 13 ZONES, REGRESSION EQUATION

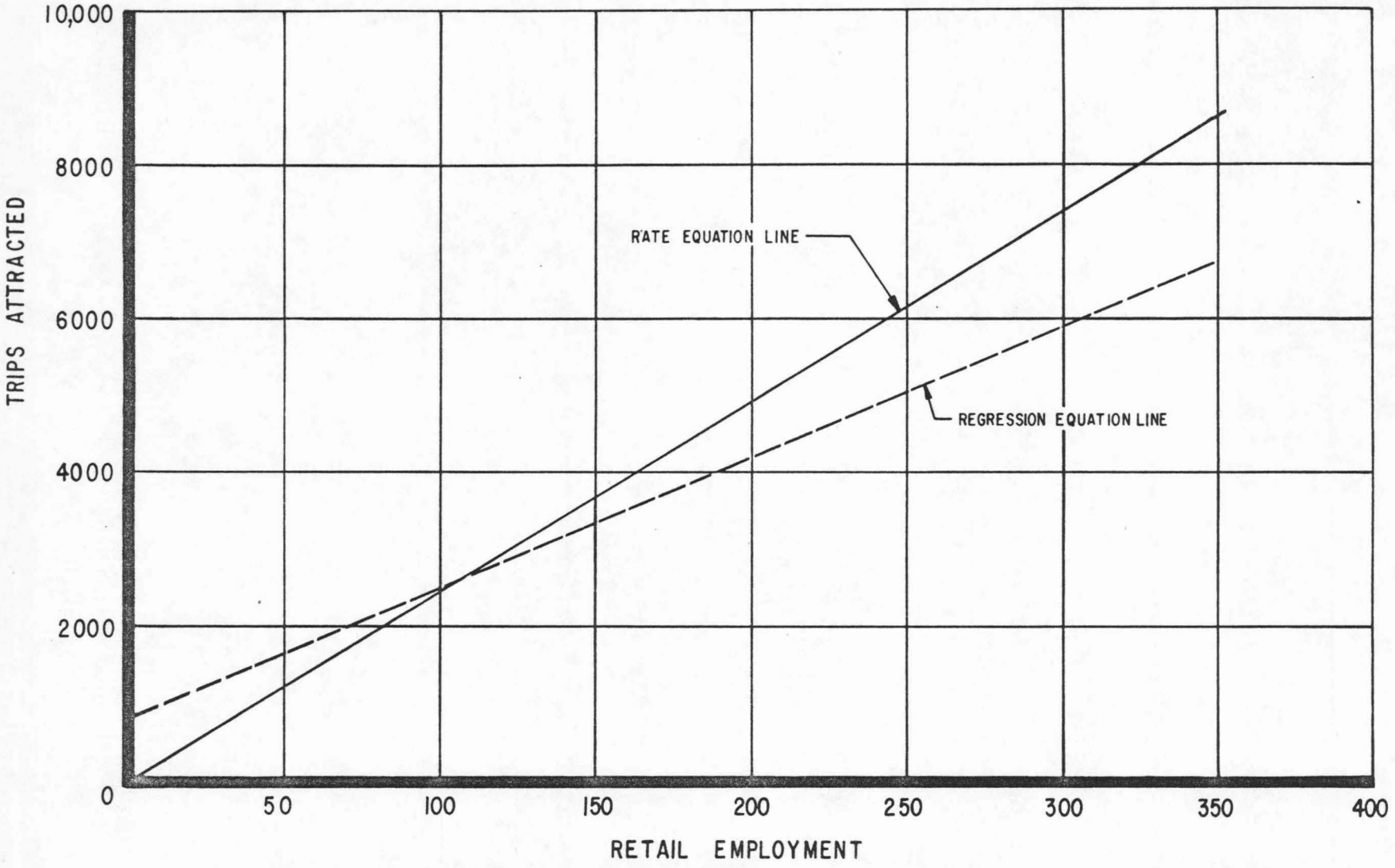
FIGURE 43A




PLOT OF OBSERVED VS. ESTIMATED VALUES
OF THE DEPENDENT VARIABLE
HB SHOP ATTRACTIONS

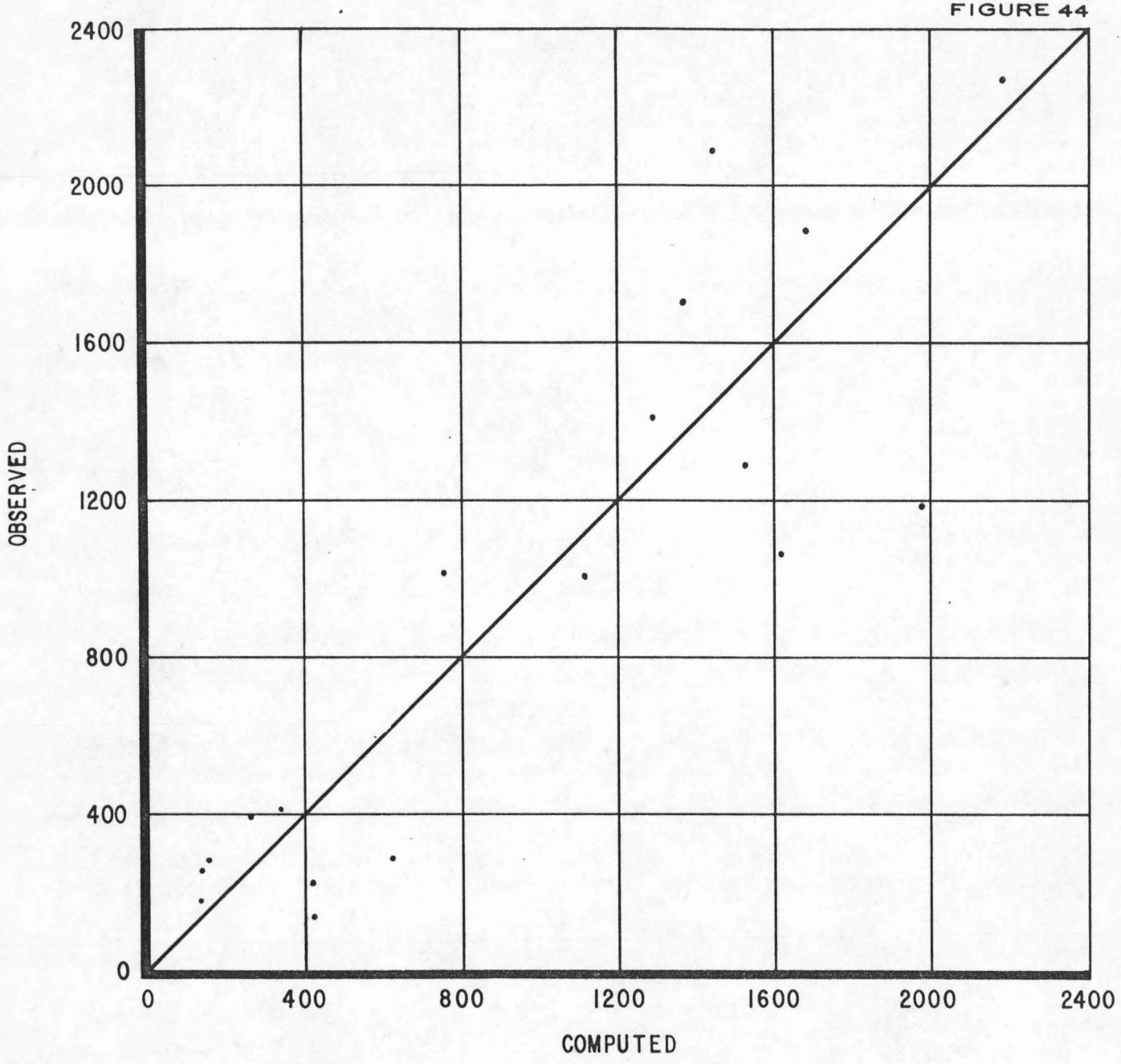
SHOPPING CENTERS, 13 ZONES, RATE EQUATION

FIGURE 43B




SHOPPING CENTERS, HB SHOP TRIP ATTRACTIONS
COMPARISON OF REGRESSION AND RATE EQUATIONS

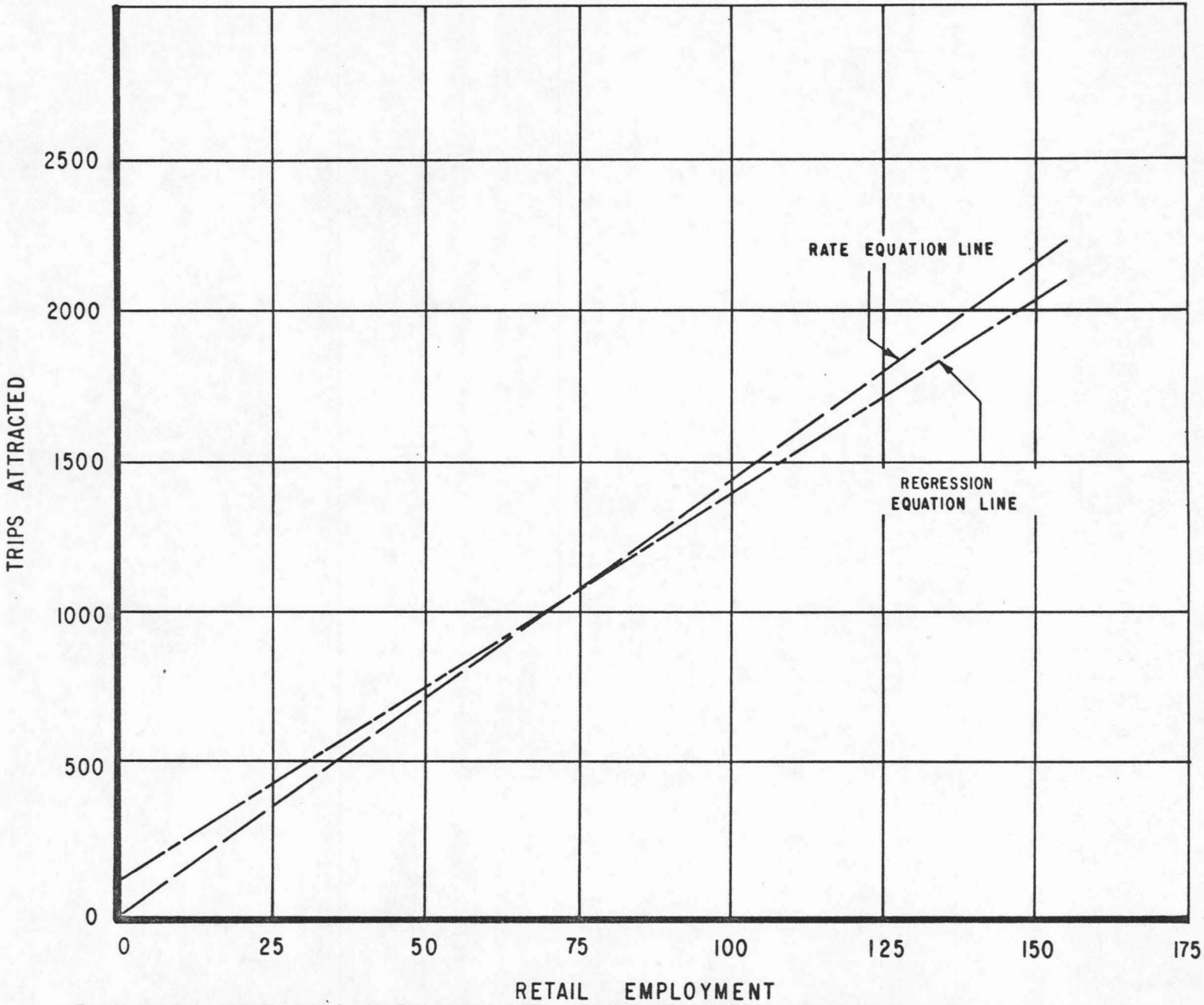
FIGURE 44




PLOT OF OBSERVED VS. ESTIMATED VALUES
OF THE DEPENDENT VARIABLE
HB SHOP ATTRACTIONS

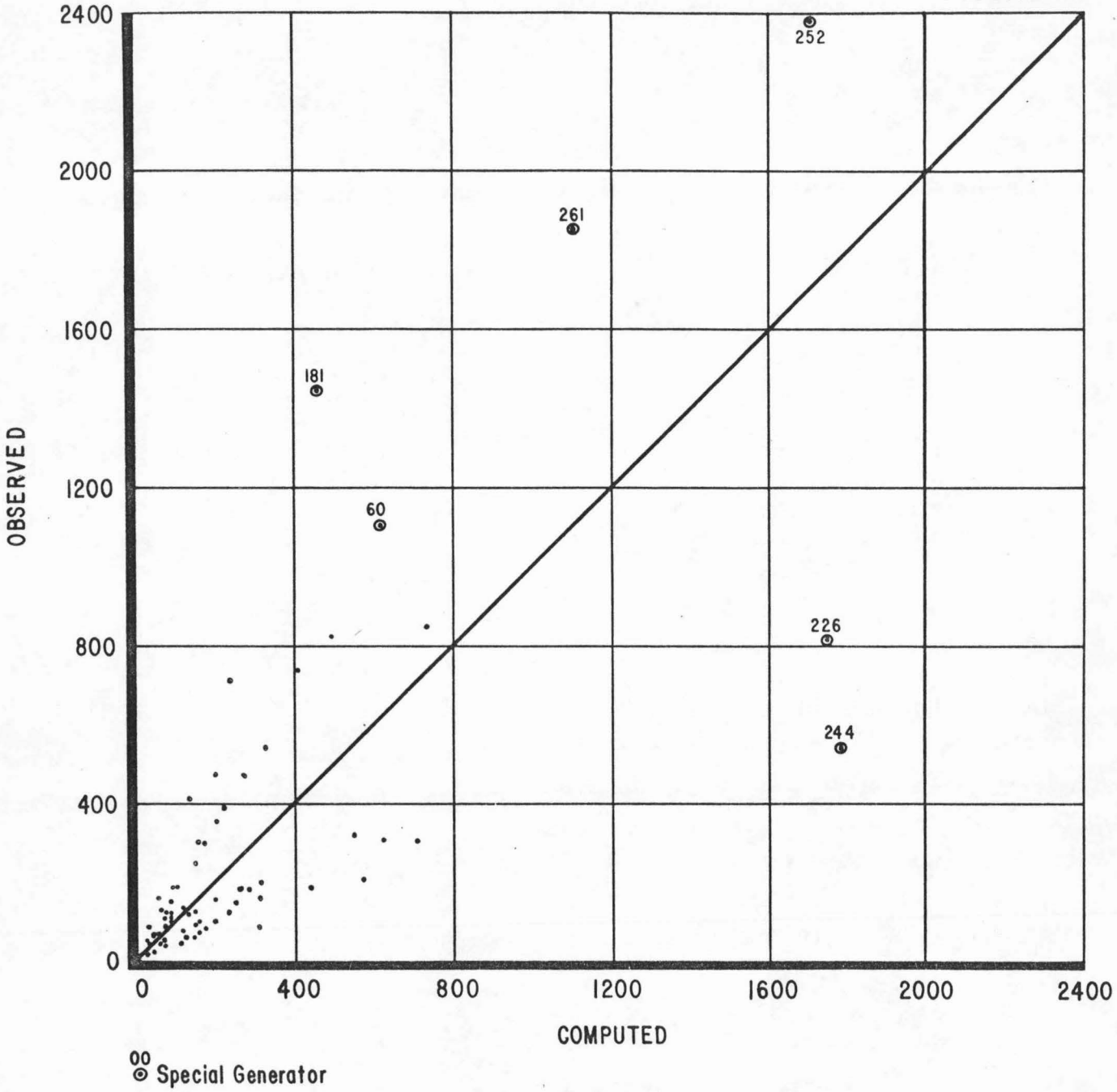
STRIP DEVELOPMENT, 17 ZONES, RATE EQUATION

FIGURE 44A




STRIP DEVELOPMENT HB SHOP TRIP ATTRACTIONS
COMPARISON OF REGRESSION AND RATE EQUATIONS

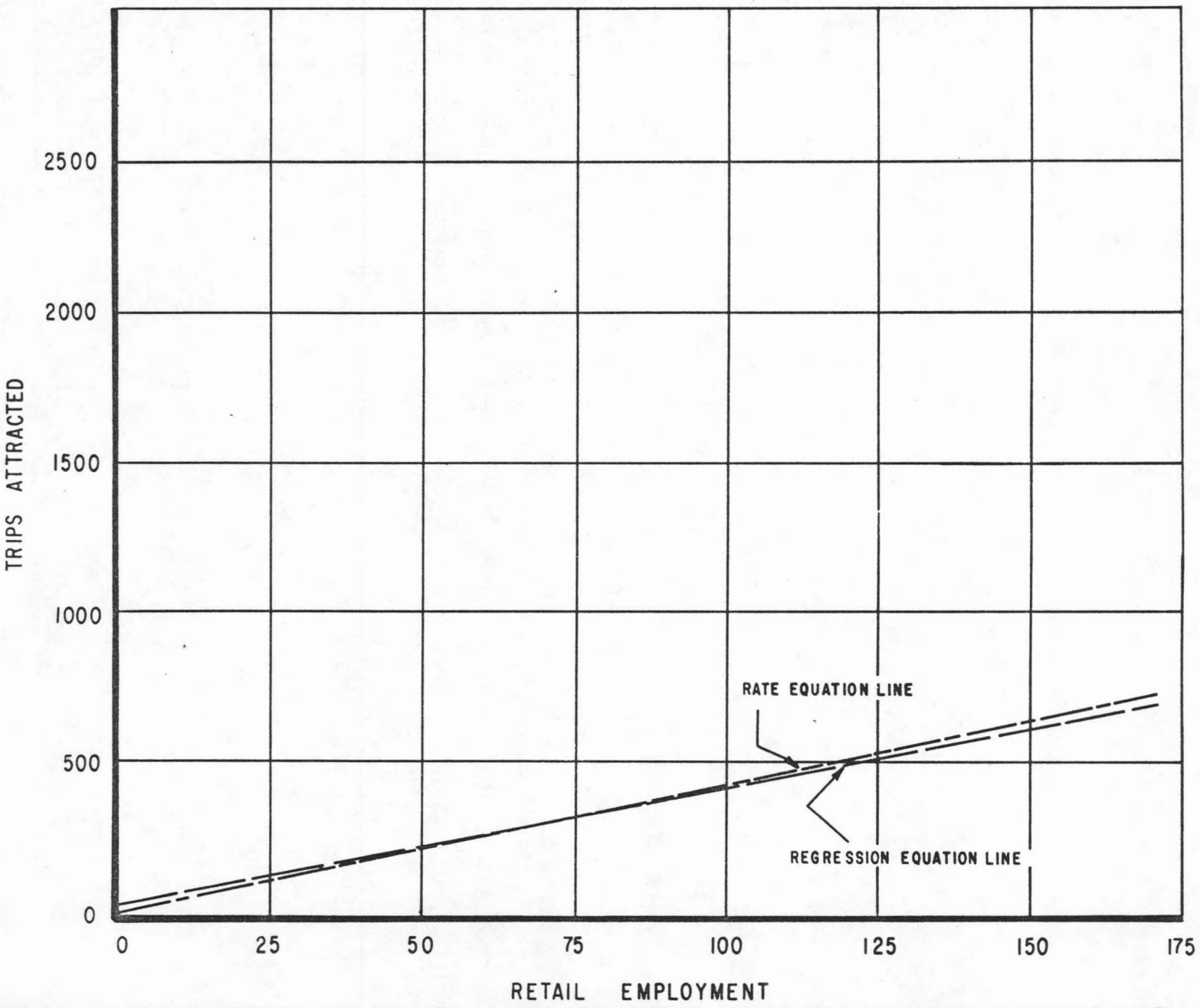
FIGURE 45




PLOT OF OBSERVED VS. ESTIMATED VALUES
OF THE DEPENDENT VARIABLE
HB SHOP ATTRACTIONS

OTHER AREAS, 68 ZONES, RATE EQUATION

FIGURE 45 A




OTHER AREAS HB SHOP TRIP ATTRACTIONS
COMPARISON OF REGRESSION AND RATE EQUATIONS

is 0.903 and the coefficient of variation is 50.5 percent. Table A-9 in the Appendix lists observed versus estimated home based shopping trip attractions.

Home Based Other Person Trip Equations

This category includes trips for purposes of personal business, medical-dental, school, social-recreation, change travel modes, eat meal and serve passenger. The aggregation of so many diverse types of travel into a single category posed difficulties in determination of both production and attraction equations.

Analysis of the data indicated a significant difference in trip making rates between the Illinois and Iowa portions of the study area. There were 1.81 home based other trips per person in the Illinois portion compared with 1.17 trips per person in the Iowa portion of the area. The difference is partially explained by the number of school trips reported in each study. The Iowa O-D study was made in the summer of 1961, while the Illinois O-D study began in the summer of 1964 and extended into the fall of 1964. Of about 53,000 school trips included in the combined trip table, approximately 50,000 are in the Illinois portion of the area and only 3,000 in the Iowa portion. In addition, Illinois O-D trips for "other" purposes were nearly doubled in the process of factoring the data while those for work and shopping combined were expanded by only 30 percent.(1)

In view of the obvious discrepancies, particularly in the category of school trips, it was decided that the trip production equation could not

(1)-Interim Report No. 11, "Origin-Destination Studies," Illinois Division of Highways, Preliminary Draft, October 1967, page 90.

be developed to reflect a true relationship for the combined study area. Instead, the equation was derived on the basis of Illinois data alone and is intended to be applied to the entire study area when forecasting future travel.

The number of cars owned in each traffic zone was found to be the best indicator of home based other person trip productions. Table 36 shows initial estimating equations for the combined study area as well as the Illinois and Iowa portions, separately. The final estimating equation, based on Illinois data alone, is presented in Table 35. Figure 46 shows zones which were removed from the final equation. Figure 47 is a plot of observed versus estimated trips for the final equation.

Centroid 62 was removed from the final equation because of apparent discrepancies in the base data relationships. The zone represented by this centroid produced 5,706 home based other trips of which 3,255 were school trips. School trip attractions for this zone were 438. There was one grade school in this zone in 1964. Total population of the zone was 1,399 and there were 366 dwelling units. The zone was removed on this basis and will be handled as a special generator.

After examination of the initial equation for home based other person trip attractions, Table 37, a determination was made that because of the large number of trips (393,564) for diverse purposes, it would be best to divide the equation into a combination of a few basic purposes.

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## URBANIZED AREA TRANSPORTATION STUDY
# ZONES REMOVED FROM FINAL EQUATION
### HB OTHER PRODUCTIONS

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LEGEND

- ZONE BOUNDARY
- 000 ZONE NUMBER
- SPECIAL GENERATORS
- MINOR ACTIVITY
- NON - URBANIZED
- IOWA DATA NOT USED

N

SCALE IN FEET
0 4000 8000 16,000

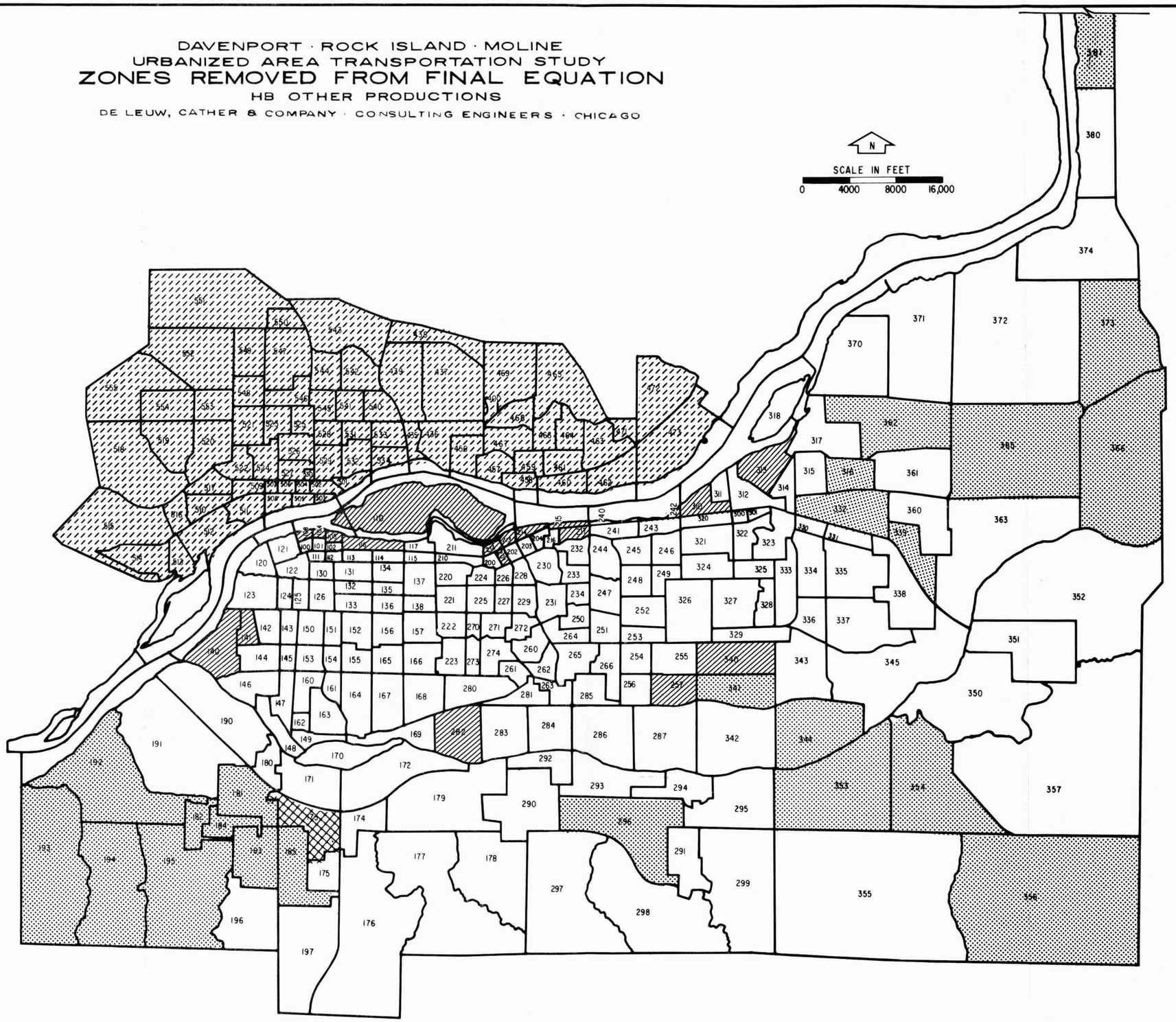
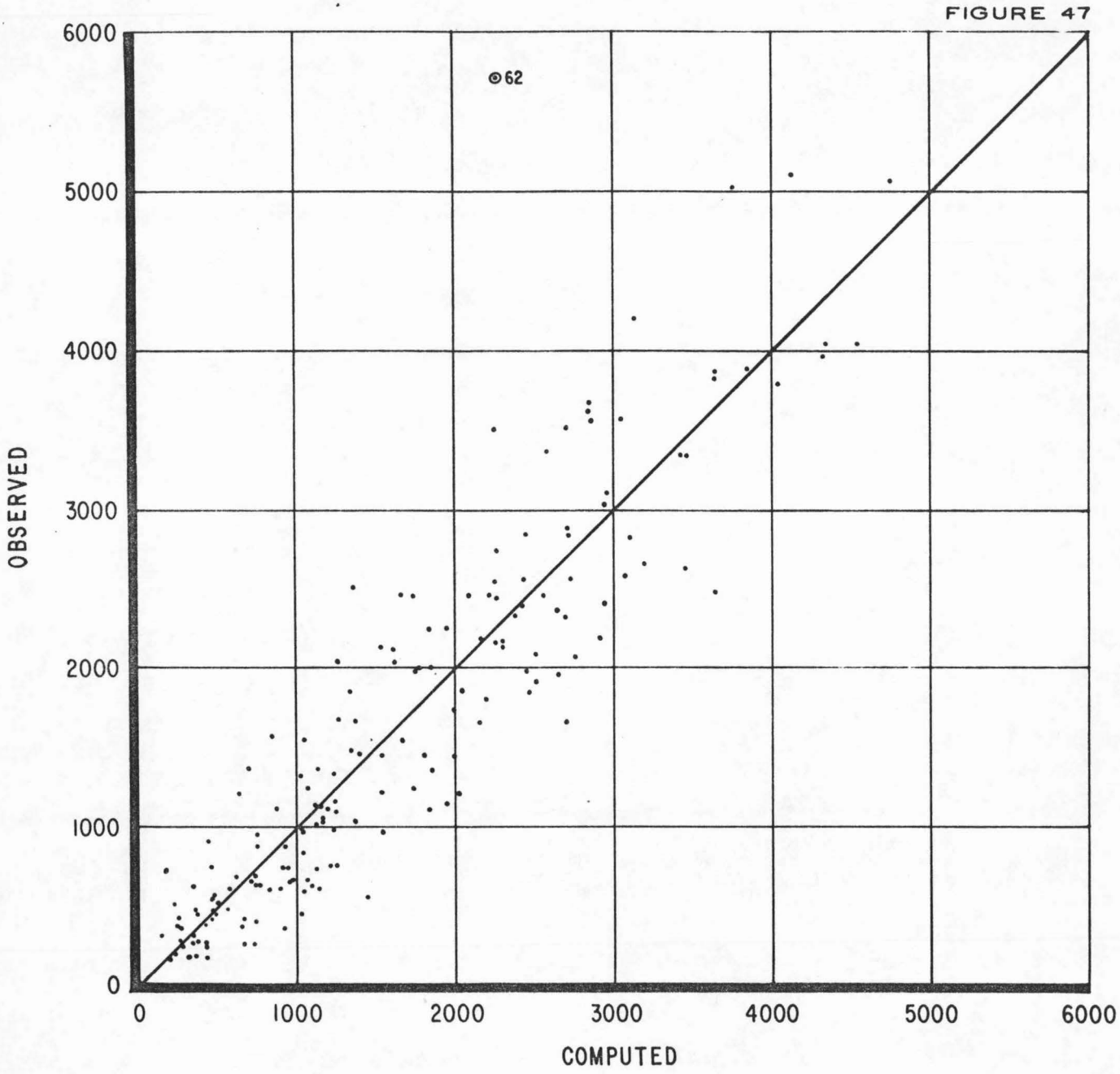


FIGURE 47




PLOT OF OBSERVED VS. ESTIMATED VALUES
OF THE DEPENDENT VARIABLE
HB OTHER PRODUCTIONS

173 ZONES

New trip attraction summaries were made, therefore, to produce the required data breakdown. It was decided to use a combination of personal business, medical-dental, change travel mode, and serve passenger trips (181,251), all referred to hereafter as the personal business group, as the basis of one equation. Social-recreation and eat meal trips (159,125), later referred to as social-recreation, were combined as another equation and school trips (53,188) were treated separately. Complete summary of observed home based other trip productions and attractions is given by each purpose in Tables A-10 and A-11, in the Appendix, respectively.

Table 37 gives the initial and final equation for the combination of home based other trip attractions in the personal business group. Figure 48 shows zones which were removed from the final equation as well as 38 special generators. Figure 49 is a plot of observed trips versus estimated trips for the final equation. Most of the special generators are either zones in or adjacent to the central business districts or other zones containing shopping centers, strip commercial development or hospitals. The final equation together with the special generators account for 92.0 percent of total trip attractions in this category.

Table 37 also presents initial and final estimating equations for the social-recreation category. Figure 50 shows zones which were removed from the final equation as well as 36 special generators. Figure 51 is a plot of observed versus estimated trips for the final equation. The

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# ZONES REMOVED FROM FINAL EQUATION

HB PERSONAL BUSINESS ATTRACTIONS

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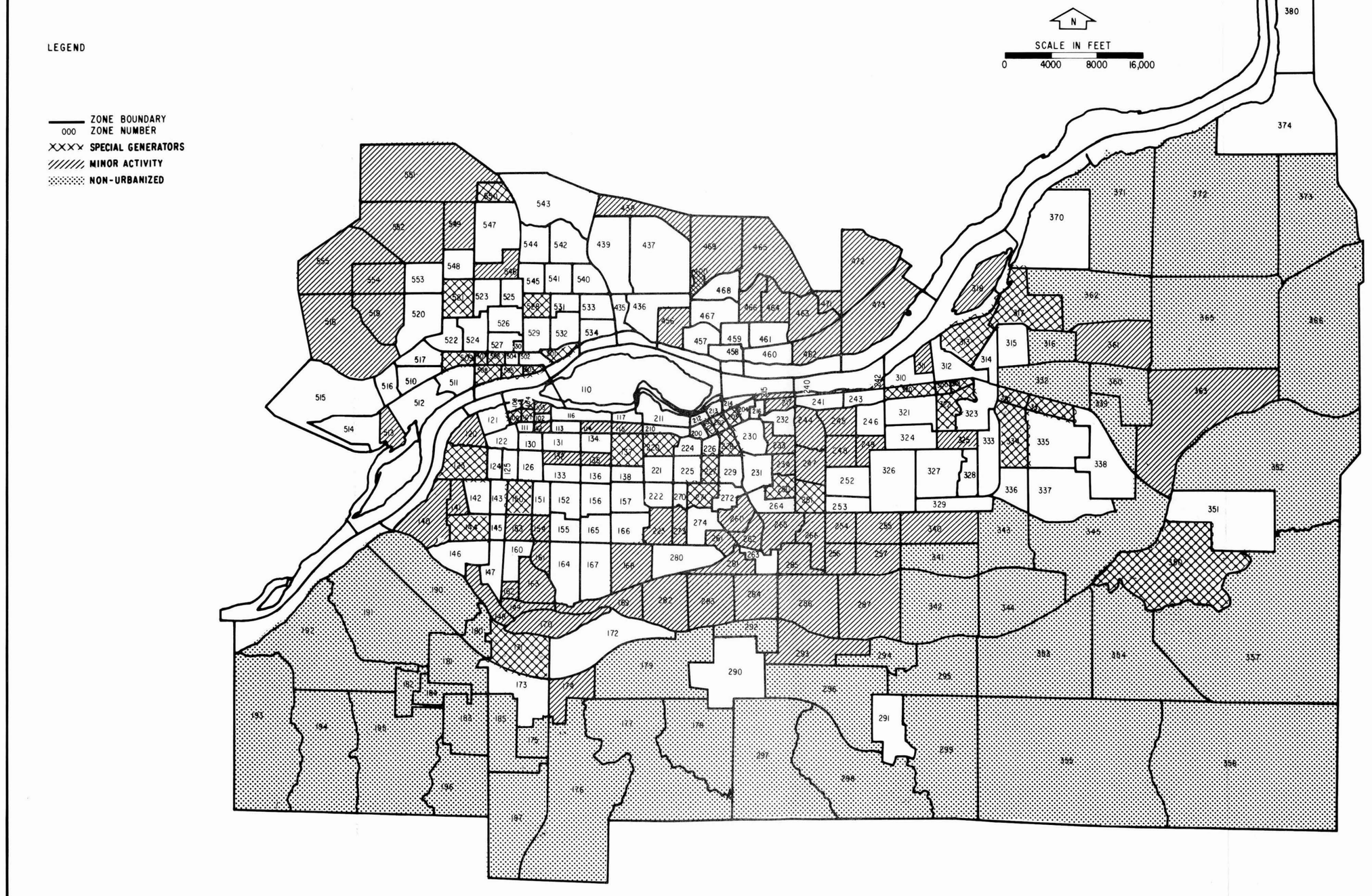

FIGURE 50

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URBANIZED AREA TRANSPORTATION STUDY

# ZONES REMOVED FROM FINAL EQUATION

HB SOCIAL RECREATION ATTRACTIONS

DE LEUW, CATHER & COMPANY · CONSULTING ENGINEERS · CHICAGO

LEGEND

ZONE BOUNDARY
000 ZONE NUMBER
SPECIAL GENERATORS
MINOR ACTIVITY
NON-URBANIZED

N

SCALE IN FEET
0 4000 8000 16,000

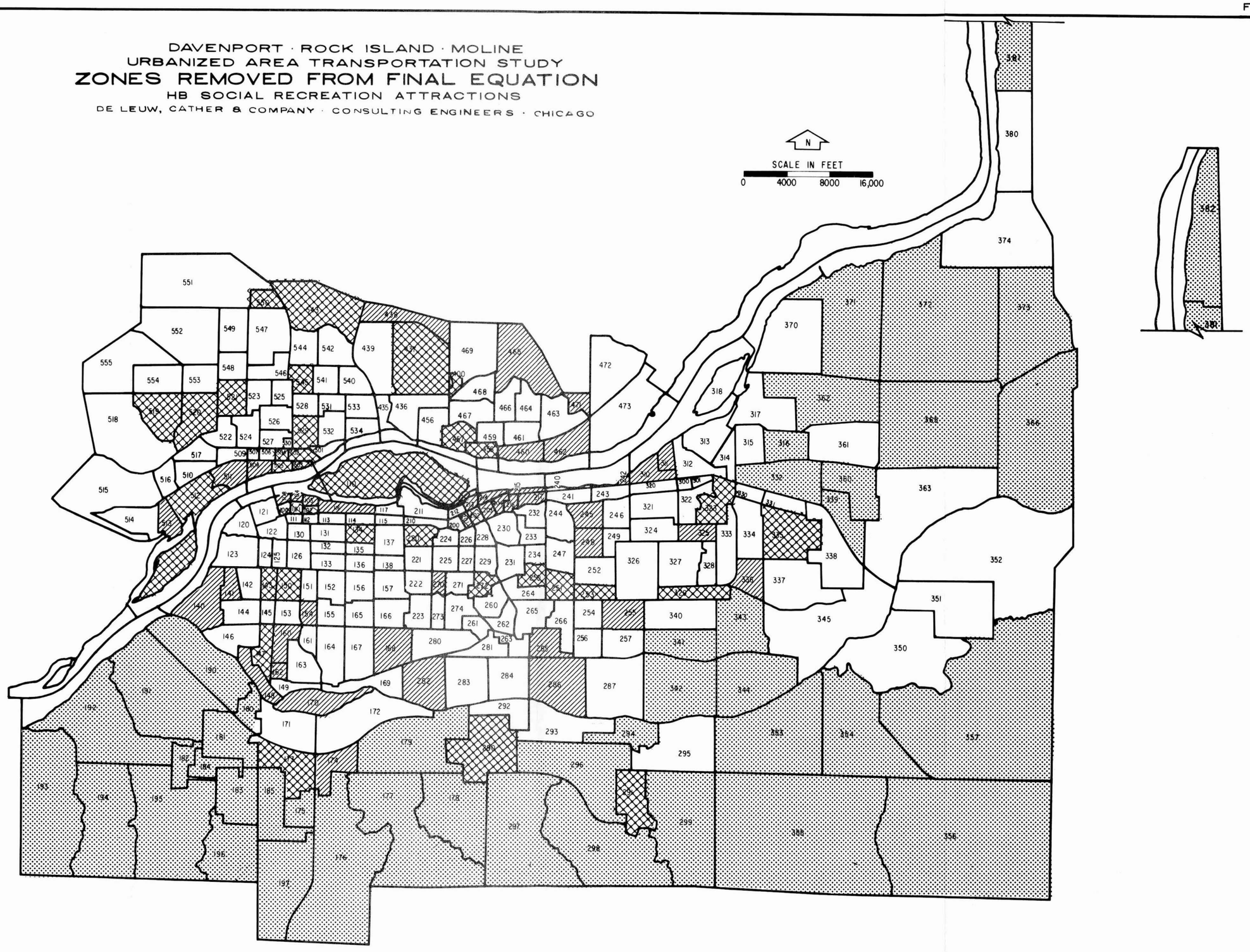
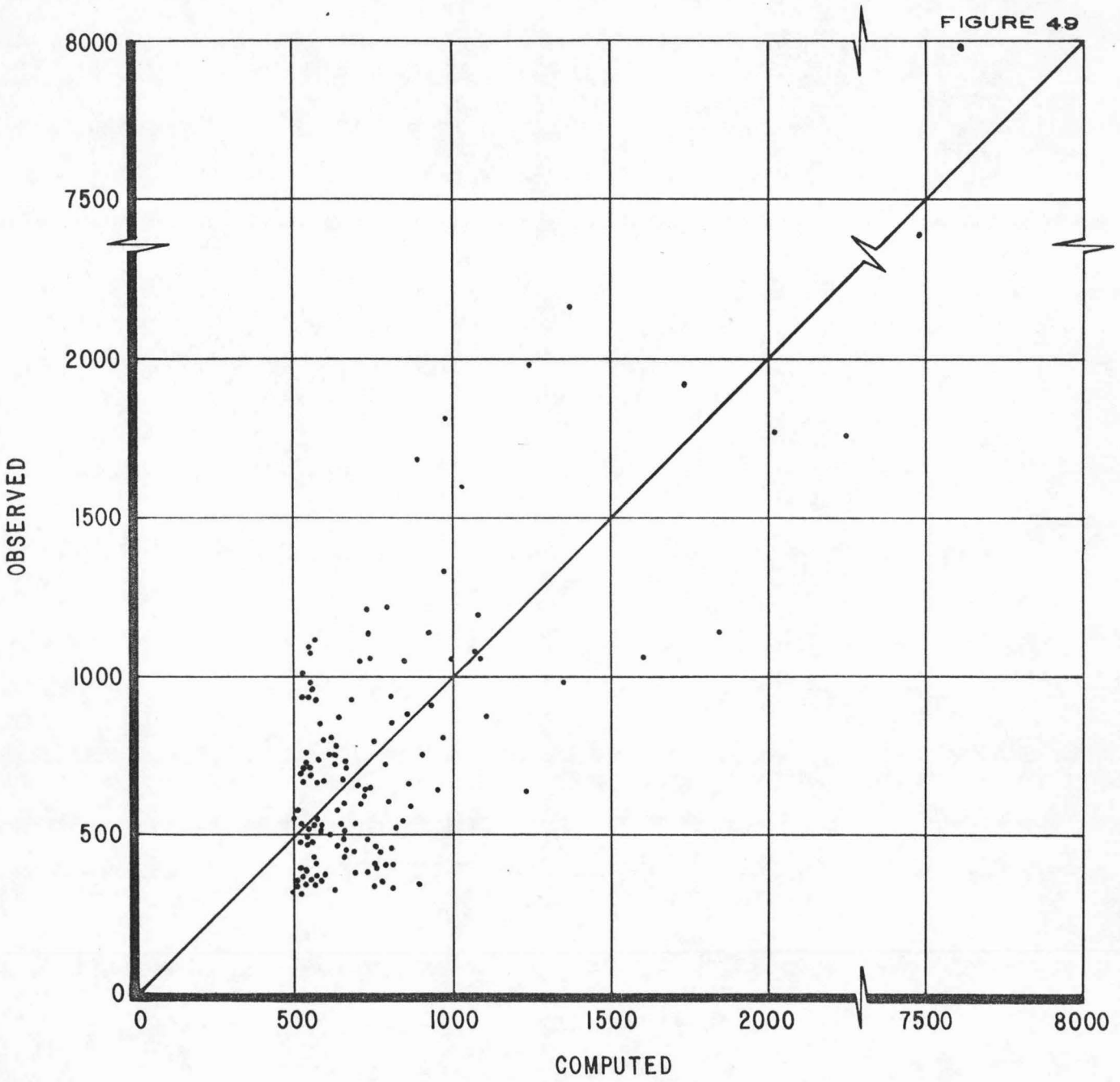


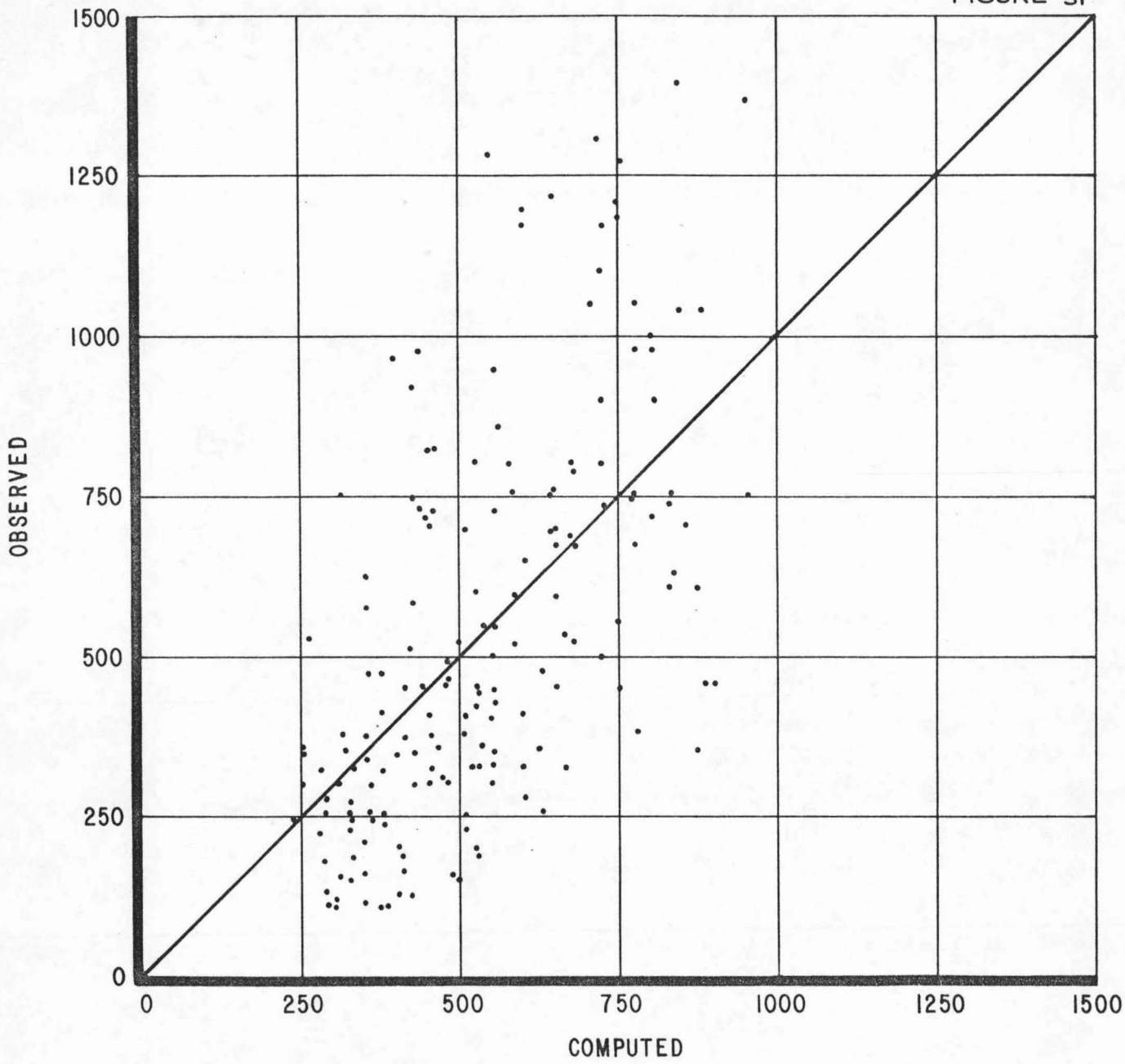
FIGURE 49




PLOT OF OBSERVED VS. ESTIMATED VALUES
OF THE DEPENDENT VARIABLE
HB OTHER ATTRACTIONS

PERSONAL BUSINESS, 128 ZONES

FIGURE 51




PLOT OF OBSERVED VS. ESTIMATED VALUES
OF THE DEPENDENT VARIABLE
HB OTHER ATTRACTIONS

SOCIAL RECREATION, 169 ZONES

statistics for the final equation are not equal to the statistics of the other equations, but since the coefficient of variation is not exceptionally high, the equation should be satisfactory. In forecasting future travel, careful analysis of this category of trip attraction will be required. The two portions of the study area were checked for bias and none was found to exist. Special generators include golf courses, museums, parks, etc. See Appendix Table A-5.

The final equation, together with special generators, accounts for 95.2 percent of home based other trip attractions in the social-recreation category.

School trip attractions could not be correlated in the usual manner and are essentially treated as special generators based on the Illinois O-D data (50,000 trips). Equations for school trips are given in Table 37. The equations are based on the ratio of the total school trips attracted, to total school enrollment stratified by grade--junior high school, high school and college. The analysis could only be made for zones in which schools of each type were located. No statistical indicators are given for the school trip equations.

Appendix Tables A-12 and A-13 list the observed versus computed productions and attractions, respectively. For trip distribution, home based other trip attractions from all three equations will be combined.

Non-Home Based Person Trip Equations

Non-home based trip productions were found to be highly correlated with non-home based trip attractions by traffic zone. See Table 32. Attractions were assumed to equal productions, therefore, for this category of trip making.

Non-home based trips, by definition, must begin at the attraction of a home based trip or another non-home based trip. The simple correlation matrix, Table 32, verifies the correlation of non-home based trip attractions with home based other and home based shop trip attractions. The final estimating equation, based on this premise, is given in Table 35. Figure 52 shows zones which were removed from the final equation. Appendix Table A-14 lists the observed versus estimated non-home based production (attractions) which have been plotted on Figure 53.

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# ZONES REMOVED FROM FINAL EQUATION

NHB PRODUCTIONS AND ATTRACTIONS

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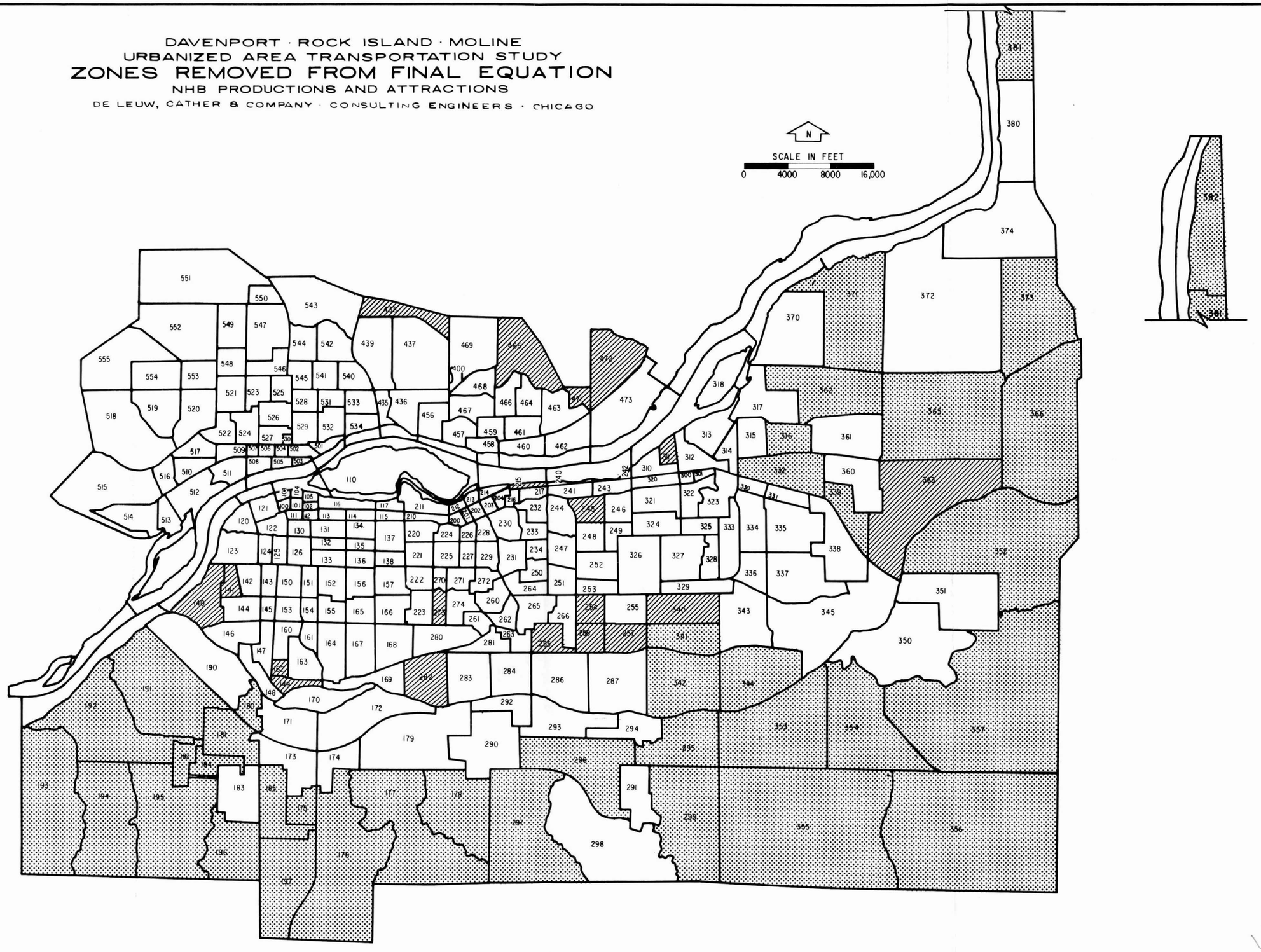
LEGEND

ZONE BOUNDARY
000 ZONE NUMBER

MINOR ACTIVITY
NON-URBANIZED

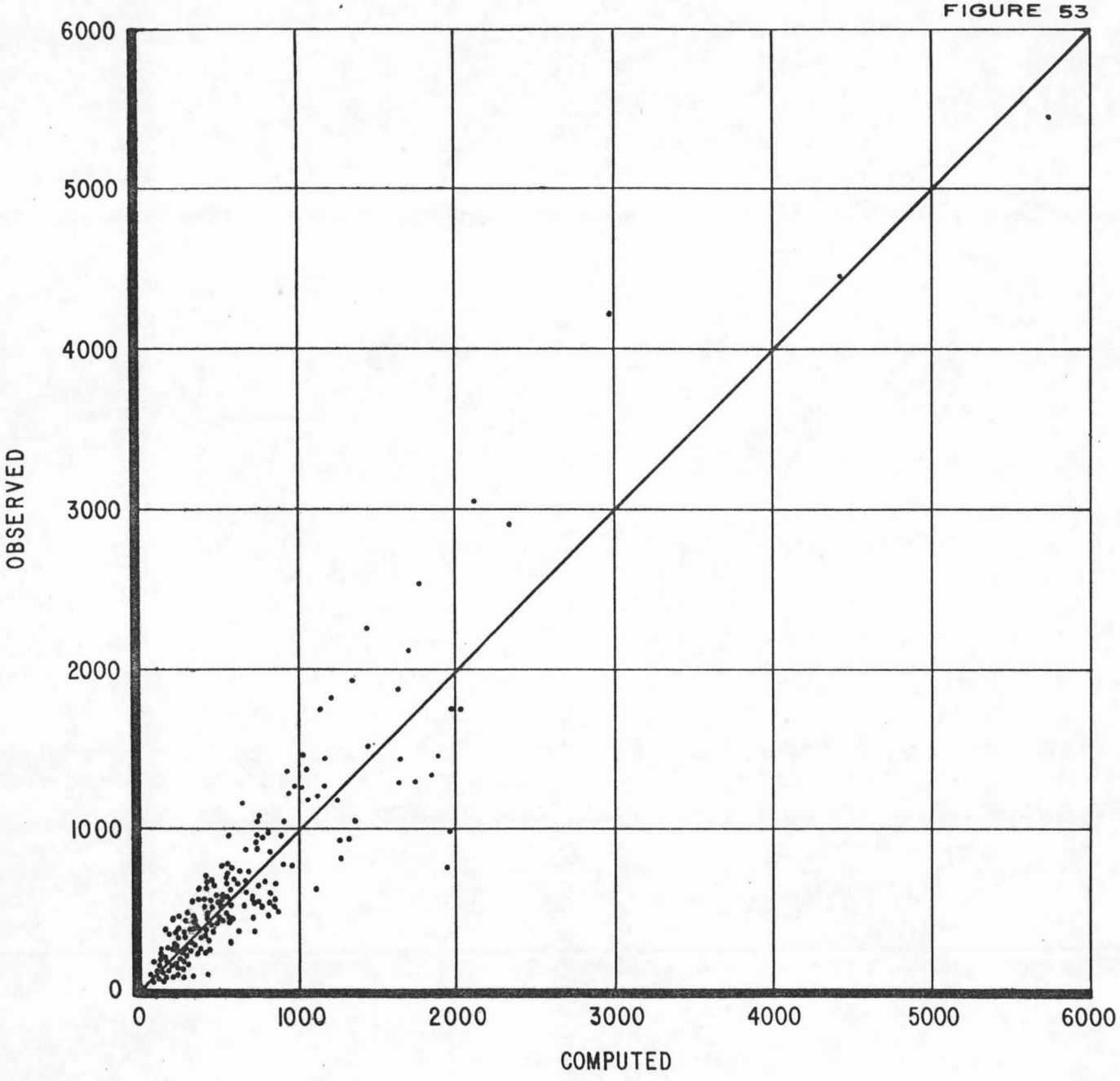
N

SCALE IN FEET
0 4000 8000 16,000




188

FIGURE 53




PLOT OF OBSERVED VS. ESTIMATED VALUES
OF THE DEPENDENT VARIABLE
NHB ATTRACTIONS

232 ZONES

Truck Equation

Because of the nature of truck movements, productions and attractions by traffic zone are usually equal. This was also found true with regard to truck movements in the Davenport-Rock Island-Moline study area. The correlation coefficient shown in Table 32 is 0.994, indicating a strong relationship between truck productions and attractions.

In order to predict truck trips, a measure of both non-residential and residential activity is normally used.

Table 36 shows the initial equation and final estimating equation for truck trip productions and attractions. Figure 54 shows zones which were removed from the final equation as well as 16 special generators. The special generators consist of some zones in the central business districts, some adjacent to the central business districts and others which include shopping centers or railroad yards. See Appendix Table A-5. Figure 55 is the plot of observed versus estimated trips for the final estimating equation, which are listed in Table A-15 of the Appendix.

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URBANIZED AREA TRANSPORTATION STUDY

# ZONES REMOVED FROM FINAL EQUATION

TRUCK PRODUCTIONS AND ATTRACTIONS

DE LEUW, CATHER & COMPANY · CONSULTING ENGINEERS · CHICAGO

LEGEND

- ZONE BOUNDARY
- 000 ZONE NUMBER
- XXXX SPECIAL GENERATORS
- ////// MINOR ACTIVITY
- ::::::: NON-URBANIZED

N

SCALE IN FEET
0 4000 8000 16,000

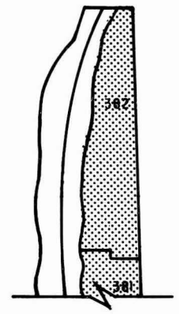
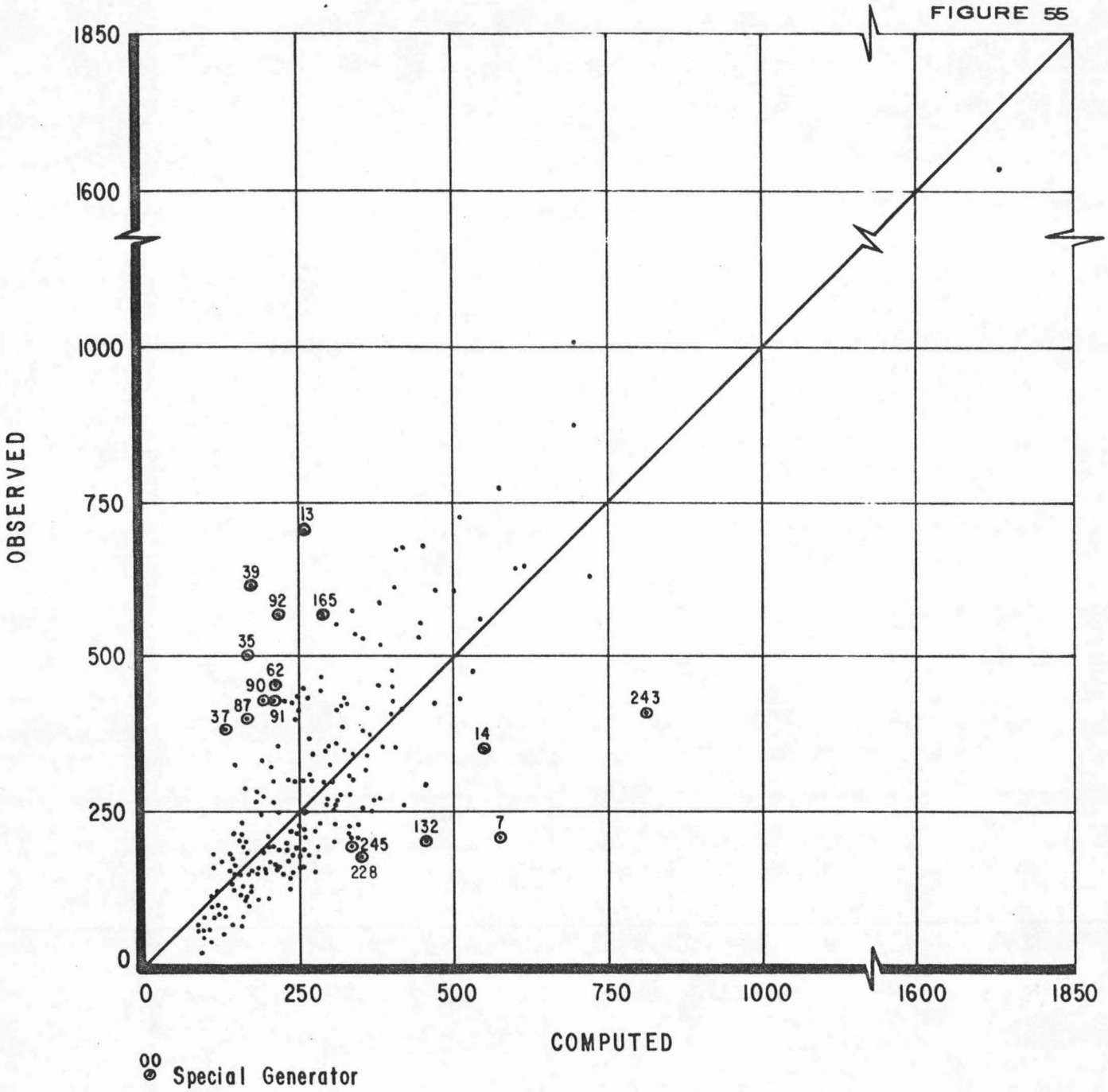


FIGURE 55




PLOT OF OBSERVED VS. ESTIMATED VALUES
OF THE DEPENDENT VARIABLE
TRUCK TRIPS

250 ZONES

Total Production Equation

An equation to estimate total trip productions is desirable both to give a control total on areawide trip productions and to check estimated productions for logic at the zonal level. Such an equation should include both residential and non-residential measures of land activity.

A satisfactory estimating equation for total trip productions was determined using cars owned and retail employment as the independent variables. See Tables 35 and 36. Statistical tests of the equation indicate that it should be a valuable tool in checking the travel forecasts. Figure 56 shows zones removed from the final estimating equation. Observed versus estimated trips for the total production equation have been listed in Table A-16 of the Appendix and plotted in Figure 57.

FIGURE 56

# DAVENPORT · ROCK ISLAND · MOLINE
## URBANIZED AREA TRANSPORTATION STUDY
# ZONES REMOVED FROM FINAL EQUATION
## TOTAL PRODUCTIONS

DE LEUW, CATHER & COMPANY · CONSULTING ENGINEERS · CHICAGO

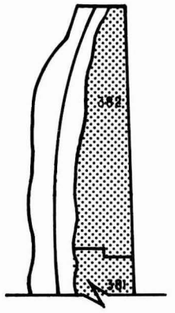
LEGEND

ZONE BOUNDARY
000 ZONE NUMBER

MINOR ACTIVITY
NON-URBANIZED

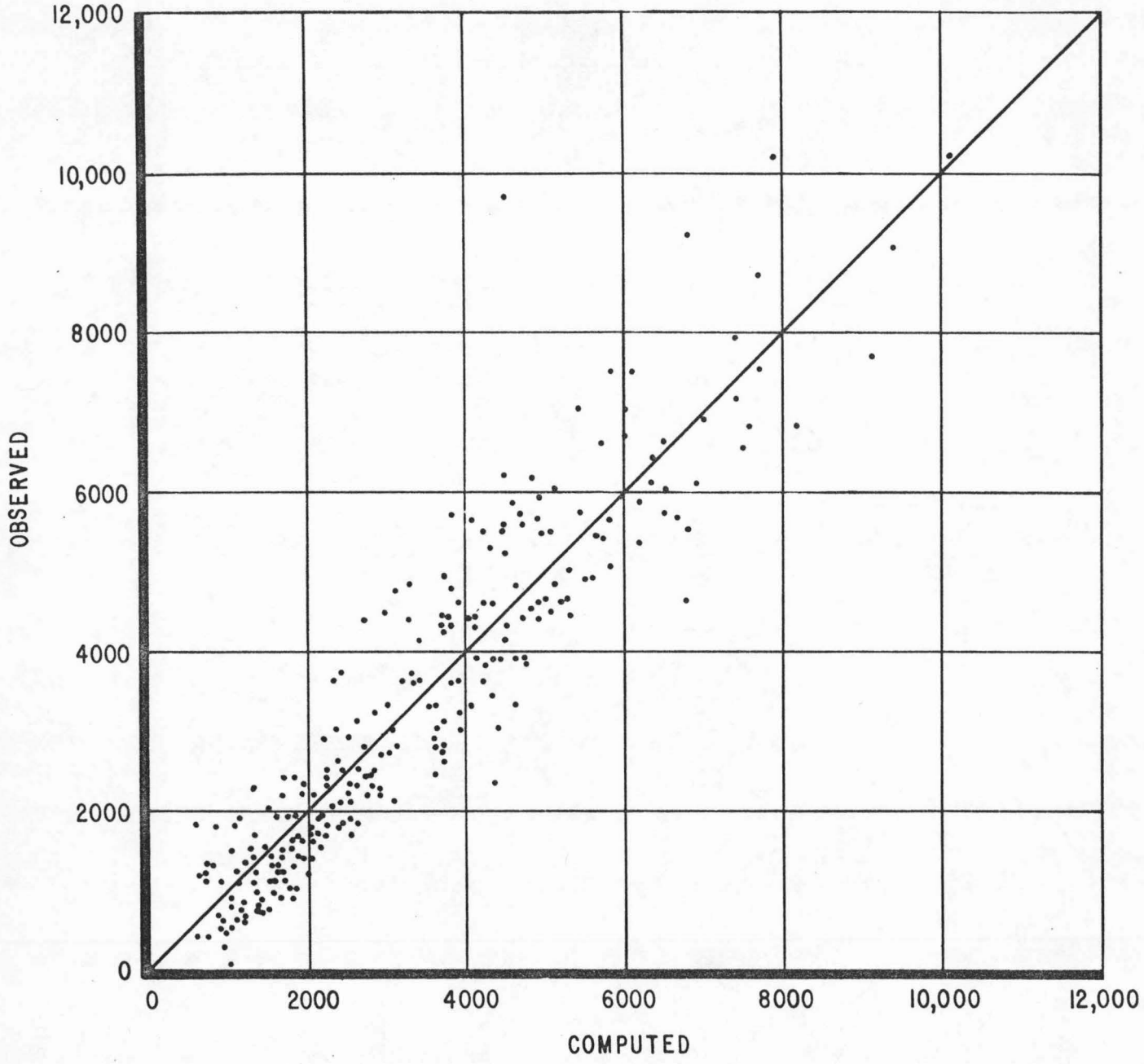
N

SCALE IN FEET
0 4000 8000 16,000




1993

FIGURE 57




PLOT OF OBSERVED VS. ESTIMATED VALUES
OF THE DEPENDENT VARIABLE
TOTAL PRODUCTIONS

253 ZONES

# CONCLUSION

The trip generation analysis was complicated to some extent by differences resulting from combination of two similar, but not identical, transportation studies, one of which was made three years after the other. The choice of independent variables was limited to those for which comparable data was available. Special consideration was also required in some phases of the analysis to assure that the estimating equations were not biased due to differences between the two studies.

Statistical tests of the final estimating equations indicate that the relationships compare favorably with those of similar analyses in other areas. Independent variables used in the equations are logically related to the dependent variables and are limited to measures of activity which can be forecasted with a reasonable degree of accuracy.

It is concluded, therefore, that a reliable procedure for estimating trip generation by purpose from basic measures of land activity has been developed.

# CHAPTER V

## MODAL SPLIT AND CAR OCCUPANCY

The final step in development of travel forecasting procedures is the division of travel demand into two components, i.e., demand for public transportation and demand for private transportation. This procedure has been named "modal split." Companion analyses are also required to translate person trip generation (see Chapter IV) into vehicular trips.

Transit usage in the Davenport-Rock Island-Moline transportation study area is a minor component of total person travel. The origin-destination studies indicated that only 9,572 or 1.19 percent of the daily trips were made by transit. The present system, operated by National City Lines, Inc., consists of buses operating on four routes in the Illinois portion of the study area, six routes in the Iowa portion of the study area, and two routes which connect the central business districts of Davenport, Rock Island and Moline.

Table 38 summarizes daily transit travel by trip purpose obtained from the 1961 and 1964 origin-destination studies made in the Iowa and Illinois portions of the study area, respectively. Bus travel to and from work accounted for 46.2 percent of the total daily transit trips.

Table 38

SUMMARY OF DAILY TRANSIT TRAVEL

| Purpose | Transit Trip Ends | Percent of Total Person Trips |
|---|---|---|
| Home Based Work | 8,848 | 2.93 |
| Home Based Shop | 3,117 | 1.37 |
| Home Based Other | 5,856 | 0.74 |
| Non-Home Based | 1,323 | 0.45 |
| Total Transit | 19,144 | 1.19 |

## THE MODAL SPLIT MODEL

The transportation study work programs specified use of the "Erie" modal split model to estimate future transit usage. This modal split model was developed by Alan M. Voorhees and Associates, Inc., for the Erie (Pennsylvania) Transportation Study. See Figure 58. It is described in Modal Split--Documentation of Nine Methods for Estimating Transit Usage[1] and Technical Report Number 3 - Erie Transportation Study.

The Erie procedure is a "trip end" model which recognizes the quality of service provided by the alternative modes of travel through use of accessibility to employment indices. The model postulates that work trips are of primary importance since they place a concentrated demand on the system, whereas trips for other purposes are more widely dispersed both geographically and throughout the day.

Accessibility to employment, used as a measure of quality of service provided by alternative modes of travel, may be expressed as follows:

$$Qi_i = \sum_{j=1}^{n} E_j \, (F_{ij})$$

where:

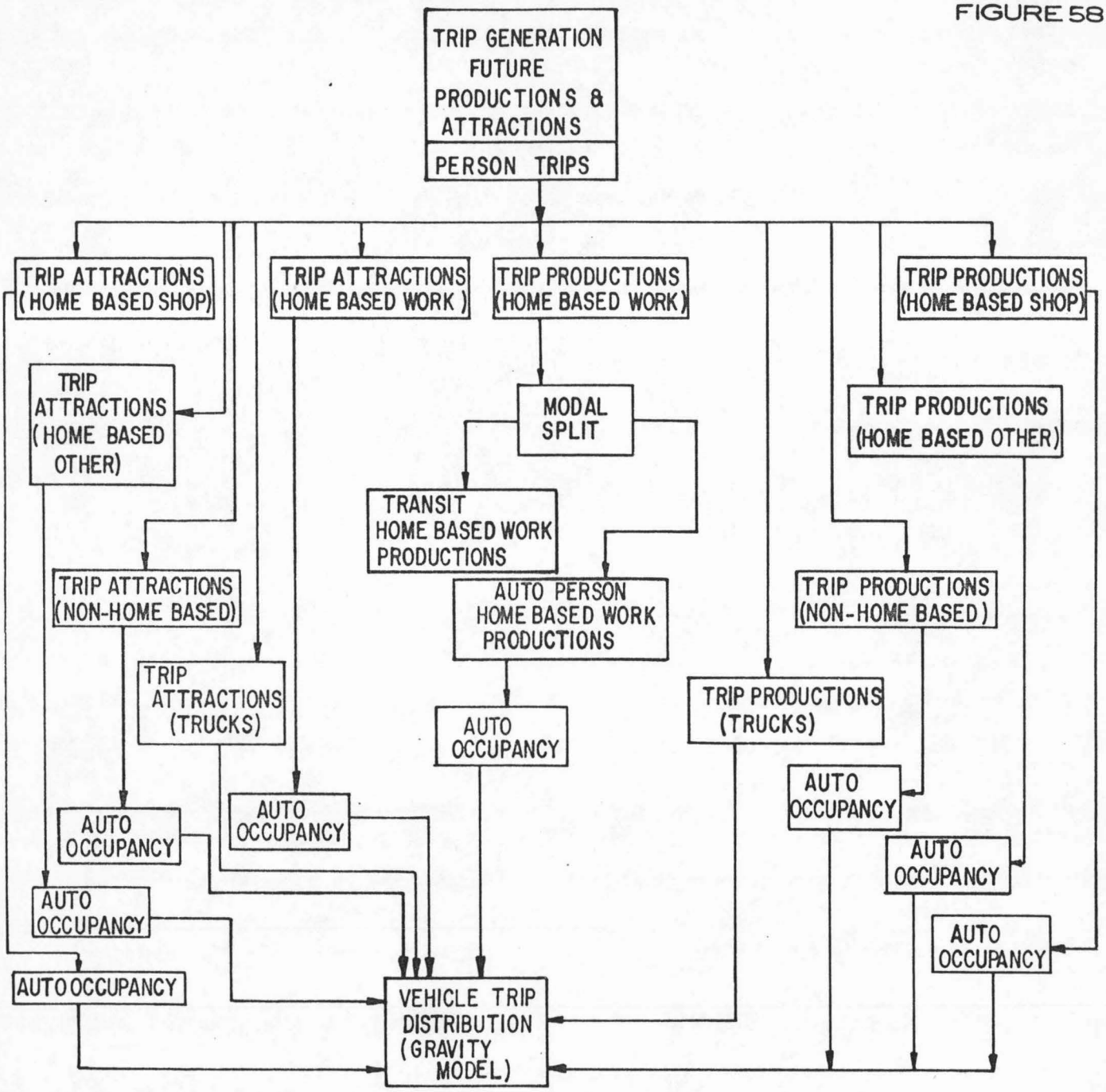
$Qi_i$ = accessibility of zone i to employment in all other zones

$E_j$ = employment in zone j

and $F_{ij}$ = travel time friction factor associated with trips from zone i to zone j over the highway network

(1)-U. S. Department of Commerce, Bureau of Public Roads, Office of Planning, December 1966, pp. 27-33.

FIGURE 58

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# ERIE MODAL SPLIT FLOW DIAGRAM

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Travel time friction factors over the highway network were developed earlier in the study of trip distribution and are given in Table 24. Zone-to-zone travel times on the highway system were also determined in a prior phase of the study.

In order to measure relative accessibility by transit, it was necessary to prepare and code a transit network for computer analysis. The procedures used were identical to those described earlier for the highway network, except that transit routes were substituted in place of arterial streets and highways. All zone centroids within one mile of an existing bus route were assumed to be accessible to the transit system. See Figure 59. Total transit zone-to-zone travel time was expressed as the sum of:

1. Walking time from origin to bus stop;
2. Waiting time at the bus stop;
3. Travel time on the bus;
4. Walking time from bus stop to destination; and
5. Transfer time, if a transfer was required.

Walking time was measured based on an average walking speed of three miles per hour. Waiting time at bus stops was assumed to average six minutes.[1] Bus travel time was taken from schedules published by the transit operator. A ten-minute time penalty was added for each transfer.

---

(1)-Headway on most bus routes is 30 minutes. In view of the substantial interval between buses and reasonably good schedule adherence, assumed average waiting time of one-half of the bus headway time would be unrealistic.

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# ZONES ACCESSIBLE TO TRANSIT NETWORK

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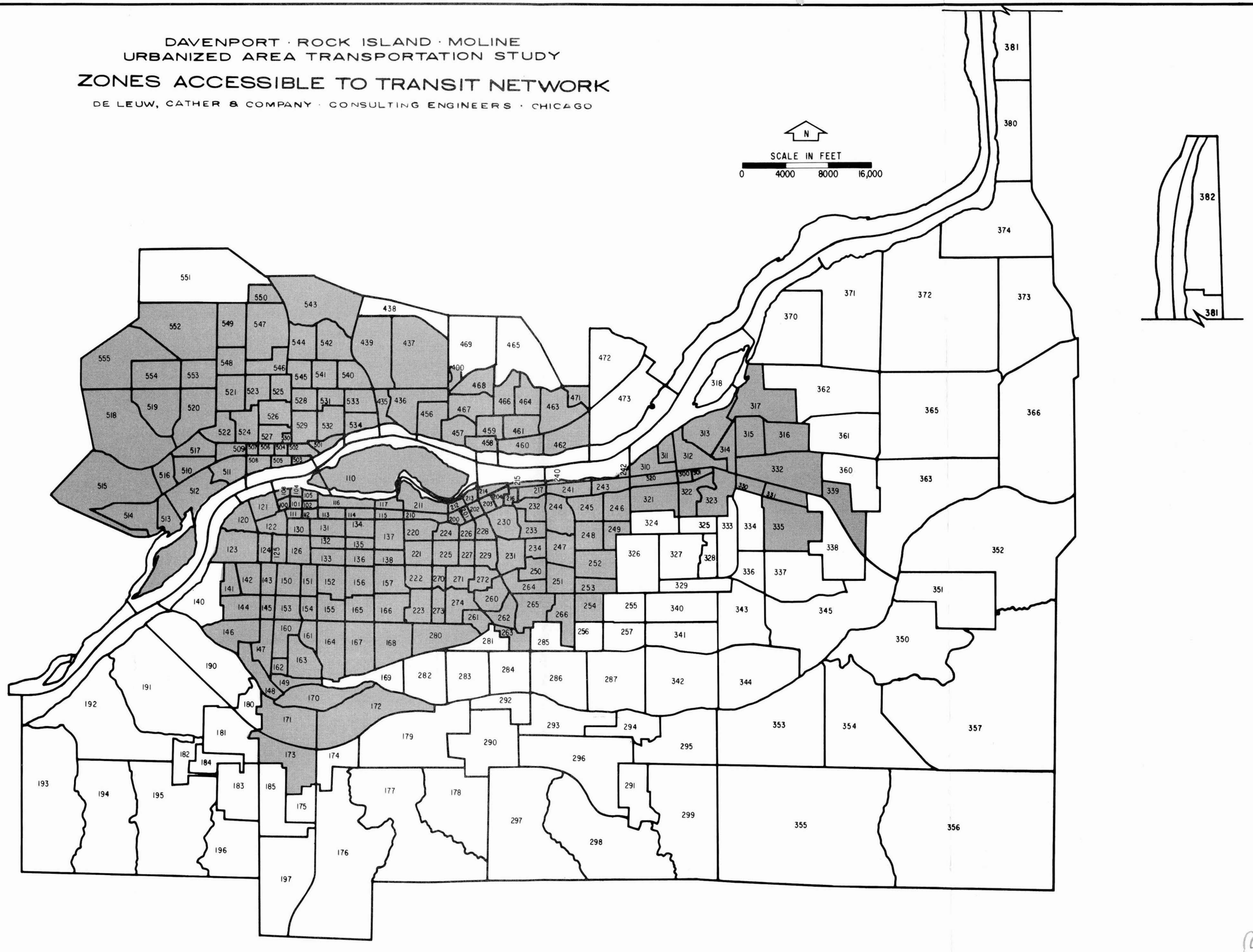
LEGEND

ZONE BOUNDARY
000 ZONE NUMBER

N

SCALE IN FEET
0 4000 8000 16,000



Using the equation cited earlier, the accessibility to employment index was calculated for each zone over both the transit and highway networks. Appendix Table A-17 shows the accessibility indices to employment over the two networks.

The transit/highway accessibility to employment was plotted against percent transit usage for work travel as reported in the 1961 and 1964 origin-destination surveys. See Figure60. Separate curves were derived for the Iowa portion of the study area, the Illinois portion of the study area, and the combined total.

Comparison of curves shown in Figure60 indicates that there was proportionately more transit travel in the Iowa portion of the study area than in Illinois. This is explained by the three-year interval between the origin-destination studies. Bus company records indicate that annual transit usage decreased by 16 percent from 1961 to 1964.

The Iowa transit work productions were reduced by 16 percent and a new curve for the combined area was determined. In our opinion, this is the best curve which can be developed to express modal split of person work trip productions. The values of percent transit usage at transit/highway accessibility ratios from zero to 0.50 are given in Table 39.

Caution must be exercised in the indiscriminate use of relationships established between percent of person trips by transit and the transit/highway accessibility ratio. Such a relationship is logical,

FIGURE 60

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URBANIZED AREA TRANSPORTATION STUDY

# PERCENT TRANSIT AND ACCESSIBILITY RATIO

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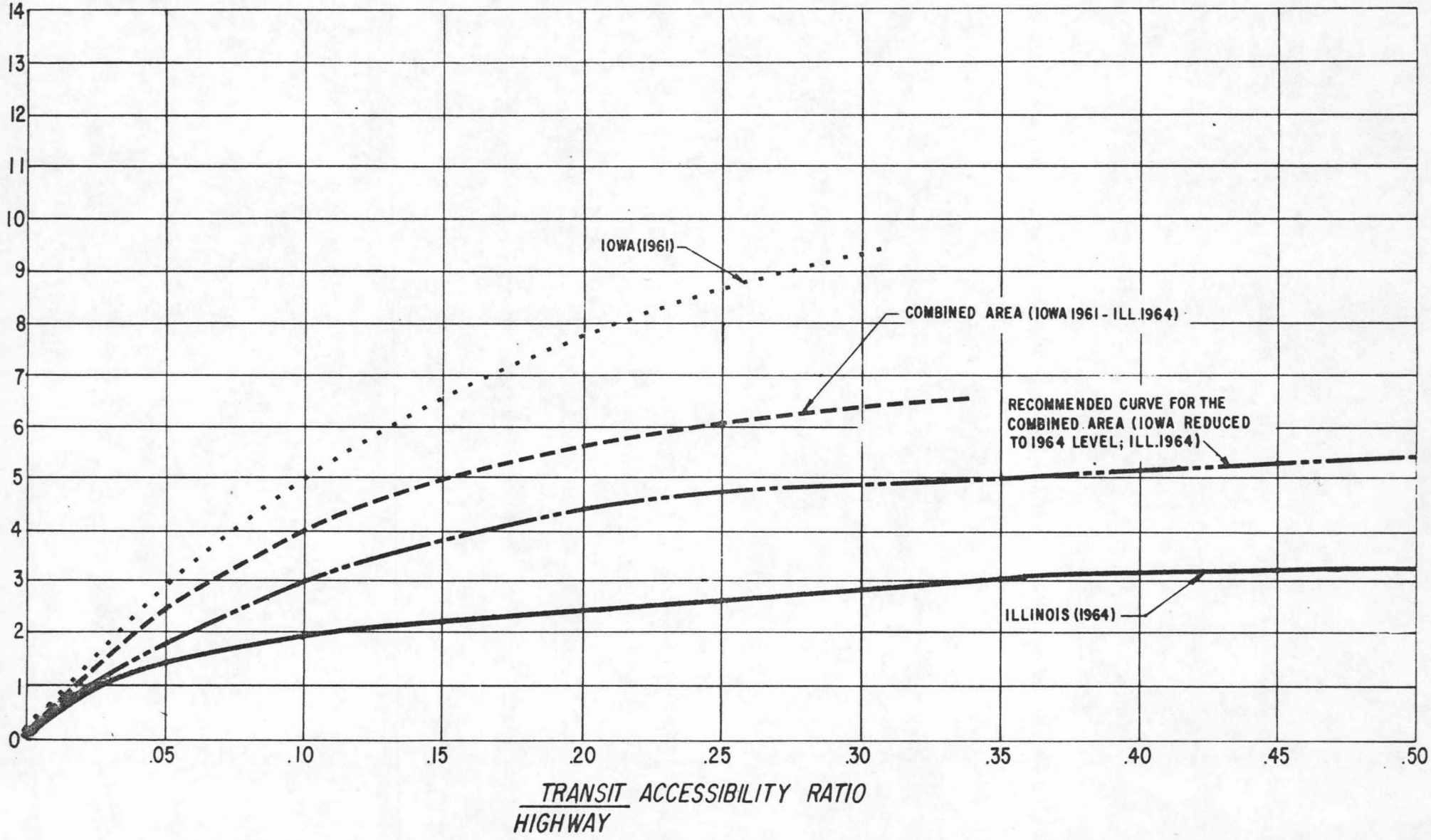

TABLE 39

MODAL SPLIT FACTORS

| Accessibility Ratio | Percent Transit Work | Accessibility Ratio | Percent Transit Work |
|---|---|---|---|
| .00 | 0.00 | | |
| .01 | 0.39 | .26 | 4.80 |
| .02 | 0.79 | .27 | 4.84 |
| .03 | 1.13 | .28 | 4.89 |
| .04 | 1.48 | .29 | 4.93 |
| .05 | 1.83 | .30 | 4.98 |
| .06 | 2.10 | .31 | 5.00 |
| .07 | 2.40 | .32 | 5.02 |
| .08 | 2.66 | .33 | 5.04 |
| .09 | 2.88 | .34 | 5.06 |
| .10 | 3.06 | .35 | 5.08 |
| .11 | 3.23 | .36 | 5.11 |
| .12 | 3.40 | .37 | 5.15 |
| .13 | 3.58 | .38 | 5.17 |
| .14 | 3.71 | .39 | 5.19 |
| .15 | 3.88 | .40 | 5.24 |
| .16 | 4.02 | .41 | 5.25 |
| .17 | 4.15 | .42 | 5.26 |
| .18 | 4.28 | .43 | 5.28 |
| .19 | 4.36 | .44 | 5.31 |
| .20 | 4.50 | .45 | 5.34 |
| .21 | 4.58 | .46 | 5.36 |
| .22 | 4.63 | .47 | 5.38 |
| .23 | 4.67 | .48 | 5.40 |
| .24 | 4.71 | .49 | 5.43 |
| .25 | 4.76 | .50 | 5.46 |

but there were too few transit trips in the base year to determine a statistically sound correlation at the zonal level.

More realistic forecasts of future transit travel may be developed from trends in transit usage, taking into account proposed extensions and improvements. Transit work trip productions by zone can then be roughly approximated through use of the values given in Table 39 using the control estimate of total future transit trips. The inherent statistical error, due to the small base year sample, will not be significant enough to affect estimates of travel by other modes.

If extensive transit improvements, i.e., rapid transit or express bus operation, evolve in the planning process, forecasts should be based on the findings of demonstration studies made elsewhere.

In conclusion, we suggest that future transit travel estimates be based more on judgment considerations than statistical analyses.

## CAR OCCUPANCY

The final step in developing travel forecasting techniques was conversion of productions and attractions from person trips into vehicle trips. To accomplish this, relationships were determined which expressed car occupancy for each purpose category of person trip productions and attractions. Appendix Table A-18 summarizes base year vehicle trip productions and attractions by purpose category.

Car occupancy of home based work trip productions in each traffic zone was calculated by dividing total person trips (except transit) by the total number of auto driver trips. For all other purpose categories, total person trips, including those by transit, were divided by auto driver trips to determine car occupancy.

Analysis of trip productions in each purpose category showed a correlation between car occupancy and vehicle ownership expressed in terms of cars owned per person. Average car occupancy weighted by the total number of vehicle trip productions was calculated and plotted at one-hundredth increments of car ownership. Figures 61 through 64 show curves fitted to these values for home based work, home based shop, home based other, and non-home based trip productions, respectively. Tables 40 through 43 list calculated car occupancy at each one-hundredth increment of car ownership for the respective trip production categories. Table 44 gives a statistical comparison of observed and

FIGURE 61

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URBANIZED AREA TRANSPORTATION STUDY

# CAR OCCUPANCY AND CAR OWNERSHIP
## HOME BASED WORK PRODUCTIONS

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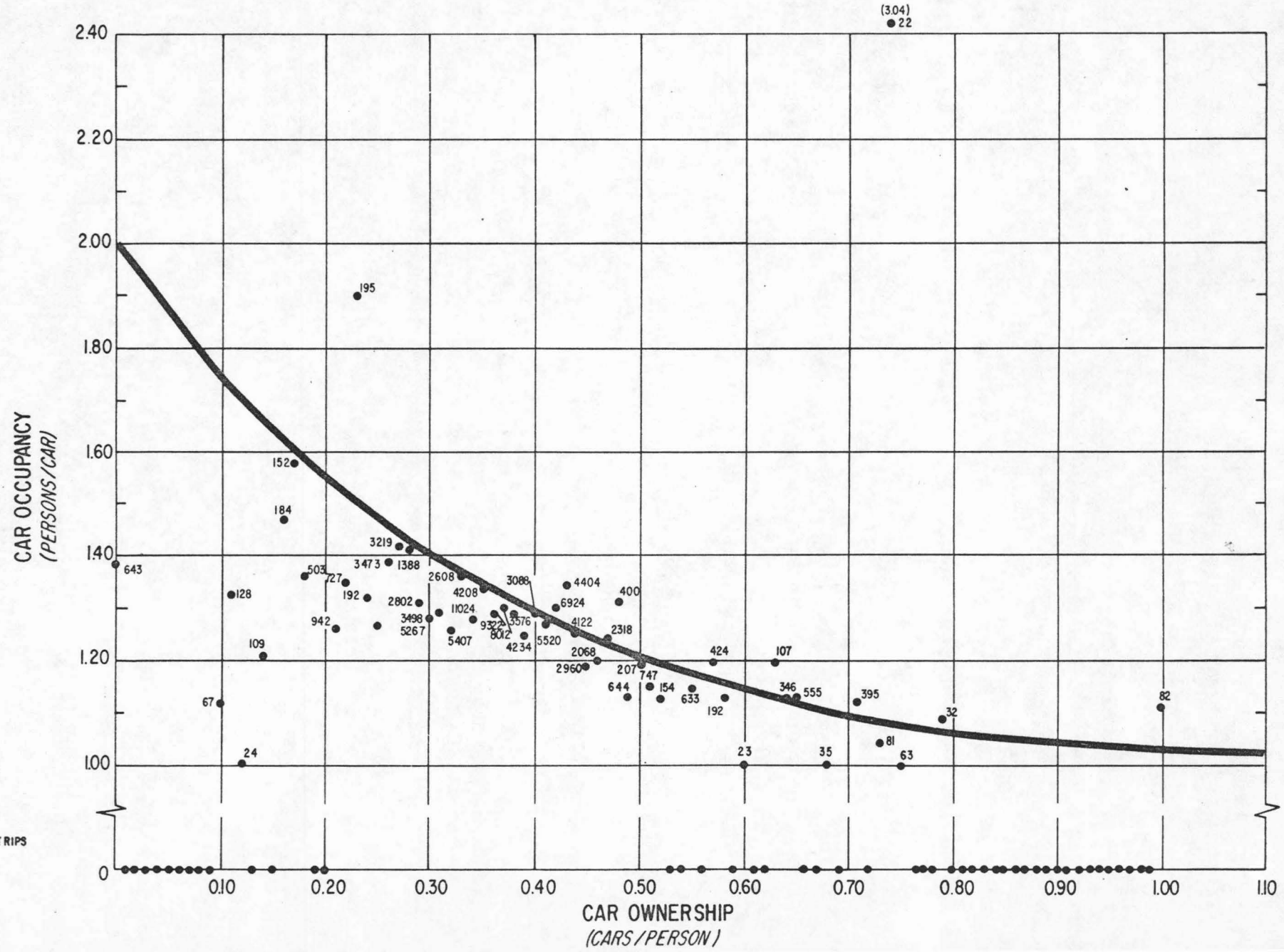
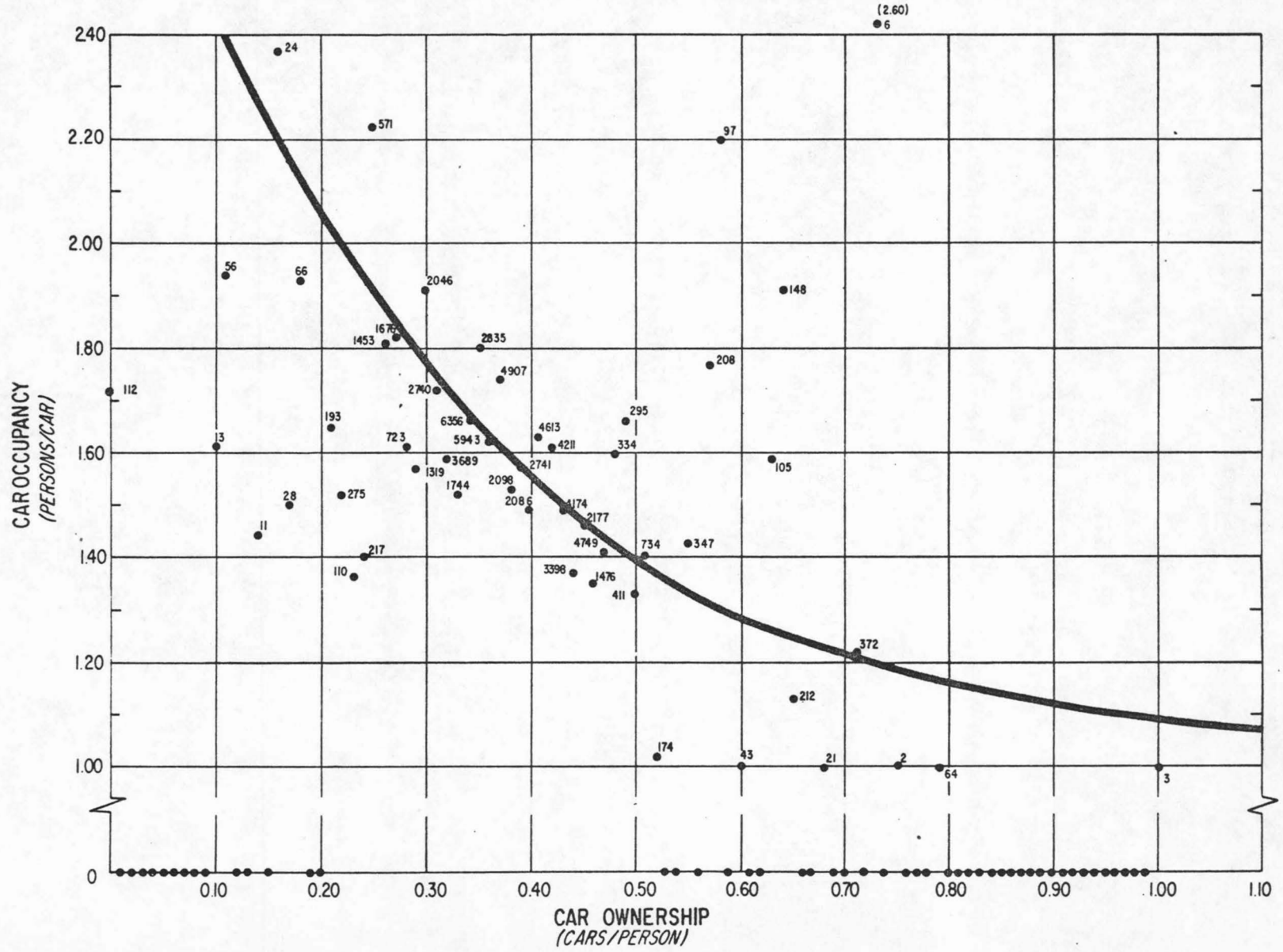


FIGURE 62

DAVENPORT · ROCK ISLAND · MOLINE
URBANIZED AREA TRANSPORTATION STUDY

# CAR OCCUPANCY AND CAR OWNERSHIP
## HOME BASED SHOP PRODUCTIONS

DE LEUW, CATHER & COMPANY · CONSULTING ENGINEERS · CHICAGO




LEGEND

● 0000 VEHICLE TRIPS

FIGURE 63

DAVENPORT · ROCK ISLAND · MOLINE

URBANIZED AREA TRANSPORTATION STUDY

# CAR OCCUPANCY AND CAR OWNERSHIP

## HOME BASED OTHER PRODUCTIONS

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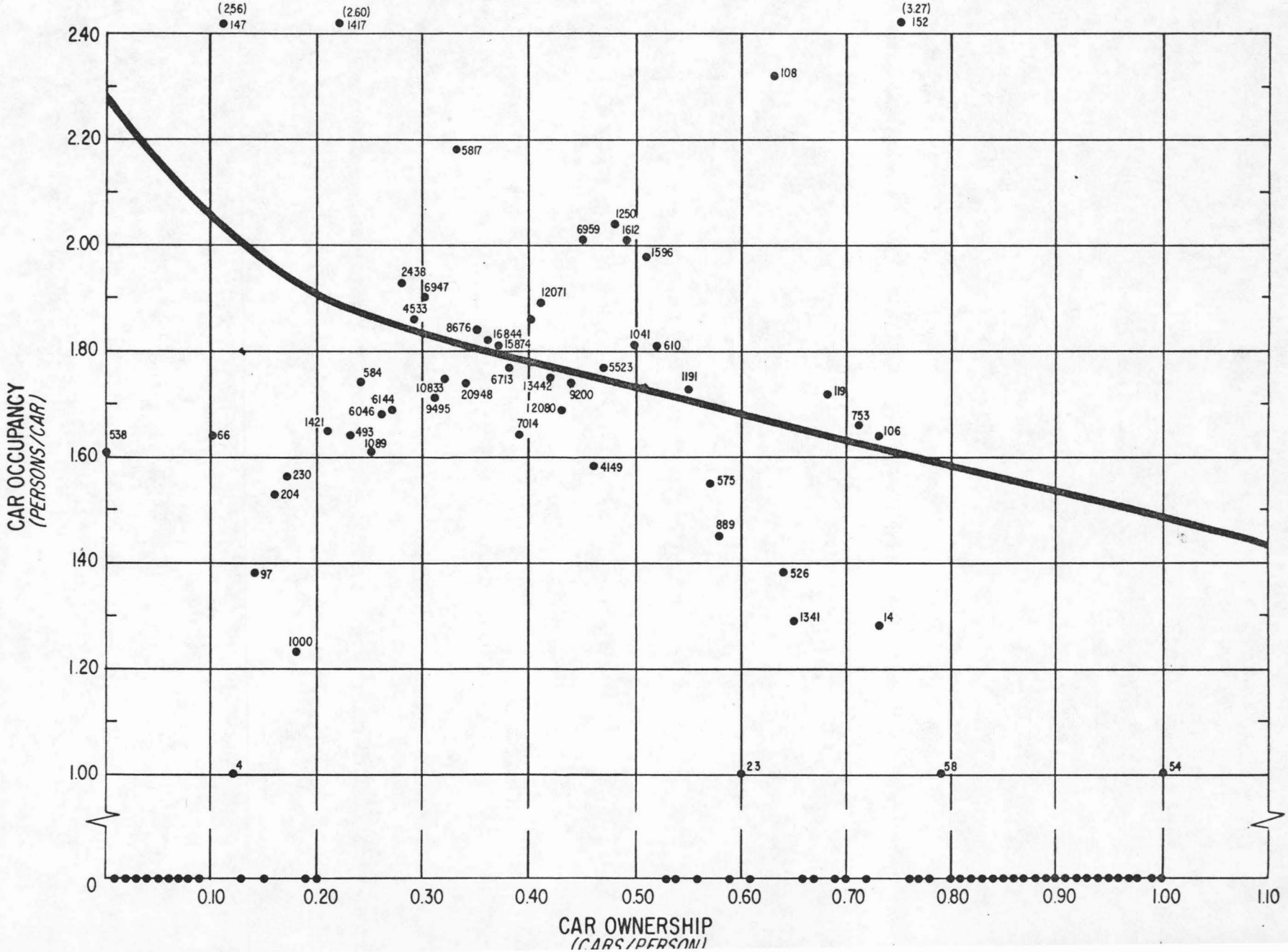


LEGEND

● 0000 VEHICLE TRIPS

DAVENPORT · ROCK ISLAND · MOLINE
URBANIZED AREA TRANSPORTATION STUDY

# CAR OCCUPANCY AND CAR OWNERSHIP
# NON-HOME BASED PRODUCTIONS

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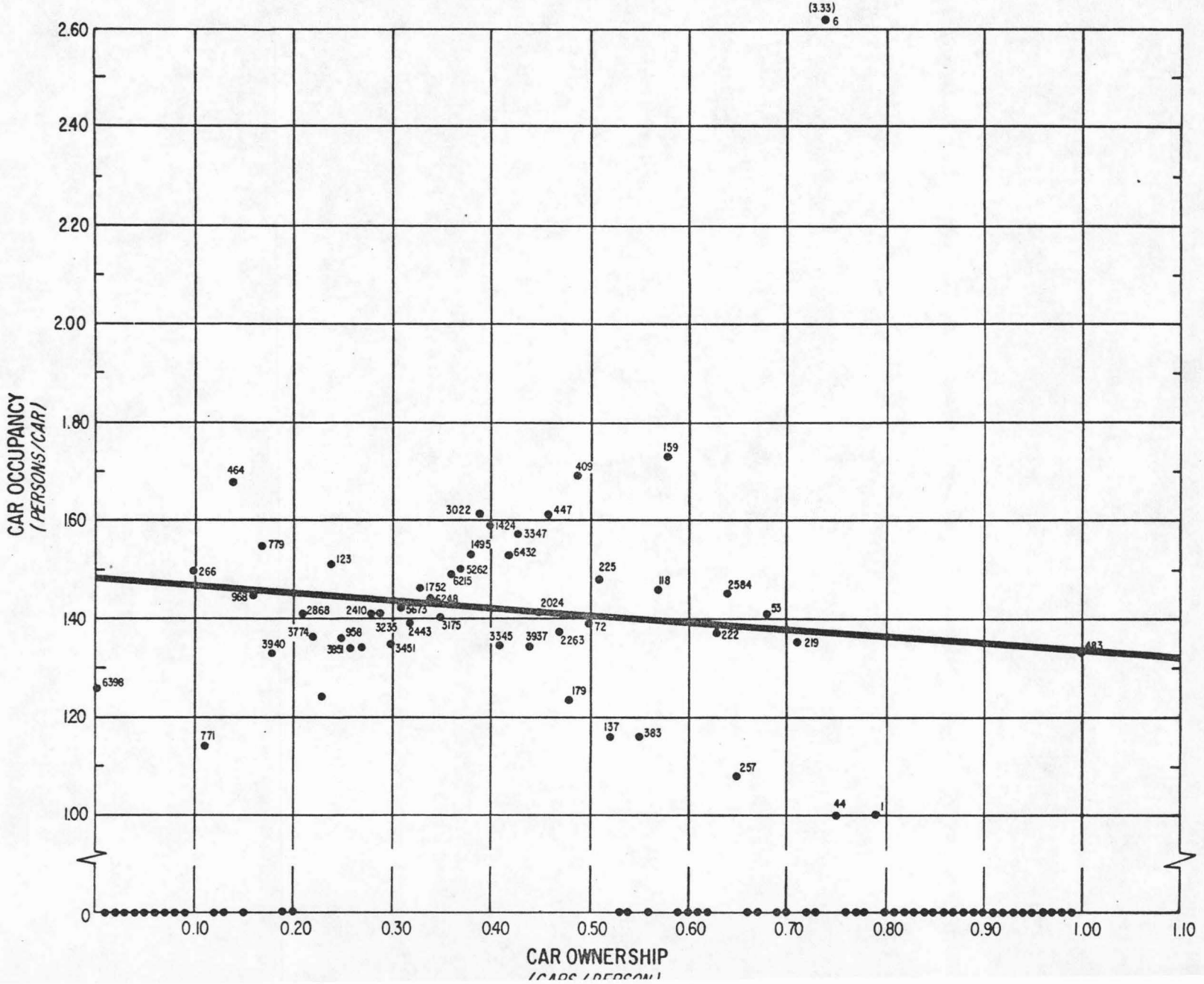
FIGURE 64




LEGEND

0000 VEHICLE TRIPS

Table 40

CAR OCCUPANCY
HOME BASED WORK PRODUCTIONS

| Car Ownership Cars/Person) | Car Occupancy (Persons/Car) | Car Ownership (Cars/Person) | Car Occupancy (Persons/Car) |
|---|---|---|---|
| 0.00 | 2.00 | 0.41 | 1.28 |
| 0.01 | 1.97 | 0.42 | 1.27 |
| 0.02 | 1.94 | 0.43 | 1.26 |
| 0.03 | 1.92 | 0.44 | 1.25 |
| 0.04 | 1.89 | 0.45 | 1.24 |
| 0.05 | 1.86 | 0.46 | 1.23 |
| 0.06 | 1.84 | 0.47 | 1.23 |
| 0.07 | 1.81 | 0.48 | 1.22 |
| 0.08 | 1.79 | 0.49 | 1.21 |
| 0.09 | 1.76 | 0.50 | 1.20 |
| 0.10 | 1.74 | 0.51 | 1.20 |
| 0.11 | 1.72 | 0.52 | 1.19 |
| 0.12 | 1.70 | 0.53 | 1.18 |
| 0.13 | 1.68 | 0.54 | 1.18 |
| 0.14 | 1.66 | 0.55 | 1.17 |
| 0.15 | 1.64 | 0.56 | 1.16 |
| 0.16 | 1.62 | 0.57 | 1.16 |
| 0.17 | 1.60 | 0.58 | 1.15 |
| 0.18 | 1.58 | 0.59 | 1.15 |
| 0.19 | 1.56 | 0.60 | 1.14 |
| 0.20 | 1.54 | 0.61 | 1.13 |
| 0.21 | 1.53 | 0.62 | 1.13 |
| 0.22 | 1.51 | 0.63 | 1.12 |
| 0.23 | 1.50 | 0.64 | 1.12 |
| 0.24 | 1.48 | 0.65 | 1.11 |
| 0.25 | 1.47 | 0.66 | 1.11 |
| 0.26 | 1.45 | 0.67 | 1.10 |
| 0.27 | 1.44 | 0.68 | 1.10 |
| 0.28 | 1.42 | 0.69 | 1.10 |
| 0.29 | 1.41 | 0.70 | 1.09 |
| 0.30 | 1.40 | 0.71 | 1.09 |
| 0.31 | 1.38 | 0.72 | 1.08 |
| 0.32 | 1.37 | 0.73 | 1.08 |
| 0.33 | 1.36 | 0.74 | 1.08 |
| 0.34 | 1.35 | 0.75 | 1.07 |
| 0.35 | 1.34 | 0.76 | 1.07 |
| 0.36 | 1.33 | 0.77 | 1.07 |
| 0.37 | 1.32 | 0.78 | 1.06 |
| 0.38 | 1.31 | 0.79 | 1.06 |
| 0.39 | 1.30 | 0.80 | 1.06 |
| 0.40 | 1.29 | | |

Table 40 (Concluded)

CAR OCCUPANCY
HOME BASED WORK PRODUCTIONS

| Car Ownership (Cars/Person) | Car Occupancy (Persons/Car) |
|---|---|
| 0.81 | 1.06 |
| 0.82 | 1.05 |
| 0.83 | 1.05 |
| 0.84 | 1.05 |
| 0.85 | 1.05 |
| 0.86 | 1.04 |
| 0.87 | 1.04 |
| 0.88 | 1.04 |
| 0.89 | 1.04 |
| 0.90 | 1.04 |
| 0.91 | 1.04 |
| 0.92 | 1.04 |
| 0.93 | 1.04 |
| 0.94 | 1.03 |
| 0.95 | 1.03 |
| 0.96 | 1.03 |
| 0.97 | 1.03 |
| 0.98 | 1.03 |
| 0.99 | 1.03 |
| 1.00 | 1.03 |

Table 41

CAR OCCUPANCY
HOME BASED SHOP PRODUCTIONS

| Car Ownership (Cars/Person) | Car Occupancy (Persons/Car) | Car Ownership (Cars/Person) | Car Occupancy (Persons/Car) |
|---|---|---|---|
| 0.00 | 2.82 | 0.41 | 1.55 |
| 0.01 | 2.78 | 0.42 | 1.51 |
| 0.02 | 2.74 | 0.43 | 1.49 |
| 0.03 | 2.70 | 0.44 | 1.48 |
| 0.04 | 2.66 | 0.45 | 1.46 |
| 0.05 | 2.62 | 0.46 | 1.45 |
| 0.06 | 2.58 | 0.47 | 1.43 |
| 0.07 | 2.54 | 0.48 | 1.42 |
| 0.08 | 2.50 | 0.49 | 1.41 |
| 0.09 | 2.46 | 0.50 | 1.39 |
| 0.10 | 2.43 | 0.51 | 1.38 |
| 0.11 | 2.39 | 0.52 | 1.37 |
| 0.12 | 2.35 | 0.53 | 1.35 |
| 0.13 | 2.30 | 0.54 | 1.34 |
| 0.14 | 2.27 | 0.55 | 1.33 |
| 0.15 | 2.23 | 0.56 | 1.32 |
| 0.16 | 2.19 | 0.57 | 1.31 |
| 0.17 | 2.16 | 0.58 | 1.30 |
| 0.18 | 2.13 | 0.59 | 1.29 |
| 0.19 | 2.10 | 0.60 | 1.28 |
| 0.20 | 2.06 | 0.61 | 1.27 |
| 0.21 | 2.03 | 0.62 | 1.27 |
| 0.22 | 2.00 | 0.63 | 1.26 |
| 0.23 | 1.97 | 0.64 | 1.25 |
| 0.24 | 1.94 | 0.65 | 1.24 |
| 0.25 | 1.91 | 0.66 | 1.23 |
| 0.26 | 1.88 | 0.67 | 1.23 |
| 0.27 | 1.86 | 0.68 | 1.22 |
| 0.28 | 1.83 | 0.69 | 1.22 |
| 0.29 | 1.80 | 0.70 | 1.21 |
| 0.30 | 1.78 | 0.71 | 1.21 |
| 0.31 | 1.75 | 0.72 | 1.20 |
| 0.32 | 1.73 | 0.73 | 1.20 |
| 0.33 | 1.70 | 0.74 | 1.19 |
| 0.34 | 1.67 | 0.75 | 1.19 |
| 0.35 | 1.65 | 0.76 | 1.19 |
| 0.36 | 1.63 | 0.77 | 1.18 |
| 0.37 | 1.61 | 0.78 | 1.18 |
| 0.38 | 1.59 | 0.79 | 1.17 |
| 0.39 | 1.57 | 0.80 | 1.17 |
| 0.40 | 1.55 | 0.81 | 1.17 |

Table 41 (Concluded)

CAR OCCUPANCY
HOME BASED SHOP PRODUCTIONS

| Car Ownership (Cars/Person) | Car Occupancy (Persons/Cars) |
|---|---|
| 0.82 | 1.16 |
| 0.83 | 1.16 |
| 0.84 | 1.16 |
| 0.85 | 1.15 |
| 0.86 | 1.15 |
| 0.87 | 1.15 |
| 0.88 | 1.14 |
| 0.89 | 1.14 |
| 0.90 | 1.14 |
| 0.91 | 1.13 |
| 0.92 | 1.13 |
| 0.93 | 1.13 |
| 0.94 | 1.12 |
| 0.95 | 1.12 |
| 0.96 | 1.11 |
| 0.97 | 1.11 |
| 0.98 | 1.11 |
| 0.99 | 1.10 |
| 1.00 | 1.10 |

Table 42

CAR OCCUPANCY
HOME BASED OTHER PRODUCTIONS

| Car Ownership (Cars/Person) | Car Occupancy (Persons/Car) | Car Ownership (Cars/Person) | Car Occupancy (Persons/Car) |
|---|---|---|---|
| 0.00 | 2.29 | 0.41 | 1.77 |
| 0.01 | 2.26 | 0.42 | 1.76 |
| 0.02 | 2.24 | 0.43 | 1.76 |
| 0.03 | 2.21 | 0.44 | 1.75 |
| 0.04 | 2.18 | 0.45 | 1.75 |
| 0.05 | 2.16 | 0.46 | 1.74 |
| 0.06 | 2.14 | 0.47 | 1.74 |
| 0.07 | 2.12 | 0.48 | 1.74 |
| 0.08 | 2.10 | 0.49 | 1.73 |
| 0.09 | 2.08 | 0.50 | 1.72 |
| 0.10 | 2.06 | 0.51 | 1.72 |
| 0.11 | 2.04 | 0.52 | 1.72 |
| 0.12 | 2.02 | 0.53 | 1.71 |
| 0.13 | 2.00 | 0.54 | 1.70 |
| 0.14 | 1.99 | 0.55 | 1.70 |
| 0.15 | 1.97 | 0.56 | 1.70 |
| 0.16 | 1.96 | 0.57 | 1.69 |
| 0.17 | 1.95 | 0.58 | 1.69 |
| 0.18 | 1.94 | 0.59 | 1.68 |
| 0.19 | 1.92 | 0.60 | 1.68 |
| 0.20 | 1.91 | 0.61 | 1.67 |
| 0.21 | 1.90 | 0.62 | 1.67 |
| 0.22 | 1.89 | 0.63 | 1.66 |
| 0.23 | 1.88 | 0.64 | 1.66 |
| 0.24 | 1.88 | 0.65 | 1.65 |
| 0.25 | 1.87 | 0.66 | 1.64 |
| 0.26 | 1.86 | 0.67 | 1.64 |
| 0.27 | 1.85 | 0.68 | 1.64 |
| 0.28 | 1.84 | 0.69 | 1.63 |
| 0.29 | 1.84 | 0.70 | 1.62 |
| 0.30 | 1.83 | 0.71 | 1.62 |
| 0.31 | 1.82 | 0.72 | 1.62 |
| 0.32 | 1.82 | 0.73 | 1.61 |
| 0.33 | 1.81 | 0.74 | 1.61 |
| 0.34 | 1.81 | 0.75 | 1.60 |
| 0.35 | 1.80 | 0.76 | 1.60 |
| 0.36 | 1.80 | 0.77 | 1.59 |
| 0.37 | 1.79 | 0.78 | 1.59 |
| 0.38 | 1.78 | 0.79 | 1.58 |
| 0.39 | 1.78 | 0.80 | 1.58 |
| 0.40 | 1.77 | 0.81 | 1.57 |

Table 42(Concluded)

CAR OCCUPANCY
HOME BASED OTHER PRODUCTIONS

| Car Ownership (Cars/Person) | Car Occupancy (Persons/Car) |
|---|---|
| 0.82 | 1.57 |
| 0.83 | 1.56 |
| 0.84 | 1.56 |
| 0.85 | 1.55 |
| 0.86 | 1.55 |
| 0.87 | 1.54 |
| 0.88 | 1.54 |
| 0.89 | 1.53 |
| 0.90 | 1.52 |
| 0.91 | 1.52 |
| 0.92 | 1.52 |
| 0.93 | 1.51 |
| 0.94 | 1.51 |
| 0.95 | 1.50 |
| 0.96 | 1.50 |
| 0.97 | 1.49 |
| 0.98 | 1.49 |
| 0.99 | 1.48 |
| 1.00 | 1.48 |

Table 43

CAR OCCUPANCY
NON-HOME BASED PRODUCTIONS

| Car Ownership (Cars/Person) | Car Occupancy (Persons/Car) | Car Ownership (Cars/Person) | Car Occupancy (Persons/Car) |
|---|---|---|---|
| 0.00 | 1.48 | 0.41 | 1.43 |
| 0.01 | 1.48 | 0.42 | 1.43 |
| 0.02 | 1.48 | 0.43 | 1.43 |
| 0.03 | 1.48 | 0.44 | 1.43 |
| 0.04 | 1.48 | 0.45 | 1.42 |
| 0.05 | 1.47 | 0.46 | 1.42 |
| 0.06 | 1.47 | 0.47 | 1.42 |
| 0.07 | 1.47 | 0.48 | 1.42 |
| 0.08 | 1.47 | 0.49 | 1.42 |
| 0.09 | 1.47 | 0.50 | 1.42 |
| 0.10 | 1.47 | 0.51 | 1.42 |
| 0.11 | 1.46 | 0.52 | 1.42 |
| 0.12 | 1.46 | 0.53 | 1.41 |
| 0.13 | 1.46 | 0.54 | 1.41 |
| 0.14 | 1.46 | 0.55 | 1.41 |
| 0.15 | 1.46 | 0.56 | 1.41 |
| 0.16 | 1.45 | 0.57 | 1.41 |
| 0.17 | 1.45 | 0.58 | 1.41 |
| 0.18 | 1.45 | 0.59 | 1.41 |
| 0.19 | 1.45 | 0.60 | 1.41 |
| 0.20 | 1.45 | 0.61 | 1.41 |
| 0.21 | 1.45 | 0.62 | 1.41 |
| 0.22 | 1.45 | 0.63 | 1.40 |
| 0.23 | 1.45 | 0.64 | 1.40 |
| 0.24 | 1.45 | 0.65 | 1.40 |
| 0.25 | 1.45 | 0.66 | 1.40 |
| 0.26 | 1.44 | 0.67 | 1.40 |
| 0.27 | 1.44 | 0.68 | 1.40 |
| 0.28 | 1.44 | 0.69 | 1.39 |
| 0.29 | 1.44 | 0.70 | 1.39 |
| 0.30 | 1.44 | 0.71 | 1.39 |
| 0.31 | 1.44 | 0.72 | 1.39 |
| 0.32 | 1.44 | 0.73 | 1.39 |
| 0.33 | 1.44 | 0.74 | 1.39 |
| 0.34 | 1.44 | 0.75 | 1.39 |
| 0.35 | 1.43 | 0.76 | 1.39 |
| 0.36 | 1.43 | 0.77 | 1.39 |
| 0.37 | 1.43 | 0.78 | 1.39 |
| 0.38 | 1.43 | 0.79 | 1.38 |
| 0.39 | 1.43 | 0.80 | 1.38 |
| 0.40 | 1.43 | | |

Table 43 (Concluded)

## CAR OCCUPANCY
## NON-HOME BASED PRODUCTIONS

| Car Ownership (Cars/Person) | Car Occupancy (Persons/Car) |
|---|---|
| 0.81 | 1.38 |
| 0.82 | 1.38 |
| 0.83 | 1.38 |
| 0.84 | 1.38 |
| 0.85 | 1.38 |
| 0.86 | 1.38 |
| 0.87 | 1.37 |
| 0.88 | 1.37 |
| 0.89 | 1.37 |
| 0.90 | 1.37 |
| 0.91 | 1.37 |
| 0.92 | 1.37 |
| 0.93 | 1.37 |
| 0.94 | 1.37 |
| 0.95 | 1.37 |
| 0.96 | 1.37 |
| 0.97 | 1.37 |
| 0.98 | 1.36 |
| 0.99 | 1.36 |
| 1.00 | 1.36 |

computed vehicle trip productions for each trip purpose category. Observed and computed vehicle trip productions, by purpose, are presented in Appendix Table A-19.

Table 44

CAR OCCUPANCY STATISTICS

Vehicle Trip Productions

| Trip Purpose | Mean Observed | Standard Error of Estimate | Coefficient of Variation (Percent) | Coefficient of Determination ($R^2$) |
|---|---|---|---|---|
| Home Based Work | 376.6 | 46.7 | 12.1 | 0.980 |
| Home Based Shop | 239.2 | 54.1 | 22.6 | 0.938 |
| Home Based Other | 754.2 | 160.0 | 21.2 | 0.941 |
| Non-Home Based | 354.6 | 69.6 | 19.6 | 0.979 |

A similar procedure was used to convert person trip attractions to vehicle trip attractions. Analyses showed that employment density was the single variable most closely associated with car occupancy at trip attractions. Retail trade, services, manufacturing, and public areas (except cemeteries and parks) were the land uses included in computing employment density. The land use inventory, however was available only in the Illinois portion of the study area; so the resulting car occupancy relationships were based on Illinois traffic zones alone. Figures 65 through 68 show the relationship between weighted car occupancy and employment density for each trip purpose category.

FIGURE 65

DAVENPORT · ROCK ISLAND · MOLINE
URBANIZED AREA TRANSPORTATION STUDY

# CAR OCCUPANCY AND EMPLOYMENT DENSITY
# HOME BASED WORK ATTRACTIONS, ILLINOIS AREA

DE LEUW, CATHER & COMPANY · CONSULTING ENGINEERS · CHICAGO

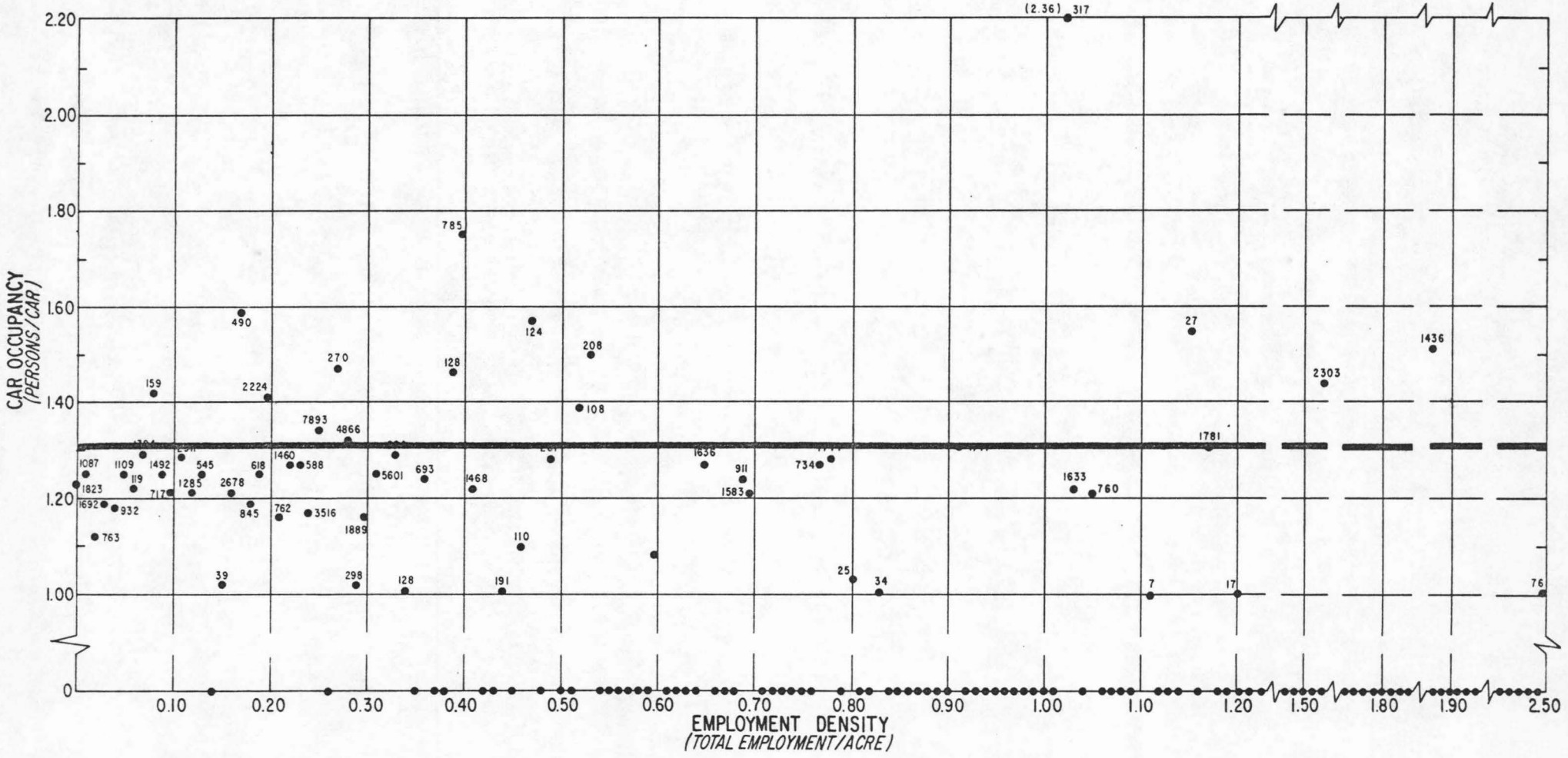


FIGURE 66

DAVENPORT · ROCK ISLAND · MOLINE
URBANIZED AREA TRANSPORTATION STUDY

# CAR OCCUPANCY AND EMPLOYMENT DENSITY
# HOME BASED SHOP ATTRACTIONS, ILLINOIS AREA

DE LEUW, CATHER & COMPANY · CONSULTING ENGINEERS · CHICAGO

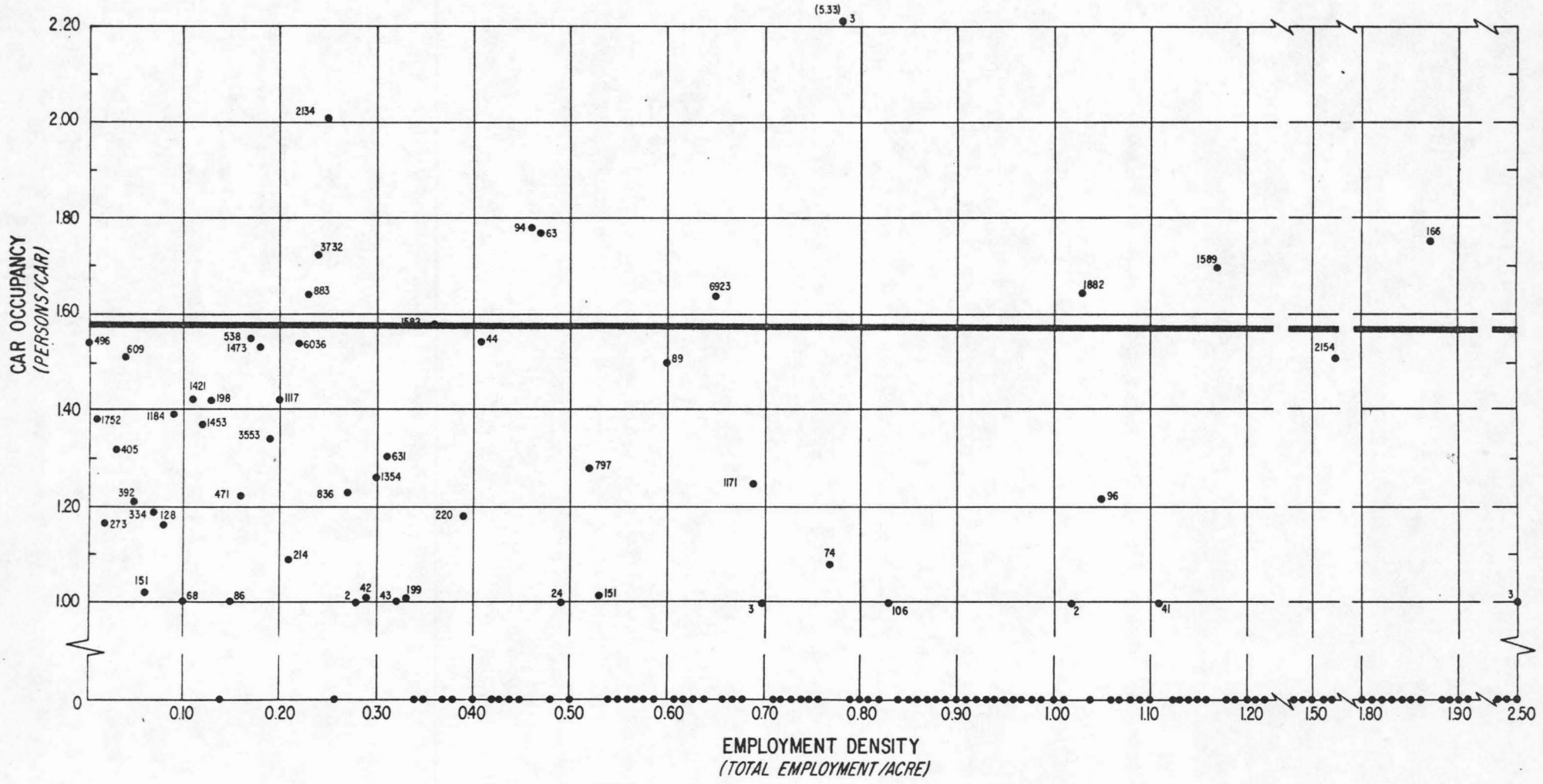


FIGURE 67

DAVENPORT · ROCK ISLAND · MOLINE
URBANIZED AREA TRANSPORTATION STUDY

# CAR OCCUPANCY AND EMPLOYMENT DENSITY
# HOME BASED OTHER ATTRACTIONS, ILLINOIS AREA

DE LEUW, CATHER & COMPANY · CONSULTING ENGINEERS · CHICAGO

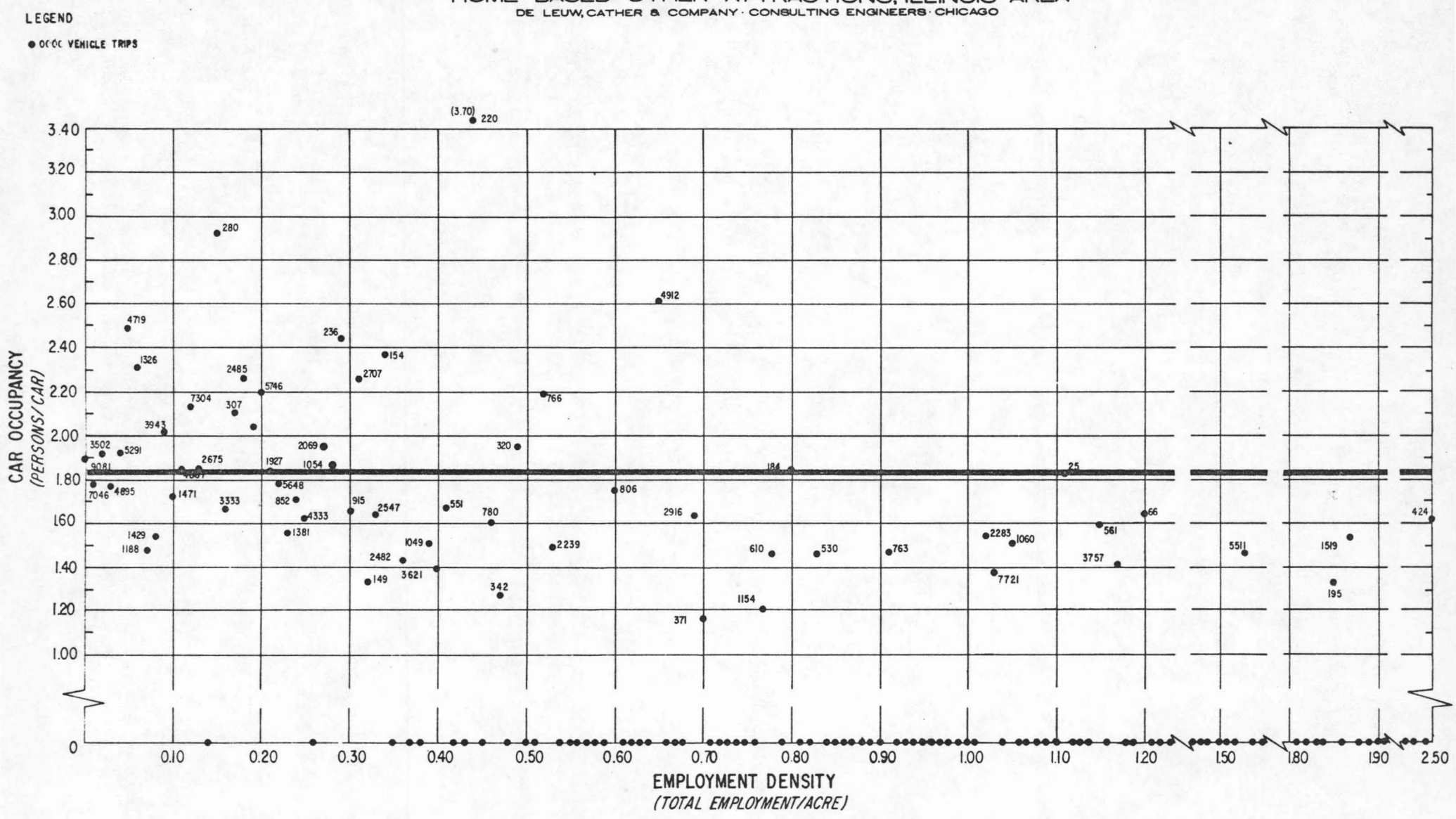
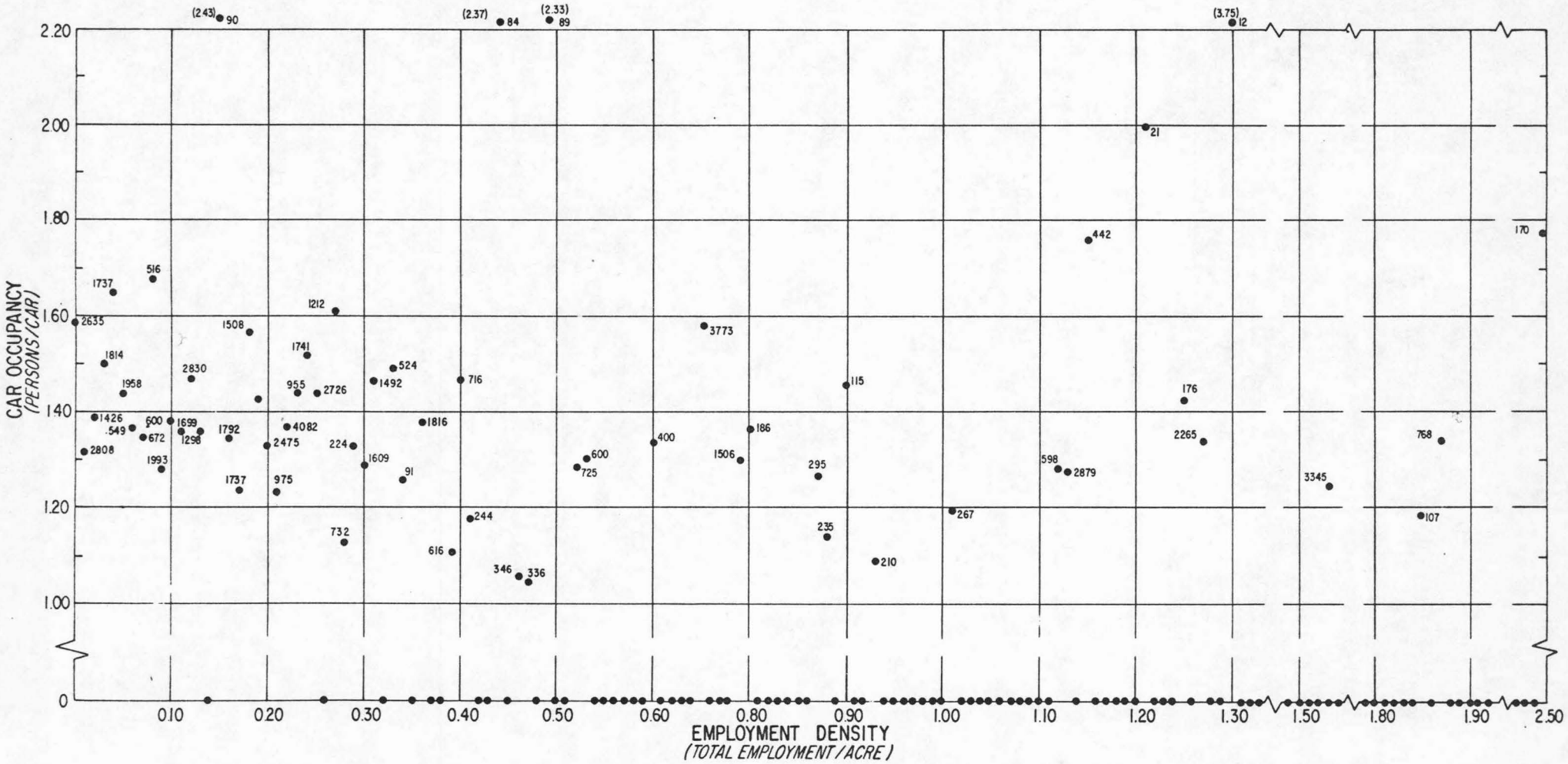


FIGURE 68

DAVENPORT · ROCK ISLAND · MOLINE
URBANIZED AREA TRANSPORTATION STUDY

# CAR OCCUPANCY AND EMPLOYMENT DENSITY NON-HOME BASED ATTRACTION, ILLINOIS AREA

DE LEUW, CATHER & COMPANY · CONSULTING ENGINEERS · CHICAGO



From Figures 65 through 68 it can be seen that home based work, shop and other trip purposes exhibit constant car occupancy relationship. In case of the non-home based trip attractions, which are highly correlated ($R^2$ equals 0.937) with non-home based productions, the car occupancy determined for the attractions was used.

Based on this analysis, average car occupancy was calculated from origin-destination trip data for the combined Illinois and Iowa study area for home based work and home based shop trip attractions. Because of substantial differences between Illinois and Iowa survey data in the category of home based other trips (see Chaper IV), the average car occupancy for this category of travel was based on Illinois data alone. The average car occupancies for the base year are as follows:

| | |
|---|---|
| Home based work attractions | 1.307 |
| Home based shop attractions | 1.567 |
| Home based other attractions | 1.830 |

Table 45 shows the statistical comparison between observed and computed vehicle attractions by trip purpose category. Observed and computed vehicle trips by traffic zone and trip purpose category are given in Appendix Table A-20.

Car occupancy relationships for trip attractions adequately define base year conditions. The relationships are constant however, and the absolute value is likely to change in the future. In projecting travel, therefore, the car occupancy constant for trip attractions will be determined from forecasts of person and vehicle trip productions.

Table 45

CAR OCCUPANCY STATISTICS

Vehicle Trip Attractions

| Trip Purpose | Mean Observed | Standard Error of Estimate | Coefficient of Variation (Percent) | Coefficient of Determination ($R^2$) |
|---|---|---|---|---|
| Home Based Work | 412.5 | 81.2 | 19.7 | 0.991 |
| Home Based Shop | 255.8 | 76.5 | 29.9 | 0.986 |
| Home Based Other(1) | 689.3 | 317.1 | 46.0 | 0.852 |

(1)-Illinois portion of the study area only.

# APPENDIX

TABLE A-1

DAVENPORT-ROCK ISLAND-MOLINE
URBANIZED AREA TRANSPORTATION STUDY

ZONE-CENTROID EQUIVALENCE

Illinois Portion of Study Area

Internal Zones

| Centroid | Zone | Centroid | Zone | Centroid | Zone | Centroid | Zone |
|---|---|---|---|---|---|---|---|
| 1 | 100 | 36 | 145 | 71 | 182 | 106 | 230 |
| 2 | 101 | 37 | 146 | 72 | 183 | 107 | 231 |
| 3 | 102 | 38 | 147 | 73 | 184 | 108 | 232 |
| 4 | 103 | 39 | 148 | 74 | 185 | 109 | 233 |
| 5 | 104 | 40 | 149 | 75 | 190 | 110 | 234 |
| 6 | 105 | 41 | 150 | 76 | 191 | 111 | 240 |
| 7 | 110 | 42 | 151 | 77 | 192 | 112 | 241 |
| 8 | 111 | 43 | 152 | 78 | 193 | 113 | 242 |
| 9 | 112 | 44 | 153 | 79 | 194 | 114 | 243 |
| 10 | 113 | 45 | 154 | 80 | 195 | 115 | 244 |
| 11 | 114 | 46 | 155 | 81 | 196 | 116 | 245 |
| 12 | 115 | 47 | 156 | 82 | 197 | 117 | 246 |
| 13 | 116 | 48 | 157 | 83 | 200 | 118 | 247 |
| 14 | 117 | 49 | 160 | 84 | 201 | 119 | 248 |
| 15 | 120 | 50 | 161 | 85 | 202 | 120 | 249 |
| 16 | 121 | 51 | 162 | 86 | 203 | 121 | 250 |
| 17 | 122 | 52 | 163 | 87 | 204 | 122 | 251 |
| 18 | 123 | 53 | 164 | 88 | 210 | 123 | 252 |
| 19 | 124 | 54 | 165 | 89 | 211 | 124 | 253 |
| 20 | 125 | 55 | 166 | 90 | 212 | 125 | 254 |
| 21 | 126 | 56 | 167 | 91 | 213 | 126 | 255 |
| 22 | 130 | 57 | 168 | 92 | 214 | 127 | 256 |
| 23 | 131 | 58 | 169 | 93 | 215 | 128 | 257 |
| 24 | 132 | 59 | 170 | 94 | 216 | 129 | 260 |
| 25 | 133 | 60 | 171 | 95 | 217 | 130 | 261 |
| 26 | 134 | 61 | 172 | 96 | 220 | 131 | 262 |
| 27 | 135 | 62 | 173 | 97 | 221 | 132 | 263 |
| 28 | 136 | 63 | 174 | 98 | 222 | 133 | 264 |
| 29 | 137 | 64 | 175 | 99 | 223 | 134 | 265 |
| 30 | 138 | 65 | 176 | 100 | 224 | 135 | 266 |
| 31 | 140 | 66 | 177 | 101 | 225 | 136 | 270 |
| 32 | 141 | 67 | 178 | 102 | 226 | 137 | 271 |
| 33 | 142 | 68 | 179 | 103 | 227 | 138 | 272 |
| 34 | 143 | 69 | 180 | 104 | 228 | 139 | 273 |
| 35 | 144 | 70 | 181 | 105 | 229 | 140 | 274 |

TABLE A-1--Continued

DAVENPORT-ROCK ISLAND-MOLINE
URBANIZED AREA TRANSPORTATION STUDY

ZONE-CENTROID EQUIVALENCE

Illinois Portion of Study Area

Internal Zones

| Centroid | Zone | Centroid | Zone | Centroid | Zone | Centroid | Zone |
|---|---|---|---|---|---|---|---|
| 141 | 280 | 161 | 310 | 181 | 331 | 201 | 355 |
| 142 | 281 | 162 | 311 | 182 | 332 | 202 | 356 |
| 143 | 282 | 163 | 312 | 183 | 333 | 203 | 357 |
| 144 | 283 | 164 | 313 | 184 | 334 | 204 | 360 |
| 145 | 284 | 165 | 314 | 185 | 335 | 205 | 361 |
| 146 | 285 | 166 | 315 | 186 | 336 | 206 | 362 |
| 147 | 286 | 167 | 316 | 187 | 337 | 207 | 363 |
| 148 | 287 | 168 | 317 | 188 | 338 | 208 | 365 |
| 149 | 290 | 169 | 318 | 189 | 339 | 209 | 366 |
| 150 | 291 | 170 | 320 | 190 | 340 | 210 | 370 |
| 151 | 292 | 171 | 321 | 191 | 341 | 211 | 371 |
| 152 | 293 | 172 | 322 | 192 | 342 | 212 | 372 |
| 153 | 294 | 173 | 323 | 193 | 343 | 213 | 373 |
| 154 | 295 | 174 | 324 | 194 | 344 | 214 | 374 |
| 155 | 296 | 175 | 325 | 195 | 345 | 215 | 380 |
| 156 | 297 | 176 | 326 | 196 | 350 | 216 | 381 |
| 157 | 298 | 177 | 327 | 197 | 351 | 217 | 382 |
| 158 | 299 | 178 | 328 | 198 | 352 | | |
| 159 | 300 | 179 | 329 | 199 | 353 | | |
| 160 | 301 | 180 | 330 | 200 | 354 | | |

External Cordon Stations

| Centroid | Station | Centroid | Station | Centroid | Station | Centroid | Station |
|---|---|---|---|---|---|---|---|
| 340 | 4 | 344 | 8 | 348 | 12 | 352 | 16 |
| 341 | 5 | 345 | 9 | 349 | 13 | 353 | 17 |
| 342 | 6 | 346 | 10 | 350 | 14 | 354 | 18 |
| 343 | 7 | 347 | 11 | 351 | 15 | 355 | 19 |

TABLE A-1--Continued

DAVENPORT-ROCK ISLAND-MOLINE
URBANIZED AREA TRANSPORTATION STUDY

ZONE-CENTROID EQUIVALENCE

Iowa Portion of Study Area

Internal Zones

| Centroid | Zone Illinois | Zone Iowa | Centroid | Zone Illinois | Zone Iowa | Centroid | Zone Illinois | Zone Iowa |
|---|---|---|---|---|---|---|---|---|
| 218 | 400 | 069 | 243 | 503 | 003 | 268 | 528 | 028 |
| 219 | 435 | 035 | 244 | 504 | 004 | 269 | 529 | 029 |
| 220 | 436 | 036 | 245 | 505 | 005 | 270 | 530 | 030 |
| 221 | 437 | 037 | 246 | 506 | 006 | 271 | 531 | 031 |
| 222 | 438 | 038 | 247 | 507 | 007 | 272 | 532 | 032 |
| 223 | 439 | 039 | 248 | 508 | 008 | 273 | 533 | 033 |
| 224 | 456 | 056 | 249 | 509 | 009 | 274 | 534 | 034 |
| 225 | 457 | 057 | 250 | 510 | 010 | 275 | 540 | 040 |
| 226 | 458 | 058 | 251 | 511 | 011 | 276 | 541 | 041 |
| 227 | 459 | 059 | 252 | 512 | 012 | 277 | 542 | 042 |
| 228 | 460 | 060 | 253 | 513 | 013 | 278 | 543 | 043 |
| 229 | 461 | 061 | 254 | 514 | 014 | 279 | 544 | 044 |
| 230 | 462 | 062 | 255 | 515 | 015 | 280 | 545 | 045 |
| 231 | 463 | 063 | 256 | 516 | 016 | 281 | 546 | 046 |
| 232 | 464 | 064 | 257 | 517 | 017 | 282 | 547 | 047 |
| 233 | 465 | 065 | 258 | 518 | 018 | 283 | 548 | 048 |
| 234 | 466 | 066 | 259 | 519 | 019 | 284 | 549 | 049 |
| 235 | 467 | 067 | 260 | 520 | 020 | 285 | 550 | 050 |
| 236 | 468 | 068 | 261 | 521 | 021 | 286 | 551 | 051 |
| 237 | 469 | 070 | 262 | 522 | 022 | 287 | 552 | 052 |
| 238 | 471 | 071 | 263 | 523 | 023 | 288 | 553 | 053 |
| 239 | 472 | 072 | 264 | 524 | 024 | 289 | 554 | 054 |
| 240 | 473 | 073 | 265 | 525 | 025 | 290 | 555 | 055 |
| 241 | 501 | 001 | 266 | 526 | 026 | | | |
| 242 | 502 | 002 | 267 | 527 | 027 | | | |

Intermediate Zones

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 291 | 486 | 806 | 293 | 581 | 801 | 296 | 584 | 804 |
| 292 | 487 | 807 | 294 | 582 | 802 | 297 | 585 | 805 |
| | | | 295 | 583 | 803 | | | |

TABLE A-1--Concluded

DAVENPORT-ROCK ISLAND-MOLINE
URBANIZED AREA TRANSPORTATION STUDY

ZONE-CENTROID EQUIVALENCE

Iowa Portion of Study Area

External Cordon Stations

| Centroid | Station | Centroid | Station | Centroid | Station | Centroid | Station |
|---|---|---|---|---|---|---|---|
| 321 | 1 | 326 | 6 | 331 | 11 | 336 | 16 |
| 322 | 2 | 327 | 7 | 332 | 12 | 337 | 17 |
| 323 | 3 | 328 | 8 | 333 | 13 | 338 | 18 |
| 324 | 4 | 329 | 9 | 334 | 14 | 339 | 60 |
| 325 | 5 | 330 | 10 | 335 | 15 | | |

Future Zones

Centroids 298-320

# TABLE A-2

DRIM TRAF STUDY G-M VS. C-L LOADED SPIDER NETS

TABLE 2 - FREQUENCY DISTRIBUTION AND ANALYSIS OF DIFFERENCES
VOLUME GROUP 0 TO 499

| DIFFERENCE | FREQUENCY | SUM OF DIFFERENCES |
|---|---|---|
| -10000 AND LESS | 0 | 0 |
| -7000 THRU -9999 | 0 | 0 |
| -5000 THRU -6999 | 0 | 0 |
| -4000 THRU -4999 | 0 | 0 |
| -3500 THRU -3999 | 0 | 0 |
| -3000 THRU -3499 | 0 | 0 |
| -2500 THRU -2999 | 0 | 0 |
| -2000 THRU -2499 | 0 | 0 |
| -1500 THRU -1999 | 0 | 0 |
| -1250 THRU -1499 | 0 | 0 |
| -1000 THRU -1249 | 0 | 0 |
| -750 THRU -999 | 0 | 0 |
| -500 THRU -749 | 0 | 0 |
| -300 THRU -499 | 0 | 0 |
| -100 THRU -299 | 12 | -1,615 |
| -1 THRU -99 | 146 | -4,826 |
| 0 THRU 99 | 299 | 10,837 |
| 100 THRU 299 | 108 | 16,320 |
| 300 THRU 499 | 8 | 3,161 |
| 500 THRU 749 | 0 | 0 |
| 750 THRU 999 | 0 | 0 |
| 1000 THRU 1249 | 0 | 0 |
| 1250 THRU 1499 | 0 | 0 |
| 1500 THRU 1999 | 0 | 0 |
| 2000 THRU 2499 | 0 | 0 |
| 2500 THRU 2999 | 0 | 0 |
| 3000 THRU 3499 | 0 | 0 |
| 3500 THRU 3999 | 0 | 0 |
| 4000 THRU 4999 | 0 | 0 |
| 5000 THRU 6999 | 0 | 0 |
| 7000 THRU 9999 | 0 | 0 |
| 10000 AND OVER | 0 | 0 |
| TOTALS | 573 | 23,897 |

SUM OF SQUARES = 5,085,371

MEAN DIFFERENCE = 42 STANDARD DEVIATION = 84

ROOT MEAN SQ. ERROR = 94 PER CENT R.M.S.ERROR = 49.74

TOTAL NO.1 TRIPS(B5)= 108,282 TOTAL NO.2 TRIPS (A6)= 132,179

# TABLE A-2



DRIM TRAF STUDY G-M VS. U-L LOADED SPIDER NETS

TABLE 2 - FREQUENCY DISTRIBUTION AND ANALYSIS OF DIFFERENCES
VOLUME GROUP 500 TO 999

| DIFFERENCE | FREQUENCY | SUM OF DIFFERENCES |
|---|---|---|
| -10000 AND LESS | 0 | 0 |
| -7000 THRU -9999 | 0 | 0 |
| -5000 THRU -6999 | 0 | 0 |
| -4000 THRU -4999 | 0 | 0 |
| -3500 THRU -3999 | 0 | 0 |
| -3000 THRU -3499 | 0 | 0 |
| -2500 THRU -2999 | 0 | 0 |
| -2000 THRU -2499 | 0 | 0 |
| -1500 THRU -1999 | 0 | 0 |
| -1250 THRU -1499 | 0 | 0 |
| -1000 THRU -1249 | 0 | 0 |
| -750 THRU -999 | 0 | 0 |
| -500 THRU -749 | 0 | 0 |
| -300 THRU -499 | 1 | -404 |
| -100 THRU -299 | 61 | -10,509 |
| -1 THRU -99 | 80 | -3,499 |
| 0 THRU 99 | 67 | 3,265 |
| 100 THRU 299 | 64 | 11,826 |
| 300 THRU 499 | 15 | 5,988 |
| 500 THRU 749 | 8 | 4,594 |
| 750 THRU 999 | 0 | 0 |
| 1000 THRU 1249 | 0 | 0 |
| 1250 THRU 1499 | 0 | 0 |
| 1500 THRU 1999 | 0 | 0 |
| 2000 THRU 2499 | 0 | 0 |
| 2500 THRU 2999 | 0 | 0 |
| 3000 THRU 3499 | 0 | 0 |
| 3500 THRU 3999 | 0 | 0 |
| 4000 THRU 4999 | 0 | 0 |
| 5000 THRU 6999 | 0 | 0 |
| 7000 THRU 9999 | 0 | 0 |
| 10000 AND OVER | 0 | 0 |
| TOTALS | 296 | 11,261 |

SUM OF SQUARES = 10,047,825

MEAN DIFFERENCE = 38 STANDARD DEVIATION = 180

ROOT MEAN SQ. ERROR = 184 PER CENT R.M.S.ERROR = 24.87

TOTAL NO.1 TRIPS(B5)= 218,964 TOTAL NO.2 TRIPS (A6)= 230,225

# TABLE A-2



DRIM TRAF STUDY G-M VS. C-D LOADED SPIDER NETS

TABLE 2 - FREQUENCY DISTRIBUTION AND ANALYSIS OF DIFFERENCES
VOLUME GROUP 1000 TO 2999

| DIFFERENCE | FREQUENCY | SUM OF DIFFERENCES |
|---|---|---|
| -10000 AND LESS | 0 | 0 |
| -7000 THRU -9999 | 0 | 0 |
| -5000 THRU -6999 | 0 | 0 |
| -4000 THRU -4999 | 0 | 0 |
| -3500 THRU -3999 | 0 | 0 |
| -3000 THRU -3499 | 0 | 0 |
| -2500 THRU -2999 | 0 | 0 |
| -2000 THRU -2499 | 0 | 0 |
| -1500 THRU -1999 | 0 | 0 |
| -1250 THRU -1499 | 0 | 0 |
| -1000 THRU -1249 | 0 | 0 |
| -750 THRU -999 | 3 | -2,368 |
| -500 THRU -749 | 26 | -16,334 |
| -300 THRU -499 | 53 | -20,120 |
| -100 THRU -299 | 124 | -22,876 |
| -1 THRU -99 | 101 | -4,734 |
| 0 THRU 99 | 76 | 3,653 |
| 100 THRU 299 | 90 | 16,384 |
| 300 THRU 499 | 41 | 16,590 |
| 500 THRU 749 | 19 | 11,755 |
| 750 THRU 999 | 4 | 3,595 |
| 1000 THRU 1249 | 0 | 0 |
| 1250 THRU 1499 | 0 | 0 |
| 1500 THRU 1999 | 0 | 0 |
| 2000 THRU 2499 | 0 | 0 |
| 2500 THRU 2999 | 0 | 0 |
| 3000 THRU 3499 | 0 | 0 |
| 3500 THRU 3999 | 0 | 0 |
| 4000 THRU 4999 | 0 | 0 |
| 5000 THRU 6999 | 0 | 0 |
| 7000 THRU 9999 | 0 | 0 |
| 10000 AND OVER | 0 | 0 |
| TOTALS | 539 | -14,455 |

SUM OF SQUARES = 45,963,691

MEAN DIFFERENCE = -27 STANDARD DEVIATION = 290

ROOT MEAN SQ. ERROR = 292 PER CENT R.M.S.ERROR = 15.77

TOTAL NO.1 TRIPS(B5)= 998,009 TOTAL NO.2 TRIPS (A6)= 983,554

DRIM TRAF STUDY G-M VS. U-D LOADED SPIDER NETS

TABLE 2 - FREQUENCY DISTRIBUTION AND ANALYSIS OF DIFFERENCES
VOLUME GROUP 3000 TO 4999

| DIFFERENCE | FREQUENCY | SUM OF DIFFERENCES |
|---|---|---|
| -10000 AND LESS | 0 | 0 |
| -7000 THRU -9999 | 0 | 0 |
| -5000 THRU -6999 | 0 | 0 |
| -4000 THRU -4999 | 0 | 0 |
| -3500 THRU -3999 | 0 | 0 |
| -3000 THRU -3499 | 0 | 0 |
| -2500 THRU -2999 | 0 | 0 |
| -2000 THRU -2499 | 0 | 0 |
| -1500 THRU -1999 | 0 | 0 |
| -1250 THRU -1499 | 0 | 0 |
| -1000 THRU -1249 | 4 | -4,362 |
| -750 THRU -999 | 12 | -10,414 |
| -500 THRU -749 | 31 | -19,114 |
| -300 THRU -499 | 29 | -11,422 |
| -100 THRU -299 | 48 | -9,585 |
| -1 THRU -99 | 23 | -1,179 |
| 0 THRU 99 | 10 | 549 |
| 100 THRU 299 | 34 | 6,057 |
| 300 THRU 499 | 30 | 11,076 |
| 500 THRU 749 | 7 | 4,459 |
| 750 THRU 999 | 4 | 3,470 |
| 1000 THRU 1249 | 1 | 1,196 |
| 1250 THRU 1499 | 1 | 1,260 |
| 1500 THRU 1999 | 0 | 0 |
| 2000 THRU 2499 | 0 | 0 |
| 2500 THRU 2999 | 0 | 0 |
| 3000 THRU 3499 | 0 | 0 |
| 3500 THRU 3999 | 0 | 0 |
| 4000 THRU 4999 | 0 | 0 |
| 5000 THRU 6999 | 0 | 0 |
| 7000 THRU 9999 | 0 | 0 |
| 10000 AND OVER | 0 | 0 |
| TOTALS | 234 | -26,809 |

SUM OF SQUARES = 47,590,789

MEAN DIFFERENCE = -115 STANDARD DEVIATION = 436

ROOT MEAN SQ. ERROR = 450 PER CENT R.M.S.ERROR = 11.41

TOTAL NO.1 TRIPS(B5)= 922,670 TOTAL NO.2 TRIPS (A6)= 895,861

DRIM TRAF STUDY G-M VS. U-C LOADED SPIDER NETS

TABLE 2 - FREQUENCY DISTRIBUTION AND ANALYSIS OF DIFFERENCES
VOLUME GROUP 5000 TO 6999

| DIFFERENCE | FREQUENCY | SUM OF DIFFERENCES |
|---|---|---|
| -10000 AND LESS | 0 | 0 |
| -7000 THRU -9999 | 0 | 0 |
| -5000 THRU -6999 | 0 | 0 |
| -4000 THRU -4999 | 0 | 0 |
| -3500 THRU -3999 | 0 | 0 |
| -3000 THRU -3499 | 0 | 0 |
| -2500 THRU -2999 | 0 | 0 |
| -2000 THRU -2499 | 0 | 0 |
| -1500 THRU -1999 | 0 | 0 |
| -1250 THRU -1499 | 3 | -4,174 |
| -1000 THRU -1249 | 6 | -6,824 |
| -750 THRU -999 | 10 | -8,523 |
| -500 THRU -749 | 17 | -10,511 |
| -300 THRU -499 | 25 | -9,906 |
| -100 THRU -299 | 20 | -3,824 |
| -1 THRU -99 | 6 | -342 |
| 0 THRU 99 | 7 | 393 |
| 100 THRU 299 | 10 | 2,129 |
| 300 THRU 499 | 5 | 2,014 |
| 500 THRU 749 | 1 | 578 |
| 750 THRU 999 | 3 | 2,693 |
| 1000 THRU 1249 | 1 | 1,041 |
| 1250 THRU 1499 | 1 | 1,451 |
| 1500 THRU 1999 | 0 | 0 |
| 2000 THRU 2499 | 0 | 0 |
| 2500 THRU 2999 | 0 | 0 |
| 3000 THRU 3499 | 0 | 0 |
| 3500 THRU 3999 | 0 | 0 |
| 4000 THRU 4999 | 0 | 0 |
| 5000 THRU 6999 | 0 | 0 |
| 7000 THRU 9999 | 0 | 0 |
| 10000 AND OVER | 0 | 0 |
| TOTALS | 115 | -33,805 |

SUM OF SQUARES = 39,589,619

MEAN DIFFERENCE = -294 STANDARD DEVIATION = 507

ROOT MEAN SQ. ERROR = 586 PER CENT R.M.S.ERROR = 10.05

TOTAL NO.1 TRIPS(B5)= 670,844 TOTAL NO.2 TRIPS (A6)= 637,039

DRIM TRAF STUDY G-M VS. C-C LOADED SPIDER NETS

TABLE 2 - FREQUENCY DISTRIBUTION AND ANALYSIS OF DIFFERENCES
VOLUME GROUP 7000 TO 9999

| DIFFERENCE | FREQUENCY | SUM OF DIFFERENCES |
|---|---|---|
| -10000 AND LESS | 0 | 0 |
| -7000 THRU -9999 | 0 | 0 |
| -5000 THRU -6999 | 0 | 0 |
| -4000 THRU -4999 | 0 | 0 |
| -3500 THRU -3999 | 0 | 0 |
| -3000 THRU -3499 | 0 | 0 |
| -2500 THRU -2999 | 0 | 0 |
| -2000 THRU -2499 | 3 | -6,469 |
| -1500 THRU -1999 | 3 | -4,762 |
| -1250 THRU -1499 | 8 | -10,552 |
| -1000 THRU -1249 | 6 | -6,989 |
| -750 THRU -999 | 9 | -8,062 |
| -500 THRU -749 | 12 | -7,339 |
| -300 THRU -499 | 8 | -3,247 |
| -100 THRU -299 | 10 | -2,184 |
| -1 THRU -99 | 1 | -54 |
| 0 THRU 99 | 1 | 99 |
| 100 THRU 299 | 6 | 989 |
| 300 THRU 499 | 5 | 2,085 |
| 500 THRU 749 | 2 | 1,393 |
| 750 THRU 999 | 1 | 919 |
| 1000 THRU 1249 | 1 | 1,155 |
| 1250 THRU 1499 | 0 | 0 |
| 1500 THRU 1999 | 0 | 0 |
| 2000 THRU 2499 | 0 | 0 |
| 2500 THRU 2999 | 0 | 0 |
| 3000 THRU 3499 | 0 | 0 |
| 3500 THRU 3999 | 0 | 0 |
| 4000 THRU 4999 | 0 | 0 |
| 5000 THRU 6999 | 0 | 0 |
| 7000 THRU 9999 | 0 | 0 |
| 10000 AND OVER | 0 | 0 |
| TOTALS | 76 | -43,018 |

SUM OF SQUARES = 61,487,610

MEAN DIFFERENCE = -566 STANDARD DEVIATION = 699

ROOT MEAN SQ. ERROR = 899 PER CENT R.M.S.ERROR = 10.92

TOTAL NO.1 TRIPS(B5)= 625,852 TOTAL NO.2 TRIPS (A6)= 582,834

# TABLE A-2

DRIM TRAF STUDY G-M VS. U-D LOADED SPIDER NETS

TABLE 2 - FREQUENCY DISTRIBUTION AND ANALYSIS OF DIFFERENCES
VOLUME GROUP 10000 TO 14999

| DIFFERENCE | FREQUENCY | SUM OF DIFFERENCES |
|---|---|---|
| -10000 AND LESS | 0 | 0 |
| -7000 THRU -9999 | 0 | 0 |
| -5000 THRU -6999 | 0 | 0 |
| -4000 THRU -4999 | 0 | 0 |
| -3500 THRU -3999 | 0 | 0 |
| -3000 THRU -3499 | 0 | 0 |
| -2500 THRU -2999 | 0 | 0 |
| -2000 THRU -2499 | 4 | -8,690 |
| -1500 THRU -1999 | 6 | -10,178 |
| -1250 THRU -1499 | 1 | -1,335 |
| -1000 THRU -1249 | 2 | -2,276 |
| -750 THRU -999 | 2 | -1,748 |
| -500 THRU -749 | 0 | 0 |
| -300 THRU -499 | 5 | -2,056 |
| -100 THRU -299 | 4 | -684 |
| -1 THRU -99 | 2 | -114 |
| 0 THRU 99 | 1 | 60 |
| 100 THRU 299 | 4 | 641 |
| 300 THRU 499 | 0 | 0 |
| 500 THRU 749 | 1 | 612 |
| 750 THRU 999 | 0 | 0 |
| 1000 THRU 1249 | 0 | 0 |
| 1250 THRU 1499 | 0 | 0 |
| 1500 THRU 1999 | 0 | 0 |
| 2000 THRU 2499 | 0 | 0 |
| 2500 THRU 2999 | 0 | 0 |
| 3000 THRU 3499 | 0 | 0 |
| 3500 THRU 3999 | 0 | 0 |
| 4000 THRU 4999 | 0 | 0 |
| 5000 THRU 6999 | 0 | 0 |
| 7000 THRU 9999 | 0 | 0 |
| 10000 AND OVER | 0 | 0 |
| TOTALS | 32 | -25,768 |

SUM OF SQUARES = 43,766,380

MEAN DIFFERENCE = -805 STANDARD DEVIATION = 848

ROOT MEAN SQ. ERROR = 1,169 PER CENT R.M.S.ERROR = 9.81

TOTAL NO.1 TRIPS(B5) = 381,216 TOTAL NO.2 TRIPS (A6) = 355,448

TABLE A-3

O-D SURVEY PERSON TRIP
PRODUCTIONS AND ATTRACTIONS

| CENTROID | PRODUCTIONS | | | | | | ATTRACTIONS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | HB WORK | HB SHOP | HB OTHER | NHB | TRUCK | TOTAL | HB WORK | HB SHOP | HB OTHER | NHB | TRUCK | TOTAL |
| 1 | 230 | 58 | 281 | 947 | 367 | 1883 | 2185 | 290 | 2342 | 1038 | 357 | 6212 |
| 2 | 368 | 104 | 455 | 3914 | 1022 | 5863 | 3336 | 3273 | 8140 | 4230 | 1040 | 20019 |
| 3 | 98 | 104 | 295 | 581 | 399 | 1477 | 938 | 81 | 1405 | 378 | 402 | 3204 |
| 4 | 32 | 38 | 93 | 782 | 143 | 1088 | 457 | 349 | 1194 | 552 | 150 | 2702 |
| 5 | 95 | 95 | 123 | 964 | 295 | 1572 | 696 | 738 | 1029 | 436 | 303 | 3202 |
| 6 | 27 | 0 | 18 | 261 | 173 | 479 | 181 | 58 | 156 | 81 | 169 | 645 |
| 7 | 59 | 0 | 43 | 1563 | 193 | 1858 | 9724 | 3 | 2850 | 988 | 228 | 13793 |
| 8 | 203 | 153 | 396 | 1243 | 343 | 2338 | 929 | 118 | 1594 | 781 | 385 | 3807 |
| 9 | 400 | 217 | 1005 | 435 | 159 | 2216 | 307 | 43 | 579 | 299 | 153 | 1381 |
| 10 | 617 | 749 | 1343 | 301 | 207 | 3217 | 157 | 1055 | 1399 | 740 | 207 | 3558 |
| 11 | 267 | 359 | 882 | 520 | 150 | 2178 | 347 | 25 | 1416 | 245 | 147 | 2180 |
| 12 | 437 | 417 | 941 | 256 | 213 | 2264 | 423 | 0 | 412 | 325 | 209 | 1369 |
| 13 | 233 | 11 | 131 | 448 | 713 | 1536 | 1404 | 66 | 1138 | 317 | 696 | 3621 |
| 14 | 318 | 140 | 302 | 755 | 347 | 1862 | 5451 | 0 | 1131 | 322 | 362 | 7266 |
| 15 | 497 | 115 | 1039 | 559 | 420 | 2630 | 874 | 6 | 685 | 441 | 441 | 2447 |
| 16 | 749 | 524 | 1124 | 457 | 444 | 3298 | 591 | 132 | 791 | 426 | 419 | 2359 |
| 17 | 1372 | 790 | 2418 | 921 | 513 | 6014 | 431 | 567 | 1657 | 1187 | 523 | 4365 |
| 18 | 1222 | 330 | 2576 | 1268 | 596 | 5992 | 2182 | 55 | 2511 | 910 | 609 | 6267 |
| 19 | 676 | 255 | 2032 | 491 | 250 | 3704 | 97 | 48 | 2821 | 524 | 245 | 3735 |
| 20 | 1269 | 844 | 2655 | 376 | 244 | 5388 | 122 | 187 | 1258 | 370 | 257 | 2194 |
| 21 | 891 | 568 | 2177 | 683 | 245 | 4564 | 69 | 4 | 1809 | 775 | 266 | 2923 |
| 22 | 1036 | 626 | 2068 | 563 | 269 | 4562 | 107 | 43 | 1394 | 428 | 258 | 2230 |
| 23 | 1029 | 1017 | 3513 | 130 | 208 | 5897 | 194 | 122 | 1183 | 334 | 191 | 2024 |
| 24 | 221 | 251 | 1526 | 251 | 84 | 2333 | 70 | 24 | 419 | 236 | 92 | 841 |
| 25 | 577 | 596 | 2467 | 440 | 237 | 4317 | 96 | 130 | 1690 | 413 | 232 | 2561 |
| 26 | 357 | 225 | 583 | 839 | 205 | 2209 | 750 | 2 | 3550 | 777 | 202 | 5281 |
| 27 | 339 | 358 | 1119 | 482 | 51 | 2349 | 196 | 125 | 437 | 356 | 61 | 1175 |
| 28 | 659 | 678 | 1953 | 984 | 232 | 4506 | 193 | 1691 | 1742 | 1225 | 215 | 5066 |
| 29 | 1036 | 890 | 3339 | 1084 | 268 | 6617 | 190 | 76 | 7424 | 978 | 274 | 8942 |
| 30 | 965 | 564 | 2778 | 453 | 236 | 4996 | 177 | 217 | 1116 | 505 | 232 | 2247 |
| 31 | 19 | 0 | 11 | 4 | 34 | 68 | 28 | 0 | 338 | 37 | 30 | 433 |
| 32 | 53 | 88 | 23 | 2 | 80 | 246 | 26 | 89 | 7 | 47 | 76 | 245 |
| 33 | 830 | 409 | 1816 | 351 | 174 | 3580 | 44 | 48 | 988 | 444 | 199 | 1723 |
| 34 | 709 | 869 | 2448 | 1278 | 316 | 5620 | 407 | 1883 | 2337 | 1750 | 313 | 6690 |
| 35 | 187 | 360 | 626 | 261 | 499 | 1933 | 401 | 46 | 841 | 281 | 494 | 2063 |
| 36 | 346 | 384 | 1022 | 518 | 216 | 2486 | 342 | 1282 | 1372 | 873 | 238 | 4107 |
| 37 | 90 | 9 | 357 | 165 | 349 | 970 | 730 | 45 | 558 | 310 | 407 | 2050 |
| 38 | 751 | 488 | 2178 | 2028 | 737 | 6182 | 914 | 2802 | 5201 | 1749 | 628 | 11294 |
| 39 | 345 | 367 | 323 | 82 | 629 | 1746 | 82 | 21 | 318 | 244 | 608 | 1273 |
| 40 | 88 | 0 | 175 | 20 | 37 | 320 | 59 | 4 | 372 | 33 | 32 | 500 |
| 41 | 739 | 752 | 2838 | 969 | 165 | 5463 | 453 | 42 | 7351 | 769 | 189 | 8804 |
| 42 | 756 | 498 | 2077 | 450 | 165 | 3946 | 418 | 239 | 1343 | 657 | 179 | 2836 |
| 43 | 1278 | 1213 | 3937 | 807 | 290 | 7525 | 177 | 1176 | 1803 | 931 | 291 | 4378 |
| 44 | 331 | 44 | 591 | 125 | 48 | 1139 | 35 | 3 | 140 | 124 | 48 | 350 |
| 45 | 94 | 61 | 922 | 150 | 22 | 1249 | 74 | 0 | 68 | 69 | 21 | 232 |
| 46 | 703 | 497 | 3520 | 718 | 268 | 5706 | 98 | 46 | 2941 | 502 | 272 | 3859 |
| 47 | 1032 | 1124 | 3794 | 613 | 415 | 6978 | 151 | 1030 | 1688 | 940 | 414 | 4223 |
| 48 | 1367 | 1394 | 4031 | 408 | 696 | 7896 | 187 | 262 | 1574 | 693 | 676 | 3392 |
| 49 | 382 | 474 | 2143 | 155 | 90 | 3244 | 80 | 31 | 403 | 149 | 83 | 746 |
| 50 | 172 | 154 | 504 | 53 | 32 | 915 | 1 | 0 | 497 | 76 | 32 | 606 |
| 51 | 152 | 180 | 994 | 57 | 51 | 1434 | 2 | 0 | 65 | 39 | 59 | 165 |
| 52 | 74 | 106 | 1070 | 75 | 59 | 1384 | 39 | 0 | 559 | 183 | 65 | 846 |
| 53 | 1263 | 498 | 5052 | 456 | 233 | 7502 | 89 | 4 | 1585 | 472 | 220 | 2370 |
| 54 | 675 | 493 | 2351 | 258 | 338 | 4115 | 58 | 49 | 1288 | 337 | 325 | 2057 |
| 55 | 1187 | 921 | 2610 | 109 | 530 | 5357 | 42 | 0 | 898 | 254 | 539 | 1733 |
| 56 | 877 | 804 | 3564 | 596 | 229 | 6070 | 130 | 4 | 1841 | 628 | 244 | 2847 |
| 57 | 63 | 2 | 499 | 44 | 67 | 675 | 201 | 0 | 346 | 170 | 63 | 780 |
| 58 | 129 | 168 | 251 | 306 | 54 | 908 | 223 | 0 | 827 | 153 | 63 | 1266 |
| 59 | 79 | 84 | 717 | 56 | 328 | 1264 | 48 | 42 | 94 | 110 | 330 | 624 |
| 60 | 474 | 178 | 2574 | 1069 | 548 | 4843 | 950 | 1107 | 5498 | 1294 | 595 | 9444 |
| 61 | 734 | 416 | 2718 | 381 | 336 | 4585 | 345 | 147 | 1718 | 440 | 347 | 2997 |
| 62 | 773 | 574 | 5706 | 515 | 457 | 8025 | 384 | 133 | 3016 | 498 | 443 | 4474 |
| 63 | 216 | 159 | 1193 | 205 | 244 | 2017 | 941 | 25 | 280 | 228 | 194 | 1668 |
| 64 | 63 | 0 | 183 | 2 | 33 | 281 | 4 | 2 | 26 | 2 | 32 | 66 |
| 65 | 209 | 7 | 260 | 48 | 279 | 803 | 103 | 88 | 322 | 60 | 292 | 865 |
| 66 | 299 | 159 | 740 | 47 | 160 | 1405 | 74 | 8 | 541 | 67 | 155 | 845 |
| 67 | 24 | 84 | 217 | 105 | 33 | 463 | 13 | 0 | 602 | 0 | 17 | 632 |
| 68 | 366 | 318 | 747 | 175 | 204 | 1810 | 100 | 199 | 385 | 122 | 214 | 1020 |
| 69 | 130 | 4 | 326 | 23 | 7 | 490 | 0 | 22 | 5 | 0 | 7 | 34 |
| 70 | 13 | 0 | 10 | 0 | 48 | 71 | 7 | 41 | 46 | 42 | 58 | 194 |
| 71 | 0 | 0 | 2 | 21 | 37 | 60 | 0 | 0 | 93 | 0 | 38 | 131 |
| 72 | 19 | 10 | 8 | 117 | 106 | 260 | 88 | 0 | 60 | 86 | 118 | 352 |
| 73 | 13 | 0 | 11 | 96 | 57 | 177 | 173 | 127 | 196 | 57 | 58 | 611 |
| 74 | 8 | 3 | 7 | 54 | 19 | 91 | 0 | 20 | 121 | 0 | 18 | 159 |
| 75 | 208 | 343 | 388 | 20 | 304 | 1263 | 13 | 61 | 357 | 105 | 304 | 840 |
| 76 | 42 | 168 | 283 | 2 | 93 | 588 | 75 | 0 | 317 | 2 | 116 | 510 |
| 77 | 23 | 0 | 115 | 103 | 24 | 265 | 24 | 0 | 187 | 58 | 27 | 296 |

TABLE A-3

O-D SURVEY PERSON TRIP
PRODUCTIONS AND ATTRACTIONS

| CENTRCID | PRODUCTIONS | | | | | | ATTRACTIONS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | HB WORK | HB SHOP | HB OTHER | NHB | TRUCK | TOTAL | HB WORK | HB SHOP | HB OTHER | NHB | TRUCK | TOTAL |
| 78 | 13 | 81 | 38 | 0 | 16 | 148 | 29 | 0 | 49 | 0 | 6 | 84 |
| 79 | 23 | 61 | 31 | 0 | 29 | 144 | 0 | 0 | 4 | 0 | 28 | 32 |
| 80 | 11 | 73 | 20 | 0 | 50 | 154 | 1 | 0 | 0 | 0 | 36 | 37 |
| 81 | 86 | 81 | 185 | 0 | 12 | 364 | 0 | 0 | 44 | 46 | 10 | 100 |
| 82 | 147 | 356 | 682 | 96 | 69 | 1350 | 38 | 109 | 225 | 0 | 57 | 429 |
| 83 | 177 | 167 | 265 | 1350 | 461 | 2420 | 953 | 293 | 2980 | 1042 | 478 | 5746 |
| 84 | 96 | 73 | 127 | 3524 | 589 | 4409 | 1667 | 3088 | 5865 | 2892 | 643 | 14155 |
| 85 | 244 | 162 | 484 | 3266 | 759 | 4915 | 2351 | 2723 | 5352 | 3047 | 776 | 14249 |
| 86 | 269 | 279 | 873 | 495 | 298 | 2214 | 437 | 806 | 935 | 553 | 313 | 3044 |
| 87 | 164 | 121 | 526 | 338 | 394 | 1543 | 644 | 1 | 731 | 303 | 394 | 2073 |
| 88 | 924 | 1142 | 1653 | 447 | 276 | 4442 | 252 | 22 | 2317 | 511 | 271 | 3373 |
| 89 | 255 | 14 | 448 | 1013 | 522 | 2252 | 3252 | 0 | 1182 | 623 | 598 | 5655 |
| 90 | 92 | 13 | 67 | 645 | 411 | 1228 | 2294 | 16 | 899 | 270 | 442 | 3921 |
| 91 | 86 | 13 | 73 | 498 | 416 | 1086 | 1799 | 68 | 925 | 291 | 444 | 3527 |
| 92 | 95 | 8 | 57 | 531 | 553 | 1244 | 1930 | 3 | 433 | 257 | 589 | 3212 |
| 93 | 10 | 4 | 3 | 75 | 64 | 156 | 195 | 0 | 181 | 40 | 68 | 484 |
| 94 | 272 | 427 | 612 | 332 | 237 | 1880 | 345 | 24 | 687 | 208 | 237 | 1501 |
| 95 | 4 | 14 | 10 | 88 | 218 | 334 | 209 | 0 | 127 | 113 | 228 | 677 |
| 96 | 664 | 558 | 1111 | 1100 | 293 | 3726 | 1378 | 0 | 5075 | 1060 | 311 | 7824 |
| 97 | 981 | 497 | 3664 | 465 | 267 | 5874 | 207 | 408 | 1446 | 706 | 269 | 3036 |
| 98 | 577 | 864 | 2316 | 1618 | 269 | 5644 | 330 | 4433 | 1767 | 1868 | 264 | 8662 |
| 99 | 244 | 315 | 1672 | 159 | 145 | 2535 | 59 | 4 | 401 | 190 | 149 | 803 |
| 100 | 490 | 388 | 1013 | 140 | 163 | 2194 | 38 | 0 | 891 | 163 | 151 | 1243 |
| 101 | 1402 | 1503 | 5101 | 878 | 349 | 9233 | 497 | 115 | 2352 | 430 | 367 | 3761 |
| 102 | 487 | 792 | 2136 | 788 | 158 | 4361 | 344 | 22 | 4731 | 804 | 142 | 6043 |
| 103 | 592 | 421 | 1458 | 1551 | 288 | 4310 | 647 | 823 | 4662 | 1505 | 304 | 7941 |
| 104 | 801 | 706 | 2395 | 496 | 223 | 4621 | 140 | 23 | 1975 | 523 | 220 | 2881 |
| 105 | 874 | 902 | 3073 | 487 | 157 | 5493 | 155 | 134 | 1415 | 542 | 162 | 2408 |
| 106 | 1085 | 1223 | 3848 | 398 | 141 | 6695 | 306 | 43 | 1127 | 548 | 140 | 2164 |
| 107 | 1053 | 1092 | 2474 | 1050 | 364 | 6033 | 217 | 995 | 2612 | 1280 | 383 | 5487 |
| 108 | 95 | 62 | 952 | 110 | 75 | 1294 | 7 | 0 | 851 | 245 | 82 | 1185 |
| 109 | 751 | 735 | 1825 | 243 | 53 | 3607 | 5 | 14 | 362 | 348 | 61 | 790 |
| 110 | 439 | 509 | 1453 | 91 | 51 | 2543 | 26 | 0 | 343 | 169 | 38 | 576 |
| 111 | 318 | 316 | 660 | 196 | 217 | 1707 | 552 | 0 | 805 | 69 | 271 | 1697 |
| 112 | 472 | 375 | 634 | 411 | 211 | 2103 | 259 | 198 | 1152 | 610 | 230 | 2449 |
| 113 | 50 | 92 | 145 | 46 | 133 | 466 | 182 | 21 | 57 | 132 | 107 | 499 |
| 114 | 371 | 346 | 759 | 653 | 288 | 2417 | 603 | 468 | 1477 | 952 | 315 | 3815 |
| 115 | 615 | 910 | 2544 | 299 | 174 | 4542 | 76 | 44 | 585 | 259 | 171 | 1135 |
| 116 | 617 | 726 | 1734 | 92 | 105 | 3274 | 38 | 0 | 183 | 49 | 111 | 381 |
| 117 | 521 | 382 | 1866 | 154 | 211 | 3134 | 32 | 83 | 709 | 172 | 217 | 1213 |
| 118 | 797 | 1419 | 1637 | 296 | 175 | 4324 | 93 | 0 | 628 | 356 | 165 | 1242 |
| 119 | 295 | 495 | 481 | 285 | 134 | 1690 | 191 | 0 | 817 | 200 | 125 | 1333 |
| 120 | 555 | 641 | 2237 | 69 | 111 | 3613 | 31 | 0 | 345 | 183 | 99 | 658 |
| 121 | 764 | 494 | 1970 | 2046 | 392 | 5666 | 525 | 2087 | 2438 | 1820 | 392 | 7262 |
| 122 | 682 | 713 | 1521 | 6276 | 528 | 9720 | 1633 | 10551 | 11909 | 5444 | 531 | 30068 |
| 123 | 616 | 851 | 2127 | 490 | 290 | 4374 | 167 | 392 | 1055 | 691 | 306 | 2611 |
| 124 | 440 | 156 | 2020 | 2306 | 271 | 5193 | 229 | 3555 | 3170 | 2527 | 262 | 9743 |
| 125 | 193 | 409 | 370 | 33 | 79 | 1084 | 1 | 43 | 199 | 51 | 79 | 373 |
| 126 | 465 | 274 | 1192 | 140 | 198 | 2269 | 0 | 22 | 261 | 128 | 195 | 606 |
| 127 | 184 | 43 | 1589 | 48 | 51 | 1915 | 5 | 0 | 263 | 45 | 54 | 367 |
| 128 | 85 | 16 | 18 | 0 | 62 | 181 | 112 | 0 | 428 | 87 | 66 | 693 |
| 129 | 369 | 631 | 1855 | 126 | 88 | 3069 | 28 | 193 | 593 | 110 | 90 | 1014 |
| 130 | 361 | 354 | 1111 | 120 | 69 | 2015 | 128 | 0 | 366 | 116 | 67 | 677 |
| 131 | 192 | 536 | 811 | 77 | 77 | 1693 | 39 | 2 | 208 | 54 | 79 | 382 |
| 132 | 366 | 213 | 589 | 1595 | 198 | 2961 | 494 | 6364 | 1140 | 1759 | 210 | 9967 |
| 133 | 756 | 698 | 2558 | 134 | 154 | 4300 | 76 | 3 | 690 | 303 | 154 | 1226 |
| 134 | 299 | 197 | 1152 | 154 | 51 | 1853 | 34 | 106 | 777 | 231 | 56 | 1204 |
| 135 | 208 | 214 | 1300 | 276 | 180 | 2178 | 62 | 0 | 500 | 261 | 176 | 999 |
| 136 | 378 | 358 | 1362 | 75 | 54 | 2227 | 47 | 0 | 339 | 94 | 51 | 531 |
| 137 | 805 | 993 | 2829 | 761 | 254 | 5642 | 282 | 149 | 2342 | 550 | 291 | 3614 |
| 138 | 541 | 286 | 2035 | 1267 | 218 | 4347 | 322 | 2269 | 2718 | 1910 | 207 | 7426 |
| 139 | 216 | 339 | 970 | 73 | 178 | 1776 | 114 | 0 | 227 | 11 | 194 | 546 |
| 140 | 842 | 664 | 2884 | 305 | 140 | 4835 | 32 | 4 | 1004 | 236 | 138 | 1414 |
| 141 | 446 | 456 | 1261 | 298 | 170 | 2631 | 206 | 2 | 1169 | 384 | 172 | 1933 |
| 142 | 576 | 631 | 1468 | 65 | 149 | 2889 | 55 | 127 | 392 | 143 | 151 | 868 |
| 143 | 30 | 46 | 47 | 11 | 52 | 186 | 0 | 2 | 50 | 11 | 62 | 125 |
| 144 | 277 | 394 | 1447 | 129 | 94 | 2341 | 2 | 41 | 270 | 109 | 92 | 514 |
| 145 | 336 | 62 | 686 | 365 | 50 | 1499 | 104 | 62 | 754 | 333 | 54 | 1307 |
| 146 | 102 | 62 | 269 | 15 | 84 | 532 | 4 | 0 | 9 | 48 | 81 | 142 |
| 147 | 541 | 399 | 555 | 99 | 100 | 1694 | 1 | 0 | 331 | 184 | 95 | 611 |
| 148 | 705 | 371 | 1200 | 205 | 295 | 2776 | 94 | 0 | 681 | 183 | 298 | 1256 |
| 149 | 122 | 65 | 405 | 346 | 264 | 1202 | 479 | 4 | 2381 | 597 | 294 | 3755 |
| 150 | 393 | 422 | 1123 | 715 | 368 | 3021 | 190 | 159 | 2348 | 536 | 336 | 3569 |
| 151 | 149 | 121 | 246 | 489 | 191 | 1196 | 550 | 49 | 798 | 485 | 203 | 2085 |
| 152 | 455 | 553 | 1986 | 250 | 104 | 3348 | 208 | 597 | 1442 | 292 | 101 | 2640 |
| 153 | 646 | 666 | 1900 | 84 | 90 | 3386 | 47 | 84 | 227 | 87 | 83 | 528 |
| 154 | 98 | 324 | 643 | 13 | 94 | 1172 | 32 | 42 | 428 | 80 | 105 | 687 |

TABLE A-3

O-D SURVEY PERSON TRIP
PRODUCTIONS AND ATTRACTIONS

| CENTROID | PRODUCTIONS | | | | | | ATTRACTIONS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | HB WORK | HB SHOP | HB OTHER | NHB | TRUCK | TOTAL | HB WORK | HB SHOP | HB OTHER | NHB | TRUCK | TOTAL |
| 155 | 50 | 242 | 62 | 0 | 31 | 385 | 3 | 0 | 5 | 0 | 23 | 31 |
| 156 | 26 | 21 | 214 | 0 | 15 | 276 | 0 | 0 | 67 | 20 | 22 | 109 |
| 157 | 186 | 162 | 184 | 11 | 170 | 713 | 78 | 0 | 67 | 100 | 178 | 423 |
| 158 | 39 | 82 | 366 | 2 | 149 | 638 | 83 | 0 | 169 | 2 | 174 | 428 |
| 159 | 230 | 113 | 465 | 2293 | 530 | 3631 | 781 | 2461 | 2969 | 2252 | 536 | 8999 |
| 160 | 134 | 2 | 737 | 1061 | 443 | 2377 | 636 | 1461 | 1948 | 1366 | 454 | 5865 |
| 161 | 120 | 0 | 144 | 1089 | 431 | 1784 | 6262 | 0 | 807 | 444 | 523 | 8036 |
| 162 | 153 | 107 | 380 | 31 | 54 | 725 | 5 | 0 | 54 | 33 | 52 | 144 |
| 163 | 298 | 57 | 1676 | 497 | 347 | 2875 | 1819 | 42 | 855 | 352 | 383 | 3451 |
| 164 | 174 | 130 | 108 | 857 | 660 | 1929 | 6413 | 2 | 1462 | 692 | 792 | 9361 |
| 165 | 592 | 606 | 2315 | 344 | 554 | 4411 | 180 | 43 | 1434 | 670 | 567 | 2894 |
| 166 | 945 | 646 | 3006 | 500 | 352 | 5449 | 235 | 0 | 1593 | 422 | 347 | 2597 |
| 167 | 0 | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 2 | 0 | 0 | 2 |
| 168 | 373 | 281 | 990 | 509 | 203 | 2356 | 922 | 390 | 1021 | 457 | 208 | 2998 |
| 169 | 457 | 396 | 975 | 178 | 114 | 2120 | 34 | 5 | 507 | 82 | 110 | 738 |
| 170 | 1143 | 1523 | 3316 | 1001 | 525 | 7508 | 312 | 249 | 4361 | 1184 | 522 | 6628 |
| 171 | 953 | 671 | 3365 | 295 | 233 | 5517 | 48 | 1 | 2034 | 673 | 227 | 2983 |
| 172 | 734 | 741 | 2483 | 581 | 264 | 4803 | 87 | 151 | 2667 | 566 | 269 | 3740 |
| 173 | 505 | 380 | 2006 | 1033 | 436 | 4360 | 325 | 182 | 4712 | 933 | 449 | 6601 |
| 174 | 1301 | 822 | 3788 | 458 | 192 | 6561 | 55 | 43 | 979 | 420 | 183 | 1680 |
| 175 | 176 | 312 | 1373 | 2 | 95 | 1958 | 4 | 0 | 275 | 143 | 100 | 522 |
| 176 | 580 | 773 | 2138 | 682 | 428 | 4601 | 281 | 45 | 1218 | 493 | 402 | 2439 |
| 177 | 1404 | 1268 | 5782 | 1033 | 735 | 10222 | 207 | 1828 | 2482 | 1278 | 736 | 6531 |
| 178 | 267 | 171 | 453 | 608 | 142 | 1641 | 91 | 0 | 2914 | 463 | 132 | 3600 |
| 179 | 560 | 650 | 2103 | 746 | 421 | 4480 | 180 | 65 | 2248 | 664 | 446 | 3603 |
| 180 | 281 | 727 | 742 | 595 | 180 | 2525 | 227 | 149 | 2221 | 874 | 197 | 3668 |
| 181 | 258 | 305 | 948 | 916 | 427 | 2854 | 647 | 1441 | 2429 | 1354 | 449 | 6320 |
| 182 | 9 | 0 | 36 | 275 | 85 | 405 | 1183 | 0 | 176 | 24 | 66 | 1449 |
| 183 | 225 | 229 | 474 | 651 | 130 | 1709 | 79 | 1899 | 1039 | 572 | 126 | 3715 |
| 184 | 979 | 1204 | 4238 | 449 | 178 | 7048 | 116 | 43 | 1775 | 495 | 167 | 2596 |
| 185 | 701 | 528 | 2472 | 409 | 318 | 4428 | 63 | 0 | 2770 | 498 | 321 | 3652 |
| 186 | 141 | 90 | 545 | 183 | 97 | 1056 | 2 | 86 | 636 | 170 | 94 | 988 |
| 187 | 382 | 567 | 2257 | 259 | 166 | 3631 | 35 | 0 | 1586 | 512 | 154 | 2287 |
| 188 | 602 | 714 | 2460 | 130 | 207 | 4113 | 166 | 6 | 1271 | 263 | 165 | 1871 |
| 189 | 2 | 0 | 4 | 31 | 59 | 96 | 46 | 0 | 83 | 31 | 64 | 224 |
| 190 | 35 | 64 | 58 | 1 | 95 | 253 | 0 | 0 | 452 | 43 | 94 | 589 |
| 191 | 29 | 0 | 108 | 0 | 7 | 144 | 2 | 43 | 2 | 0 | 11 | 58 |
| 192 | 141 | 236 | 630 | 22 | 83 | 1112 | 2 | 0 | 72 | 12 | 90 | 176 |
| 193 | 199 | 257 | 254 | 541 | 40 | 1291 | 1696 | 0 | 515 | 277 | 42 | 2530 |
| 194 | 0 | 0 | 72 | 75 | 44 | 191 | 17 | 0 | 109 | 45 | 45 | 216 |
| 195 | 350 | 216 | 1308 | 163 | 76 | 2113 | 68 | 0 | 733 | 166 | 75 | 1042 |
| 196 | 1190 | 1359 | 5093 | 711 | 335 | 8688 | 179 | 431 | 2598 | 547 | 354 | 4109 |
| 197 | 489 | 765 | 2477 | 532 | 170 | 4433 | 133 | 679 | 2473 | 661 | 194 | 4140 |
| 198 | 239 | 243 | 1082 | 37 | 188 | 1789 | 38 | 0 | 506 | 11 | 142 | 697 |
| 199 | 92 | 86 | 122 | 0 | 10 | 310 | 0 | 2 | 1 | 32 | 10 | 45 |
| 200 | 23 | 43 | 23 | 0 | 1 | 90 | 0 | 0 | 0 | 0 | 7 | 7 |
| 201 | 79 | 43 | 443 | 0 | 10 | 575 | 46 | 0 | 242 | 0 | 10 | 298 |
| 202 | 0 | 0 | 98 | 0 | 7 | 105 | 6 | 0 | 5 | 0 | 8 | 19 |
| 203 | 290 | 214 | 1235 | 77 | 75 | 1891 | 29 | 0 | 214 | 0 | 95 | 338 |
| 204 | 76 | 42 | 607 | 98 | 68 | 891 | 118 | 42 | 204 | 195 | 83 | 642 |
| 205 | 555 | 332 | 2534 | 156 | 66 | 3643 | 25 | 0 | 882 | 158 | 66 | 1131 |
| 206 | 3 | 15 | 0 | 0 | 7 | 25 | 3 | 0 | 0 | 0 | 14 | 17 |
| 207 | 272 | 367 | 729 | 86 | 144 | 1598 | 128 | 1 | 361 | 42 | 145 | 677 |
| 208 | 25 | 0 | 4 | 11 | 22 | 62 | 27 | 81 | 0 | 12 | 21 | 141 |
| 209 | 35 | 21 | 133 | 0 | 0 | 189 | 3 | 0 | 92 | 0 | 6 | 101 |
| 210 | 405 | 582 | 1987 | 495 | 162 | 3631 | 52 | 312 | 1827 | 713 | 151 | 3055 |
| 211 | 125 | 85 | 599 | 130 | 0 | 939 | 0 | 0 | 618 | 0 | 0 | 618 |
| 212 | 159 | 214 | 1123 | 107 | 33 | 1636 | 45 | 0 | 166 | 108 | 33 | 352 |
| 213 | 24 | 0 | 4 | 0 | 5 | 33 | 1 | 2 | 3 | 0 | 11 | 17 |
| 214 | 333 | 376 | 1485 | 11 | 62 | 2267 | 43 | 153 | 944 | 87 | 73 | 1300 |
| 215 | 392 | 66 | 635 | 43 | 253 | 1389 | 229 | 121 | 1413 | 60 | 283 | 2106 |
| 216 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 42 | 135 | 0 | 0 | 177 |
| 217 | 10 | 46 | 14 | 0 | 10 | 80 | 5 | 0 | 6 | 0 | 5 | 16 |
| 218 | 45 | 52 | 69 | 1076 | 126 | 1368 | 739 | 4989 | 2151 | 1447 | 117 | 9443 |
| 219 | 669 | 222 | 1192 | 433 | 228 | 2744 | 624 | 95 | 1386 | 392 | 202 | 2699 |
| 220 | 1331 | 1078 | 3961 | 614 | 678 | 7662 | 417 | 588 | 1183 | 589 | 678 | 3455 |
| 221 | 690 | 693 | 2159 | 478 | 429 | 4449 | 133 | 76 | 1986 | 338 | 431 | 2964 |
| 222 | 39 | 21 | 71 | 10 | 15 | 156 | 26 | 0 | 91 | 29 | 14 | 160 |
| 223 | 959 | 636 | 1945 | 198 | 196 | 3934 | 353 | 427 | 746 | 334 | 170 | 2030 |
| 224 | 512 | 370 | 895 | 174 | 119 | 2070 | 153 | 6 | 750 | 152 | 135 | 1196 |
| 225 | 1098 | 615 | 1898 | 697 | 320 | 4628 | 574 | 730 | 1847 | 664 | 288 | 4103 |
| 226 | 290 | 57 | 314 | 1409 | 587 | 2657 | 2284 | 797 | 2970 | 1459 | 544 | 8054 |
| 227 | 590 | 213 | 1377 | 414 | 170 | 2764 | 231 | 549 | 1309 | 569 | 169 | 2827 |
| 228 | 113 | 18 | 115 | 339 | 172 | 757 | 2031 | 312 | 485 | 294 | 214 | 3336 |
| 229 | 750 | 679 | 1708 | 497 | 276 | 3910 | 355 | 348 | 1250 | 550 | 260 | 2763 |
| 230 | 151 | 18 | 629 | 51 | 120 | 969 | 244 | 37 | 161 | 98 | 122 | 662 |
| 231 | 424 | 289 | 613 | 53 | 122 | 1501 | 150 | 11 | 187 | 85 | 112 | 545 |

TABLE A-3

O-D SURVEY PERSON TRIP
PRODUCTIONS AND ATTRACTIONS

| CENTROID | PRODUCTIONS | | | | | | ATTRACTIONS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | HB WORK | HB SHOP | HB OTHER | NHB | TRUCK | TOTAL | HB WORK | HB SHOP | HB OTHER | NHB | TRUCK | TOTAL |
| 232 | 948 | 993 | 1710 | 111 | 163 | 3925 | 104 | 288 | 402 | 193 | 162 | 1149 |
| 233 | 35 | 6 | 77 | 27 | 1 | 146 | 55 | 0 | 103 | 19 | 1 | 178 |
| 234 | 571 | 380 | 1032 | 115 | 99 | 2197 | 56 | 2 | 635 | 225 | 78 | 996 |
| 235 | 1163 | 986 | 2330 | 161 | 111 | 4751 | 146 | 8 | 848 | 230 | 115 | 1347 |
| 236 | 707 | 645 | 2018 | 334 | 143 | 3847 | 103 | 42 | 785 | 337 | 139 | 1406 |
| 237 | 602 | 449 | 1345 | 451 | 197 | 3044 | 361 | 708 | 703 | 472 | 199 | 2443 |
| 238 | 1 | 0 | 87 | 11 | 0 | 99 | 0 | 0 | 65 | 11 | 0 | 76 |
| 239 | 253 | 90 | 409 | 4 | 56 | 812 | 214 | 32 | 149 | 27 | 56 | 478 |
| 240 | 264 | 90 | 239 | 306 | 243 | 1142 | 4790 | 3 | 523 | 257 | 298 | 5871 |
| 241 | 76 | 21 | 109 | 401 | 442 | 1049 | 2053 | 23 | 802 | 302 | 460 | 3640 |
| 242 | 730 | 128 | 1238 | 5296 | 1638 | 9030 | 9826 | 4421 | 12829 | 4441 | 1627 | 33144 |
| 243 | 255 | 42 | 362 | 1215 | 415 | 2289 | 1819 | 4021 | 2975 | 1329 | 407 | 10551 |
| 244 | 346 | 24 | 604 | 1129 | 620 | 2723 | 3069 | 538 | 4494 | 1057 | 663 | 9821 |
| 245 | 190 | 16 | 135 | 784 | 210 | 1335 | 690 | 613 | 3458 | 661 | 198 | 5620 |
| 246 | 407 | 50 | 421 | 1183 | 412 | 2473 | 1058 | 2653 | 1459 | 1201 | 454 | 6825 |
| 247 | 289 | 67 | 607 | 395 | 431 | 1789 | 797 | 200 | 1448 | 445 | 412 | 3302 |
| 248 | 73 | 5 | 82 | 306 | 295 | 761 | 586 | 65 | 516 | 348 | 305 | 1820 |
| 249 | 804 | 125 | 1358 | 584 | 440 | 3311 | 750 | 256 | 1051 | 663 | 397 | 3117 |
| 250 | 1208 | 569 | 1817 | 503 | 555 | 4652 | 1156 | 189 | 1343 | 415 | 549 | 3652 |
| 251 | 81 | 0 | 93 | 351 | 358 | 883 | 3137 | 59 | 910 | 271 | 488 | 4865 |
| 252 | 317 | 273 | 531 | 1284 | 612 | 3017 | 2676 | 2384 | 3797 | 1293 | 667 | 10817 |
| 253 | 92 | 83 | 204 | 164 | 167 | 710 | 463 | 125 | 221 | 105 | 126 | 1040 |
| 254 | 1380 | 1055 | 3436 | 545 | 422 | 6838 | 230 | 536 | 1483 | 745 | 408 | 3402 |
| 255 | 1268 | 488 | 2392 | 530 | 216 | 4894 | 367 | 113 | 1828 | 534 | 207 | 3049 |
| 256 | 911 | 475 | 1887 | 282 | 250 | 3805 | 434 | 86 | 1310 | 366 | 257 | 2453 |
| 257 | 1170 | 569 | 2020 | 690 | 443 | 4892 | 480 | 153 | 1632 | 674 | 455 | 3394 |
| 258 | 712 | 517 | 1753 | 170 | 176 | 3328 | 118 | 22 | 615 | 172 | 197 | 1124 |
| 259 | 356 | 192 | 613 | 296 | 164 | 1621 | 237 | 76 | 2475 | 370 | 160 | 3318 |
| 260 | 1177 | 533 | 2691 | 999 | 424 | 5824 | 192 | 80 | 3156 | 964 | 432 | 4824 |
| 261 | 1919 | 1077 | 4311 | 2043 | 891 | 10241 | 1267 | 1849 | 4575 | 2107 | 848 | 10646 |
| 262 | 1365 | 659 | 1983 | 363 | 187 | 4557 | 188 | 17 | 1298 | 343 | 162 | 2008 |
| 263 | 1858 | 942 | 3262 | 473 | 272 | 6807 | 196 | 127 | 1266 | 484 | 248 | 2321 |
| 264 | 1078 | 685 | 2832 | 695 | 407 | 5697 | 420 | 191 | 2275 | 519 | 366 | 3771 |
| 265 | 1427 | 634 | 2228 | 963 | 470 | 5722 | 790 | 1402 | 2345 | 1270 | 475 | 6282 |
| 266 | 1222 | 775 | 2448 | 804 | 365 | 5614 | 700 | 87 | 2111 | 665 | 332 | 3895 |
| 267 | 1011 | 606 | 2083 | 433 | 244 | 4377 | 444 | 70 | 907 | 408 | 239 | 2068 |
| 268 | 1737 | 895 | 2404 | 1384 | 678 | 7098 | 614 | 2509 | 3396 | 1460 | 663 | 8642 |
| 269 | 1928 | 722 | 2884 | 1521 | 620 | 7675 | 2226 | 121 | 4262 | 1412 | 625 | 8646 |
| 270 | 184 | 18 | 182 | 350 | 150 | 884 | 1142 | 35 | 829 | 203 | 146 | 2355 |
| 271 | 1689 | 583 | 3544 | 406 | 219 | 6441 | 170 | 122 | 874 | 541 | 225 | 1932 |
| 272 | 1512 | 734 | 2510 | 469 | 124 | 5349 | 261 | 72 | 957 | 369 | 101 | 1760 |
| 273 | 1345 | 479 | 2464 | 308 | 359 | 4955 | 235 | 473 | 1423 | 521 | 346 | 2998 |
| 274 | 797 | 272 | 1215 | 266 | 214 | 2764 | 225 | 156 | 818 | 205 | 181 | 1585 |
| 275 | 1114 | 580 | 1709 | 972 | 249 | 4624 | 1042 | 127 | 2734 | 855 | 252 | 5010 |
| 276 | 1569 | 807 | 2804 | 347 | 619 | 6146 | 101 | 300 | 1069 | 298 | 617 | 2385 |
| 277 | 1535 | 891 | 3235 | 524 | 344 | 6529 | 103 | 4 | 1634 | 464 | 331 | 2536 |
| 278 | 344 | 326 | 767 | 1020 | 330 | 2787 | 924 | 857 | 3044 | 1193 | 314 | 6332 |
| 279 | 1031 | 559 | 2608 | 864 | 431 | 5493 | 404 | 389 | 2284 | 1061 | 424 | 4562 |
| 280 | 915 | 967 | 2109 | 855 | 430 | 5276 | 279 | 185 | 3126 | 790 | 432 | 4812 |
| 281 | 1541 | 764 | 2872 | 344 | 136 | 5657 | 202 | 46 | 984 | 325 | 126 | 1683 |
| 282 | 763 | 618 | 1884 | 496 | 123 | 3884 | 407 | 100 | 1343 | 435 | 112 | 2397 |
| 283 | 756 | 679 | 1432 | 907 | 109 | 3883 | 1043 | 4 | 2163 | 637 | 112 | 3959 |
| 284 | 1416 | 1276 | 2922 | 398 | 134 | 6146 | 209 | 211 | 1057 | 546 | 121 | 2144 |
| 285 | 15 | 25 | 41 | 742 | 88 | 911 | 643 | 3618 | 1105 | 912 | 89 | 6367 |
| 286 | 609 | 355 | 1744 | 100 | 147 | 2955 | 146 | 56 | 383 | 161 | 116 | 862 |
| 287 | 1294 | 547 | 1812 | 100 | 185 | 3938 | 140 | 46 | 574 | 117 | 159 | 1036 |
| 288 | 1450 | 1039 | 3359 | 632 | 427 | 6907 | 2020 | 262 | 1711 | 716 | 417 | 5126 |
| 289 | 1108 | 823 | 1966 | 441 | 302 | 4640 | 225 | 1055 | 599 | 502 | 290 | 2671 |
| 290 | 390 | 178 | 501 | 56 | 32 | 1157 | 32 | 19 | 196 | 71 | 33 | 351 |
| TOT | 145935 | 111848 | 392575 | 146558 | 69023 | 865939 | 156397 | 116218 | 393564 | 146549 | 69674 | 882402 |

TABLE A-4



LAND ACTIVITY DATA

| CENTROID | POPULATION | DWELLING UNITS | CARS OWNED | EMPLOYED RESIDENTS | EMPLOYMENT | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | RETAIL | MANUF | OTHER | TOTAL |
| 1 | 161 | 69 | 46 | 69 | 165 | 280 | 1559 | 2004 |
| 2 | 299 | 196 | 92 | 104 | 560 | 161 | 1268 | 1989 |
| 3 | 219 | 81 | 23 | 81 | 97 | 320 | 242 | 659 |
| 4 | 0 | 0 | 0 | 0 | 58 | 0 | 26 | 84 |
| 5 | 46 | 35 | 12 | 12 | 195 | 0 | 124 | 319 |
| 6 | 23 | 12 | 0 | 0 | 32 | 19 | 52 | 103 |
| 7 | 0 | 0 | 0 | 0 | 0 | 4956 | 1790 | 6746 |
| 8 | 370 | 213 | 146 | 179 | 54 | 0 | 1000 | 1054 |
| 9 | 762 | 224 | 224 | 235 | 3 | 0 | 79 | 82 |
| 10 | 1176 | 414 | 381 | 370 | 113 | 0 | 31 | 144 |
| 11 | 515 | 179 | 146 | 134 | 1 | 100 | 9 | 110 |
| 12 | 1008 | 302 | 314 | 336 | 0 | 142 | 7 | 149 |
| 13 | 0 | 0 | 0 | 0 | 80 | 932 | 105 | 1117 |
| 14 | 190 | 67 | 56 | 78 | 3 | 4359 | 45 | 4407 |
| 15 | 1131 | 250 | 238 | 262 | 14 | 358 | 85 | 457 |
| 16 | 1523 | 559 | 405 | 405 | 28 | 172 | 171 | 371 |
| 17 | 2380 | 762 | 607 | 726 | 36 | 26 | 142 | 204 |
| 18 | 2269 | 752 | 638 | 730 | 0 | 1594 | 88 | 1682 |
| 19 | 1117 | 319 | 251 | 331 | 18 | 0 | 42 | 60 |
| 20 | 1936 | 638 | 660 | 704 | 66 | 25 | 37 | 128 |
| 21 | 1606 | 484 | 605 | 550 | 0 | 0 | 29 | 29 |
| 22 | 1573 | 599 | 514 | 556 | 12 | 0 | 76 | 88 |
| 23 | 2097 | 599 | 556 | 632 | 15 | 0 | 19 | 34 |
| 24 | 653 | 193 | 225 | 171 | 8 | 0 | 6 | 14 |
| 25 | 1616 | 482 | 524 | 439 | 29 | 0 | 62 | 91 |
| 26 | 593 | 182 | 182 | 217 | 9 | 0 | 747 | 756 |
| 27 | 559 | 205 | 228 | 217 | 0 | 21 | 7 | 28 |
| 28 | 1402 | 456 | 547 | 456 | 95 | 0 | 72 | 167 |
| 29 | 2189 | 627 | 707 | 673 | 16 | 0 | 131 | 147 |
| 30 | 1459 | 547 | 638 | 467 | 28 | 0 | 13 | 41 |
| 31 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 8 |
| 32 | 89 | 33 | 33 | 22 | 0 | 0 | 35 | 35 |
| 33 | 1243 | 400 | 455 | 522 | 3 | 17 | 0 | 20 |
| 34 | 1421 | 455 | 466 | 500 | 117 | 0 | 58 | 175 |
| 35 | 522 | 144 | 189 | 144 | 26 | 59 | 562 | 647 |
| 36 | 533 | 155 | 233 | 222 | 106 | 9 | 59 | 174 |
| 37 | 225 | 75 | 54 | 54 | 0 | 111 | 276 | 387 |
| 38 | 1017 | 375 | 449 | 417 | 139 | 256 | 129 | 524 |
| 39 | 428 | 150 | 182 | 193 | 26 | 0 | 0 | 26 |
| 40 | 43 | 21 | 32 | 32 | 12 | 0 | 0 | 12 |
| 41 | 1220 | 443 | 497 | 378 | 6 | 0 | 207 | 213 |
| 42 | 1048 | 421 | 572 | 432 | 2 | 94 | 17 | 113 |
| 43 | 2171 | 702 | 896 | 799 | 137 | 0 | 70 | 207 |
| 44 | 248 | 108 | 162 | 151 | 0 | 0 | 3 | 3 |
| 45 | 248 | 43 | 76 | 43 | 0 | 0 | 46 | 46 |
| 46 | 1134 | 302 | 454 | 356 | 0 | 0 | 56 | 56 |
| 47 | 1824 | 638 | 752 | 684 | 4 | 0 | 63 | 67 |
| 48 | 2269 | 775 | 946 | 809 | 11 | 0 | 36 | 47 |
| 49 | 661 | 182 | 308 | 217 | 0 | 0 | 25 | 25 |
| 50 | 308 | 80 | 103 | 80 | 0 | 0 | 0 | 0 |
| 51 | 353 | 91 | 182 | 125 | 0 | 0 | 0 | 0 |
| 52 | 205 | 57 | 103 | 46 | 0 | 0 | 0 | 0 |
| 53 | 1733 | 467 | 775 | 581 | 0 | 0 | 13 | 13 |
| 54 | 1071 | 286 | 547 | 380 | 0 | 0 | 24 | 24 |
| 55 | 1559 | 452 | 714 | 631 | 0 | 0 | 46 | 46 |
| 56 | 1299 | 366 | 588 | 500 | 3 | 0 | 33 | 36 |
| 57 | 44 | 11 | 33 | 11 | 0 | 0 | 5 | 5 |
| 58 | 211 | 78 | 133 | 122 | 0 | 0 | 44 | 44 |
| 59 | 100 | 22 | 22 | 33 | 0 | 0 | 0 | 0 |
| 60 | 821 | 244 | 244 | 255 | 150 | 153 | 73 | 376 |
| 61 | 1121 | 377 | 466 | 433 | 58 | 0 | 13 | 71 |
| 62 | 1399 | 366 | 466 | 422 | 7 | 41 | 103 | 151 |
| 63 | 389 | 122 | 122 | 122 | 9 | 0 | 690 | 699 |
| 64 | 189 | 44 | 67 | 56 | 0 | 0 | 3 | 3 |
| 65 | 178 | 33 | 56 | 33 | 0 | 0 | 3 | 3 |
| 66 | 533 | 133 | 178 | 189 | 0 | 0 | 8 | 8 |
| 67 | 144 | 33 | 44 | 33 | 0 | 0 | 0 | 0 |
| 68 | 677 | 167 | 255 | 200 | 0 | 0 | 14 | 14 |
| 69 | 161 | 32 | 43 | 68 | 0 | 0 | 0 | 0 |
| 70 | 0 | 0 | 0 | 0 | 0 | 111 | 0 | 111 |
| 71 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 72 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 13 |
| 73 | 0 | 0 | 0 | 0 | 4 | 0 | 31 | 35 |

LAND ACTIVITY DATA

| CENTRCID | POPULATION | DWELLING UNITS | CARS OWNED | EMPLOYED RESIDENTS | EMPLOYMENT | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | RETAIL | MANUF | OTHER | TOTAL |
| 74 | 0 | 0 | 0 | 0 | 0 | 0 | 76 | 76 |
| 75 | 375 | 128 | 128 | 170 | 0 | 0 | 10 | 10 |
| 76 | 150 | 43 | 75 | 57 | 0 | 0 | 0 | 0 |
| 77 | 21 | 11 | 11 | 11 | 0 | 0 | 0 | 0 |
| 78 | 86 | 32 | 43 | 23 | 0 | 0 | 0 | 0 |
| 79 | 86 | 11 | 21 | 11 | 0 | 0 | 0 | 0 |
| 80 | 118 | 32 | 43 | 34 | 0 | 0 | 0 | 0 |
| 81 | 193 | 43 | 54 | 45 | 0 | 0 | 0 | 0 |
| 82 | 300 | 64 | 118 | 79 | 20 | 0 | 0 | 20 |
| 83 | 226 | 143 | 48 | 48 | 145 | 19 | 517 | 681 |
| 84 | 107 | 83 | 24 | 36 | 381 | 5 | 409 | 795 |
| 85 | 167 | 119 | 107 | 71 | 461 | 173 | 824 | 1458 |
| 86 | 690 | 190 | 179 | 190 | 116 | 0 | 364 | 480 |
| 87 | 345 | 119 | 95 | 71 | 22 | 145 | 112 | 279 |
| 88 | 2202 | 655 | 559 | 631 | 16 | 0 | 83 | 99 |
| 89 | 452 | 119 | 95 | 131 | 0 | 1720 | 60 | 1780 |
| 90 | 12 | 12 | 12 | 12 | 0 | 976 | 233 | 1209 |
| 91 | 83 | 24 | 0 | 12 | 12 | 761 | 258 | 1031 |
| 92 | 0 | 0 | 0 | 0 | 0 | 1286 | 296 | 1582 |
| 93 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 94 | 476 | 179 | 143 | 179 | 2 | 0 | 304 | 306 |
| 95 | 0 | 0 | 0 | 0 | 42 | 82 | 77 | 201 |
| 96 | 1032 | 420 | 372 | 419 | 11 | 165 | 941 | 1117 |
| 97 | 1440 | 564 | 588 | 516 | 23 | 0 | 28 | 51 |
| 98 | 1236 | 420 | 552 | 408 | 83 | 0 | 8 | 91 |
| 99 | 696 | 252 | 276 | 216 | 0 | 0 | 13 | 13 |
| 100 | 838 | 319 | 283 | 307 | 18 | 0 | 3 | 21 |
| 101 | 2419 | 814 | 850 | 861 | 21 | 0 | 190 | 211 |
| 102 | 1074 | 389 | 472 | 448 | 0 | 0 | 144 | 144 |
| 103 | 1038 | 378 | 366 | 354 | 116 | 53 | 193 | 362 |
| 104 | 1192 | 378 | 496 | 496 | 39 | 0 | 61 | 100 |
| 105 | 1676 | 472 | 614 | 566 | 0 | 0 | 24 | 24 |
| 106 | 2029 | 604 | 752 | 604 | 0 | 0 | 29 | 29 |
| 107 | 1778 | 604 | 775 | 559 | 77 | 0 | 37 | 114 |
| 108 | 231 | 55 | 88 | 77 | 3 | 0 | 3 | 6 |
| 109 | 1474 | 374 | 506 | 363 | 0 | 0 | 0 | 0 |
| 110 | 880 | 264 | 308 | 253 | 0 | 0 | 16 | 16 |
| 111 | 580 | 209 | 220 | 232 | 0 | 208 | 62 | 270 |
| 112 | 568 | 209 | 220 | 220 | 72 | 46 | 187 | 305 |
| 113 | 93 | 46 | 46 | 35 | 0 | 24 | 65 | 89 |
| 114 | 522 | 197 | 244 | 244 | 64 | 183 | 92 | 339 |
| 115 | 1353 | 396 | 561 | 440 | 38 | 0 | 37 | 75 |
| 116 | 1210 | 352 | 407 | 352 | 0 | 0 | 15 | 15 |
| 117 | 1012 | 308 | 440 | 310 | 0 | 0 | 17 | 17 |
| 118 | 1067 | 297 | 440 | 396 | 0 | 55 | 12 | 67 |
| 119 | 539 | 154 | 209 | 154 | 0 | 0 | 70 | 70 |
| 120 | 803 | 209 | 374 | 330 | 0 | 0 | 15 | 15 |
| 121 | 1166 | 492 | 503 | 421 | 100 | 0 | 87 | 187 |
| 122 | 813 | 246 | 342 | 310 | 283 | 12 | 342 | 637 |
| 123 | 1091 | 353 | 471 | 375 | 18 | 0 | 32 | 50 |
| 124 | 856 | 321 | 417 | 289 | 184 | 0 | 44 | 228 |
| 125 | 268 | 75 | 128 | 90 | 8 | 0 | 8 | 16 |
| 126 | 728 | 182 | 310 | 294 | 0 | 25 | 12 | 37 |
| 127 | 332 | 96 | 161 | 147 | 0 | 0 | 13 | 13 |
| 128 | 118 | 43 | 86 | 68 | 0 | 0 | 3 | 3 |
| 129 | 633 | 192 | 271 | 271 | 7 | 0 | 12 | 19 |
| 130 | 531 | 158 | 237 | 192 | 0 | 0 | 17 | 17 |
| 131 | 396 | 124 | 203 | 102 | 0 | 0 | 0 | 0 |
| 132 | 633 | 181 | 237 | 181 | 326 | 0 | 49 | 375 |
| 133 | 1130 | 418 | 497 | 441 | 2 | 5 | 68 | 75 |
| 134 | 384 | 136 | 249 | 170 | 20 | 0 | 30 | 50 |
| 135 | 350 | 113 | 203 | 90 | 0 | 0 | 4 | 4 |
| 136 | 512 | 174 | 229 | 196 | 0 | 0 | 0 | 0 |
| 137 | 1733 | 545 | 556 | 493 | 21 | 0 | 84 | 105 |
| 138 | 970 | 316 | 327 | 283 | 152 | 11 | 45 | 208 |
| 139 | 491 | 142 | 207 | 153 | 22 | 0 | 10 | 32 |
| 140 | 1264 | 425 | 556 | 512 | 0 | 0 | 21 | 21 |
| 141 | 491 | 185 | 349 | 203 | 120 | 5 | 13 | 138 |
| 142 | 959 | 283 | 392 | 362 | 0 | 6 | 17 | 23 |
| 143 | 44 | 22 | 22 | 11 | 0 | 9 | 21 | 30 |
| 144 | 785 | 229 | 283 | 249 | 0 | 0 | 4 | 4 |
| 145 | 403 | 120 | 142 | 158 | 38 | 0 | 0 | 38 |
| 146 | 207 | 55 | 65 | 68 | 0 | 5 | 0 | 5 |

LAND ACTIVITY DATA

| CENTROID | POPULATION | DWELLING UNITS | CARS OWNED | EMPLOYED RESIDENTS | EMPLOYMENT | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | RETAIL | MANUF | OTHER | TOTAL |
| 147 | 621 | 185 | 294 | 283 | 0 | 0 | 4 | 4 |
| 148 | 1316 | 300 | 417 | 384 | 13 | 0 | 9 | 22 |
| 149 | 161 | 43 | 43 | 45 | 80 | 0 | 99 | 179 |
| 150 | 621 | 171 | 225 | 215 | 11 | 13 | 25 | 49 |
| 151 | 118 | 54 | 75 | 57 | 99 | 0 | 8 | 107 |
| 152 | 963 | 257 | 353 | 316 | 0 | 0 | 58 | 58 |
| 153 | 1584 | 407 | 514 | 554 | 0 | 0 | 0 | 0 |
| 154 | 310 | 75 | 139 | 90 | 0 | 0 | 0 | 0 |
| 155 | 107 | 32 | 32 | 12 | 0 | 0 | 0 | 0 |
| 156 | 75 | 21 | 32 | 34 | 0 | 0 | 0 | 0 |
| 157 | 289 | 75 | 107 | 113 | 0 | 0 | 0 | 0 |
| 158 | 86 | 43 | 43 | 12 | 0 | 0 | 18 | 18 |
| 159 | 328 | 136 | 90 | 192 | 212 | 24 | 116 | 352 |
| 160 | 418 | 158 | 90 | 124 | 112 | 1 | 231 | 344 |
| 161 | 0 | 0 | 0 | 0 | 42 | 4106 | 11 | 4159 |
| 162 | 260 | 57 | 79 | 102 | 0 | 0 | 0 | 0 |
| 163 | 554 | 215 | 260 | 226 | 4 | 948 | 143 | 1095 |
| 164 | 271 | 79 | 68 | 90 | 1 | 3954 | 34 | 3989 |
| 165 | 1887 | 531 | 486 | 531 | 13 | 61 | 41 | 115 |
| 166 | 2113 | 554 | 610 | 622 | 12 | 36 | 87 | 135 |
| 167 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 168 | 678 | 237 | 203 | 271 | 0 | 0 | 675 | 675 |
| 169 | 633 | 181 | 249 | 192 | 0 | 0 | 3 | 3 |
| 170 | 2011 | 644 | 712 | 735 | 35 | 30 | 243 | 308 |
| 171 | 1333 | 373 | 531 | 486 | 13 | 0 | 51 | 64 |
| 172 | 1141 | 339 | 452 | 452 | 4 | 0 | 46 | 50 |
| 173 | 802 | 260 | 373 | 373 | 103 | 0 | 156 | 259 |
| 174 | 1989 | 565 | 836 | 757 | 0 | 0 | 21 | 21 |
| 175 | 339 | 90 | 124 | 124 | 0 | 0 | 0 | 0 |
| 176 | 1266 | 339 | 463 | 452 | 0 | 13 | 26 | 39 |
| 177 | 2769 | 689 | 994 | 994 | 41 | 0 | 148 | 189 |
| 178 | 429 | 124 | 203 | 136 | 0 | 0 | 50 | 50 |
| 179 | 757 | 226 | 328 | 249 | 9 | 0 | 62 | 71 |
| 180 | 735 | 215 | 226 | 203 | 47 | 2 | 8 | 57 |
| 181 | 407 | 147 | 147 | 147 | 107 | 23 | 73 | 203 |
| 182 | 0 | 0 | 0 | 0 | 0 | 0 | 1550 | 1550 |
| 183 | 226 | 79 | 68 | 90 | 38 | 0 | 0 | 38 |
| 184 | 1492 | 418 | 644 | 576 | 0 | 0 | 17 | 17 |
| 185 | 1187 | 328 | 429 | 350 | 7 | 0 | 46 | 53 |
| 186 | 294 | 79 | 90 | 90 | 6 | 0 | 0 | 6 |
| 187 | 927 | 226 | 396 | 373 | 0 | 0 | 31 | 31 |
| 188 | 1119 | 260 | 350 | 328 | 15 | 16 | 16 | 47 |
| 189 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 190 | 57 | 23 | 45 | 23 | 0 | 0 | 2 | 2 |
| 191 | 34 | 11 | 11 | 11 | 0 | 0 | 0 | 0 |
| 192 | 509 | 90 | 124 | 90 | 0 | 0 | 13 | 13 |
| 193 | 373 | 102 | 147 | 124 | 0 | 924 | 1 | 925 |
| 194 | 34 | 23 | 23 | 11 | 24 | 0 | 0 | 24 |
| 195 | 655 | 181 | 249 | 181 | 0 | 0 | 0 | 0 |
| 196 | 2870 | 757 | 983 | 938 | 12 | 0 | 10 | 22 |
| 197 | 1141 | 249 | 339 | 316 | 9 | 6 | 30 | 45 |
| 198 | 509 | 136 | 249 | 170 | 0 | 0 | 0 | 0 |
| 199 | 203 | 45 | 68 | 79 | 0 | 0 | 0 | 0 |
| 200 | 57 | 23 | 34 | 23 | 0 | 0 | 0 | 0 |
| 201 | 215 | 45 | 68 | 68 | 0 | 0 | 0 | 0 |
| 202 | 34 | 11 | 11 | 11 | 0 | 0 | 10 | 10 |
| 203 | 622 | 158 | 215 | 170 | 0 | 0 | 0 | 0 |
| 204 | 181 | 45 | 57 | 57 | 0 | 0 | 2 | 2 |
| 205 | 1300 | 316 | 463 | 384 | 0 | 0 | 0 | 0 |
| 206 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 207 | 531 | 147 | 181 | 136 | 0 | 0 | 5 | 5 |
| 208 | 23 | 11 | 11 | 0 | 0 | 0 | 0 | 0 |
| 209 | 34 | 11 | 23 | 34 | 0 | 0 | 0 | 0 |
| 210 | 1074 | 260 | 362 | 294 | 0 | 4 | 25 | 29 |
| 211 | 237 | 79 | 113 | 136 | 0 | 0 | 0 | 0 |
| 212 | 463 | 113 | 170 | 136 | 0 | 0 | 0 | 0 |
| 213 | 90 | 11 | 11 | 11 | 0 | 0 | 0 | 0 |
| 214 | 735 | 215 | 271 | 237 | 3 | 0 | 9 | 12 |
| 215 | 554 | 215 | 192 | 226 | 15 | 0 | 115 | 130 |
| 216 | 45 | 23 | 34 | 23 | 0 | 0 | 9 | 9 |
| 217 | 68 | 23 | 34 | 11 | 18 | 105 | 64 | 187 |
| 218 | 0 | 0 | 0 | 0 | 201 | 0 | 51 | 252 |
| 219 | 899 | 268 | 308 | 355 | 48 | 72 | 258 | 378 |

Iowa

Zone Data

TABLE A-4

LAND ACTIVITY DATA

| ULATION | DWELLING UNITS | CARS OWNED | EMPLOYED RESIDENTS | EMPLOYMENT RETAIL | EMPLOYMENT MANUF | EMPLOYMENT OTHER | TOTAL |
|---|---|---|---|---|---|---|---|
| 2618 | 810 | 1194 | 826 | 9 | 19 | 177 | 205 |
| 1405 | 375 | 609 | 374 | 0 | 23 | 58 | 81 |
| 32 | 16 | 16 | 24 | 0 | 0 | 0 | 0 |
| 1467 | 437 | 546 | 507 | 28 | 0 | 188 | 216 |
| 600 | 225 | 345 | 240 | 0 | 0 | 34 | 50 |
| 1379 | 450 | 577 | 532 | 94 | 16 | 184 | 301 |
| 187 | 75 | 30 | 60 | 406 | 23 | 527 | 1445 |
| 877 | 255 | 330 | 277 | 28 | 512 | 120 | 158 |
| 82 | 30 | 30 | 23 | 130 | 10 | 76 | 148 |
| 1529 | 420 | 547 | 547 | 47 | 1275 | 111 | 1 |
| 405 | 97 | 135 | 127 | 39 | 89 | 58 | 24 |
| 757 | 195 | 217 | 225 | 0 | 64 | 84 | 7 |
| 1469 | 367 | 472 | 510 | 35 | 36 | 17 | 16 |
| 67 | 15 | 15 | 14 | 0 | 17 | 0 | 1 |
| 967 | 255 | 330 | 307 | 0 | 32 | 20 | 20 |
| 1649 | 457 | 622 | 547 | 17 | 0 | 17 | 34 |
| 1349 | 337 | 502 | 412 | 9 | 0 | 45 | 62 |
| 1027 | 255 | 307 | 270 | 54 | 8 | 107 | 161 |
| 22 | 7 | 7 | 7 | 0 | 0 | 0 | 0 |
| 343 | 83 | 106 | 82 | 0 | 0 | 34 | 47 |
| 165 | 59 | 71 | 59 | 10 | 13 | 207 | 288 |
| 99 | 50 | 10 | 30 | 230 | 2667 | 220 | 123 |
| 742 | 495 | 130 | 377 | 1554 | 781 | 3380 | 546 |
| 200 | 177 | 35 | 153 | 707 | 526 | 414 | 121 |
| 565 | 353 | 118 | 200 | 416 | 98 | 1023 | 162 |
| 177 | 118 | 24 | 94 | 204 | 183 | 226 | 45 |
| 601 | 294 | 177 | 248 | 344 | 23 | 187 | 59 |
| 794 | 256 | 182 | 257 | 133 | 60 | 223 | 48 |
| 157 | 50 | 17 | 33 | 123 | 128 | 167 | 44 |
| 1514 | 496 | 389 | 530 | 136 | 22 | 173 | 31 |
| 2306 | 736 | 705 | 706 | 66 | 131 | 136 | 44 |
| 17 | 8 | 0 | 8 | 110 | 454 | 341 | 65 |
| 516 | 144 | 144 | 159 | 397 | 1699 | 370 | 215 |
| 265 | 61 | 61 | 76 | 19 | 954 | 140 | 172 |
| 2694 | 764 | 925 | 931 | 75 | 124 | 75 | 28 |
| 2022 | 642 | 682 | 706 | 28 | 10 | 109 | 316 |
| 1787 | 544 | 528 | 593 | 71 | 57 | 48 | 160 |
| 2101 | 637 | 645 | 698 | 72 | 102 | 284 | 194 |
| 1470 | 430 | 568 | 536 | 0 | 25 | 89 | 221 |
| 421 | 120 | 160 | 167 | 26 | 0 | 114 | 381 |
| 2078 | 575 | 762 | 762 | 41 | 9 | 69 | 89 |
| 3406 | 1070 | 1156 | 1133 | 258 | 0 | 325 | 149 |
| 2572 | 731 | 863 | 977 | 10 | 24 | 170 | 110 |
| 2925 | 975 | 1046 | 1074 | 30 | 8 | 82 | 607 |
| 2268 | 633 | 665 | 739 | 19 | 0 | 270 | 188 |
| 2111 | 698 | 769 | 868 | 89 | 8 | 377 | 112 |
| 2303 | 745 | 686 | 794 | 64 | 0 | 426 | 297 |
| 2175 | 784 | 598 | 882 | 81 | 65 | 128 | 466 |
| 2502 | 881 | 906 | 839 | 76 | 28 | 203 | 490 |
| 3746 | 1570 | 964 | 1421 | 106 | 148 | 1012 | 274 |
| 225 | 118 | 59 | 79 | 114 | 29 | 467 | 307 |
| 2527 | 682 | 806 | 847 | 18 | 8 | 64 | 1266 |
| 2752 | 904 | 755 | 954 | 37 | 0 | 72 | 610 |
| 2035 | 576 | 702 | 583 | 46 | 0 | 30 | 90 |
| 1088 | 355 | 402 | 434 | 39 | 32 | 68 | 109 |
| 1637 | 526 | 600 | 568 | 35 | 30 | 471 | 76 |
| 2722 | 814 | 855 | 856 | 36 | 9 | 36 | 139 |
| 2453 | 708 | 971 | 825 | 0 | 9 | 57 | 536 |
| 504 | 138 | 172 | 154 | 170 | 49 | 171 | 81 |
| 2153 | 745 | 832 | 796 | 52 | 34 | 232 | 66 |
| 1398 | 419 | 510 | 436 | 22 | 0 | 129 | 390 |
| 2049 | 619 | 854 | 712 | 8 | 0 | 63 | 318 |
| 1231 | 384 | 505 | 434 | 36 | 11 | 179 | 151 |
| 1433 | 546 | 529 | 432 | 0 | 0 | 486 | 71 |
| 2240 | 586 | 798 | 717 | 0 | 10 | 44 | 226 |
| 0 | 0 | 0 | 0 | 0 | 9 | 61 | 486 |
| 1373 | 365 | 520 | 463 | 235 | 0 | 15 | 54 |
| 1470 | 414 | 577 | 560 | 29 | 28 | 73 | 305 |
| 2155 | 762 | 901 | 818 | 0 | 1164 | 147 | 44 |
| 1752 | 475 | 615 | 595 | 10 | 17 | 69 | 101 |
| 593 | 146 | 195 | 179 | 53 | 0 | 0 | 1321 |
| | | | | 0 | | | 139 |
| 153132 | 47181 | 56782 | 51809 | 6764 | 30561 | 22031 | 59356 |
| 97619 | 30807 | 33389 | 33758 | 7580 | 11982 | 16088 | 35650 |
| 77988 | | 90171 | 85567 | 14344 | 42543 | 38119 | 95006 |

IL TOT

TOT

Table A-5

SPECIAL GENERATORS

| Centroid | Zone | Reference (Figure) | Description of Zone Activity |
|---|---|---|---|
| 35 | 144 | 6 | Large number manufacturing and construction employees |
| 86 | 203 | 6 | Large number manufacturing and construction employees |
| 151 | 292 | 6 | Large number manufacturing and construction employees |
| 182 | 332 | 6 | Large number manufacturing and construction employees |
| 53 | 164 | 8 | Residential |
| 118 | 247 | 8 | Residential, close to shopping center |
| 180 | 330 | 8 | Silvis Area |
| 260 | 520 | 8 | Residential |
| 271 | 531 | 8 | Residential |
| 273 | 533 | 8 | Residential |
| 279 | 544 | 8 | Residential |
| 286 | 551 | 8 | Residential |
| 122 | 251 | 10 | Shopping Center |
| 60 | 171 | 10 | Milan |
| 181 | 331 | 10 | Silvis |
| 226 | 458 | 10 | Bettendorf |
| 244 | 504 | 10 | Davenport |
| 252 | 512 | 10 | Industrial Area and Park |
| 261 | 521 | 10 | Residential and Small Business |
| 62 | 173 | 17 | Residential, School trip data questionable |
| 1 | 100 | 19 | Rock Island Central Business District |
| 2 | 101 | 19 | Rock Island Central Business District |
| 5 | 104 | 19 | Rock Island Central Business District |
| 18 | 123 | 19 | Residential, Industrial |
| 29 | 137 | 19 | Residential, Park, High School |
| 35 | 144 | 19 | Industrial |
| 41 | 150 | 19 | Residential, High School |
| 60 | 171 | 19 | Milan Area |
| 84 | 201 | 19 | Moline Central Business District |
| 85 | 202 | 19 | Moline Central Business District |
| 86 | 203 | 19 | Moline Central Business District |
| 96 | 220 | 19 | Hospital |
| 103 | 227 | 19 | Residential, Commercial |
| 104 | 228 | 19 | Residential, Commercial |
| 121 | 250 | 19 | Strip Development |
| 122 | 251 | 19 | Shopping Center |
| 137 | 271 | 19 | Residential, High School |
| 159 | 300 | 19 | East Moline Central Business District |
| 160 | 301 | 19 | East Moline Central Business District |
| 164 | 313 | 19 | Industrial, Railroad Trackage |
| 168 | 317 | 19 | State Hospital |

Table A-5

SPECIAL GENERATORS
(Continued)

| Centroid | Zone | Reference (Figure) | Description of Zone Activity |
|---|---|---|---|
| 170 | 320 | 19 | Commercial |
| 172 | 322 | 19 | Residential |
| 180 | 330 | 19 | Silvis Area |
| 181 | 331 | 19 | Silvis Area |
| 184 | 334 | 19 | Residential |
| 196 | 350 | 19 | Green Rock Area |
| 218 | 400 | 19 | Shopping Center |
| 241 | 501 | 19 | Industrial, Railroad Trackage |
| 243 | 503 | 19 | Davenport Central Business District |
| 245 | 505 | 19 | Davenport Central Business District |
| 246 | 506 | 19 | Davenport Central Business District |
| 247 | 507 | 19 | Fringe Central Business District |
| 248 | 508 | 19 | Industrial, Railroad Trackage |
| 249 | 509 | 19 | Fringe Central Business District |
| 261 | 521 | 19 | Residential, Commercial |
| 268 | 528 | 19 | Shopping Center |
| 285 | 550 | 19 | Shopping Center |
| 2 | 101 | 21 | Rock Island Central Business District |
| 3 | 102 | 21 | Rock Island Central Business District |
| 7 | 110 | 21 | Golf Course |
| 26 | 134 | 21 | Hospital, College |
| 34 | 143 | 21 | Strip Development |
| 38 | 147 | 21 | Shopping Center |
| 41 | 150 | 21 | High School |
| 62 | 173 | 21 | Miniature Golf Course |
| 84 | 201 | 21 | Moline Central Business District |
| 85 | 202 | 21 | Moline Central Business District |
| 96 | 220 | 21 | Hospital |
| 121 | 250 | 21 | Strip Development |
| 122 | 251 | 21 | Shopping Center, Park, High School, Jr. High School |
| 124 | 253 | 21 | Strip Development |
| 138 | 272 | 21 | Strip Development |
| 149 | 290 | 21 | Airport |
| 150 | 291 | 21 | Coal Valley |
| 173 | 323 | 21 | Golf Course |
| 179 | 329 | 21 | Fairgrounds |
| 185 | 335 | 21 | Park, Masonic Temple |
| 218 | 400 | 21 | Shopping Center |
| 221 | 437 | 21 | Park, Golf Course |
| 225 | 457 | 21 | Residential, Park |
| 226 | 458 | 21 | Bettendorf Central Business District |

Table A-5

SPECIAL GENERATORS
(Concluded)

| Centroid | Zone | Reference (Figure) | Description of Zone Activity |
|---|---|---|---|
| 242 | 502 | 21 | Davenport Central Business District |
| 243 | 503 | 21 | Davenport Central Business District |
| 244 | 504 | 21 | Davenport Central Business District |
| 245 | 505 | 21 | Davenport Central Business District, Stadium |
| 252 | 512 | 21 | Golf Course |
| 259 | 519 | 21 | High School, Fairgrounds |
| 260 | 520 | 21 | Cultural Area, Park, Zoo, Art Gallery, Public Museum |
| 261 | 521 | 21 | Residential, Commercial |
| 269 | 529 | 21 | Colleges, Masonic Temple |
| 278 | 543 | 21 | Cemeteries |
| 280 | 545 | 21 | Park |
| 285 | 550 | 21 | Shopping Center |
| 7 | 110 | 25 | Rock Island Arsenal |
| 13 | 116 | 25 | Railroad Trackage |
| 14 | 117 | 25 | Large Number of Manufacutring Employees |
| 35 | 144 | 25 | Railroad Trackage |
| 37 | 146 | 25 | Railroad Trackage |
| 39 | 148 | 25 | River Front |
| 62 | 173 | 25 | Milan |
| 87 | 204 | 25 | Fringe Central Business District, Moline |
| 90 | 212 | 25 | Fringe Central Business District, Moline |
| 91 | 213 | 25 | Fringe Central Business District, Moline |
| 92 | 214 | 25 | Railroad Trackage |
| 132 | 263 | 25 | Shopping Center |
| 165 | 314 | 25 | Adjacent to Industry |
| 228 | 460 | 25 | Railroad Trackage |
| 243 | 503 | 25 | Davenport Central Business District |
| 245 | 505 | 25 | Davenport Central Business District |

TABLE A-6

HOME BASED WORK PRODUCTIONS

| CENTROID | OBSERVED | COMPUTED | CENTROID | OBSERVED | COMPUTED | CENTROID | OBSERVED | COMPUTED | CENTROID | OBSERVED | COMPUTI |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 230 | 151 | 64 | 63 | 130 | 141 | 446 | 364 | 230 | 151 | 243 |
| 2 | 368 | 207 | 65 | 209 | 94 | 142 | 576 | 616 | 231 | 424 | 398 |
| 3 | 98 | 170 | 69 | 130 | 150 | 143 | 30 | 59 | 232 | 948 | 850 |
| 5 | 95 | 61 | 82 | 147 | 167 | 144 | 277 | 436 | 233 | 35 | 64 |
| 6 | 27 | 42 | 83 | 177 | 118 | 145 | 336 | 292 | 234 | 571 | 528 |
| 8 | 203 | 326 | 84 | 96 | 99 | 146 | 102 | 150 | 235 | 1163 | 909 |
| 9 | 400 | 414 | 85 | 244 | 154 | 147 | 541 | 490 | 236 | 707 | 695 |
| 10 | 617 | 628 | 86 | 269 | 343 | 148 | 705 | 650 | 237 | 602 | 470 |
| 11 | 267 | 254 | 87 | 164 | 154 | 150 | 393 | 383 | 239 | 253 | 172 |
| 12 | 437 | 574 | 88 | 924 | 1041 | 152 | 455 | 543 | 240 | 264 | 135 |
| 14 | 318 | 165 | 89 | 255 | 249 | 153 | 646 | 920 | 241 | 76 | 89 |
| 15 | 497 | 457 | 90 | 92 | 61 | 159 | 230 | 346 | 242 | 730 | 639 |
| 16 | 749 | 684 | 91 | 86 | 61 | 160 | 134 | 238 | 243 | 255 | 284 |
| 17 | 1372 | 1192 | 94 | 272 | 325 | 162 | 153 | 203 | 244 | 346 | 359 |
| 18 | 1222 | 1198 | 96 | 664 | 706 | 163 | 298 | 400 | 245 | 190 | 191 |
| 19 | 676 | 566 | 97 | 981 | 860 | 164 | 174 | 184 | 246 | 407 | 435 |
| 20 | 1269 | 1157 | 98 | 577 | 688 | 165 | 592 | 883 | 247 | 289 | 449 |
| 21 | 891 | 913 | 99 | 244 | 384 | 166 | 945 | 1027 | 248 | 73 | 94 |
| 22 | 1036 | 923 | 100 | 490 | 528 | 168 | 373 | 471 | 249 | 804 | 882 |
| 23 | 1029 | 1043 | 101 | 1402 | 1406 | 169 | 457 | 346 | 250 | 1208 | 1160 |
| 24 | 221 | 313 | 102 | 487 | 752 | 170 | 1143 | 1206 | 251 | 81 | 55 |
| 25 | 577 | 738 | 103 | 592 | 603 | 171 | 953 | 812 | 252 | 317 | 294 |
| 26 | 357 | 386 | 104 | 801 | 828 | 172 | 734 | 758 | 253 | 92 | 162 |
| 27 | 339 | 386 | 105 | 874 | 939 | 173 | 505 | 633 | 254 | 1380 | 1517 |
| 28 | 659 | 764 | 106 | 1085 | 999 | 174 | 1301 | 1241 | 255 | 1268 | 1160 |
| 29 | 1036 | 1108 | 107 | 1053 | 928 | 175 | 176 | 238 | 256 | 911 | 982 |
| 30 | 965 | 782 | 108 | 95 | 164 | 176 | 580 | 758 | 257 | 1170 | 1147 |
| 32 | 53 | 767 | 109 | 751 | 617 | 177 | 1404 | 1617 | 258 | 712 | 891 |
| 33 | 830 | 869 | 110 | 439 | 443 | 178 | 267 | 257 | 259 | 356 | 3064 |
| 34 | 709 | 834 | 111 | 318 | 410 | 179 | 560 | 436 | 260 | 1177 | 1249 |
| 35 | 187 | 270 | 112 | 472 | 390 | 180 | 281 | 364 | 261 | 1919 | 1837 |
| 36 | 346 | 394 | 113 | 50 | 97 | 181 | 258 | 275 | 262 | 1365 | 1590 |
| 37 | 90 | 127 | 114 | 371 | 429 | 183 | 225 | 184 | 263 | 1858 | 1743 |
| 38 | 751 | 703 | 115 | 615 | 739 | 184 | 979 | 955 | 264 | 1078 | 1212 |
| 39 | 345 | 348 | 116 | 617 | 600 | 185 | 701 | 596 | 265 | 1427 | 1417 |
| 40 | 88 | 93 | 117 | 521 | 533 | 186 | 141 | 184 | 266 | 1222 | 1300 |
| 41 | 739 | 641 | 118 | 797 | 669 | 187 | 382 | 633 | 267 | 1011 | 1439 |
| 42 | 756 | 726 | 119 | 295 | 286 | 188 | 602 | 562 | 268 | 1737 | 1371 |
| 43 | 1278 | 1308 | 120 | 555 | 565 | 190 | 35 | 78 | 269 | 1928 | 2293 |
| 44 | 331 | 281 | 121 | 764 | 709 | 191 | 29 | 59 | 270 | 184 | 167 |
| 45 | 94 | 110 | 122 | 682 | 533 | 192 | 141 | 184 | 271 | 1689 | 1384 |
| 46 | 703 | 606 | 123 | 616 | 636 | 193 | 199 | 238 | 272 | 1512 | 1553 |
| 47 | 1032 | 1125 | 124 | 440 | 500 | 196 | 1190 | 1528 | 273 | 1345 | 966 |
| 48 | 1367 | 1323 | 125 | 193 | 184 | 197 | 489 | 543 | 274 | 797 | 730 |
| 49 | 382 | 386 | 126 | 465 | 508 | 205 | 555 | 650 | 275 | 1114 | 942 |
| 50 | 172 | 169 | 127 | 184 | 275 | 210 | 405 | 508 | 276 | 1569 | 1398 |
| 51 | 152 | 240 | 128 | 85 | 150 | 214 | 333 | 417 | 277 | 1535 | 1349 |
| 52 | 74 | 115 | 129 | 369 | 471 | 215 | 392 | 400 | 278 | 344 | 286 |
| 53 | 1263 | 963 | 130 | 361 | 346 | 219 | 669 | 604 | 279 | 1031 | 1303 |
| 54 | 675 | 644 | 131 | 192 | 203 | 220 | 1331 | 1350 | 280 | 915 | 733 |
| 55 | 1187 | 1041 | 132 | 366 | 329 | 221 | 690 | 635 | 281 | 1541 | 1170 |
| 56 | 877 | 834 | 133 | 756 | 741 | 222 | 39 | 80 | 282 | 763 | 730 |
| 57 | 63 | 59 | 134 | 299 | 311 | 223 | 959 | 845 | 283 | 756 | 726 |
| 58 | 129 | 235 | 135 | 208 | 184 | 224 | 512 | 422 | 284 | 1416 | 1178 |
| 59 | 79 | 94 | 136 | 378 | 352 | 225 | 1098 | 885 | 286 | 609 | 776 |
| 60 | 474 | 446 | 137 | 805 | 823 | 226 | 290 | 137 | 287 | 1294 | 929 |
| 61 | 734 | 728 | 138 | 541 | 490 | 227 | 590 | 481 | 288 | 1450 | 1338 |
| 62 | 773 | 711 | 139 | 216 | 284 | 228 | 113 | 78 | 289 | 1108 | 985 |
| 63 | 216 | 235 | 140 | 842 | 853 | 229 | 750 | 909 | 290 | 390 | 325 |

TABLE A-7

HOME BASED WORK ATTRACTIONS

| CENTROID | OBSERVED | COMPUTED | CENTROID | OBSERVED | COMPUTED | CENTROID | OBSERVED | COMPUTED | CENTROID | OBSERVED | COMPUTED |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2185 | 3089 | 63 | 941 | 1118 | 141 | 206 | 271 | 232 | 104 | 167 |
| 2 | 3336 | 3067 | 65 | 103 | 67 | 142 | 55 | 98 | 233 | 55 | 111 |
| 3 | 938 | 1058 | 66 | 74 | 75 | 145 | 104 | 120 | 234 | 56 | 93 |
| 4 | 457 | 190 | 68 | 100 | 84 | 148 | 94 | 96 | 235 | 146 | 114 |
| 5 | 696 | 545 | 72 | 88 | 82 | 149 | 479 | 333 | 236 | 103 | 156 |
| 6 | 181 | 218 | 73 | 173 | 116 | 150 | 190 | 137 | 237 | 361 | 306 |
| 7 | 9724 | 10250 | 75 | 13 | 78 | 151 | 550 | SPEC | 239 | 214 | 134 |
| 8 | 929 | 1654 | 82 | 38 | 93 | 152 | 208 | 150 | 240 | 4790 | 4419 |
| 9 | 307 | 187 | 83 | 953 | 1091 | 158 | 83 | 90 | 241 | 2053 | 1922 |
| 10 | 157 | 280 | 84 | 1667 | 1263 | 159 | 781 | 595 | 242 | 9826 | 8310 |
| 11 | 347 | 229 | 85 | 2351 | 2265 | 160 | 636 | 582 | 243 | 1819 | 1904 |
| 12 | 423 | 288 | 86 | 437 | SPEC | 161 | 6262 | 6345 | 244 | 3069 | 2512 |
| 13 | 1404 | 1750 | 87 | 644 | 484 | 163 | 1819 | 1716 | 245 | 690 | 747 |
| 14 | 5451 | 6719 | 88 | 252 | 212 | 164 | 6413 | 6088 | 246 | 1058 | 956 |
| 15 | 874 | 753 | 89 | 3252 | 2751 | 165 | 180 | 237 | 247 | 797 | 793 |
| 16 | 591 | 623 | 90 | 2294 | 1889 | 166 | 235 | 267 | 248 | 586 | 534 |
| 17 | 431 | 371 | 91 | 1799 | 1620 | 168 | 922 | 1082 | 249 | 750 | 727 |
| 18 | 2182 | 2603 | 92 | 1930 | 2452 | 169 | 34 | 67 | 250 | 1156 | 1053 |
| 19 | 97 | 153 | 94 | 345 | 525 | 170 | 312 | 528 | 251 | 3137 | 3310 |
| 20 | 122 | 256 | 95 | 209 | 366 | 171 | 48 | 160 | 252 | 2676 | 2662 |
| 21 | 69 | 107 | 96 | 1378 | 1750 | 172 | 87 | 138 | 253 | 463 | 490 |
| 22 | 107 | 196 | 97 | 207 | 140 | 173 | 325 | 454 | 254 | 230 | 305 |
| 23 | 194 | 114 | 98 | 330 | 200 | 174 | 55 | 94 | 255 | 367 | 356 |
| 24 | 70 | 84 | 99 | 59 | 82 | 176 | 281 | 122 | 256 | 434 | 397 |
| 25 | 96 | 200 | 100 | 38 | 95 | 177 | 207 | 348 | 257 | 480 | 638 |
| 26 | 750 | 1204 | 101 | 497 | 382 | 178 | 91 | 138 | 258 | 118 | 197 |
| 27 | 196 | 105 | 102 | 344 | 280 | 179 | 180 | 170 | 259 | 237 | 288 |
| 28 | 193 | 315 | 103 | 647 | 610 | 180 | 227 | 149 | 260 | 192 | 229 |
| 29 | 190 | 285 | 104 | 140 | 214 | 181 | 647 | 369 | 261 | 1267 | 980 |
| 30 | 177 | 125 | 105 | 155 | 99 | 182 | 1183 | SPEC | 262 | 188 | 347 |
| 31 | 28 | 75 | 106 | 306 | 107 | 183 | 79 | 120 | 263 | 196 | 232 |
| 32 | 26 | 116 | 107 | 217 | 235 | 184 | 116 | 89 | 264 | 420 | 511 |
| 33 | 44 | 93 | 110 | 26 | 87 | 185 | 63 | 143 | 265 | 790 | 767 |
| 34 | 407 | 327 | 111 | 552 | 471 | 187 | 35 | 110 | 266 | 700 | 803 |
| 35 | 401 | SPEC | 112 | 259 | 524 | 188 | 166 | 134 | 267 | 444 | 477 |
| 36 | 342 | 326 | 113 | 182 | 197 | 193 | 1696 | 1460 | 268 | 614 | 527 |
| 37 | 730 | 647 | 114 | 603 | 575 | 194 | 17 | 99 | 269 | 2226 | 1975 |
| 38 | 914 | 854 | 115 | 76 | 176 | 196 | 179 | 96 | 270 | 1142 | 984 |
| 39 | 82 | 102 | 116 | 38 | 85 | 197 | 133 | 131 | 271 | 170 | 199 |
| 40 | 59 | 81 | 117 | 32 | 88 | 204 | 118 | 66 | 272 | 261 | 227 |
| 41 | 453 | 385 | 118 | 93 | 164 | 207 | 128 | 70 | 273 | 235 | 178 |
| 42 | 418 | 234 | 119 | 191 | 169 | 210 | 52 | 107 | 274 | 225 | 273 |
| 43 | 177 | 376 | 120 | 31 | 85 | 214 | 43 | 81 | 275 | 1042 | 872 |
| 44 | 35 | 67 | 121 | 525 | 345 | 215 | 229 | 259 | 276 | 101 | 185 |
| 45 | 74 | 132 | 122 | 1633 | 1025 | 218 | 739 | 443 | 277 | 103 | 163 |
| 46 | 98 | 147 | 123 | 167 | 138 | 219 | 624 | 634 | 278 | 924 | 652 |
| 47 | 151 | 164 | 124 | 229 | 407 | 220 | 417 | 372 | 279 | 404 | 543 |
| 48 | 187 | 134 | 128 | 112 | 67 | 221 | 133 | 185 | 280 | 279 | 291 |
| 49 | 80 | 101 | 129 | 28 | 91 | 223 | 353 | 389 | 281 | 202 | 170 |
| 53 | 89 | 82 | 130 | 128 | 89 | 224 | 153 | 138 | 282 | 407 | 404 |
| 54 | 58 | 99 | 132 | 494 | 629 | 225 | 574 | 518 | 283 | 1043 | 797 |
| 55 | 42 | 132 | 133 | 76 | 176 | 226 | 2284 | 2245 | 284 | 209 | 144 |
| 56 | 130 | 117 | 134 | 34 | 138 | 227 | 231 | 302 | 285 | 643 | 524 |
| 57 | 201 | 70 | 135 | 62 | 69 | 228 | 2031 | 2299 | 286 | 146 | 129 |
| 58 | 223 | 129 | 137 | 282 | 221 | 229 | 355 | 436 | 287 | 140 | 215 |
| 60 | 950 | 631 | 138 | 322 | 377 | 230 | 244 | 306 | 288 | 2020 | 206 |
| 61 | 345 | 170 | 139 | 114 | 111 | 231 | 150 | 244 | 289 | 225 | 273 |
| 62 | 384 | 291 | 140 | 32 | 95 | | | | | | |

TABLE A-8

HOME BASED SHOP PRODUCTIONS

| CENTROID | OBSERVED | COMPUTED | CENTROID | OBSERVED | COMPUTED | CENTROID | OBSERVED | COMPUTED | CENTROID | OBSERVED | COMPUT |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 58 | 116 | 80 | 73 | 112 | 143 | 46 | 889 | 222 | 21 | 82 |
| 2 | 104 | 168 | 81 | 81 | 125 | 144 | 394 | 383 | 223 | 636 | 678 |
| 3 | 104 | 90 | 82 | 356 | 197 | 146 | 62 | 137 | 224 | 370 | 452 |
| 4 | 38 | 64 | 83 | 167 | 118 | 147 | 399 | 395 | 225 | 615 | 713 |
| 5 | 95 | 78 | 84 | 73 | 91 | 148 | 371 | 533 | 226 | 57 | 98 |
| 8 | 153 | 228 | 85 | 162 | 184 | 149 | 65 | 113 | 228 | 18 | 98 |
| 9 | 217 | 316 | 86 | 279 | 266 | 150 | 422 | 317 | 229 | 679 | 680 |
| 10 | 749 | 493 | 87 | 121 | 171 | 151 | 121 | 148 | 231 | 289 | 308 |
| 11 | 359 | 228 | 88 | 1142 | 693 | 152 | 553 | 461 | 232 | 993 | 595 |
| 12 | 417 | 418 | 89 | 14 | 171 | 153 | 666 | 642 | 234 | 380 | 436 |
| 13 | 11 | 64 | 90 | 13 | 77 | 154 | 324 | 220 | 235 | 986 | 764 |
| 14 | 140 | 127 | 91 | 13 | 64 | 157 | 162 | 185 | 236 | 645 | 629 |
| 16 | 524 | 520 | 94 | 427 | 225 | 158 | 82 | 113 | 237 | 449 | 410 |
| 17 | 790 | 747 | 95 | 14 | 64 | 159 | 113 | 165 | 239 | 90 | 183 |
| 19 | 255 | 347 | 96 | 558 | 483 | 162 | 107 | 153 | 240 | 90 | 144 |
| 20 | 844 | 807 | 97 | 497 | 726 | 164 | 130 | 141 | 241 | 21 | 75 |
| 21 | 568 | 745 | 98 | 864 | 685 | 165 | 606 | 611 | 242 | 128 | 210 |
| 22 | 626 | 643 | 99 | 315 | 375 | 166 | 646 | 751 | 243 | 42 | 103 |
| 23 | 1017 | 690 | 100 | 388 | 383 | 168 | 281 | 293 | 244 | 24 | 197 |
| 24 | 251 | 317 | 101 | 1503 | 1020 | 169 | 396 | 344 | 245 | 16 | 91 |
| 25 | 596 | 654 | 102 | 792 | 595 | 170 | 1523 | 865 | 250 | 569 | 857 |
| 26 | 225 | 269 | 103 | 421 | 476 | 171 | 671 | 662 | 252 | 273 | 226 |
| 27 | 358 | 321 | 104 | 706 | 622 | 172 | 741 | 573 | 253 | 83 | 133 |
| 28 | 678 | 680 | 105 | 902 | 755 | 173 | 380 | 484 | 254 | 1055 | 1105 |
| 29 | 890 | 860 | 106 | 1223 | 910 | 174 | 822 | 1004 | 256 | 475 | 658 |
| 30 | 564 | 782 | 107 | 1092 | 936 | 175 | 312 | 204 | 257 | 569 | 790 |
| 32 | 88 | 101 | 108 | 62 | 163 | 176 | 773 | 585 | 258 | 517 | 703 |
| 33 | 409 | 576 | 109 | 735 | 634 | 177 | 1268 | 1182 | 259 | 192 | 244 |
| 34 | 869 | 589 | 110 | 509 | 411 | 178 | 171 | 293 | 260 | 533 | SPEC |
| 35 | 360 | 277 | 111 | 316 | 312 | 179 | 650 | 433 | 261 | 1077 | 1365 |
| 36 | 384 | 326 | 112 | 375 | 312 | 180 | 727 | SPEC | 262 | 659 | 1035 |
| 38 | 488 | 569 | 113 | 92 | 116 | 181 | 305 | 230 | 263 | 942 | 1241 |
| 39 | 367 | 269 | 114 | 346 | 338 | 183 | 229 | 141 | 264 | 685 | 812 |
| 41 | 752 | 623 | 115 | 910 | 695 | 184 | 1204 | 789 | 265 | 634 | 929 |
| 42 | 498 | 708 | 116 | 726 | 522 | 185 | 528 | 547 | 266 | 775 | 836 |
| 43 | 1213 | 1072 | 117 | 382 | 559 | 186 | 90 | 165 | 267 | 606 | 737 |
| 45 | 61 | 150 | 118 | 1419 | SPEC | 187 | 567 | 510 | 268 | 895 | 1083 |
| 46 | 497 | 575 | 119 | 495 | 299 | 188 | 714 | 458 | 269 | 722 | 1148 |
| 47 | 1124 | 910 | 120 | 641 | 485 | 190 | 64 | 115 | 270 | 18 | 130 |
| 48 | 1394 | 1128 | 121 | 494 | 630 | 192 | 236 | 204 | 271 | 583 | SPEC |
| 49 | 474 | 411 | 122 | 713 | 449 | 193 | 257 | 230 | 272 | 734 | 913 |
| 50 | 154 | 180 | 123 | 851 | 594 | 195 | 216 | 344 | 273 | 479 | SPEC |
| 51 | 180 | 269 | 126 | 274 | 413 | 196 | 1359 | 1170 | 275 | 580 | 739 |
| 52 | 106 | 180 | 128 | 16 | 161 | 197 | 765 | 446 | 276 | 807 | 1026 |
| 53 | 498 | SPEC | 129 | 631 | 369 | 198 | 243 | 344 | 277 | 891 | 1156 |
| 54 | 493 | 680 | 130 | 354 | 331 | 199 | 86 | 141 | 278 | 326 | 258 |
| 55 | 921 | 868 | 131 | 536 | 293 | 203 | 214 | 306 | 279 | 559 | SPEC |
| 56 | 804 | 726 | 132 | 213 | 331 | 204 | 42 | 128 | 280 | 967 | 638 |
| 58 | 168 | 214 | 133 | 698 | 623 | 206 | 15 | 64 | 281 | 764 | 1025 |
| 59 | 84 | 89 | 134 | 197 | 344 | 207 | 367 | 268 | 282 | 618 | 632 |
| 61 | 416 | 588 | 135 | 214 | 293 | 209 | 21 | 90 | 283 | 679 | 659 |
| 62 | 574 | 588 | 136 | 358 | 322 | 210 | 582 | 472 | 284 | 1276 | 962 |
| 63 | 159 | 201 | 137 | 993 | 690 | 211 | 85 | 191 | 285 | 25 | 64 |
| 67 | 84 | 114 | 138 | 286 | 432 | 212 | 214 | 255 | 286 | 355 | SPEC |
| 68 | 318 | 351 | 139 | 339 | 297 | 214 | 376 | 369 | 287 | 547 | 713 |
| 75 | 343 | 208 | 140 | 664 | 690 | 218 | 52 | 64 | 288 | 1039 | 1078 |
| 76 | 168 | 149 | 141 | 456 | 457 | 220 | 1078 | 1407 | 289 | 823 | 756 |
| 78 | 81 | 112 | 142 | 631 | 505 | 221 | 693 | 749 | 290 | 178 | 284 |
| 79 | 61 | 88 | | | | | | | | | |

TABLE A-9

HOME BASED SHOP ATTRACTIONS

| CENTROID | OBSERVED | COMPUTED | CENTROID | OBSERVED | COMPUTED | CENTROID | OBSERVED | COMPUTED | CENTROID | OBSERVED | COMPUTED |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 290 | 709 | 83 | 293 | 623 | 177 | 1828 | 1507 | 252 | 2384 | SPEC |
| 2 | 3273 | 2632 | 84 | 3088 | 2141 | 179 | 65 | 39 | 253 | 125 | 82 |
| 4 | 349 | 1255 | 85 | 2723 | 2360 | 180 | 149 | 202 | 254 | 536 | 322 |
| 5 | 738 | 1631 | 86 | 806 | 1414 | 181 | 1441 | SPEC | 255 | 113 | 120 |
| 6 | 58 | 138 | 91 | 68 | 52 | 183 | 1899 | 1457 | 256 | 86 | 305 |
| 8 | 118 | 232 | 97 | 408 | 331 | 186 | 86 | 26 | 257 | 153 | 310 |
| 10 | 1055 | 1626 | 98 | 4433 | 2209 | 196 | 431 | 1022 | 259 | 76 | 112 |
| 16 | 132 | 120 | 101 | 115 | 90 | 197 | 679 | 972 | 260 | 80 | 176 |
| 17 | 567 | 1423 | 103 | 823 | 499 | 214 | 153 | 13 | 261 | 1849 | SPEC |
| 19 | 48 | 77 | 107 | 995 | 1108 | 215 | 121 | 64 | 262 | 17 | 43 |
| 20 | 187 | 284 | 112 | 198 | 310 | 218 | 4989 | 4182 | 263 | 127 | 129 |
| 22 | 43 | 52 | 114 | 468 | 275 | 219 | 95 | 206 | 264 | 191 | 82 |
| 23 | 122 | 64 | 121 | 2087 | 1439 | 223 | 427 | 120 | 265 | 1402 | 1281 |
| 24 | 24 | 34 | 122 | 10551 | SPEC | 225 | 730 | 404 | 268 | 2509 | 2092 |
| 25 | 130 | 417 | 123 | 392 | 259 | 226 | 797 | SPEC | 271 | 122 | 77 |
| 28 | 1691 | 1367 | 124 | 3555 | 3897 | 227 | 549 | 1289 | 272 | 72 | 159 |
| 29 | 76 | 69 | 125 | 43 | 34 | 228 | 312 | 559 | 273 | 473 | 198 |
| 30 | 217 | 403 | 129 | 193 | 101 | 229 | 348 | 202 | 274 | 156 | 168 |
| 34 | 1883 | 1684 | 132 | 6364 | 6271 | 232 | 288 | 150 | 275 | 127 | 150 |
| 35 | 46 | 112 | 134 | 106 | 86 | 236 | 42 | 39 | 276 | 300 | 155 |
| 36 | 1282 | 1525 | 137 | 149 | 90 | 237 | 708 | 232 | 278 | 857 | 731 |
| 38 | 2802 | 3145 | 138 | 2269 | 2187 | 242 | 4421 | 5358 | 279 | 389 | 224 |
| 41 | 42 | 26 | 145 | 62 | 163 | 243 | 4021 | 3035 | 280 | 185 | 95 |
| 43 | 1176 | 1971 | 150 | 159 | 47 | 244 | 538 | SPEC | 281 | 46 | 34 |
| 48 | 262 | 158 | 159 | 2461 | 1677 | 245 | 613 | 1655 | 282 | 100 | 155 |
| 60 | 1107 | SPEC | 160 | 1461 | 1403 | 246 | 2653 | 2039 | 285 | 3618 | 4750 |
| 61 | 147 | 249 | 165 | 43 | 56 | 247 | 200 | 572 | 286 | 56 | 125 |
| 62 | 133 | 30 | 170 | 249 | 150 | 249 | 256 | 585 | 288 | 262 | 144 |
| 63 | 25 | 39 | 173 | 182 | 443 | 250 | 189 | 284 | 289 | 1055 | 763 |
| 82 | 109 | 86 | | | | | | | | | |

TABLE A-10

O-D SURVEY PERSON TRIP

HOME BASED OTHER PRODUCTIONS-PURPOSE BREAKDOWN



| CENTROID | PURPOSE 2 PERS. BUS | PURPOSE 3 MED. DENT. | PURPOSE 4 SCHOOL | PURPOSE 5 SOC. REC. | PURPOSE 6 CH. TV. MODE | PURPOSE 7 EAT MEAL | PURPOSE 9 SERV. PASS. | TOTAL HB OTHER |
|---|---|---|---|---|---|---|---|---|
| 1 | 130 | 5 | 57 | 58 | 0 | 1 | 27 | 278 |
| 2 | 205 | 4 | 0 | 187 | 11 | 24 | 12 | 443 |
| 3 | 118 | 4 | 0 | 161 | 0 | 6 | 4 | 293 |
| 4 | 51 | 3 | 0 | 36 | 0 | 0 | 0 | 90 |
| 5 | 37 | 0 | 2 | 51 | 0 | 28 | 3 | 121 |
| 6 | 3 | 0 | 0 | 6 | 0 | 3 | 0 | 12 |
| 7 | 3 | 0 | 0 | 16 | 15 | 9 | 2 | 45 |
| 8 | 86 | 0 | 0 | 177 | 0 | 74 | 46 | 383 |
| 9 | 280 | 3 | 0 | 442 | 0 | 129 | 146 | 1000 |
| 10 | 518 | 68 | 1 | 410 | 0 | 161 | 179 | 1337 |
| 11 | 623 | 44 | 1 | 73 | 0 | 64 | 67 | 872 |
| 12 | 497 | 0 | 11 | 347 | 0 | 33 | 46 | 934 |
| 13 | 55 | 6 | 1 | 34 | 2 | 17 | 11 | 126 |
| 14 | 121 | 46 | 1 | 55 | 0 | 3 | 69 | 295 |
| 15 | 576 | 20 | 2 | 262 | 9 | 3 | 162 | 1034 |
| 16 | 483 | 29 | 4 | 365 | 0 | 179 | 61 | 1121 |
| 17 | 997 | 56 | 190 | 733 | 1 | 113 | 320 | 2410 |
| 18 | 904 | 91 | 185 | 815 | 0 | 202 | 369 | 2566 |
| 19 | 855 | 22 | 177 | 593 | 0 | 73 | 307 | 2027 |
| 20 | 430 | 10 | 454 | 1010 | 0 | 161 | 592 | 2657 |
| 21 | 631 | 12 | 647 | 665 | 0 | 63 | 151 | 2169 |
| 22 | 617 | 74 | 1 | 476 | 0 | 666 | 224 | 2058 |
| 23 | 1058 | 74 | 521 | 1219 | 0 | 229 | 397 | 3498 |
| 24 | 319 | 68 | 632 | 362 | 0 | 30 | 108 | 1519 |
| 25 | 770 | 141 | 260 | 893 | 0 | 159 | 238 | 2461 |
| 26 | 256 | 15 | 114 | 163 | 0 | 3 | 24 | 575 |
| 27 | 467 | 39 | 111 | 394 | 0 | 4 | 99 | 1114 |
| 28 | 536 | 15 | 226 | 849 | 0 | 135 | 189 | 1950 |
| 29 | 1119 | 196 | 496 | 1087 | 0 | 113 | 324 | 3335 |
| 30 | 995 | 7 | 204 | 886 | 0 | 299 | 376 | 2767 |
| 31 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 10 |
| 32 | 0 | 4 | 0 | 15 | 0 | 0 | 2 | 21 |
| 33 | 378 | 82 | 334 | 756 | 3 | 0 | 260 | 1813 |
| 34 | 627 | 87 | 359 | 795 | 44 | 227 | 302 | 2441 |
| 35 | 270 | 23 | 2 | 228 | 0 | 47 | 54 | 624 |
| 36 | 559 | 22 | 22 | 300 | 11 | 5 | 99 | 1018 |
| 37 | 69 | 23 | 55 | 173 | 0 | 32 | 2 | 354 |
| 38 | 355 | 103 | 626 | 805 | 0 | 8 | 282 | 2179 |
| 39 | 162 | 0 | 0 | 100 | 0 | 1 | 63 | 326 |
| 40 | 34 | 0 | 53 | 7 | 0 | 9 | 69 | 172 |
| 41 | 1117 | 18 | 481 | 771 | 0 | 249 | 192 | 2828 |
| 42 | 391 | 55 | 321 | 708 | 0 | 314 | 282 | 2071 |
| 43 | 1354 | 48 | 423 | 1339 | 12 | 424 | 328 | 3928 |
| 44 | 68 | 0 | 0 | 257 | 0 | 155 | 107 | 587 |
| 45 | 130 | 0 | 306 | 366 | 0 | 0 | 118 | 920 |
| 46 | 833 | 68 | 1124 | 842 | 0 | 282 | 365 | 3514 |
| 47 | 995 | 81 | 446 | 1778 | 0 | 136 | 353 | 3789 |
| 48 | 631 | 61 | 683 | 1789 | 0 | 234 | 627 | 4025 |
| 49 | 975 | 79 | 226 | 577 | 0 | 141 | 143 | 2141 |
| 50 | 183 | 7 | 111 | 128 | 0 | 0 | 68 | 497 |
| 51 | 152 | 0 | 111 | 550 | 0 | 108 | 68 | 989 |
| 52 | 174 | 0 | 559 | 181 | 0 | 2 | 150 | 1066 |
| 53 | 1008 | 50 | 1790 | 1354 | 0 | 496 | 354 | 5052 |
| 54 | 565 | 87 | 813 | 432 | 0 | 36 | 416 | 2349 |
| 55 | 875 | 47 | 437 | 981 | 11 | 138 | 110 | 2599 |
| 56 | 1108 | 125 | 921 | 777 | 0 | 151 | 472 | 3554 |
| 57 | 130 | 0 | 108 | 114 | 0 | 99 | 44 | 495 |
| 58 | 82 | 22 | 108 | 8 | 0 | 4 | 25 | 249 |
| 59 | 5 | 0 | 650 | 23 | 0 | 0 | 39 | 717 |
| 60 | 528 | 23 | 720 | 845 | 0 | 261 | 197 | 2574 |
| 61 | 540 | 0 | 1033 | 651 | 0 | 230 | 266 | 2720 |
| 62 | 677 | 44 | 3255 | 967 | 11 | 234 | 503 | 5691 |
| 63 | 544 | 0 | 433 | 145 | 0 | 0 | 69 | 1191 |
| 64 | 32 | 0 | 66 | 84 | 0 | 0 | 0 | 182 |
| 65 | 34 | 6 | 58 | 146 | 0 | 4 | 23 | 271 |
| 66 | 296 | 11 | 0 | 343 | 22 | 22 | 44 | 738 |
| 67 | 11 | 0 | 0 | 187 | 0 | 0 | 22 | 220 |
| 68 | 231 | 11 | 0 | 317 | 0 | 64 | 122 | 745 |
| 69 | 61 | 0 | 210 | 0 | 0 | 0 | 53 | 324 |
| 70 | 7 | 0 | 1 | 0 | 0 | 0 | 0 | 8 |
| 71 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 72 | 8 | 0 | 0 | 3 | 0 | 0 | 0 | 11 |
| 73 | 5 | 0 | 0 | 6 | 0 | 0 | 0 | 11 |
| 74 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 6 |

TABLE A-10

O-D SURVEY PERSON TRIP

HOME BASED OTHER PRODUCTIONS-PURPOSE BREAKDOWN



| CENTROID | PURPOSE 2 PERS. BUS | PURPOSE 3 MED. DENT. | PURPOSE 4 SCHOOL | PURPOSE 5 SOC. REC. | PURPOSE 6 CH. TV. MODE | PURPOSE 7 EAT MEAL | PURPOSE 9 SERV. PASS. | TOTAL HB OTHER |
|---|---|---|---|---|---|---|---|---|
| 75 | 185 | 0 | 0 | 106 | 0 | 0 | 96 | 387 |
| 76 | 132 | 0 | 0 | 130 | 0 | 0 | 21 | 283 |
| 77 | 63 | 0 | 0 | 8 | 0 | 0 | 42 | 113 |
| 78 | 6 | 21 | 0 | 16 | 0 | 0 | 0 | 43 |
| 79 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 30 |
| 80 | 10 | 0 | 0 | 9 | 0 | 0 | 0 | 19 |
| 81 | 123 | 21 | 0 | 40 | 0 | 0 | 0 | 184 |
| 82 | 133 | 0 | 230 | 206 | 0 | 2 | 108 | 679 |
| 83 | 191 | 23 | 0 | 43 | 0 | 3 | 4 | 264 |
| 84 | 56 | 3 | 1 | 56 | 0 | 3 | 0 | 119 |
| 85 | 237 | 5 | 6 | 157 | 0 | 40 | 32 | 477 |
| 86 | 503 | 0 | 163 | 180 | 0 | 2 | 23 | 871 |
| 87 | 220 | 0 | 1 | 300 | 0 | 0 | 5 | 526 |
| 88 | 407 | 32 | 350 | 487 | 0 | 214 | 157 | 1647 |
| 89 | 181 | 4 | 0 | 175 | 0 | 5 | 81 | 446 |
| 90 | 56 | 0 | 0 | 4 | 0 | 5 | 2 | 67 |
| 91 | 25 | 0 | 0 | 25 | 3 | 3 | 15 | 71 |
| 92 | 16 | 1 | 0 | 26 | 0 | 7 | 6 | 56 |
| 93 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 2 |
| 94 | 149 | 4 | 0 | 348 | 0 | 0 | 111 | 612 |
| 95 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 10 |
| 96 | 290 | 21 | 229 | 396 | 0 | 76 | 95 | 1107 |
| 97 | 1016 | 3 | 1464 | 693 | 0 | 69 | 413 | 3658 |
| 98 | 623 | 36 | 436 | 995 | 0 | 7 | 213 | 2310 |
| 99 | 709 | 2 | 141 | 359 | 11 | 312 | 131 | 1665 |
| 100 | 318 | 37 | 3 | 345 | 0 | 236 | 70 | 1009 |
| 101 | 2038 | 24 | 948 | 1372 | 7 | 238 | 470 | 5097 |
| 102 | 317 | 9 | 638 | 325 | 0 | 718 | 129 | 2136 |
| 103 | 270 | 3 | 291 | 571 | 47 | 69 | 199 | 1450 |
| 104 | 1209 | 50 | 143 | 716 | 0 | 108 | 165 | 2391 |
| 105 | 1041 | 33 | 407 | 937 | 0 | 341 | 307 | 3066 |
| 106 | 964 | 0 | 987 | 1043 | 4 | 403 | 446 | 3847 |
| 107 | 969 | 70 | 338 | 630 | 2 | 260 | 208 | 2477 |
| 108 | 69 | 1 | 709 | 82 | 0 | 0 | 89 | 950 |
| 109 | 338 | 27 | 214 | 735 | 14 | 321 | 164 | 1813 |
| 110 | 427 | 32 | 375 | 499 | 0 | 0 | 120 | 1453 |
| 111 | 173 | 0 | 113 | 163 | 0 | 165 | 44 | 658 |
| 112 | 266 | 0 | 136 | 86 | 0 | 68 | 69 | 625 |
| 113 | 4 | 0 | 0 | 138 | 0 | 0 | 1 | 143 |
| 114 | 192 | 25 | 159 | 308 | 0 | 0 | 69 | 753 |
| 115 | 843 | 23 | 415 | 850 | 0 | 198 | 208 | 2537 |
| 116 | 701 | 21 | 129 | 728 | 0 | 97 | 55 | 1731 |
| 117 | 716 | 21 | 334 | 469 | 0 | 71 | 252 | 1863 |
| 118 | 550 | 168 | 161 | 390 | 0 | 205 | 164 | 1638 |
| 119 | 200 | 10 | 0 | 258 | 0 | 0 | 10 | 478 |
| 120 | 455 | 32 | 536 | 787 | 0 | 195 | 230 | 2235 |
| 121 | 720 | 33 | 147 | 795 | 0 | 108 | 164 | 1967 |
| 122 | 188 | 32 | 55 | 825 | 0 | 196 | 203 | 1499 |
| 123 | 502 | 74 | 313 | 952 | 0 | 39 | 237 | 2117 |
| 124 | 970 | 32 | 1 | 578 | 0 | 353 | 85 | 2019 |
| 125 | 185 | 0 | 0 | 132 | 0 | 0 | 52 | 369 |
| 126 | 630 | 0 | 0 | 403 | 0 | 61 | 96 | 1190 |
| 127 | 563 | 0 | 521 | 361 | 0 | 12 | 128 | 1585 |
| 128 | 0 | 0 | 0 | 14 | 0 | 0 | 3 | 17 |
| 129 | 827 | 0 | 330 | 413 | 0 | 78 | 202 | 1850 |
| 130 | 405 | 1 | 220 | 474 | 0 | 9 | 0 | 1109 |
| 131 | 557 | 9 | 111 | 99 | 0 | 9 | 22 | 807 |
| 132 | 197 | 7 | 0 | 287 | 0 | 32 | 62 | 585 |
| 133 | 876 | 69 | 546 | 694 | 0 | 138 | 233 | 2556 |
| 134 | 539 | 0 | 330 | 212 | 11 | 2 | 56 | 1150 |
| 135 | 626 | 11 | 100 | 499 | 2 | 40 | 22 | 1300 |
| 136 | 316 | 0 | 427 | 400 | 0 | 31 | 185 | 1359 |
| 137 | 915 | 3 | 278 | 878 | 0 | 478 | 275 | 2827 |
| 138 | 635 | 48 | 531 | 633 | 0 | 36 | 143 | 2026 |
| 139 | 199 | 0 | 425 | 255 | 0 | 24 | 65 | 968 |
| 140 | 905 | 67 | 544 | 673 | 0 | 269 | 415 | 2873 |
| 141 | 332 | 11 | 212 | 355 | 0 | 193 | 155 | 1258 |
| 142 | 357 | 43 | 106 | 765 | 0 | 0 | 196 | 1467 |
| 143 | 1 | 0 | 0 | 44 | 0 | 0 | 0 | 45 |
| 144 | 860 | 65 | 0 | 422 | 0 | 0 | 98 | 1445 |
| 145 | 263 | 9 | 108 | 162 | 0 | 0 | 141 | 683 |
| 146 | 68 | 0 | 0 | 156 | 0 | 32 | 10 | 266 |
| 147 | 94 | 0 | 1 | 406 | 0 | 0 | 54 | 555 |
| 148 | 512 | 0 | 0 | 517 | 0 | 61 | 106 | 1196 |

TABLE A-10

O-D SURVEY PERSON TRIP

HOME BASED OTHER PRODUCTIONS-PURPOSE BREAKDOWN



| CENTRCID | PURPOSE 2 PERS. BUS | PURPOSE 3 MED. DENT. | PURPOSE 4 SCHOOL | PURPOSE 5 SOC. REC. | PURPOSE 6 CH. TV. MODE | PURPOSE 7 EAT MEAL | PURPOSE 9 SERV. PASS. | TOTAL HB OTHER |
|---|---|---|---|---|---|---|---|---|
| 149 | 181 | 3 | 4 | 147 | 24 | 24 | 22 | 405 |
| 150 | 230 | 11 | 512 | 155 | 0 | 0 | 215 | 1123 |
| 151 | 188 | 0 | 0 | 36 | 0 | 0 | 21 | 245 |
| 152 | 529 | 10 | 951 | 374 | 0 | 30 | 85 | 1979 |
| 153 | 447 | 42 | 1003 | 289 | 0 | 30 | 85 | 1896 |
| 154 | 188 | 0 | 52 | 265 | 0 | 92 | 32 | 629 |
| 155 | 61 | 0 | 0 | 0 | 0 | 0 | 0 | 61 |
| 156 | 61 | 0 | 0 | 124 | 0 | 5 | 21 | 211 |
| 157 | 30 | 0 | 52 | 57 | 10 | 0 | 32 | 181 |
| 158 | 164 | 10 | 0 | 184 | 0 | 0 | 0 | 358 |
| 159 | 238 | 13 | 22 | 178 | 0 | 1 | 11 | 463 |
| 160 | 278 | 3 | 220 | 211 | 0 | 0 | 22 | 734 |
| 161 | 2 | 0 | 55 | 58 | 10 | 0 | 13 | 138 |
| 162 | 165 | 0 | 49 | 97 | 0 | 0 | 67 | 378 |
| 163 | 930 | 0 | 245 | 312 | 11 | 65 | 114 | 1677 |
| 164 | 2 | 3 | 0 | 74 | 0 | 5 | 22 | 106 |
| 165 | 1046 | 69 | 255 | 649 | 5 | 0 | 287 | 2311 |
| 166 | 1554 | 70 | 284 | 716 | 0 | 231 | 146 | 3001 |
| 167 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 3 |
| 168 | 673 | 45 | 0 | 83 | 0 | 65 | 122 | 988 |
| 169 | 624 | 22 | 0 | 258 | 0 | 0 | 67 | 971 |
| 170 | 1174 | 33 | 551 | 1157 | 0 | 151 | 248 | 3314 |
| 171 | 1283 | 30 | 723 | 824 | 0 | 132 | 372 | 3364 |
| 172 | 1054 | 28 | 314 | 549 | 11 | 71 | 451 | 2478 |
| 173 | 981 | 22 | 265 | 184 | 0 | 359 | 192 | 2003 |
| 174 | 1807 | 46 | 622 | 975 | 0 | 72 | 253 | 3775 |
| 175 | 624 | 0 | 79 | 365 | 0 | 65 | 237 | 1370 |
| 176 | 747 | 103 | 416 | 504 | 11 | 163 | 192 | 2136 |
| 177 | 2270 | 65 | 824 | 1540 | 0 | 569 | 508 | 5776 |
| 178 | 101 | 2 | 94 | 255 | 0 | 0 | 0 | 452 |
| 179 | 995 | 4 | 673 | 164 | 0 | 163 | 102 | 2101 |
| 180 | 467 | 11 | 0 | 190 | 0 | 0 | 72 | 740 |
| 181 | 468 | 3 | 24 | 349 | 11 | 0 | 90 | 945 |
| 182 | 2 | 0 | 11 | 21 | 0 | 0 | 0 | 34 |
| 183 | 269 | 0 | 79 | 57 | 0 | 0 | 67 | 472 |
| 184 | 1410 | 45 | 798 | 1332 | 0 | 297 | 353 | 4235 |
| 185 | 863 | 19 | 691 | 449 | 0 | 196 | 248 | 2466 |
| 186 | 130 | 0 | 22 | 270 | 0 | 98 | 22 | 542 |
| 187 | 886 | 22 | 316 | 906 | 0 | 0 | 126 | 2256 |
| 188 | 834 | 22 | 122 | 1250 | 0 | 98 | 135 | 2461 |
| 189 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 3 |
| 190 | 35 | 0 | 0 | 0 | 0 | 0 | 22 | 57 |
| 191 | 32 | 0 | 0 | 42 | 0 | 32 | 0 | 106 |
| 192 | 296 | 5 | 0 | 227 | 0 | 0 | 101 | 629 |
| 193 | 116 | 0 | 0 | 96 | 0 | 0 | 41 | 253 |
| 194 | 68 | 0 | 0 | 3 | 0 | 0 | 0 | 71 |
| 195 | 986 | 11 | 67 | 158 | 0 | 0 | 69 | 1291 |
| 196 | 2181 | 56 | 990 | 1282 | 45 | 163 | 372 | 5089 |
| 197 | 1093 | 35 | 497 | 574 | 0 | 163 | 124 | 2486 |
| 198 | 301 | 0 | 11 | 589 | 11 | 98 | 70 | 1080 |
| 199 | 65 | 0 | 11 | 2 | 22 | 0 | 22 | 122 |
| 200 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 22 |
| 201 | 265 | 22 | 22 | 87 | 0 | 0 | 45 | 441 |
| 202 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 98 |
| 203 | 627 | 22 | 134 | 395 | 0 | 0 | 56 | 1234 |
| 204 | 561 | 11 | 0 | 2 | 0 | 0 | 33 | 607 |
| 205 | 525 | 11 | 1052 | 786 | 0 | 0 | 158 | 2532 |
| 206 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 207 | 490 | 0 | 0 | 181 | 11 | 0 | 45 | 727 |
| 208 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 4 |
| 209 | 2 | 0 | 0 | 130 | 0 | 0 | 0 | 132 |
| 210 | 1030 | 67 | 55 | 529 | 0 | 102 | 203 | 1986 |
| 211 | 261 | 0 | 55 | 171 | 0 | 65 | 45 | 597 |
| 212 | 855 | 0 | 90 | 90 | 0 | 65 | 22 | 1122 |
| 213 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 6 |
| 214 | 1036 | 19 | 66 | 256 | 0 | 65 | 45 | 1487 |
| 215 | 189 | 24 | 3 | 367 | 0 | 10 | 45 | 638 |
| 216 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 217 | 7 | 0 | 0 | 7 | 0 | 4 | 0 | 18 |
| 218 | 12 | 0 | 0 | 32 | 5 | 12 | 8 | 69 |
| 219 | 277 | 19 | 38 | 580 | 27 | 68 | 192 | 1201 |
| 220 | 744 | 44 | 118 | 2105 | 266 | 141 | 551 | 3969 |
| 221 | 271 | 85 | 74 | 925 | 107 | 46 | 657 | 2165 |
| 222 | 13 | 0 | 0 | 16 | 1 | 0 | 39 | 69 |

TABLE A-10



O-D SURVEY PERSON TRIP

HOME BASED OTHER PRODUCTIONS-PURPOSE BREAKDOWN

| CENTROID | PURPOSE 2 PERS. BUS | PURPOSE 3 MED. DENT. | PURPOSE 4 SCHOOL | PURPOSE 5 SOC. REC. | PURPOSE 6 CH. TV. MODE | PURPOSE 7 EAT MEAL | PURPOSE 9 SERV. PASS. | TOTAL HB OTHER |
|---|---|---|---|---|---|---|---|---|
| 223 | 428 | 3 | 84 | 780 | 53 | 63 | 540 | 1951 |
| 224 | 173 | 34 | 100 | 379 | 54 | 50 | 107 | 897 |
| 225 | 507 | 78 | 89 | 500 | 69 | 147 | 529 | 1919 |
| 226 | 86 | 7 | 4 | 164 | 63 | 21 | 12 | 357 |
| 227 | 407 | 17 | 25 | 669 | 72 | 20 | 197 | 1407 |
| 228 | 60 | 3 | 0 | 48 | 19 | 0 | 1 | 131 |
| 229 | 376 | 87 | 5 | 733 | 64 | 90 | 362 | 1717 |
| 230 | 357 | 17 | 8 | 60 | 31 | 3 | 156 | 632 |
| 231 | 244 | 0 | 102 | 143 | 34 | 53 | 43 | 619 |
| 232 | 358 | 31 | 26 | 768 | 11 | 187 | 330 | 1711 |
| 233 | 9 | 0 | 0 | 12 | 0 | 1 | 53 | 75 |
| 234 | 320 | 26 | 26 | 406 | 20 | 73 | 165 | 1036 |
| 235 | 439 | 122 | 8 | 1141 | 75 | 226 | 324 | 2335 |
| 236 | 181 | 39 | 81 | 1095 | 42 | 53 | 527 | 2018 |
| 237 | 205 | 36 | 0 | 705 | 33 | 16 | 355 | 1350 |
| 238 | 1 | 0 | 0 | 39 | 17 | 27 | 0 | 84 |
| 239 | 79 | 0 | 8 | 269 | 13 | 8 | 36 | 413 |
| 240 | 7 | 42 | 5 | 37 | 71 | 4 | 100 | 266 |
| 241 | 15 | 3 | 0 | 60 | 50 | 9 | 1 | 138 |
| 242 | 455 | 23 | 5 | 391 | 407 | 31 | 61 | 1373 |
| 243 | 85 | 7 | 3 | 232 | 43 | 12 | 4 | 386 |
| 244 | 129 | 58 | 9 | 247 | 123 | 15 | 54 | 635 |
| 245 | 40 | 0 | 0 | 84 | 25 | 9 | 2 | 160 |
| 246 | 110 | 28 | 1 | 228 | 41 | 0 | 28 | 436 |
| 247 | 110 | 11 | 9 | 340 | 40 | 12 | 103 | 625 |
| 248 | 35 | 0 | 1 | 32 | 41 | 2 | 2 | 113 |
| 249 | 355 | 33 | 0 | 641 | 61 | 83 | 217 | 1390 |
| 250 | 103 | 65 | 0 | 1347 | 65 | 113 | 159 | 1852 |
| 251 | 31 | 1 | 0 | 47 | 58 | 8 | 2 | 147 |
| 252 | 100 | 8 | 20 | 292 | 90 | 49 | 36 | 595 |
| 253 | 23 | 3 | 9 | 166 | 50 | 0 | 0 | 251 |
| 254 | 905 | 44 | 33 | 1887 | 38 | 149 | 415 | 3471 |
| 255 | 488 | 21 | 2 | 1270 | 69 | 25 | 529 | 2404 |
| 256 | 327 | 152 | 42 | 1097 | 32 | 4 | 255 | 1909 |
| 257 | 187 | 23 | 43 | 1332 | 49 | 54 | 339 | 2027 |
| 258 | 227 | 19 | 25 | 875 | 127 | 63 | 431 | 1767 |
| 259 | 83 | 32 | 10 | 282 | 18 | 52 | 142 | 619 |
| 260 | 355 | 130 | 55 | 1412 | 34 | 142 | 573 | 2701 |
| 261 | 798 | 13 | 56 | 1938 | 205 | 221 | 1121 | 4352 |
| 262 | 561 | 11 | 49 | 1040 | 24 | 91 | 209 | 1985 |
| 263 | 666 | 135 | 109 | 1717 | 56 | 22 | 565 | 3270 |
| 264 | 500 | 117 | 72 | 1159 | 19 | 160 | 813 | 2840 |
| 265 | 478 | 12 | 37 | 1056 | 20 | 64 | 572 | 2239 |
| 266 | 532 | 64 | 74 | 1215 | 41 | 41 | 507 | 2474 |
| 267 | 308 | 10 | 152 | 975 | 12 | 113 | 518 | 2088 |
| 268 | 538 | 36 | 181 | 1140 | 82 | 27 | 409 | 2413 |
| 269 | 508 | 102 | 38 | 1423 | 105 | 191 | 565 | 2932 |
| 270 | 86 | 2 | 11 | 62 | 24 | 6 | 0 | 191 |
| 271 | 619 | 43 | 24 | 2034 | 76 | 173 | 574 | 3543 |
| 272 | 739 | 18 | 41 | 1013 | 22 | 55 | 624 | 2512 |
| 273 | 341 | 38 | 78 | 1341 | 6 | 109 | 548 | 2461 |
| 274 | 233 | 0 | 72 | 676 | 12 | 126 | 105 | 1224 |
| 275 | 206 | 242 | 51 | 830 | 20 | 77 | 291 | 1717 |
| 276 | 483 | 148 | 50 | 1421 | 14 | 106 | 578 | 2800 |
| 277 | 460 | 30 | 125 | 1257 | 161 | 192 | 1018 | 3243 |
| 278 | 149 | 8 | 38 | 304 | 72 | 18 | 218 | 807 |
| 279 | 481 | 81 | 44 | 1336 | 103 | 142 | 433 | 2620 |
| 280 | 410 | 19 | 11 | 1150 | 16 | 48 | 464 | 2118 |
| 281 | 683 | 57 | 61 | 1194 | 23 | 198 | 655 | 2871 |
| 282 | 330 | 19 | 34 | 772 | 33 | 120 | 587 | 1895 |
| 283 | 366 | 71 | 68 | 646 | 14 | 1 | 269 | 1435 |
| 284 | 370 | 59 | 147 | 1303 | 36 | 54 | 959 | 2928 |
| 285 | 10 | 1 | 0 | 15 | 21 | 4 | 0 | 51 |
| 286 | 487 | 38 | 20 | 936 | 37 | 17 | 229 | 1764 |
| 287 | 271 | 23 | 86 | 853 | 42 | 115 | 434 | 1824 |
| 288 | 763 | 53 | 61 | 1633 | 55 | 118 | 711 | 3394 |
| 289 | 337 | 29 | 43 | 1088 | 58 | 117 | 303 | 1975 |
| 290 | 65 | 0 | 0 | 286 | 34 | 16 | 100 | 501 |
| ILL TOT | 95690 | 4554 | 49887 | 82881 | 435 | 17494 | 26270 | 277211 |
| IA TOT | 22495 | 2830 | 2901 | 55681 | 4051 | 4883 | 23016 | 115857 |
| TOTAL | 118185 | 7384 | 52788 | 138562 | 4486 | 22377 | 49286 | 393068 |

TABLE A-11

O-D SURVEY PERSON TRIP

HOME BASED OTHER ATTRACTIONS-PURPOSE BREAKDOWN



| CENTROID | PURPOSE 2 PERS. BUS. | PURPOSE 3 MED. DENT. | PURPOSE 4 SCHOOL | PURPOSE 5 SOC. REC. | PURPOSE 6 CH. TV. MODE | PURPOSE 7 EAT MEAL | PURPOSE 9 SERV. PASS. | PURPOSES 2+3+6+9 PERS. BUS. | PURPOSES 5+7 SOC. REC. | TOTAL HB OTHER |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1016 | 0 | 0 | 546 | 33 | 355 | 434 | 1483 | 901 | 2384 |
| 2 | 4130 | 354 | 23 | 1453 | 14 | 1242 | 992 | 5490 | 2695 | 8208 |
| 3 | 776 | 0 | 272 | 255 | 0 | 72 | 33 | 809 | 327 | 1408 |
| 4 | 979 | 25 | 0 | 126 | 0 | 0 | 56 | 1060 | 126 | 1186 |
| 5 | 386 | 139 | 4 | 151 | 0 | 114 | 215 | 740 | 265 | 1009 |
| 6 | 14 | 0 | 0 | 42 | 0 | 64 | 35 | 49 | 106 | 155 |
| 7 | 794 | 37 | 1 | 972 | 379 | 147 | 528 | 1738 | 1119 | 2858 |
| 8 | 703 | 139 | 0 | 528 | 0 | 6 | 200 | 1042 | 534 | 1576 |
| 9 | 151 | 22 | 236 | 21 | 0 | 96 | 44 | 217 | 117 | 570 |
| 10 | 330 | 0 | 510 | 266 | 0 | 209 | 79 | 409 | 475 | 1394 |
| 11 | 87 | 4 | 1021 | 210 | 0 | 0 | 86 | 177 | 210 | 1408 |
| 12 | 201 | 43 | 0 | 116 | 0 | 0 | 50 | 294 | 116 | 410 |
| 13 | 602 | 0 | 0 | 73 | 87 | 198 | 169 | 858 | 271 | 1129 |
| 14 | 336 | 25 | 0 | 179 | 0 | 3 | 593 | 954 | 182 | 1136 |
| 15 | 56 | 0 | 0 | 584 | 0 | 0 | 50 | 106 | 584 | 690 |
| 16 | 264 | 0 | 66 | 334 | 0 | 0 | 105 | 369 | 334 | 769 |
| 17 | 871 | 14 | 0 | 583 | 0 | 8 | 176 | 1061 | 591 | 1652 |
| 18 | 978 | 14 | 132 | 849 | 0 | 129 | 402 | 1394 | 978 | 2504 |
| 19 | 137 | 6 | 1262 | 1133 | 0 | 65 | 218 | 361 | 1198 | 2821 |
| 20 | 461 | 0 | 169 | 449 | 0 | 0 | 179 | 640 | 449 | 1258 |
| 21 | 257 | 35 | 375 | 756 | 0 | 192 | 193 | 485 | 948 | 1808 |
| 22 | 557 | 83 | 111 | 528 | 0 | 0 | 116 | 756 | 528 | 1395 |
| 23 | 331 | 54 | 0 | 626 | 0 | 61 | 90 | 475 | 687 | 1162 |
| 24 | 47 | 0 | 0 | 289 | 0 | 36 | 47 | 94 | 325 | 419 |
| 25 | 541 | 22 | 315 | 363 | 0 | 290 | 151 | 714 | 653 | 1682 |
| 26 | 1367 | 133 | 169 | 843 | 0 | 550 | 479 | 1979 | 1393 | 3541 |
| 27 | 108 | 0 | 0 | 223 | 0 | 31 | 81 | 189 | 254 | 443 |
| 28 | 369 | 2 | 55 | 725 | 0 | 508 | 82 | 453 | 1233 | 1741 |
| 29 | 816 | 4 | 4865 | 974 | 0 | 64 | 692 | 1512 | 1038 | 7415 |
| 30 | 660 | 43 | 55 | 259 | 0 | 0 | 97 | 800 | 259 | 1114 |
| 31 | 170 | 0 | 2 | 96 | 0 | 61 | 0 | 170 | 157 | 329 |
| 32 | 3 | 0 | 3 | 1 | 0 | 0 | 0 | 3 | 1 | 7 |
| 33 | 464 | 0 | 54 | 382 | 0 | 0 | 81 | 545 | 382 | 981 |
| 34 | 889 | 1 | 3 | 816 | 3 | 481 | 145 | 1038 | 1297 | 2338 |
| 35 | 446 | 0 | 0 | 303 | 0 | 4 | 89 | 535 | 307 | 842 |
| 36 | 409 | 0 | 370 | 322 | 22 | 131 | 100 | 531 | 453 | 1354 |
| 37 | 367 | 1 | 0 | 161 | 0 | 0 | 47 | 415 | 161 | 576 |
| 38 | 1132 | 1 | 1319 | 1273 | 0 | 761 | 699 | 1832 | 2034 | 5185 |
| 39 | 147 | 0 | 0 | 60 | 11 | 31 | 62 | 220 | 91 | 311 |
| 40 | 81 | 0 | 1 | 142 | 0 | 146 | 0 | 81 | 288 | 370 |
| 41 | 1010 | 0 | 4268 | 1277 | 0 | 39 | 759 | 1769 | 1316 | 7353 |
| 42 | 445 | 71 | 0 | 555 | 0 | 62 | 199 | 715 | 617 | 1332 |
| 43 | 655 | 114 | 313 | 564 | 0 | 34 | 125 | 894 | 598 | 1805 |
| 44 | 5 | 0 | 0 | 110 | 0 | 0 | 23 | 28 | 110 | 138 |
| 45 | 1 | 33 | 0 | 11 | 0 | 0 | 21 | 55 | 11 | 66 |
| 46 | 361 | 0 | 1926 | 330 | 0 | 0 | 319 | 680 | 330 | 2936 |
| 47 | 367 | 0 | 333 | 689 | 0 | 0 | 291 | 658 | 689 | 1680 |
| 48 | 808 | 3 | 120 | 372 | 11 | 0 | 250 | 1072 | 372 | 1564 |
| 49 | 330 | 0 | 1 | 25 | 0 | 0 | 44 | 374 | 25 | 400 |
| 50 | 34 | 0 | 189 | 232 | 0 | 0 | 44 | 78 | 232 | 499 |
| 51 | 0 | 0 | 0 | 52 | 0 | 0 | 10 | 10 | 52 | 62 |
| 52 | 96 | 0 | 107 | 359 | 0 | 0 | 0 | 96 | 359 | 562 |
| 53 | 313 | 0 | 563 | 453 | 0 | 0 | 255 | 568 | 453 | 1584 |
| 54 | 320 | 0 | 0 | 932 | 0 | 0 | 29 | 349 | 932 | 1281 |
| 55 | 393 | 0 | 0 | 355 | 0 | 65 | 72 | 465 | 420 | 885 |
| 56 | 503 | 11 | 632 | 492 | 1 | 0 | 202 | 717 | 492 | 1841 |
| 57 | 64 | 0 | 0 | 240 | 0 | 0 | 44 | 108 | 240 | 348 |
| 58 | 66 | 0 | 0 | 763 | 0 | 0 | 0 | 66 | 763 | 829 |
| 59 | 0 | 44 | 0 | 46 | 0 | 0 | 0 | 44 | 46 | 90 |
| 60 | 1466 | 66 | 2812 | 662 | 11 | 60 | 415 | 1958 | 722 | 5492 |
| 61 | 422 | 0 | 0 | 462 | 0 | 825 | 2 | 424 | 1287 | 1711 |
| 62 | 348 | 11 | 438 | 1842 | 0 | 258 | 134 | 493 | 2100 | 3031 |
| 63 | 56 | 0 | 0 | 113 | 0 | 0 | 112 | 168 | 113 | 281 |
| 64 | 0 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 27 | 27 |
| 65 | 24 | 0 | 3 | 215 | 0 | 0 | 87 | 111 | 215 | 329 |
| 66 | 10 | 0 | 0 | 466 | 0 | 0 | 66 | 76 | 466 | 542 |
| 67 | 324 | 0 | 3 | 274 | 0 | 0 | 0 | 324 | 274 | 601 |
| 68 | 150 | 0 | 0 | 200 | 0 | 0 | 32 | 182 | 200 | 382 |
| 69 | 2 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 3 | 5 |
| 70 | 1 | 0 | 0 | 45 | 0 | 0 | 0 | 1 | 45 | 46 |
| 71 | 0 | 0 | 0 | 93 | 0 | 0 | 0 | 0 | 93 | 93 |
| 72 | 3 | 0 | 0 | 7 | 0 | 0 | 44 | 47 | 7 | 54 |
| 73 | 76 | 0 | 0 | 109 | 0 | 0 | 10 | 86 | 109 | 195 |

TABLE A-11

O-D SURVEY PERSON TRIP

HOME BASED OTHER ATTRACTIONS-PURPOSE BREAKDOWN



| CENTROID | PURPOSE 2 | | PURPOSE 3 | | PURPOSE 4 | PURPOSE 5 | | PURPOSE 6 | | PURPOSE 7 | | PURPOSE 9 | | PURPOSES 2+3+6+9 | | PURPOSES 5+7 | | TOTAL HB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PERS. | BUS. | MED. | DENT. | SCHOOL | SOC. | REC. | CH. | TV. | MODE | EAT | MEAL | SERV. | PASS. | PERS. | BUS. | SOC. | REC. | OTHER |
| 74 | 1 | | 0 | | 0 | 108 | | 0 | | 0 | | 11 | | 12 | | 108 | | 120 |
| 75 | 190 | | 0 | | 0 | 168 | | 0 | | 0 | | 0 | | 190 | | 168 | | 358 |
| 76 | 95 | | 0 | | 0 | 150 | | 0 | | 0 | | 69 | | 164 | | 150 | | 314 |
| 77 | 0 | | 0 | | 0 | 175 | | 0 | | 0 | | 11 | | 11 | | 175 | | 186 |
| 78 | 0 | | 0 | | 0 | 46 | | 0 | | 0 | | 3 | | 3 | | 46 | | 49 |
| 79 | 0 | | 0 | | 0 | 3 | | 0 | | 0 | | 0 | | 0 | | 3 | | 3 |
| 80 | 0 | | 0 | | 0 | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 |
| 81 | 0 | | 0 | | 0 | 45 | | 0 | | 0 | | 0 | | 0 | | 45 | | 45 |
| 82 | 25 | | 0 | | 0 | 183 | | 2 | | 8 | | 0 | | 27 | | 191 | | 218 |
| 83 | 2043 | | 9 | | 0 | 536 | | 0 | | 267 | | 118 | | 2170 | | 803 | | 2973 |
| 84 | 4136 | | 151 | | 114 | 962 | | 46 | | 221 | | 227 | | 4560 | | 1183 | | 5857 |
| 85 | 2937 | | 408 | | 12 | 1161 | | 13 | | 170 | | 637 | | 3995 | | 1331 | | 5338 |
| 86 | 466 | | 32 | | 110 | 120 | | 0 | | 103 | | 90 | | 588 | | 223 | | 921 |
| 87 | 462 | | 24 | | 0 | 118 | | 0 | | 1 | | 115 | | 601 | | 119 | | 720 |
| 88 | 575 | | 3 | | 814 | 730 | | 0 | | 0 | | 188 | | 766 | | 730 | | 2310 |
| 89 | 749 | | 4 | | 0 | 228 | | 0 | | 9 | | 192 | | 945 | | 237 | | 1182 |
| 90 | 400 | | 0 | | 0 | 199 | | 0 | | 68 | | 235 | | 635 | | 267 | | 902 |
| 91 | 477 | | 0 | | 2 | 195 | | 3 | | 0 | | 243 | | 723 | | 195 | | 920 |
| 92 | 155 | | 0 | | 0 | 55 | | 0 | | 0 | | 226 | | 381 | | 55 | | 436 |
| 93 | 104 | | 0 | | 0 | 43 | | 0 | | 0 | | 33 | | 137 | | 43 | | 180 |
| 94 | 233 | | 0 | | 214 | 124 | | 10 | | 0 | | 102 | | 345 | | 124 | | 683 |
| 95 | 10 | | 0 | | 0 | 94 | | 0 | | 0 | | 22 | | 32 | | 94 | | 126 |
| 96 | 2776 | | 212 | | 2 | 1439 | | 10 | | 0 | | 628 | | 3626 | | 1439 | | 5067 |
| 97 | 440 | | 276 | | 2 | 492 | | 0 | | 98 | | 133 | | 849 | | 590 | | 1441 |
| 98 | 146 | | 182 | | 0 | 339 | | 0 | | 829 | | 270 | | 598 | | 1168 | | 1766 |
| 99 | 169 | | 0 | | 0 | 113 | | 0 | | 75 | | 44 | | 213 | | 188 | | 401 |
| 100 | 344 | | 0 | | 0 | 365 | | 0 | | 0 | | 173 | | 517 | | 365 | | 882 |
| 101 | 409 | | 463 | | 494 | 711 | | 0 | | 0 | | 266 | | 1138 | | 711 | | 2343 |
| 102 | 275 | | 84 | | 4070 | 187 | | 0 | | 0 | | 100 | | 459 | | 187 | | 4716 |
| 103 | 1389 | | 97 | | 1932 | 468 | | 0 | | 295 | | 480 | | 1966 | | 763 | | 4661 |
| 104 | 884 | | 69 | | 262 | 544 | | 0 | | 0 | | 208 | | 1161 | | 544 | | 1967 |
| 105 | 758 | | 0 | | 187 | 288 | | 0 | | 0 | | 184 | | 942 | | 288 | | 1417 |
| 106 | 496 | | 0 | | 0 | 453 | | 0 | | 0 | | 173 | | 669 | | 453 | | 1122 |
| 107 | 985 | | 0 | | 232 | 692 | | 0 | | 484 | | 217 | | 1202 | | 1176 | | 2610 |
| 108 | 230 | | 0 | | 0 | 521 | | 0 | | 0 | | 78 | | 308 | | 521 | | 829 |
| 109 | 108 | | 0 | | 0 | 162 | | 2 | | 65 | | 22 | | 132 | | 227 | | 359 |
| 110 | 135 | | 0 | | 0 | 183 | | 0 | | 0 | | 22 | | 157 | | 183 | | 340 |
| 111 | 424 | | 0 | | 0 | 242 | | 0 | | 0 | | 133 | | 557 | | 242 | | 799 |
| 112 | 626 | | 0 | | 0 | 198 | | 0 | | 292 | | 35 | | 661 | | 490 | | 1151 |
| 113 | 17 | | 0 | | 0 | 27 | | 0 | | 0 | | 22 | | 39 | | 27 | | 66 |
| 114 | 440 | | 2 | | 0 | 394 | | 0 | | 425 | | 213 | | 655 | | 819 | | 1474 |
| 115 | 226 | | 0 | | 0 | 340 | | 0 | | 0 | | 10 | | 236 | | 340 | | 576 |
| 116 | 0 | | 107 | | 0 | 38 | | 0 | | 0 | | 35 | | 142 | | 38 | | 180 |
| 117 | 224 | | 0 | | 0 | 374 | | 0 | | 0 | | 110 | | 334 | | 374 | | 708 |
| 118 | 162 | | 24 | | 0 | 350 | | 0 | | 0 | | 92 | | 278 | | 350 | | 628 |
| 119 | 98 | | 0 | | 498 | 75 | | 0 | | 0 | | 130 | | 228 | | 75 | | 801 |
| 120 | 105 | | 0 | | 113 | 108 | | 0 | | 0 | | 16 | | 121 | | 108 | | 342 |
| 121 | 1272 | | 12 | | 1 | 481 | | 0 | | 520 | | 147 | | 1431 | | 1001 | | 2433 |
| 122 | 1523 | | 328 | | 6741 | 1090 | | 0 | | 850 | | 1362 | | 3213 | | 1940 | | 11894 |
| 123 | 494 | | 0 | | 0 | 454 | | 0 | | 65 | | 34 | | 528 | | 519 | | 1047 |
| 124 | 792 | | 0 | | 0 | 1653 | | 0 | | 461 | | 258 | | 1050 | | 2114 | | 3164 |
| 125 | 96 | | 0 | | 0 | 107 | | 0 | | 0 | | 0 | | 96 | | 107 | | 203 |
| 126 | 194 | | 0 | | 0 | 41 | | 0 | | 0 | | 22 | | 216 | | 41 | | 257 |
| 127 | 0 | | 4 | | 1 | 258 | | 0 | | 0 | | 0 | | 4 | | 258 | | 263 |
| 128 | 75 | | 0 | | 0 | 353 | | 0 | | 0 | | 0 | | 75 | | 353 | | 428 |
| 129 | 271 | | 0 | | 1 | 266 | | 0 | | 32 | | 22 | | 293 | | 298 | | 592 |
| 130 | 14 | | 0 | | 0 | 268 | | 0 | | 68 | | 14 | | 28 | | 336 | | 364 |
| 131 | 38 | | 0 | | 0 | 156 | | 0 | | 0 | | 10 | | 48 | | 156 | | 204 |
| 132 | 772 | | 1 | | 1 | 162 | | 0 | | 0 | | 199 | | 972 | | 162 | | 1135 |
| 133 | 299 | | 0 | | 14 | 318 | | 10 | | 0 | | 43 | | 352 | | 318 | | 684 |
| 134 | 130 | | 0 | | 55 | 570 | | 0 | | 0 | | 22 | | 152 | | 570 | | 777 |
| 135 | 132 | | 54 | | 0 | 247 | | 0 | | 61 | | 0 | | 186 | | 308 | | 494 |
| 136 | 246 | | 24 | | 0 | 22 | | 0 | | 0 | | 43 | | 313 | | 22 | | 335 |
| 137 | 1075 | | 2 | | 309 | 546 | | 0 | | 131 | | 275 | | 1352 | | 677 | | 2338 |
| 138 | 872 | | 10 | | 23 | 1094 | | 0 | | 464 | | 253 | | 1135 | | 1558 | | 2716 |
| 139 | 37 | | 0 | | 0 | 108 | | 0 | | 0 | | 76 | | 113 | | 108 | | 221 |
| 140 | 360 | | 0 | | 174 | 382 | | 0 | | 62 | | 22 | | 382 | | 444 | | 1000 |
| 141 | 293 | | 0 | | 106 | 303 | | 0 | | 429 | | 34 | | 327 | | 732 | | 1165 |
| 142 | 22 | | 0 | | 47 | 299 | | 0 | | 0 | | 22 | | 44 | | 299 | | 390 |
| 143 | 4 | | 0 | | 3 | 47 | | 0 | | 0 | | 0 | | 4 | | 47 | | 54 |
| 144 | 0 | | 1 | | 0 | 246 | | 0 | | 0 | | 22 | | 23 | | 246 | | 269 |
| 145 | 97 | | 0 | | 0 | 604 | | 0 | | 32 | | 21 | | 118 | | 636 | | 754 |
| 146 | 0 | | 0 | | 0 | 7 | | 0 | | 0 | | 0 | | 0 | | 7 | | 7 |

TABLE A-11

O-D SURVEY PERSON TRIP

HOME BASED OTHER ATTRACTIONS-PURPOSE BREAKDOWN



| CENTROID | PURPOSE 2 PERS. BUS. | PURPOSE 3 MED. DENT. | PURPOSE 4 SCHOOL | PURPOSE 5 SOC. REC. | PURPOSE 6 CH. TV. MODE | PURPOSE 7 EAT MEAL | PURPOSE 9 SERV. PASS. | PURPOSES 2+3+6+9 PERS. BUS. | PURPOSES 5+7 SOC. REC. | TOTAL HB OTHER |
|---|---|---|---|---|---|---|---|---|---|---|
| 147 | 227 | 0 | 0 | 90 | 0 | 0 | 11 | 238 | 90 | 328 |
| 148 | 4 | 0 | 104 | 403 | 0 | 1 | 165 | 169 | 404 | 677 |
| 149 | 785 | 1 | 6 | 698 | 278 | 435 | 159 | 1223 | 1133 | 2362 |
| 150 | 727 | 68 | 283 | 959 | 0 | 136 | 183 | 978 | 1095 | 2356 |
| 151 | 106 | 0 | 0 | 438 | 0 | 43 | 191 | 297 | 481 | 778 |
| 152 | 186 | 0 | 877 | 351 | 0 | 0 | 23 | 209 | 351 | 1437 |
| 153 | 0 | 0 | 53 | 149 | 0 | 0 | 21 | 21 | 149 | 223 |
| 154 | 65 | 0 | 0 | 320 | 22 | 0 | 22 | 109 | 320 | 429 |
| 155 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 5 |
| 156 | 64 | 0 | 0 | 1 | 0 | 0 | 0 | 64 | 1 | 65 |
| 157 | 4 | 0 | 0 | 73 | 0 | 0 | 0 | 4 | 73 | 77 |
| 158 | 15 | 4 | 2 | 143 | 0 | 0 | 0 | 19 | 143 | 164 |
| 159 | 2307 | 6 | 0 | 349 | 0 | 196 | 101 | 2414 | 545 | 2959 |
| 160 | 1550 | 24 | 0 | 155 | 0 | 0 | 216 | 1790 | 155 | 1945 |
| 161 | 377 | 2 | 0 | 7 | 0 | 0 | 419 | 798 | 7 | 805 |
| 162 | 0 | 0 | 0 | 53 | 0 | 0 | 0 | 0 | 53 | 53 |
| 163 | 575 | 0 | 0 | 155 | 0 | 2 | 124 | 699 | 157 | 856 |
| 164 | 825 | 2 | 0 | 99 | 0 | 3 | 533 | 1360 | 102 | 1462 |
| 165 | 1056 | 0 | 0 | 319 | 0 | 0 | 56 | 1112 | 319 | 1431 |
| 166 | 633 | 0 | 145 | 690 | 0 | 0 | 124 | 757 | 690 | 1592 |
| 167 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| 168 | 453 | 9 | 2 | 348 | 0 | 2 | 207 | 669 | 350 | 1021 |
| 169 | 165 | 0 | 0 | 338 | 0 | 0 | 0 | 165 | 338 | 503 |
| 170 | 1738 | 209 | 795 | 663 | 22 | 616 | 314 | 2283 | 1279 | 4357 |
| 171 | 592 | 22 | 593 | 567 | 0 | 133 | 124 | 738 | 700 | 2031 |
| 172 | 997 | 0 | 978 | 306 | 0 | 131 | 248 | 1245 | 437 | 2660 |
| 173 | 1353 | 0 | 1575 | 1324 | 11 | 130 | 316 | 1680 | 1454 | 4709 |
| 174 | 553 | 22 | 0 | 267 | 0 | 0 | 125 | 700 | 267 | 967 |
| 175 | 65 | 0 | 116 | 79 | 0 | 0 | 11 | 76 | 79 | 271 |
| 176 | 343 | 0 | 56 | 692 | 0 | 0 | 124 | 467 | 692 | 1215 |
| 177 | 639 | 0 | 923 | 754 | 0 | 0 | 157 | 796 | 754 | 2473 |
| 178 | 559 | 0 | 1909 | 266 | 0 | 0 | 182 | 741 | 266 | 2916 |
| 179 | 277 | 0 | 67 | 1820 | 0 | 0 | 79 | 356 | 1820 | 2243 |
| 180 | 1340 | 0 | 0 | 206 | 0 | 553 | 123 | 1463 | 759 | 2222 |
| 181 | 1908 | 27 | 0 | 141 | 11 | 163 | 171 | 2117 | 304 | 2421 |
| 182 | 61 | 0 | 0 | 0 | 0 | 0 | 112 | 173 | 0 | 173 |
| 183 | 572 | 0 | 0 | 373 | 0 | 0 | 90 | 662 | 373 | 1035 |
| 184 | 1016 | 0 | 177 | 428 | 0 | 2 | 143 | 1159 | 430 | 1766 |
| 185 | 728 | 0 | 492 | 1264 | 0 | 65 | 203 | 931 | 1329 | 2752 |
| 186 | 294 | 0 | 165 | 128 | 0 | 0 | 45 | 339 | 128 | 632 |
| 187 | 300 | 0 | 248 | 963 | 0 | 0 | 66 | 366 | 963 | 1577 |
| 188 | 672 | 0 | 45 | 514 | 0 | 4 | 35 | 707 | 518 | 1270 |
| 189 | 0 | 0 | 0 | 83 | 0 | 0 | 0 | 0 | 83 | 83 |
| 190 | 196 | 0 | 0 | 254 | 0 | 0 | 0 | 196 | 254 | 450 |
| 191 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 |
| 192 | 4 | 0 | 0 | 66 | 0 | 0 | 0 | 4 | 66 | 70 |
| 193 | 88 | 0 | 0 | 279 | 0 | 2 | 142 | 230 | 281 | 511 |
| 194 | 2 | 0 | 0 | 106 | 0 | 0 | 0 | 2 | 106 | 108 |
| 195 | 294 | 0 | 0 | 369 | 0 | 0 | 67 | 361 | 369 | 730 |
| 196 | 1415 | 2 | 24 | 943 | 0 | 100 | 107 | 1524 | 1043 | 2591 |
| 197 | 933 | 45 | 403 | 915 | 0 | 65 | 104 | 1082 | 980 | 2465 |
| 198 | 147 | 0 | 0 | 358 | 0 | 0 | 0 | 147 | 358 | 505 |
| 199 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| 200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 201 | 196 | 0 | 22 | 1 | 0 | 0 | 22 | 218 | 1 | 241 |
| 202 | 3 | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 2 | 5 |
| 203 | 206 | 2 | 2 | 2 | 0 | 0 | 0 | 208 | 2 | 212 |
| 204 | 71 | 0 | 0 | 132 | 0 | 0 | 0 | 71 | 132 | 203 |
| 205 | 166 | 0 | 0 | 716 | 0 | 0 | 0 | 166 | 716 | 882 |
| 206 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 207 | 131 | 0 | 33 | 185 | 0 | 0 | 13 | 144 | 185 | 362 |
| 208 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 209 | 5 | 0 | 0 | 86 | 0 | 0 | 0 | 5 | 86 | 91 |
| 210 | 950 | 5 | 92 | 733 | 11 | 0 | 35 | 1001 | 733 | 1826 |
| 211 | 65 | 0 | 110 | 418 | 0 | 0 | 22 | 87 | 418 | 615 |
| 212 | 163 | 0 | 0 | 2 | 0 | 0 | 0 | 163 | 2 | 165 |
| 213 | 2 | 0 | 0 | 4 | 0 | 0 | 0 | 2 | 4 | 6 |
| 214 | 498 | 2 | 0 | 410 | 0 | 0 | 26 | 526 | 410 | 936 |
| 215 | 823 | 27 | 66 | 418 | 0 | 35 | 12 | 862 | 453 | 1381 |
| 216 | 130 | 0 | 0 | 3 | 0 | 0 | 0 | 130 | 3 | 133 |
| 217 | 2 | 0 | 0 | 0 | 4 | 0 | 0 | 6 | 0 | 6 |
| 218 | 114 | 0 | 0 | 732 | 14 | 966 | 308 | 436 | 1698 | 2134 |
| 219 | 321 | 0 | 0 | 805 | 20 | 3 | 239 | 580 | 808 | 1388 |

TABLE A-11

O-D SURVEY PERSON TRIP

HOME BASED OTHER ATTRACTIONS-PURPOSE BREAKDOWN



| CENTROID | PURPOSE 2 PERS. BUS. | PURPOSE 3 MED. DENT. | PURPOSE 4 SCHOOL | PURPOSE 5 SOC. REC. | PURPOSE 6 CH. TV. | PURPOSE 7 MODE EAT | PURPOSE 9 MEAL SERV. | PURPOSES 2+3+6+9 PASS. PERS. BUS. | PURPOSES 5+7 SOC. REC. | TOTAL HB OTHER |
|---|---|---|---|---|---|---|---|---|---|---|
| 220 | 325 | 21 | 9 | 610 | 28 | 19 | 158 | 532 | 629 | 1170 |
| 221 | 67 | 4 | 1 | 1533 | 13 | 101 | 266 | 350 | 1634 | 1985 |
| 222 | 2 | 0 | 0 | 67 | 9 | 1 | 9 | 20 | 68 | 88 |
| 223 | 91 | 1 | 0 | 407 | 2 | 0 | 245 | 339 | 407 | 746 |
| 224 | 107 | 0 | 8 | 455 | 9 | 18 | 144 | 260 | 473 | 741 |
| 225 | 380 | 51 | 0 | 889 | 9 | 224 | 302 | 742 | 1113 | 1855 |
| 226 | 1208 | 96 | 0 | 883 | 81 | 330 | 375 | 1760 | 1213 | 2973 |
| 227 | 168 | 8 | 45 | 715 | 1 | 104 | 263 | 440 | 819 | 1304 |
| 228 | 150 | 0 | 0 | 159 | 37 | 8 | 144 | 331 | 167 | 498 |
| 229 | 198 | 14 | 87 | 519 | 10 | 0 | 419 | 641 | 519 | 1247 |
| 230 | 46 | 0 | 0 | 94 | 7 | 0 | 18 | 71 | 94 | 165 |
| 231 | 78 | 0 | 0 | 105 | 2 | 0 | 3 | 83 | 105 | 188 |
| 232 | 114 | 0 | 71 | 133 | 3 | 8 | 69 | 186 | 141 | 398 |
| 233 | 5 | 0 | 0 | 92 | 0 | 0 | 0 | 5 | 92 | 97 |
| 234 | 87 | 1 | 89 | 371 | 9 | 0 | 73 | 170 | 371 | 630 |
| 235 | 195 | 62 | 2 | 489 | 0 | 1 | 91 | 348 | 490 | 840 |
| 236 | 37 | 2 | 48 | 287 | 8 | 19 | 377 | 424 | 306 | 778 |
| 237 | 89 | 0 | 9 | 345 | 33 | 118 | 83 | 205 | 463 | 677 |
| 238 | 0 | 0 | 0 | 54 | 0 | 8 | 0 | 0 | 62 | 62 |
| 239 | 24 | 0 | 0 | 113 | 4 | 0 | 8 | 36 | 113 | 149 |
| 240 | 102 | 1 | 7 | 226 | 22 | 8 | 140 | 265 | 234 | 506 |
| 241 | 225 | 1 | 0 | 277 | 38 | 160 | 107 | 371 | 437 | 808 |
| 242 | 4605 | 527 | 44 | 3939 | 215 | 543 | 2747 | 8094 | 4482 | 12620 |
| 243 | 705 | 245 | 8 | 1225 | 12 | 45 | 724 | 1686 | 1270 | 2964 |
| 244 | 1230 | 117 | 17 | 1946 | 71 | 116 | 985 | 2403 | 2062 | 4482 |
| 245 | 254 | 10 | 1 | 2775 | 6 | 6 | 404 | 674 | 2781 | 3456 |
| 246 | 526 | 9 | 10 | 717 | 43 | 0 | 144 | 722 | 717 | 1449 |
| 247 | 380 | 1 | 0 | 746 | 27 | 10 | 284 | 692 | 756 | 1448 |
| 248 | 270 | 1 | 0 | 81 | 19 | 3 | 153 | 443 | 84 | 527 |
| 249 | 325 | 2 | 2 | 529 | 23 | 20 | 143 | 493 | 549 | 1044 |
| 250 | 267 | 0 | 0 | 746 | 49 | 5 | 278 | 594 | 751 | 1345 |
| 251 | 304 | 1 | 2 | 135 | 55 | 4 | 499 | 859 | 139 | 1000 |
| 252 | 669 | 0 | 0 | 2550 | 37 | 167 | 417 | 1123 | 2717 | 3840 |
| 253 | 17 | 0 | 0 | 161 | 15 | 0 | 40 | 72 | 161 | 233 |
| 254 | 319 | 4 | 1 | 896 | 29 | 148 | 94 | 446 | 1044 | 1491 |
| 255 | 282 | 6 | 16 | 1243 | 12 | 72 | 187 | 487 | 1315 | 1818 |
| 256 | 194 | 5 | 38 | 806 | 43 | 2 | 232 | 474 | 808 | 1320 |
| 257 | 326 | 146 | 23 | 860 | 4 | 112 | 157 | 633 | 972 | 1628 |
| 258 | 133 | 0 | 24 | 400 | 3 | 0 | 54 | 190 | 400 | 614 |
| 259 | 132 | 0 | 0 | 2167 | 13 | 4 | 155 | 300 | 2171 | 2471 |
| 260 | 127 | 2 | 38 | 2361 | 12 | 40 | 572 | 713 | 2401 | 3152 |
| 261 | 1631 | 166 | 23 | 1492 | 69 | 424 | 763 | 2629 | 1916 | 4568 |
| 262 | 191 | 7 | 241 | 679 | 2 | 1 | 167 | 367 | 680 | 1288 |
| 263 | 114 | 45 | 1 | 755 | 17 | 0 | 334 | 510 | 755 | 1266 |
| 264 | 399 | 36 | 107 | 1213 | 10 | 0 | 497 | 942 | 1213 | 2262 |
| 265 | 656 | 143 | 78 | 985 | 44 | 104 | 329 | 1172 | 1089 | 2339 |
| 266 | 384 | 31 | 575 | 431 | 10 | 19 | 655 | 1080 | 450 | 2105 |
| 267 | 333 | 9 | 32 | 335 | 30 | 0 | 157 | 529 | 335 | 896 |
| 268 | 603 | 640 | 43 | 1355 | 37 | 20 | 686 | 1966 | 1375 | 3384 |
| 269 | 664 | 54 | 914 | 1387 | 86 | 37 | 1110 | 1914 | 1424 | 4252 |
| 270 | 260 | 8 | 0 | 197 | 27 | 0 | 330 | 625 | 197 | 822 |
| 271 | 81 | 2 | 0 | 500 | 8 | 0 | 274 | 365 | 500 | 865 |
| 272 | 129 | 1 | 59 | 431 | 10 | 5 | 313 | 453 | 436 | 948 |
| 273 | 174 | 64 | 49 | 640 | 1 | 156 | 330 | 569 | 796 | 1414 |
| 274 | 254 | 0 | 4 | 327 | 20 | 0 | 211 | 485 | 327 | 816 |
| 275 | 287 | 361 | 227 | 881 | 64 | 26 | 882 | 1594 | 907 | 2728 |
| 276 | 86 | 2 | 5 | 740 | 1 | 0 | 229 | 318 | 740 | 1063 |
| 277 | 79 | 26 | 3 | 1102 | 0 | 0 | 416 | 521 | 1102 | 1626 |
| 278 | 674 | 21 | 2 | 1043 | 66 | 831 | 294 | 1055 | 1874 | 2931 |
| 279 | 372 | 163 | 3 | 1312 | 16 | 84 | 328 | 879 | 1396 | 2278 |
| 280 | 258 | 34 | 110 | 2005 | 8 | 94 | 603 | 903 | 2099 | 3112 |
| 281 | 61 | 0 | 4 | 684 | 11 | 0 | 205 | 277 | 684 | 965 |
| 282 | 86 | 72 | 27 | 811 | 4 | 56 | 283 | 445 | 867 | 1339 |
| 283 | 327 | 283 | 16 | 789 | 191 | 8 | 532 | 1333 | 797 | 2146 |
| 284 | 100 | 2 | 10 | 609 | 1 | 144 | 179 | 282 | 753 | 1045 |
| 285 | 263 | 20 | 1 | 347 | 5 | 99 | 360 | 648 | 446 | 1095 |
| 286 | 83 | 22 | 2 | 242 | 3 | 2 | 24 | 132 | 244 | 378 |
| 287 | 49 | 8 | 48 | 343 | 4 | 9 | 108 | 169 | 352 | 569 |
| 288 | 294 | 22 | 1 | 861 | 17 | 141 | 330 | 663 | 1002 | 1666 |
| 289 | 138 | 2 | 6 | 355 | 11 | 0 | 74 | 225 | 355 | 586 |
| 290 | 9 | 0 | 0 | 147 | 0 | 0 | 37 | 46 | 147 | 193 |
| ILL TOT | 95745 | 4616 | 49997 | 78396 | 1027 | 16800 | 26474 | 127862 | 95196 | 273055 |
| IA TOT | 24237 | 3582 | 3191 | 57641 | 1820 | 5653 | 23150 | 52789 | 63294 | 119274 |
| TOTAL | 119982 | 8198 | 53188 | 136037 | 2847 | 22453 | 116657 | 180651 | 158490 | 392329 |

TABLE A-12

HOME BASED OTHER PRODUCTIONS

| CENTROID | OBSERVED | COMPUTED | CENTROID | OBSERVED | COMPUTED | CENTROID | OBSERVED | COMPUTED | CENTROID | OBSERVED | COMPUTED |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 281 | 263 | 52 | 1070 | 532 | 111 | 660 | 1083 | 158 | 366 | 249 |
| 2 | 455 | 480 | 53 | 5052 | 3701 | 112 | 634 | 1083 | 159 | 465 | 470 |
| 3 | 295 | 154 | 54 | 2351 | 2625 | 114 | 759 | 1196 | 160 | 737 | 470 |
| 8 | 396 | 734 | 55 | 2610 | 3413 | 115 | 2544 | 2692 | 162 | 380 | 418 |
| 9 | 1005 | 1102 | 56 | 3564 | 2819 | 116 | 1734 | 1965 | 163 | 1676 | 1272 |
| 10 | 1343 | 1842 | 57 | 499 | 201 | 117 | 1866 | 2121 | 165 | 2315 | 2338 |
| 11 | 882 | 734 | 58 | 251 | 673 | 118 | 1637 | 2121 | 166 | 3006 | 2923 |
| 12 | 941 | 1526 | 59 | 717 | 150 | 119 | 481 | 1031 | 168 | 990 | 1003 |
| 14 | 302 | 310 | 60 | 2574 | 1196 | 120 | 2237 | 1809 | 169 | 975 | 1220 |
| 15 | 1039 | 1168 | 61 | 2718 | 2243 | 121 | 1970 | 2418 | 170 | 3316 | 3404 |
| 16 | 1124 | 1956 | 63 | 1193 | 621 | 122 | 1521 | 1658 | 171 | 3365 | 2550 |
| 17 | 2418 | 2908 | 64 | 183 | 362 | 123 | 2127 | 2267 | 172 | 2483 | 2177 |
| 18 | 2576 | 3055 | 65 | 260 | 310 | 124 | 2020 | 2012 | 173 | 2006 | 1805 |
| 19 | 2032 | 1229 | 66 | 740 | 885 | 125 | 370 | 650 | 174 | 3788 | 3989 |
| 20 | 2655 | 3158 | 67 | 217 | 253 | 126 | 1192 | 1508 | 175 | 1373 | 631 |
| 21 | 2177 | 2899 | 68 | 747 | 1248 | 127 | 1589 | 805 | 176 | 2138 | 2229 |
| 22 | 2068 | 2470 | 69 | 326 | 249 | 129 | 1855 | 1324 | 177 | 5782 | 4734 |
| 23 | 3513 | 2668 | 75 | 388 | 650 | 130 | 1111 | 1163 | 178 | 453 | 1003 |
| 24 | 1526 | 1107 | 76 | 283 | 400 | 131 | 811 | 1003 | 179 | 2103 | 1592 |
| 25 | 2467 | 2517 | 81 | 185 | 300 | 132 | 589 | 1163 | 180 | 742 | 1104 |
| 26 | 583 | 904 | 82 | 682 | 602 | 133 | 2558 | 2390 | 181 | 948 | 739 |
| 27 | 1119 | 1121 | 83 | 265 | 272 | 134 | 1152 | 1220 | 183 | 474 | 367 |
| 28 | 1953 | 2625 | 85 | 484 | 550 | 135 | 1300 | 1003 | 184 | 4238 | 3083 |
| 29 | 3339 | 3380 | 86 | 873 | 890 | 136 | 1362 | 1125 | 185 | 2472 | 2069 |
| 30 | 2778 | 3055 | 87 | 526 | 494 | 137 | 2829 | 2668 | 186 | 545 | 470 |
| 33 | 1816 | 2191 | 88 | 1653 | 2682 | 138 | 2035 | 1588 | 187 | 2257 | 1913 |
| 34 | 2448 | 2243 | 89 | 448 | 494 | 139 | 970 | 1022 | 188 | 2460 | 1696 |
| 35 | 626 | 937 | 94 | 612 | 720 | 140 | 2884 | 2668 | 192 | 630 | 631 |
| 36 | 1022 | 1144 | 96 | 1111 | 1800 | 141 | 1261 | 1691 | 193 | 254 | 739 |
| 37 | 357 | 300 | 97 | 3664 | 2819 | 142 | 1468 | 1894 | 195 | 1308 | 1220 |
| 38 | 2178 | 2163 | 98 | 2316 | 2649 | 144 | 1447 | 1380 | 196 | 5093 | 4682 |
| 39 | 323 | 904 | 99 | 1672 | 1347 | 145 | 686 | 716 | 197 | 2477 | 1644 |
| 40 | 175 | 197 | 100 | 1013 | 1380 | 146 | 269 | 352 | 198 | 1082 | 1220 |
| 41 | 2838 | 2390 | 101 | 5101 | 4055 | 147 | 555 | 1432 | 201 | 443 | 367 |
| 42 | 2077 | 2743 | 102 | 2136 | 2272 | 148 | 1200 | 2012 | 203 | 1235 | 1059 |
| 43 | 3937 | 4272 | 103 | 1458 | 1772 | 149 | 405 | 248 | 204 | 607 | 315 |
| 44 | 591 | 810 | 104 | 2395 | 2385 | 150 | 1123 | 1107 | 205 | 2534 | 2229 |
| 45 | 922 | 404 | 105 | 3073 | 2942 | 151 | 246 | 400 | 207 | 729 | 900 |
| 46 | 3520 | 2187 | 106 | 3848 | 3592 | 152 | 1986 | 1710 | 210 | 1987 | 1753 |
| 47 | 3794 | 3592 | 107 | 2474 | 3701 | 153 | 1900 | 2470 | 211 | 599 | 579 |
| 48 | 4031 | 4508 | 108 | 952 | 4608 | 154 | 643 | 701 | 212 | 1123 | 848 |
| 49 | 2143 | 1498 | 109 | 1825 | 2432 | 156 | 214 | 197 | 214 | 1485 | 1324 |
| 50 | 504 | 532 | 110 | 1453 | 1498 | 157 | 184 | 550 | 215 | 635 | 951 |
| 51 | 994 | 904 | | | | | | | | | |

TABLE A-13



HOME BASED OTHER ATTRACTIONS**

| CENTROID | PERS. BUS. OBSERVED | PERS. BUS. COMPUTED | SOC.-RECR. OBSERVED | SOC.-RECR. COMPUTED | SCHOOL OBSERVED | SCHOOL COMPUTED | OTHER TOTAL OBSERVED | OTHER TOTAL COMPUTED |
|---|---|---|---|---|---|---|---|---|
| 1 | 1483 | SPEC | 901 | 803 | 0 | - | 2384 | 2286 |
| 2 | 5490 | SPEC | 2695 | SPEC | 23 | - | 8208 | 8185 |
| 3 | 809 | 967 | 327 | SPEC | 272 | 21 | 1408 | 1315 |
| 4 | 1060 | 657 | 126 | - | 0 | - | 1186 | 657 |
| 5 | 740 | SPEC | 265 | - | 4 | - | 1009 | 740 |
| 6 | 49 | - | 106 | - | 0 | - | 155 | 0 |
| 7 | 1738 | 2240 | 1119 | SPEC | 1 | - | 2858 | 3359 |
| 8 | 1042 | 1602 | 534 | 662 | 0 | - | 1576 | 2264 |
| 9 | 217 | - | 117 | 399 | 236 | 1010 | 570 | 1409 |
| 10 | 409 | 801 | 475 | 625 | 510 | 276 | 1394 | 1702 |
| 11 | 177 | - | 210 | 348 | 1021 | 2480 | 1408 | 2828 |
| 12 | 294 | - | 116 | 433 | 0 | - | 410 | 433 |
| 13 | 858 | 790 | 271 | - | 0 | - | 1129 | 790 |
| 14 | 954 | 537 | 182 | 281 | 0 | - | 1136 | 818 |
| 15 | 106 | - | 584 | 429 | 0 | - | 690 | 429 |
| 16 | 369 | 724 | 334 | 678 | 66 | 384 | 769 | 1786 |
| 17 | 1061 | 716 | 591 | 821 | 0 | - | 1652 | 1537 |
| 18 | 1394 | SPEC | 978 | 766 | 132 | 679 | 2504 | 2839 |
| 19 | 361 | 572 | 1198 | 470 | 1262 | 533 | 2821 | 1575 |
| 20 | 640 | 688 | 449 | 737 | 169 | 669 | 1258 | 2094 |
| 21 | 485 | 514 | 948 | 565 | 375 | 296 | 1808 | 1375 |
| 22 | 756 | 590 | 528 | 668 | 111 | - | 1395 | 1258 |
| 23 | 475 | 542 | 687 | 657 | 0 | - | 1162 | 1199 |
| 24 | 94 | - | 325 | 364 | 0 | - | 419 | 364 |
| 25 | 714 | 620 | 653 | 599 | 315 | 504 | 1682 | 1723 |
| 26 | 1979 | 1240 | 1393 | SPEC | 169 | - | 3541 | 2633 |
| 27 | 189 | - | 254 | 365 | 0 | - | 443 | 365 |
| 28 | 453 | 796 | 1233 | 647 | 55 | - | 1741 | 1443 |
| 29 | 1512 | SPEC | 1038 | 705 | 4865 | 2475 | 7415 | 4692 |
| 30 | 800 | 569 | 259 | 632 | 55 | - | 1114 | 1201 |
| 31 | 170 | - | 157 | - | 2 | - | 329 | - |
| 32 | 3 | - | 1 | - | 3 | - | 7 | - |
| 33 | 545 | 493 | 382 | 502 | 54 | - | 981 | 995 |
| 34 | 1038 | 837 | 1297 | SPEC | 3 | - | 2338 | 2134 |
| 35 | 535 | SPEC | 307 | 482 | 0 | - | 842 | 1017 |
| 36 | 531 | 811 | 453 | 444 | 370 | 438 | 1354 | 1693 |
| 37 | 415 | 756 | 161 | 340 | 0 | - | 576 | 1096 |
| 38 | 1832 | 963 | 2034 | SPEC | 1319 | 608 | 5185 | 3605 |
| 39 | 220 | - | 91 | - | 0 | - | 311 | 0 |
| 40 | 81 | - | 288 | 247 | 1 | - | 370 | 247 |
| 41 | 1769 | SPEC | 1316 | SPEC | 4268 | 3466 | 7353 | 6551 |
| 42 | 715 | 507 | 617 | 520 | 0 | - | 1332 | 1027 |
| 43 | 894 | 900 | 598 | 858 | 313 | - | 1805 | 1758 |
| 44 | 28 | - | 110 | 297 | 0 | - | 138 | 297 |
| 45 | 55 | - | 11 | - | 0 | - | 66 | 0 |
| 46 | 680 | 541 | 330 | 445 | 1926 | 598 | 2936 | 1584 |
| 47 | 658 | 558 | 689 | 684 | 333 | 836 | 1680 | 2078 |
| 48 | 1072 | 549 | 372 | 780 | 120 | 659 | 1564 | 1988 |
| 49 | 374 | 510 | 25 | - | 1 | - | 400 | 510 |
| 50 | 78 | - | 232 | 276 | 189 | 182 | 499 | 458 |
| 51 | 10 | - | 52 | - | 0 | - | 62 | - |
| 52 | 96 | - | 359 | 260 | 107 | - | 562 | 260 |
| 53 | 568 | 498 | 453 | 549 | 563 | 382 | 1584 | 1429 |
| 54 | 349 | 509 | 932 | 426 | 0 | - | 1281 | 935 |
| 55 | 465 | 531 | 420 | 547 | 0 | - | 885 | 1078 |
| 56 | 717 | 526 | 492 | 487 | 632 | 373 | 1841 | 1386 |
| 57 | 108 | - | 240 | - | 0 | - | 348 | 0 |
| 58 | 66 | - | 763 | 285 | 0 | - | 829 | 285 |
| 59 | 44 | - | 46 | - | 0 | - | 90 | 0 |
| 60 | 1958 | SPEC | 722 | 551 | 2812 | 351 | 5492 | 2860 |
| 61 | 424 | 645 | 1287 | 542 | 0 | - | 1711 | 1187 |
| 62 | 493 | 604 | 2100 | SPEC | 438 | 509 | 3031 | 3213 |
| 63 | 168 | - | 113 | - | 0 | - | 281 | 0 |
| 64 | 0 | - | 27 | - | 0 | - | 27 | - |
| 65 | 111 | - | 215 | - | 3 | - | 329 | - |
| 66 | 76 | - | 466 | - | 0 | - | 542 | - |
| 67 | 324 | - | 274 | - | 3 | - | 601 | - |
| 68 | 182 | - | 200 | - | 0 | - | 382 | 0 |
| 69 | 2 | - | 3 | - | 0 | - | 5 | - |
| 70 | 1 | - | 45 | - | 0 | - | 46 | - |
| 71 | 0 | - | 93 | - | 0 | - | 93 | - |
| 72 | 47 | - | 7 | - | 0 | - | 54 | 0 |
| 73 | 86 | - | 109 | - | 0 | - | 195 | - |
| 74 | 12 | - | 108 | - | 0 | - | 120 | - |

TABLE A-13



HOME BASED OTHER ATTRACTIONS

| CENTROID | PERS. BUS. OBSERVED | PERS. BUS. COMPUTED | SOC.-RECR. OBSERVED | SOC.-RECR. COMPUTED | SCHOOL OBSERVED | SCHOOL COMPUTED | OTHER TOTAL OBSERVED | OTHER TOTAL COMPUTED |
|---|---|---|---|---|---|---|---|---|
| 75 | 190 | - | 168 | - | 0 | - | 358 | 0 |
| 76 | 164 | - | 150 | - | 0 | - | 314 | - |
| 77 | 11 | - | 175 | - | 0 | - | 186 | - |
| 78 | 3 | - | 46 | - | 0 | - | 49 | - |
| 79 | 0 | - | 3 | - | 0 | - | 3 | - |
| 80 | 0 | - | 0 | - | 0 | - | 0 | - |
| 81 | 0 | - | 45 | - | 0 | - | 45 | - |
| 82 | 27 | - | 191 | - | 0 | - | 218 | - |
| 83 | 2170 | 1358 | 803 | 584 | 114 | 233 | 2973 | 2175 |
| 84 | 4560 | SPEC | 1183 | SPEC | 0 | - | 5857 | 5743 |
| 85 | 3995 | SPEC | 1331 | SPEC | 12 | - | 5338 | 5326 |
| 86 | 588 | SPEC | 223 | - | 110 | - | 921 | 588 |
| 87 | 601 | 651 | 119 | - | 0 | - | 720 | 651 |
| 88 | 766 | 607 | 730 | 713 | 814 | 278 | 2310 | 1598 |
| 89 | 945 | 545 | 237 | 318 | 0 | - | 1182 | 863 |
| 90 | 635 | 714 | 267 | 285 | 0 | - | 902 | 999 |
| 91 | 723 | 769 | 195 | - | 2 | - | 920 | 769 |
| 92 | 381 | 776 | 55 | - | 0 | - | 436 | 776 |
| 93 | 137 | - | 43 | - | 0 | - | 180 | - |
| 94 | 345 | 789 | 124 | - | 214 | 301 | 683 | 1090 |
| 95 | 32 | - | 94 | - | 0 | - | 126 | 0 |
| 96 | 3626 | SPEC | 1439 | SPEC | 2 | - | 5067 | 5065 |
| 97 | 849 | 571 | 590 | 643 | 2 | - | 1441 | 1214 |
| 98 | 598 | 703 | 1168 | 595 | 0 | - | 1766 | 1298 |
| 99 | 213 | - | 188 | 399 | 0 | - | 401 | 399 |
| 100 | 517 | 534 | 365 | 461 | 0 | - | 882 | 995 |
| 101 | 1138 | 725 | 711 | 854 | 494 | 505 | 2343 | 2084 |
| 102 | 459 | 627 | 187 | 527 | 4070 | 2778 | 4716 | 3932 |
| 103 | 1966 | SPEC | 763 | 641 | 1932 | 740 | 4661 | 3347 |
| 104 | 1161 | SPEC | 544 | 536 | 262 | - | 1967 | 1697 |
| 105 | 942 | 509 | 288 | 555 | 187 | 312 | 1411 | 1376 |
| 106 | 669 | 514 | 453 | 649 | 0 | - | 1122 | 1163 |
| 107 | 1202 | 716 | 1176 | 724 | 232 | 473 | 2610 | 1913 |
| 108 | 308 | 496 | 521 | 262 | 0 | - | 829 | 758 |
| 109 | 132 | - | 227 | 481 | 0 | - | 359 | 481 |
| 110 | 157 | - | 183 | 408 | 0 | - | 340 | 408 |
| 111 | 557 | 546 | 242 | 381 | 0 | - | 799 | 927 |
| 112 | 661 | 851 | 490 | 480 | 0 | - | 1151 | 1331 |
| 113 | 39 | - | 27 | - | 0 | - | 66 | 0 |
| 114 | 655 | 737 | 819 | 441 | 0 | - | 1474 | 1178 |
| 115 | 236 | - | 340 | 542 | 0 | - | 576 | 542 |
| 116 | 142 | - | 38 | - | 0 | - | 180 | - |
| 117 | 334 | 502 | 374 | 439 | 0 | - | 708 | 941 |
| 118 | 278 | - | 350 | 431 | 0 | - | 628 | 431 |
| 119 | 228 | - | 75 | - | 498 | 1113 | 801 | 1113 |
| 120 | 121 | - | 108 | 370 | 113 | 305 | 342 | 675 |
| 121 | 1431 | SPEC | 1001 | SPEC | 1 | - | 2433 | 2432 |
| 122 | 3213 | SPEC | 1940 | SPEC | 6741 | 4664 | 11894 | 9817 |
| 123 | 528 | 562 | 519 | 492 | 0 | - | 1047 | 1054 |
| 124 | 1050 | 993 | 2114 | SPEC | 0 | - | 3164 | 3107 |
| 125 | 96 | - | 107 | 282 | 0 | - | 203 | 282 |
| 126 | 216 | - | 41 | - | 0 | - | 257 | 0 |
| 127 | 4 | - | 258 | 291 | 1 | - | 263 | 291 |
| 128 | 75 | - | 353 | 251 | 0 | - | 428 | 251 |
| 129 | 293 | - | 298 | 364 | 1 | - | 592 | 364 |
| 130 | 28 | - | 336 | 335 | 0 | - | 364 | 335 |
| 131 | 48 | - | 156 | 307 | 0 | - | 204 | 307 |
| 132 | 972 | 1355 | 162 | 670 | 1 | - | 1135 | 2025 |
| 133 | 352 | 557 | 318 | 530 | 14 | - | 684 | 1087 |
| 134 | 152 | - | 570 | 342 | 55 | 203 | 777 | 545 |
| 135 | 186 | - | 308 | 300 | 0 | - | 494 | 300 |
| 136 | 313 | 486 | 22 | - | 0 | - | 335 | 486 |
| 137 | 1352 | SPEC | 677 | 641 | 309 | 889 | 2338 | 2882 |
| 138 | 1135 | 913 | 1558 | SPEC | 23 | 375 | 2716 | 2846 |
| 139 | 113 | - | 108 | 343 | 0 | 174 | 221 | 517 |
| 140 | 382 | 506 | 444 | 522 | 174 | - | 1000 | 1028 |
| 141 | 327 | 801 | 732 | 467 | 106 | - | 1165 | 1268 |
| 142 | 44 | - | 299 | 422 | 47 | 423 | 390 | 845 |
| 143 | 4 | - | 47 | - | 3 | - | 54 | - |
| 144 | 23 | - | 246 | 381 | 0 | - | 269 | 381 |
| 145 | 118 | - | 636 | 340 | 0 | - | 754 | 340 |
| 146 | 0 | - | 7 | - | 0 | - | 7 | - |
| 147 | 238 | - | 90 | - | 0 | - | 328 | 0 |
| 148 | 169 | - | 404 | 444 | 104 | 497 | 677 | 941 |

TABLE A-13

HOME BASED OTHER ATTRACTIONS

| CENTROID | PERS. BUS. OBSERVED | PERS. BUS. COMPUTED | SOC.-RECR. OBSERVED | SOC.-RECR. COMPUTED | SCHOOL OBSERVED | SCHOOL COMPUTED | OTHER TOTAL OBSERVED | OTHER TOTAL COMPUTED |
|---|---|---|---|---|---|---|---|---|
| 149 | 1223 | 784 | 1133 | SPEC | 6 | - | 2362 | 1917 |
| 150 | 978 | 538 | 1095 | SPEC | 283 | 408 | 2356 | 2041 |
| 151 | 297 | - | 481 | 355 | 0 | - | 778 | 355 |
| 152 | 209 | - | 351 | 414 | 877 | 372 | 1437 | 786 |
| 153 | 21 | - | 149 | - | 53 | - | 223 | 0 |
| 154 | 109 | - | 320 | 273 | 0 | - | 429 | 273 |
| 155 | 5 | - | 0 | - | 0 | - | 5 | - |
| 156 | 64 | - | 1 | - | 0 | - | 65 | - |
| 157 | 4 | - | 73 | - | 0 | - | 77 | 0 |
| 158 | 19 | - | 143 | - | 2 | - | 164 | - |
| 159 | 2414 | SPEC | 545 | 546 | 0 | - | 2959 | 2960 |
| 160 | 1790 | SPEC | 155 | 493 | 0 | - | 1945 | 2283 |
| 161 | 798 | 602 | 7 | - | 0 | - | 805 | 602 |
| 162 | 0 | - | 53 | - | 0 | - | 53 | - |
| 163 | 699 | 636 | 157 | 409 | 0 | - | 856 | 1045 |
| 164 | 1360 | SPEC | 102 | 285 | 0 | - | 1462 | 1645 |
| 165 | 1112 | 559 | 319 | 613 | 0 | - | 1431 | 1172 |
| 166 | 757 | 601 | 690 | 639 | 145 | 586 | 1592 | 1826 |
| 167 | 2 | - | 0 | - | 0 | - | 2 | - |
| 168 | 669 | SPEC | 350 | 549 | 2 | - | 1021 | 1218 |
| 169 | 165 | - | 338 | 347 | 0 | - | 503 | 347 |
| 170 | 2283 | SPEC | 1279 | 762 | 795 | - | 4357 | 3045 |
| 171 | 738 | 568 | 700 | 505 | 593 | 799 | 2031 | 1872 |
| 172 | 1245 | SPEC | 437 | 472 | 978 | 661 | 2660 | 2378 |
| 173 | 1680 | 898 | 1454 | SPEC | 1575 | 2356 | 4709 | 4708 |
| 174 | 700 | 506 | 267 | 620 | 0 | - | 967 | 1126 |
| 175 | 76 | - | 79 | - | 116 | 807 | 271 | 807 |
| 176 | 467 | 511 | 692 | 463 | 56 | 467 | 1215 | 1441 |
| 177 | 796 | 734 | 754 | 776 | 923 | 797 | 2473 | 2307 |
| 178 | 741 | 535 | 266 | 319 | 1909 | 1994 | 2916 | 2848 |
| 179 | 356 | 569 | 1820 | SPEC | 67 | - | 2243 | 2389 |
| 180 | 1463 | SPEC | 759 | 417 | 0 | - | 2222 | 1880 |
| 181 | 2117 | SPEC | 304 | 443 | 0 | - | 2421 | 2560 |
| 182 | 173 | - | 0 | - | 0 | - | 173 | - |
| 183 | 662 | 581 | 373 | 312 | 0 | - | 1035 | 893 |
| 184 | 1159 | SPEC | 430 | 516 | 177 | 352 | 1766 | 2027 |
| 185 | 931 | 548 | 1329 | SPEC | 492 | 750 | 2752 | 2627 |
| 186 | 339 | 501 | 128 | - | 165 | - | 632 | 501 |
| 187 | 366 | 516 | 963 | 386 | 248 | 606 | 1577 | 1508 |
| 188 | 707 | 539 | 518 | 420 | 45 | 198 | 1270 | 1157 |
| 189 | 0 | - | 83 | - | 0 | - | 83 | - |
| 190 | 196 | - | 254 | 237 | 0 | - | 450 | 237 |
| 191 | 0 | - | 2 | - | 0 | - | 2 | - |
| 192 | 4 | - | 66 | - | 0 | - | 70 | - |
| 193 | 230 | - | 281 | - | 0 | - | 511 | 0 |
| 194 | 2 | - | 106 | - | 0 | - | 108 | - |
| 195 | 361 | - | 369 | 347 | 0 | - | 730 | 347 |
| 196 | 1524 | SPEC | 1043 | 762 | 24 | 156 | 2591 | 2442 |
| 197 | 1082 | 538 | 980 | 410 | 403 | 730 | 2465 | 1678 |
| 198 | 147 | - | 358 | 315 | 0 | - | 505 | 315 |
| 199 | 0 | - | 1 | - | 0 | - | 1 | - |
| 200 | 0 | - | 0 | - | 0 | - | 0 | - |
| 201 | 218 | - | 1 | - | 22 | - | 241 | - |
| 202 | 3 | - | 2 | - | 0 | - | 5 | - |
| 203 | 208 | - | 2 | - | 2 | - | 212 | - |
| 204 | 71 | - | 132 | - | 0 | - | 203 | 0 |
| 205 | 166 | - | 716 | 441 | 0 | - | 882 | 441 |
| 206 | 0 | - | 0 | - | 0 | - | 0 | - |
| 207 | 144 | - | 185 | 324 | 33 | 152 | 362 | 476 |
| 208 | 0 | - | 0 | - | 0 | - | 0 | - |
| 209 | 5 | - | 86 | - | 0 | - | 91 | - |
| 210 | 1001 | 510 | 733 | 408 | 92 | 230 | 1826 | 1148 |
| 211 | 87 | - | 418 | - | 110 | - | 615 | - |
| 212 | 163 | - | 2 | - | 0 | - | 165 | 0 |
| 213 | 2 | - | 4 | - | 0 | - | 6 | - |
| 214 | 526 | 502 | 410 | 375 | 0 | - | 936 | 877 |
| 215 | 862 | 636 | 453 | 413 | 66 | 877 | 1381 | 1926 |
| 216 | 130 | - | 3 | - | 0 | - | 133 | - |
| 217 | 6 | - | 0 | - | 0 | - | 6 | - |
| 218 | 436 | SPEC | 1698 | SPEC | 0 | - | 2134 | - |
| 219 | 580 | 860 | 808 | 516 | 0 | - | 1388 | - |
| 220 | 532 | 682 | 629 | 837 | 9 | - | 1170 | - |
| 221 | 350 | 543 | 1634 | SPEC | 1 | - | 1985 | - |
| 222 | 20 | - | 68 | - | 0 | - | 88 | - |

TABLE A-13

HOME BASED OTHER ATTRACTIONS

| CENTROID | PERS. BUS. OBSERVED | PERS. BUS. COMPUTED | SOC.-RECR. OBSERVED | SOC.-RECR. COMPUTED | SCHOOL OBSERVED | SCHOOL COMPUTED | OTHER TOTAL OBSERVED | OTHER TOTAL COMPUTED |
|---|---|---|---|---|---|---|---|---|
| 223 | 339 | 741 | 407 | 597 | 0 | - | 746 | - |
| 224 | 260 | - | 473 | 386 | 8 | - | 741 | - |
| 225 | 742 | 903 | 1113 | SPEC | 0 | - | 1855 | - |
| 226 | 1760 | 2025 | 1213 | SPEC | 0 | - | 2973 | - |
| 227 | 440 | 674 | 819 | 454 | 45 | - | 1304 | - |
| 228 | 331 | 888 | 167 | - | 0 | - | 498 | - |
| 229 | 641 | 713 | 519 | 585 | 87 | - | 1247 | - |
| 230 | 71 | - | 94 | - | 0 | - | 165 | - |
| 231 | 83 | - | 105 | 377 | 0 | - | 188 | - |
| 232 | 186 | - | 141 | 514 | 71 | - | 398 | - |
| 233 | 5 | - | 92 | - | 0 | - | 97 | - |
| 234 | 170 | - | 371 | 403 | 89 | - | 630 | - |
| 235 | 348 | 545 | 490 | 560 | 2 | - | 840 | - |
| 236 | 424 | 553 | 306 | 475 | 48 | - | 778 | - |
| 237 | 205 | - | 463 | 476 | 9 | - | 677 | - |
| 238 | 0 | - | 62 | - | 0 | - | 62 | - |
| 239 | 36 | - | 113 | 287 | 0 | - | 149 | - |
| 240 | 265 | - | 234 | 321 | 7 | - | 506 | - |
| 241 | 371 | SPEC | 437 | 528 | 0 | - | 808 | - |
| 242 | 8094 | 7716 | 4482 | SPEC | 44 | - | 12620 | - |
| 243 | 1686 | SPEC | 1270 | SPEC | 8 | - | 2964 | - |
| 244 | 2403 | 2537 | 2062 | SPEC | 17 | - | 4482 | - |
| 245 | 674 | SPEC | 2781 | SPEC | 1 | - | 3456 | - |
| 246 | 722 | SPEC | 717 | 799 | 10 | - | 1449 | - |
| 247 | 692 | SPEC | 756 | 580 | 0 | - | 1448 | - |
| 248 | 443 | SPEC | 84 | - | 0 | - | 527 | - |
| 249 | 493 | SPEC | 549 | 738 | 2 | - | 1044 | - |
| 250 | 594 | 785 | 751 | 830 | 0 | - | 1345 | - |
| 251 | 859 | 1097 | 139 | - | 2 | - | 1000 | - |
| 252 | 1123 | 1849 | 2717 | SPEC | 0 | - | 3840 | - |
| 253 | 72 | - | 161 | - | 0 | - | 233 | - |
| 254 | 446 | 748 | 1044 | 843 | 1 | - | 1491 | - |
| 255 | 487 | 663 | 1315 | 721 | 16 | - | 1818 | - |
| 256 | 474 | 712 | 808 | 679 | 38 | - | 1320 | - |
| 257 | 633 | 946 | 972 | 802 | 23 | - | 1628 | - |
| 258 | 190 | - | 400 | 542 | 24 | - | 614 | - |
| 259 | 300 | - | 2171 | SPEC | 0 | - | 2471 | - |
| 260 | 713 | 657 | 2401 | SPEC | 38 | - | 3152 | - |
| 261 | 2629 | SPEC | 1916 | SPEC | 23 | - | 4568 | - |
| 262 | 367 | 678 | 680 | 781 | 241 | - | 1288 | - |
| 263 | 510 | 642 | 755 | 949 | 1 | - | 1266 | - |
| 264 | 942 | 798 | 1213 | 745 | 107 | - | 2262 | - |
| 265 | 1172 | 1079 | 1089 | 883 | 78 | - | 2339 | - |
| 266 | 1080 | 1064 | 450 | 904 | 575 | - | 2105 | - |
| 267 | 529 | 815 | 335 | 876 | 32 | - | 896 | - |
| 268 | 1966 | SPEC | 1375 | 957 | 43 | - | 3384 | - |
| 269 | 1914 | 1745 | 1424 | SPEC | 914 | - | 4252 | - |
| 270 | 625 | 1230 | 197 | 525 | 0 | - | 822 | - |
| 271 | 365 | 594 | 500 | 729 | 0 | - | 865 | - |
| 272 | 453 | 650 | 436 | 904 | 59 | - | 948 | - |
| 273 | 569 | 631 | 796 | 673 | 49 | - | 1414 | - |
| 274 | 485 | 651 | 327 | 522 | 4 | - | 816 | - |
| 275 | 1594 | 1035 | 907 | 735 | 227 | - | 2728 | - |
| 276 | 318 | 612 | 740 | 831 | 5 | - | 1063 | - |
| 277 | 521 | 542 | 1102 | 728 | 3 | - | 1626 | - |
| 278 | 1055 | 1081 | 1874 | SPEC | 2 | - | 2931 | - |
| 279 | 879 | 844 | 1396 | 846 | 3 | - | 2278 | - |
| 280 | 903 | 668 | 2099 | SPEC | 110 | - | 3112 | - |
| 281 | 277 | - | 684 | 675 | 4 | - | 965 | - |
| 282 | 445 | 752 | 867 | 566 | 27 | - | 1339 | - |
| 283 | 1333 | 962 | 797 | 719 | 16 | - | 2146 | - |
| 284 | 282 | - | 753 | 640 | 10 | - | 1045 | - |
| 285 | 648 | SPEC | 446 | SPEC | 1 | - | 1095 | - |
| 286 | 132 | - | 244 | 506 | 2 | - | 378 | - |
| 287 | 169 | - | 352 | 527 | 48 | - | 569 | - |
| 288 | 663 | 655 | 1002 | 797 | 1 | - | 1666 | - |
| 289 | 225 | - | 355 | 619 | 6 | - | 586 | - |
| 290 | 46 | - | 147 | 322 | 0 | - | 193 | - |

TABLE A-14

NON-HOME BASED PRODUCTIONS AND ATTRACTIONS

| CENT | PROD OBS. | ATTR OBS. | NHB COMPUTED | OTHER AND SHOP ATTR OBSERVED | OTHER AND SHOP ATTR COMPUTED | CENT | PROD OBS. | ATTR OBS. | NHB COMPUTED | OTHER AND SHOP ATTR OBSERVED | OTHER AND SHOP ATTR COMPUTED |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 947 | 1038 | 829 | 2674 | 2995 | 104 | 496 | 523 | 504 | 1990 | 1697 |
| 2 | 3914 | 4230 | 2784 | 11481 | 10817 | 105 | 487 | 542 | 424 | 1551 | 1376 |
| 3 | 581 | 378 | 409 | 1489 | 1315 | 106 | 398 | 548 | 371 | 1165 | 1163 |
| 4 | 782 | 552 | 558 | 1535 | 1912 | 107 | 1050 | 1280 | 835 | 3605 | 3021 |
| 5 | 964 | 436 | 673 | 1747 | 2371 | 108 | 110 | 245 | 270 | 829 | 758 |
| 6 | 261 | 81 | 115 | 213 | 138 | 109 | 243 | 348 | 200 | 373 | 481 |
| 7 | 1563 | 988 | 920 | 2861 | 3359 | 110 | 91 | 169 | 182 | 340 | 408 |
| 8 | 1243 | 781 | 704 | 1694 | 2496 | 111 | 196 | 69 | 312 | 799 | 927 |
| 9 | 435 | 299 | 432 | 613 | 1409 | 112 | 411 | 610 | 490 | 1349 | 1641 |
| 10 | 301 | 740 | 912 | 2449 | 3328 | 113 | 46 | 132 | 80 | 87 | 0 |
| 11 | 520 | 245 | 785 | 1433 | 2828 | 114 | 653 | 952 | 443 | 1942 | 1453 |
| 12 | 256 | 325 | 185 | 410 | 433 | 115 | 299 | 259 | 216 | 620 | 542 |
| 13 | 448 | 317 | 278 | 1195 | 790 | 117 | 154 | 172 | 315 | 791 | 941 |
| 14 | 755 | 322 | 285 | 1136 | 818 | 118 | 296 | 356 | 188 | 628 | 431 |
| 15 | 559 | 441 | 187 | 696 | 429 | 119 | 285 | 200 | 358 | 801 | 1113 |
| 16 | 457 | 426 | 557 | 901 | 1906 | 120 | 69 | 163 | 249 | 342 | 675 |
| 17 | 921 | 1187 | 826 | 2219 | 2460 | 121 | 2046 | 1820 | 1047 | 4520 | 3871 |
| 18 | 1268 | 910 | 790 | 2559 | 2839 | 122 | 6276 | 5444 | 5172 | 22445 | 20368 |
| 19 | 491 | 524 | 493 | 2869 | 1652 | 123 | 490 | 691 | 408 | 1439 | 1313 |
| 20 | 376 | 370 | 675 | 1445 | 2378 | 124 | 2306 | 2527 | 1831 | 6719 | 7004 |
| 21 | 683 | 775 | 424 | 1812 | 1375 | 126 | 140 | 128 | 80 | 279 | 0 |
| 22 | 563 | 428 | 408 | 1438 | 1310 | 129 | 126 | 110 | 196 | 785 | 465 |
| 23 | 130 | 334 | 421 | 1284 | 1263 | 130 | 120 | 116 | 164 | 364 | 335 |
| 24 | 251 | 236 | 180 | 443 | 398 | 131 | 77 | 54 | 157 | 206 | 307 |
| 25 | 440 | 413 | 615 | 1812 | 2140 | 132 | 1595 | 1759 | 2154 | 7499 | 8296 |
| 26 | 839 | 777 | 738 | 3543 | 2633 | 133 | 134 | 303 | 352 | 687 | 1087 |
| 27 | 482 | 356 | 171 | 568 | 365 | 134 | 154 | 231 | 238 | 883 | 631 |
| 28 | 984 | 1225 | 782 | 3432 | 2810 | 135 | 276 | 261 | 155 | 494 | 300 |
| 29 | 1084 | 978 | 1270 | 7491 | 4761 | 136 | 75 | 94 | 202 | 335 | 486 |
| 30 | 453 | 505 | 481 | 1331 | 1604 | 137 | 761 | 550 | 823 | 2487 | 2972 |
| 33 | 351 | 444 | 329 | 1029 | 995 | 138 | 1267 | 1910 | 1338 | 4985 | 5033 |
| 34 | 1278 | 1750 | 1034 | 4221 | 3818 | 140 | 305 | 236 | 337 | 1004 | 1028 |
| 35 | 261 | 281 | 362 | 888 | 1129 | 141 | 298 | 384 | 397 | 1167 | 1268 |
| 36 | 518 | 873 | 885 | 2636 | 3218 | 142 | 65 | 143 | 291 | 517 | 845 |
| 37 | 165 | 310 | 354 | 621 | 1096 | 144 | 129 | 109 | 175 | 310 | 381 |
| 38 | 2028 | 1749 | 1768 | 7987 | 6750 | 145 | 365 | 333 | 206 | 816 | 503 |
| 39 | 82 | 244 | 80 | 332 | 0 | 147 | 99 | 184 | 80 | 328 | 0 |
| 41 | 969 | 769 | 1724 | 7395 | 6577 | 148 | 205 | 183 | 315 | 677 | 941 |
| 42 | 450 | 657 | 337 | 1571 | 1027 | 149 | 346 | 597 | 559 | 2366 | 1917 |
| 43 | 807 | 931 | 1012 | 2981 | 3729 | 150 | 715 | 536 | 602 | 2515 | 2088 |
| 44 | 125 | 124 | 154 | 141 | 297 | 151 | 489 | 485 | 169 | 827 | 355 |
| 45 | 150 | 69 | 80 | 66 | 0 | 152 | 250 | 292 | 277 | 2034 | 786 |
| 46 | 718 | 502 | 476 | 2982 | 1584 | 153 | 84 | 87 | 80 | 307 | 0 |
| 47 | 613 | 940 | 600 | 2710 | 2078 | 157 | 11 | 100 | 80 | 77 | 0 |
| 48 | 408 | 693 | 617 | 1826 | 2146 | 159 | 2293 | 2252 | 1239 | 5420 | 4637 |
| 49 | 155 | 149 | 208 | 431 | 510 | 160 | 1061 | 1366 | 1001 | 3406 | 3686 |
| 50 | 53 | 76 | 195 | 499 | 458 | 161 | 1089 | 444 | 230 | 805 | 602 |
| 52 | 75 | 183 | 145 | 562 | 260 | 163 | 497 | 352 | 341 | 898 | 1045 |
| 53 | 456 | 472 | 437 | 1588 | 1429 | 164 | 857 | 692 | 491 | 1464 | 1645 |
| 54 | 258 | 337 | 314 | 1330 | 935 | 165 | 344 | 670 | 387 | 1474 | 1228 |
| 55 | 109 | 254 | 349 | 885 | 1078 | 166 | 500 | 422 | 536 | 1592 | 1826 |
| 56 | 596 | 628 | 426 | 1845 | 1386 | 168 | 509 | 457 | 385 | 1411 | 1218 |
| 57 | 44 | 170 | 80 | 348 | 0 | 169 | 178 | 82 | 167 | 508 | 347 |
| 58 | 306 | 153 | 151 | 829 | 285 | 170 | 1001 | 1184 | 879 | 4606 | 3195 |
| 59 | 56 | 110 | 80 | 132 | 0 | 171 | 295 | 673 | 548 | 2032 | 1872 |
| 60 | 1069 | 1294 | 1071 | 6599 | 3967 | 172 | 581 | 566 | 675 | 2811 | 2378 |
| 61 | 381 | 440 | 439 | 1858 | 1436 | 173 | 1033 | 933 | 1367 | 4891 | 5151 |
| 62 | 515 | 498 | 891 | 3164 | 3243 | 174 | 458 | 420 | 362 | 1010 | 1126 |
| 63 | 205 | 228 | 90 | 306 | 39 | 175 | 2 | 143 | 282 | 271 | 807 |
| 68 | 175 | 122 | 80 | 581 | 0 | 176 | 682 | 493 | 440 | 1260 | 1441 |
| 72 | 117 | 86 | 80 | 54 | 0 | 177 | 1033 | 1278 | 1034 | 4301 | 3814 |
| 75 | 20 | 105 | 80 | 419 | 0 | 178 | 608 | 463 | 792 | 2916 | 2848 |
| 83 | 1350 | 1042 | 780 | 3266 | 2798 | 179 | 746 | 664 | 687 | 2308 | 2428 |
| 84 | 3524 | 2892 | 2051 | 8945 | 7884 | 180 | 595 | 874 | 600 | 2371 | 2082 |
| 85 | 3266 | 3047 | 2001 | 8061 | 7686 | 181 | 916 | 1354 | 1080 | 3862 | 4001 |
| 86 | 495 | 553 | 581 | 1727 | 2002 | 183 | 651 | 572 | 668 | 2934 | 2350 |
| 87 | 338 | 303 | 243 | 721 | 651 | 184 | 449 | 495 | 587 | 1809 | 2027 |
| 88 | 447 | 511 | 480 | 2332 | 1598 | 185 | 409 | 498 | 737 | 2752 | 2627 |
| 89 | 1013 | 623 | 295 | 1182 | 863 | 186 | 183 | 170 | 212 | 718 | 527 |
| 90 | 645 | 270 | 330 | 918 | 999 | 187 | 259 | 512 | 457 | 1577 | 1508 |
| 91 | 498 | 291 | 285 | 988 | 821 | 188 | 130 | 263 | 369 | 1276 | 1157 |
| 92 | 531 | 257 | 274 | 439 | 776 | 193 | 541 | 277 | 80 | 511 | 0 |
| 94 | 332 | 208 | 352 | 707 | 1090 | 195 | 163 | 166 | 167 | 730 | 347 |
| 95 | 88 | 113 | 80 | 126 | 0 | 196 | 711 | 547 | 946 | 3022 | 3464 |
| 96 | 1100 | 1060 | 1346 | 5067 | 5065 | 197 | 532 | 661 | 743 | 3144 | 2650 |
| 97 | 465 | 706 | 466 | 1849 | 1545 | 204 | 98 | 195 | 80 | 245 | 0 |
| 98 | 1618 | 1868 | 957 | 6199 | 3507 | 205 | 156 | 158 | 190 | 882 | 441 |
| 99 | 159 | 190 | 180 | 405 | 399 | 210 | 495 | 713 | 367 | 2138 | 1148 |
| 100 | 140 | 163 | 329 | 882 | 995 | 212 | 107 | 108 | 80 | 165 | 0 |
| 101 | 878 | 430 | 624 | 2458 | 2174 | 214 | 11 | 87 | 303 | 1089 | 890 |
| 102 | 788 | 804 | 1063 | 4738 | 3932 | 215 | 43 | 60 | 578 | 1502 | 1990 |
| 103 | 1551 | 1505 | 1041 | 5484 | 3846 | | | | | | |

TABLE A-15

TRUCK PRODUCTIONS AND ATTRACTIONS

| CENT | PROD OBS | ATTR OBS | COMPUTED | CENT | PROD OBS | ATTR OBS | COMPUTED | CENT | PROD OBS | ATTR OBS | COMPUTED | CENT | PROD OBS | ATTR OBS | COMPUTED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 367 | 357 | 304 | 71 | 37 | 38 | 75 | 140 | 140 | 138 | 216 | 222 | 15 | 14 | 80 |
| 2 | 1022 | 1040 | 740 | 72 | 106 | 118 | 89 | 141 | 170 | 172 | 261 | 223 | 196 | 170 | 249 |
| 3 | 399 | 402 | 243 | 73 | 57 | 58 | 79 | 142 | 149 | 151 | 170 | 224 | 119 | 135 | 152 |
| 4 | 143 | 150 | 135 | 74 | 19 | 18 | 75 | 143 | 52 | 62 | 84 | 225 | 320 | 288 | 325 |
| 5 | 295 | 303 | 289 | 76 | 93 | 116 | 89 | 144 | 94 | 92 | 151 | 226 | 587 | 544 | 585 |
| 6 | 173 | 169 | 115 | 77 | 24 | 27 | 79 | 145 | 50 | 54 | 154 | 227 | 170 | 169 | 190 |
| 7 | 193 | 228 | SPEC | 79 | 29 | 28 | 79 | 146 | 84 | 81 | 94 | 228 | 172 | 214 | SPEC |
| 8 | 343 | 385 | 202 | 80 | 50 | 36 | 86 | 147 | 100 | 95 | 137 | 229 | 276 | 260 | 275 |
| 9 | 159 | 153 | 153 | 81 | 12 | 10 | 89 | 148 | 295 | 298 | 188 | 230 | 120 | 122 | 156 |
| 10 | 207 | 207 | 330 | 82 | 69 | 57 | 117 | 149 | 264 | 294 | 172 | 231 | 122 | 112 | 145 |
| 11 | 150 | 147 | 148 | 83 | 461 | 478 | 275 | 151 | 191 | 203 | 196 | 232 | 163 | 162 | 236 |
| 12 | 213 | 209 | 194 | 84 | 589 | 643 | 498 | 152 | 104 | 101 | 161 | 234 | 99 | 78 | 160 |
| 13 | 713 | 696 | SPEC | 85 | 759 | 776 | 614 | 153 | 90 | 83 | 210 | 235 | 111 | 115 | 245 |
| 14 | 347 | 362 | SPEC | 86 | 298 | 313 | 258 | 154 | 94 | 105 | 100 | 236 | 143 | 139 | 198 |
| 15 | 420 | 441 | 218 | 87 | 394 | 394 | SPEC | 155 | 31 | 23 | 86 | 237 | 197 | 199 | 216 |
| 16 | 444 | 419 | 312 | 88 | 276 | 271 | 309 | 156 | 15 | 22 | 82 | 239 | 56 | 56 | 104 |
| 17 | 513 | 523 | 369 | 89 | 522 | 598 | 334 | 157 | 170 | 178 | 100 | 240 | 243 | 298 | 444 |
| 18 | 596 | 609 | 528 | 90 | 411 | 442 | SPEC | 158 | 149 | 174 | 89 | 241 | 442 | 460 | 429 |
| 19 | 250 | 245 | 200 | 91 | 416 | 444 | SPEC | 159 | 530 | 536 | 343 | 242 | 1638 | 1627 | 1914 |
| 20 | 244 | 257 | 359 | 92 | 553 | 589 | SPEC | 160 | 443 | 454 | 244 | 243 | 415 | 407 | SPEC |
| 21 | 245 | 266 | 236 | 93 | 64 | 68 | 75 | 161 | 431 | 523 | 641 | 244 | 620 | 663 | 646 |
| 22 | 269 | 258 | 287 | 94 | 237 | 237 | 137 | 162 | 54 | 52 | 94 | 245 | 210 | 198 | SPEC |
| 23 | 208 | 191 | 290 | 95 | 218 | 228 | 129 | 163 | 347 | 383 | 271 | 246 | 412 | 454 | 537 |
| 24 | 84 | 92 | 148 | 96 | 293 | 311 | 247 | 164 | 660 | 792 | 605 | 247 | 431 | 412 | 314 |
| 25 | 237 | 232 | 265 | 97 | 267 | 269 | 286 | 165 | 554 | 567 | SPEC | 248 | 295 | 305 | 222 |
| 26 | 205 | 202 | 145 | 98 | 269 | 264 | 301 | 166 | 352 | 347 | 276 | 249 | 440 | 397 | 397 |
| 27 | 51 | 61 | 146 | 99 | 145 | 149 | 159 | 168 | 203 | 208 | 158 | 250 | 555 | 549 | 446 |
| 28 | 232 | 215 | 325 | 100 | 163 | 151 | 200 | 169 | 114 | 110 | 135 | 251 | 358 | 488 | 408 |
| 29 | 268 | 274 | 300 | 101 | 349 | 367 | 367 | 170 | 525 | 522 | 329 | 252 | 612 | 667 | 655 |
| 30 | 236 | 232 | 286 | 102 | 158 | 142 | 204 | 171 | 233 | 227 | 213 | 253 | 167 | 126 | 131 |
| 31 | 34 | 30 | 83 | 103 | 288 | 304 | 328 | 172 | 264 | 269 | 192 | 254 | 422 | 408 | 408 |
| 32 | 80 | 76 | 86 | 104 | 223 | 220 | 241 | 173 | 436 | 449 | 268 | 255 | 216 | 207 | 325 |
| 33 | 174 | 199 | 213 | 105 | 157 | 162 | 232 | 174 | 192 | 183 | 263 | 256 | 250 | 257 | 342 |
| 34 | 316 | 313 | 347 | 106 | 141 | 140 | 276 | 175 | 95 | 100 | 105 | 257 | 443 | 455 | 365 |
| 35 | 499 | 494 | SPEC | 107 | 364 | 383 | 356 | 176 | 428 | 402 | 189 | 258 | 176 | 197 | 218 |
| 36 | 216 | 238 | 238 | 108 | 75 | 82 | 97 | 178 | 142 | 132 | 116 | 259 | 164 | 160 | 143 |
| 37 | 349 | 407 | SPEC | 109 | 53 | 61 | 199 | 180 | 180 | 197 | 196 | 260 | 424 | 432 | 309 |
| 38 | 737 | 628 | 376 | 110 | 51 | 38 | 163 | 181 | 427 | 449 | 238 | 261 | 891 | 848 | 701 |
| 39 | 629 | 608 | SPEC | 111 | 217 | 271 | 171 | 182 | 85 | 66 | 75 | 262 | 187 | 162 | 330 |
| 40 | 37 | 32 | 94 | 112 | 211 | 230 | 225 | 183 | 130 | 126 | 141 | 263 | 272 | 248 | 430 |
| 41 | 165 | 189 | 229 | 113 | 133 | 107 | 93 | 184 | 178 | 167 | 214 | 264 | 407 | 366 | 306 |
| 42 | 165 | 179 | 229 | 114 | 288 | 315 | 230 | 185 | 318 | 321 | 191 | 265 | 470 | 475 | 399 |
| 43 | 290 | 291 | 450 | 115 | 174 | 171 | 246 | 186 | 97 | 94 | 108 | 266 | 365 | 332 | 389 |
| 44 | 48 | 48 | 110 | 116 | 105 | 111 | 192 | 187 | 166 | 154 | 150 | 267 | 244 | 239 | 428 |
| 45 | 22 | 21 | 89 | 117 | 211 | 217 | 178 | 188 | 207 | 165 | 179 | 268 | 678 | 663 | 450 |
| 46 | 268 | 272 | 176 | 118 | 175 | 165 | 181 | 189 | 59 | 64 | 75 | 269 | 620 | 625 | 726 |
| 47 | 415 | 414 | 291 | 119 | 134 | 125 | 126 | 190 | 95 | 94 | 83 | 270 | 150 | 146 | 236 |
| 48 | 696 | 676 | 344 | 120 | 111 | 99 | 145 | 192 | 83 | 90 | 105 | 271 | 219 | 225 | 322 |
| 49 | 90 | 83 | 136 | 121 | 392 | 392 | 342 | 193 | 40 | 42 | 227 | 272 | 124 | 101 | 414 |
| 50 | 32 | 32 | 102 | 122 | 528 | 531 | 451 | 194 | 44 | 45 | 108 | 273 | 359 | 346 | 314 |
| 51 | 51 | 59 | 105 | 123 | 290 | 306 | 211 | 195 | 76 | 75 | 135 | 274 | 214 | 181 | 238 |
| 52 | 59 | 65 | 94 | 124 | 271 | 262 | 372 | 196 | 335 | 354 | 339 | 275 | 249 | 252 | 290 |
| 53 | 233 | 220 | 230 | 125 | 79 | 79 | 108 | 197 | 170 | 194 | 168 | 276 | 619 | 617 | 384 |
| 54 | 338 | 325 | 170 | 126 | 198 | 195 | 139 | 198 | 188 | 142 | 120 | 277 | 344 | 331 | 312 |
| 56 | 229 | 244 | 200 | 127 | 51 | 54 | 107 | 203 | 75 | 95 | 128 | 278 | 330 | 314 | 303 |
| 57 | 67 | 63 | 79 | 128 | 62 | 66 | 89 | 204 | 68 | 83 | 90 | 279 | 431 | 424 | 381 |
| 58 | 54 | 63 | 101 | 129 | 88 | 90 | 146 | 205 | 66 | 66 | 180 | 280 | 430 | 432 | 237 |
| 60 | 548 | 595 | 331 | 130 | 69 | 67 | 128 | 207 | 144 | 145 | 124 | 281 | 136 | 126 | 289 |
| 61 | 336 | 347 | 261 | 131 | 77 | 79 | 116 | 208 | 22 | 21 | 79 | 282 | 123 | 112 | 241 |
| 62 | 457 | 443 | SPEC | 132 | 198 | 210 | SPEC | 210 | 162 | 151 | 162 | 283 | 109 | 112 | 257 |
| 63 | 244 | 194 | 125 | 133 | 154 | 154 | 217 | 212 | 33 | 33 | 113 | 284 | 134 | 121 | 271 |
| 64 | 33 | 32 | 90 | 134 | 51 | 56 | 141 | 214 | 62 | 73 | 150 | 286 | 147 | 116 | 226 |
| 65 | 279 | 292 | 86 | 135 | 180 | 176 | 113 | 215 | 253 | 283 | 162 | 287 | 185 | 159 | 216 |
| 66 | 160 | 155 | 119 | 136 | 54 | 51 | 133 | 218 | 126 | 117 | 283 | 288 | 427 | 417 | 487 |
| 67 | 33 | 17 | 86 | 137 | 254 | 291 | 278 | 219 | 228 | 202 | 223 | 289 | 302 | 290 | 290 |
| 68 | 204 | 214 | 131 | 138 | 218 | 207 | 339 | 220 | 678 | 678 | 356 | 290 | 32 | 33 | 123 |
| 70 | 48 | 58 | 89 | 139 | 178 | 194 | 145 | 221 | 429 | 431 | 202 | | | | |

TABLE A-16

TOTAL PRODUCTIONS

| CENTROID | OBSERVED | COMPUTED | CENTROID | OBSERVED | COMPUTED | CENTROID | OBSERVED | COMPUTED | CENTROID | OBSERVED | COMPUTED |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1883 | 1764 | 69 | 490 | 910 | 146 | 532 | 1066 | 226 | 2657 | 2866 |
| 2 | 5863 | 4084 | 75 | 1263 | 1514 | 147 | 1694 | 2695 | 227 | 2764 | 3092 |
| 3 | 1477 | 1257 | 76 | 588 | 1137 | 148 | 2776 | 3636 | 228 | 757 | 1473 |
| 4 | 1088 | 897 | 82 | 1350 | 1544 | 149 | 1202 | 1313 | 229 | 3910 | 4732 |
| 5 | 1572 | 1673 | 83 | 2420 | 1677 | 150 | 3021 | 2260 | 230 | 969 | 1761 |
| 6 | 479 | 766 | 84 | 4409 | 2697 | 151 | 1196 | 1637 | 231 | 1504 | 2147 |
| 7 | 1858 | 604 | 85 | 4915 | 3691 | 152 | 3348 | 3115 | 232 | 3925 | 4138 |
| 8 | 2338 | 1915 | 86 | 2214 | 2462 | 153 | 3386 | 4260 | 234 | 2197 | 2951 |
| 9 | 2216 | 2212 | 87 | 1543 | 1391 | 154 | 1172 | 1593 | 235 | 4751 | 5114 |
| 10 | 3217 | 3884 | 88 | 4442 | 4661 | 157 | 713 | 1365 | 236 | 3847 | 4220 |
| 11 | 2178 | 1647 | 89 | 2252 | 1280 | 158 | 638 | 910 | 237 | 3044 | 3060 |
| 12 | 2264 | 2837 | 90 | 1228 | 690 | 159 | 3631 | 2314 | 239 | 812 | 1358 |
| 13 | 1536 | 1008 | 91 | 1086 | 665 | 160 | 2377 | 1809 | 240 | 1142 | 1159 |
| 14 | 1862 | 1017 | 92 | 1244 | 604 | 161 | 1784 | 816 | 241 | 1049 | 1836 |
| 15 | 2630 | 2367 | 94 | 1880 | 1631 | 162 | 725 | 1166 | 242 | 9030 | 9370 |
| 16 | 3298 | 3626 | 96 | 3726 | 3305 | 163 | 2875 | 2473 | 243 | 2289 | 4420 |
| 17 | 6014 | 5103 | 97 | 5874 | 4902 | 164 | 1929 | 1093 | 244 | 2723 | 3542 |
| 18 | 5992 | 5142 | 98 | 5644 | 4949 | 165 | 4411 | 4126 | 245 | 1335 | 1804 |
| 19 | 3704 | 2480 | 99 | 2535 | 2567 | 166 | 5449 | 5003 | 246 | 2473 | 3599 |
| 20 | 5388 | 5632 | 100 | 2194 | 2708 | 168 | 2356 | 2048 | 247 | 1789 | 2570 |
| 21 | 4564 | 4907 | 101 | 9233 | 6756 | 169 | 2120 | 2375 | 248 | 761 | 1345 |
| 22 | 4562 | 4321 | 102 | 4361 | 3961 | 170 | 7508 | 5845 | 249 | 3311 | 4057 |
| 23 | 5897 | 4634 | 103 | 4310 | 3793 | 171 | 5517 | 4447 | 250 | 4652 | 5952 |
| 24 | 2333 | 2245 | 104 | 4621 | 4329 | 172 | 4803 | 3839 | 251 | 883 | 1159 |
| 25 | 4317 | 4477 | 105 | 5493 | 4971 | 173 | 4360 | 3777 | 252 | 3017 | 3631 |
| 26 | 2209 | 1944 | 106 | 6695 | 5953 | 174 | 6561 | 6550 | 253 | 710 | 1134 |
| 27 | 2349 | 2226 | 107 | 6033 | 6505 | 175 | 1958 | 1486 | 254 | 6838 | 7562 |
| 28 | 4506 | 4974 | 108 | 1294 | 1245 | 176 | 4601 | 3897 | 255 | 4894 | 5596 |
| 29 | 6617 | 5714 | 109 | 3607 | 4203 | 177 | 10220 | 7881 | 256 | 3805 | 4718 |
| 30 | 4996 | 5283 | 110 | 2543 | 2795 | 178 | 1641 | 2048 | 257 | 4892 | 5555 |
| 33 | 3580 | 3855 | 111 | 1707 | 2169 | 179 | 4480 | 2982 | 258 | 3328 | 4644 |
| 34 | 5620 | 4509 | 112 | 2103 | 2532 | 180 | 2525 | 2449 | 259 | 1621 | 1873 |
| 35 | 1933 | 2079 | 113 | 466 | 932 | 181 | 2854 | 2189 | 260 | 5824 | 6231 |
| 36 | 2486 | 2796 | 114 | 2417 | 2662 | 182 | 405 | 604 | 261 | 10240 | 10120 |
| 37 | 970 | 989 | 115 | 4542 | 4786 | 183 | 1709 | 1279 | 262 | 4557 | 6793 |
| 38 | 6182 | 4499 | 116 | 3274 | 3499 | 184 | 7048 | 5185 | 263 | 6807 | 8196 |
| 39 | 1746 | 2030 | 117 | 3134 | 3734 | 185 | 4428 | 3691 | 264 | 5697 | 5430 |
| 41 | 5463 | 4169 | 118 | 4324 | 3734 | 186 | 1056 | 1274 | 265 | 5722 | 6523 |
| 42 | 3946 | 4683 | 119 | 1690 | 2091 | 187 | 3631 | 3421 | 266 | 5614 | 5806 |
| 43 | 7525 | 7668 | 120 | 3613 | 3264 | 188 | 4113 | 3169 | 267 | 4377 | 5266 |
| 44 | 1139 | 1756 | 121 | 5666 | 4686 | 192 | 1112 | 1486 | 268 | 7098 | 7432 |
| 45 | 1249 | 1145 | 122 | 9720 | 4464 | 193 | 1291 | 1650 | 269 | 7675 | 7996 |
| 46 | 5706 | 3833 | 123 | 4374 | 4045 | 195 | 2113 | 2375 | 270 | 884 | 1599 |
| 47 | 6978 | 5973 | 124 | 5193 | 4498 | 196 | 8688 | 7657 | 271 | 6441 | 6428 |
| 48 | 7896 | 7388 | 125 | 1084 | 1555 | 197 | 4433 | 3061 | 272 | 5349 | 6161 |
| 49 | 3244 | 2795 | 126 | 2269 | 2809 | 198 | 1789 | 2375 | 273 | 4955 | 5829 |
| 50 | 915 | 1337 | 127 | 1915 | 1749 | 201 | 575 | 1088 | 274 | 2764 | 3660 |
| 51 | 1434 | 1898 | 129 | 3069 | 2567 | 203 | 1891 | 2133 | 275 | 4624 | 5048 |
| 52 | 1384 | 1337 | 130 | 2015 | 2290 | 204 | 891 | 1009 | 276 | 6146 | 6867 |
| 53 | 7502 | 6117 | 131 | 1693 | 2048 | 205 | 3643 | 3897 | 277 | 6529 | 7511 |
| 54 | 4115 | 4495 | 132 | 2961 | 3935 | 207 | 1598 | 1891 | 278 | 2787 | 2685 |
| 55 | 5357 | 5683 | 133 | 4300 | 4149 | 210 | 3631 | 3179 | 279 | 5493 | 6784 |
| 56 | 6070 | 4802 | 134 | 1853 | 2476 | 211 | 939 | 1408 | 280 | 5276 | 4343 |
| 57 | 675 | 839 | 135 | 2178 | 2048 | 212 | 1636 | 1813 | 281 | 5657 | 6719 |
| 58 | 908 | 1550 | 136 | 2227 | 2233 | 214 | 2267 | 2547 | 282 | 3884 | 4378 |
| 59 | 1264 | 761 | 137 | 5642 | 4665 | 215 | 1389 | 2045 | 283 | 3883 | 4367 |
| 60 | 4843 | 3096 | 138 | 4347 | 3697 | 218 | 1368 | 1618 | 284 | 6146 | 6280 |
| 61 | 4585 | 4211 | 139 | 1776 | 2187 | 219 | 2744 | 3037 | 285 | 911 | 1790 |
| 62 | 8025 | 3954 | 140 | 4835 | 4559 | 220 | 7662 | 9142 | 286 | 2955 | 4449 |
| 63 | 2017 | 1517 | 141 | 2631 | 3692 | 221 | 4449 | 4936 | 287 | 3938 | 4708 |
| 65 | 803 | 1002 | 142 | 2889 | 3392 | 223 | 3934 | 4629 | 288 | 6907 | 7063 |
| 66 | 1405 | 1870 | 144 | 2341 | 2617 | 224 | 2070 | 3058 | 289 | 4640 | 5246 |
| 68 | 1810 | 2418 | 145 | 1499 | 1806 | 225 | 4628 | 5182 | 290 | 1157 | 1991 |

TABLE A-17

ACCESSIBILITY TO EMPLOYMENT

| CENTROID | HIGHWAY NETWORK | TRANSIT NETWORK | TRANSIT/HIGHWAY ACCESSIBILITY RATIO | CENTROID | HIGHWAY NETWORK | TRANSIT NETWORK | TRANSIT/HIGHWAY ACCESSIBILITY RATIO |
|---|---|---|---|---|---|---|---|
| 1 | 58 | 20 | .34 | 52 | 49 | 2 | .04 |
| 2 | 61 | 14 | .23 | 53 | 50 | 1 | .02 |
| 3 | 72 | 14 | .19 | 54 | 51 | 4 | .08 |
| 4 | 59 | 20 | .34 | 55 | 49 | 2 | .04 |
| 5 | 59 | 15 | .25 | 56 | 48 | 1 | .02 |
| 6 | 70 | 14 | .20 | 59 | 42 | 2 | .05 |
| 7 | 85 | 16 | .19 | 60 | 31 | 2 | .06 |
| 8 | 67 | 13 | .19 | 61 | 29 | 1 | .03 |
| 9 | 70 | 18 | .26 | 62 | 31 | 1 | .03 |
| 10 | 71 | 18 | .25 | 83 | 64 | 22 | .34 |
| 11 | 69 | 15 | .22 | 84 | 65 | 22 | .34 |
| 12 | 73 | 18 | .25 | 85 | 64 | 21 | .33 |
| 13 | 66 | 14 | .21 | 86 | 73 | 21 | .29 |
| 14 | 77 | 14 | .18 | 87 | 72 | 19 | .26 |
| 15 | 50 | 11 | .22 | 88 | 70 | 20 | .29 |
| 16 | 55 | 15 | .27 | 89 | 64 | 11 | .17 |
| 17 | 61 | 10 | .16 | 90 | 69 | 15 | .22 |
| 18 | 45 | 7 | .16 | 91 | 71 | 17 | .24 |
| 19 | 74 | 10 | .14 | 92 | 64 | 14 | .22 |
| 20 | 62 | 8 | .13 | 93 | 58 | 12 | .21 |
| 21 | 72 | 11 | .15 | 94 | 70 | 17 | .24 |
| 22 | 77 | 11 | .14 | 95 | 65 | 15 | .23 |
| 23 | 76 | 9 | .12 | 96 | 75 | 15 | .20 |
| 24 | 74 | 7 | .09 | 97 | 63 | 7 | .11 |
| 25 | 62 | 6 | .10 | 98 | 56 | 3 | .05 |
| 26 | 71 | 6 | .08 | 99 | 43 | 3 | .07 |
| 27 | 78 | 7 | .09 | 100 | 73 | 10 | .14 |
| 28 | 63 | 7 | .11 | 101 | 64 | 6 | .09 |
| 29 | 68 | 6 | .09 | 102 | 73 | 8 | .11 |
| 30 | 75 | 7 | .09 | 103 | 56 | 7 | .13 |
| 32 | 47 | 5 | .11 | 104 | 71 | 6 | .08 |
| 33 | 55 | 5 | .09 | 105 | 68 | 3 | .04 |
| 34 | 54 | 6 | .11 | 106 | 69 | 6 | .09 |
| 35 | 49 | 5 | .10 | 107 | 64 | 5 | .08 |
| 36 | 54 | 7 | .13 | 108 | 77 | 15 | .19 |
| 37 | 50 | 3 | .06 | 109 | 72 | 6 | .08 |
| 38 | 40 | 5 | .13 | 110 | 64 | 4 | .06 |
| 39 | 49 | 3 | .06 | 111 | 68 | 10 | .15 |
| 40 | 45 | 3 | .07 | 112 | 67 | 13 | .19 |
| 41 | 52 | 6 | .12 | 113 | 65 | 10 | .15 |
| 42 | 61 | 6 | .10 | 114 | 69 | 17 | .25 |
| 43 | 56 | 4 | .07 | 115 | 54 | 1 | .02 |
| 44 | 51 | 5 | .10 | 116 | 65 | 9 | .14 |
| 45 | 54 | 4 | .07 | 117 | 54 | 8 | .15 |
| 46 | 47 | 2 | .04 | 118 | 58 | 2 | .03 |
| 47 | 60 | 4 | .07 | 119 | 59 | 2 | .03 |
| 48 | 52 | 4 | .08 | 120 | 59 | 1 | .02 |
| 49 | 42 | 4 | .10 | 121 | 44 | 4 | .09 |
| 50 | 50 | 2 | .04 | 122 | 38 | 3 | .08 |
| 51 | 37 | 3 | .08 | 123 | 46 | 3 | .07 |

TABLE A-17

ACCESSIBILITY TO EMPLOYMENT

| CENTROID | HIGHWAY NETWORK | TRANSIT NETWORK | TRANSIT/HIGHWAY ACCESSIBILITY RATIO |
|---|---|---|---|
| 124 | 44 | 3 | .07 |
| 125 | 44 | 2 | .05 |
| 129 | 50 | 2 | .04 |
| 130 | 49 | 2 | .04 |
| 131 | 40 | 2 | .05 |
| 132 | 36 | 2 | .06 |
| 133 | 50 | 2 | .04 |
| 134 | 42 | 2 | .05 |
| 135 | 42 | 1 | .02 |
| 136 | 66 | 4 | .06 |
| 137 | 53 | 3 | .06 |
| 138 | 61 | 4 | .07 |
| 139 | 57 | 3 | .05 |
| 140 | 56 | 3 | .05 |
| 141 | 51 | 2 | .04 |
| 159 | 46 | 20 | .43 |
| 160 | 46 | 23 | .50 |
| 161 | 63 | 14 | .22 |
| 162 | 51 | 7 | .14 |
| 163 | 57 | 10 | .18 |
| 164 | 53 | 12 | .23 |
| 165 | 54 | 20 | .37 |
| 166 | 48 | 14 | .29 |
| 167 | 36 | 5 | .14 |
| 168 | 41 | 14 | .34 |
| 170 | 57 | 16 | .28 |
| 171 | 54 | 7 | .13 |
| 172 | 52 | 9 | .17 |
| 173 | 56 | 5 | .09 |
| 180 | 56 | 7 | .13 |
| 181 | 42 | 6 | .14 |
| 182 | 43 | 6 | .14 |
| 185 | 37 | 6 | .16 |
| 189 | 36 | 2 | .06 |
| 218 | 53 | 4 | .08 |
| 219 | 72 | 9 | .13 |
| 220 | 66 | 6 | .09 |
| 221 | 64 | 5 | .08 |
| 223 | 66 | 4 | .06 |
| 224 | 62 | 4 | .06 |
| 225 | 64 | 6 | .09 |
| 226 | 51 | 6 | .12 |
| 227 | 60 | 3 | .05 |
| 228 | 62 | 7 | .11 |
| 229 | 58 | 7 | .12 |
| 230 | 54 | 5 | .09 |
| 231 | 49 | 5 | .10 |
| 232 | 49 | 3 | .06 |
| 234 | 54 | 3 | .06 |
| 235 | 64 | 2 | .31 |
| 236 | 50 | 2 | .04 |
| 238 | 45 | 2 | .04 |
| 241 | 73 | 20 | .27 |
| 242 | 69 | 19 | .28 |
| 243 | 82 | 13 | .16 |
| 244 | 68 | 15 | .22 |
| 245 | 80 | 13 | .16 |
| 246 | 78 | 13 | .17 |
| 247 | 86 | 23 | .27 |
| 248 | 80 | 23 | .29 |
| 249 | 71 | 22 | .31 |
| 250 | 78 | 6 | .08 |
| 251 | 72 | 12 | .17 |
| 252 | 73 | 6 | .08 |
| 253 | 64 | 5 | .08 |
| 254 | 54 | 5 | .09 |
| 255 | 54 | 5 | .09 |
| 256 | 68 | 8 | .12 |
| 257 | 82 | 8 | .10 |
| 258 | 56 | 4 | .07 |
| 259 | 57 | 4 | .07 |
| 260 | 57 | 4 | .07 |
| 261 | 62 | 10 | .16 |
| 262 | 66 | 10 | .15 |
| 263 | 67 | 7 | .10 |
| 264 | 85 | 13 | .15 |
| 265 | 53 | 8 | .15 |
| 266 | 68 | 10 | .15 |
| 267 | 72 | 13 | .18 |
| 268 | 66 | 10 | .15 |
| 269 | 71 | 20 | .28 |
| 270 | 79 | 20 | .25 |
| 271 | 74 | 6 | .08 |
| 272 | 75 | 8 | .11 |
| 273 | 81 | 10 | .12 |
| 274 | 76 | 12 | .16 |
| 275 | 70 | 7 | .10 |
| 276 | 68 | 9 | .13 |
| 277 | 63 | 8 | .13 |
| 278 | 63 | 3 | .05 |
| 279 | 62 | 6 | .10 |
| 280 | 67 | 8 | .12 |
| 281 | 70 | 5 | .07 |
| 282 | 55 | 5 | .09 |
| 283 | 62 | 3 | .05 |
| 284 | 51 | 4 | .08 |
| 285 | 52 | 5 | .10 |
| 287 | 48 | 3 | .06 |
| 288 | 57 | 9 | .14 |
| 289 | 42 | 4 | .10 |
| 290 | 36 | 3 | .08 |

TABLE A-18

O-D SURVEY



VEHICLE PRODUCTIONS AND ATTRACTIONS

| CENTROID | PRODUCTIONS | | | | ATTRACTIONS | | | |
|---|---|---|---|---|---|---|---|---|
| | HB WORK | HB SHOP | HB OTHER | NHB | HB WORK | HB SHOP | HB OTHER | NHB |
| 1 | 175 | 36 | 168 | 808 | 1436 | 166 | 1519 | 768 |
| 2 | 285 | 74 | 271 | 3009 | 2303 | 2154 | 5511 | 3345 |
| 3 | 74 | 51 | 78 | 518 | 734 | 74 | 1154 | 295 |
| 4 | 32 | 24 | 65 | 678 | 302 | 257 | 1013 | 527 |
| 5 | 75 | 43 | 76 | 648 | 531 | 471 | 549 | 340 |
| 6 | 14 | 0 | 13 | 228 | 138 | 52 | 72 | 81 |
| 7 | 48 | 0 | 36 | 1279 | 7136 | 3 | 1857 | 663 |
| 8 | 167 | 103 | 278 | 591 | 760 | 96 | 1060 | 442 |
| 9 | 236 | 173 | 619 | 350 | 298 | 42 | 236 | 224 |
| 10 | 428 | 356 | 725 | 236 | 86 | 1036 | 600 | 570 |
| 11 | 177 | 218 | 374 | 412 | 233 | 25 | 1109 | 189 |
| 12 | 262 | 264 | 587 | 179 | 399 | 0 | 254 | 238 |
| 13 | 134 | 8 | 78 | 448 | 1045 | 58 | 723 | 317 |
| 14 | 213 | 90 | 183 | 573 | 4141 | 0 | 763 | 267 |
| 15 | 382 | 101 | 637 | 344 | 765 | 6 | 488 | 334 |
| 16 | 547 | 262 | 689 | 382 | 513 | 111 | 602 | 362 |
| 17 | 857 | 510 | 1809 | 755 | 310 | 388 | 1190 | 1042 |
| 18 | 817 | 223 | 1366 | 905 | 1432 | 54 | 1465 | 643 |
| 19 | 482 | 144 | 1005 | 424 | 66 | 46 | 1160 | 381 |
| 20 | 844 | 578 | 1481 | 301 | 110 | 94 | 780 | 246 |
| 21 | 757 | 464 | 1636 | 481 | 50 | 3 | 685 | 442 |
| 22 | 707 | 385 | 1410 | 474 | 53 | 43 | 782 | 404 |
| 23 | 710 | 553 | 2077 | 125 | 136 | 81 | 861 | 270 |
| 24 | 173 | 207 | 717 | 233 | 62 | 24 | 168 | 214 |
| 25 | 406 | 441 | 1545 | 353 | 39 | 66 | 907 | 244 |
| 26 | 289 | 210 | 416 | 561 | 317 | 2 | 2283 | 598 |
| 27 | 248 | 208 | 560 | 418 | 124 | 63 | 342 | 336 |
| 28 | 521 | 428 | 1138 | 695 | 142 | 1329 | 985 | 906 |
| 29 | 805 | 533 | 1848 | 722 | 122 | 45 | 2320 | 603 |
| 30 | 660 | 360 | 1600 | 338 | 111 | 190 | 776 | 421 |
| 31 | 17 | 0 | 5 | 4 | 28 | 0 | 295 | 37 |
| 32 | 50 | 44 | 8 | 2 | 26 | 22 | 5 | 24 |
| 33 | 519 | 239 | 1161 | 198 | 42 | 48 | 614 | 218 |
| 34 | 469 | 561 | 1413 | 798 | 358 | 1210 | 1465 | 1168 |
| 35 | 140 | 222 | 403 | 261 | 356 | 46 | 404 | 249 |
| 36 | 301 | 273 | 692 | 471 | 278 | 842 | 615 | 639 |
| 37 | 73 | 6 | 150 | 101 | 593 | 45 | 317 | 191 |
| 38 | 523 | 410 | 1342 | 1416 | 670 | 1914 | 2421 | 1283 |
| 39 | 252 | 264 | 222 | 82 | 60 | 21 | 247 | 213 |
| 40 | 22 | 0 | 106 | 6 | 58 | 2 | 139 | 2 |
| 41 | 612 | 540 | 1401 | 734 | 402 | 31 | 2679 | 651 |
| 42 | 633 | 347 | 1191 | 383 | 359 | 195 | 849 | 455 |
| 43 | 1001 | 734 | 2162 | 606 | 122 | 922 | 1196 | 762 |
| 44 | 276 | 31 | 374 | 103 | 14 | 2 | 139 | 102 |
| 45 | 72 | 20 | 457 | 129 | 29 | 0 | 55 | 69 |
| 46 | 567 | 361 | 1679 | 476 | 74 | 46 | 650 | 370 |
| 47 | 702 | 787 | 2108 | 513 | 108 | 797 | 766 | 725 |
| 48 | 938 | 899 | 2285 | 394 | 128 | 220 | 1049 | 516 |
| 49 | 357 | 402 | 1258 | 142 | 73 | 24 | 205 | 112 |
| 50 | 102 | 111 | 246 | 53 | 1 | 0 | 150 | 44 |
| 51 | 152 | 174 | 495 | 57 | 2 | 0 | 59 | 39 |
| 52 | 65 | 75 | 377 | 47 | 31 | 0 | 338 | 152 |
| 53 | 1111 | 321 | 1870 | 296 | 59 | 1 | 699 | 379 |
| 54 | 557 | 377 | 1190 | 148 | 51 | 25 | 641 | 259 |
| 55 | 1018 | 701 | 1641 | 76 | 27 | 0 | 561 | 176 |
| 56 | 710 | 610 | 1892 | 400 | 92 | 2 | 705 | 494 |
| 57 | 63 | 2 | 152 | 44 | 201 | 0 | 206 | 144 |
| 58 | 107 | 105 | 108 | 222 | 189 | 0 | 544 | 141 |
| 59 | 57 | 84 | 42 | 56 | 16 | 21 | 61 | 55 |
| 60 | 367 | 113 | 1440 | 836 | 787 | 840 | 2213 | 948 |
| 61 | 583 | 366 | 1433 | 297 | 334 | 104 | 996 | 351 |
| 62 | 514 | 385 | 1821 | 304 | 347 | 133 | 1140 | 273 |
| 63 | 139 | 111 | 692 | 166 | 832 | 24 | 228 | 206 |
| 64 | 57 | 0 | 116 | 2 | 4 | 2 | 22 | 2 |
| 65 | 178 | 7 | 166 | 48 | 70 | 88 | 228 | 47 |
| 66 | 277 | 152 | 216 | 47 | 74 | 8 | 250 | 46 |
| 67 | 24 | 84 | 122 | 74 | 13 | 0 | 344 | 0 |
| 68 | 225 | 234 | 438 | 134 | 89 | 112 | 202 | 122 |
| 69 | 84 | 2 | 117 | 0 | 0 | 0 | 4 | 0 |
| 70 | 4 | 0 | 4 | 0 | 7 | 41 | 25 | 21 |
| 71 | 0 | 0 | 2 | 21 | 0 | 0 | 2 | 0 |
| 72 | 19 | 6 | 8 | 117 | 60 | 0 | 60 | 86 |
| 73 | 13 | 0 | 11 | 85 | 165 | 127 | 123 | 57 |
| 74 | 8 | 3 | 2 | 32 | 0 | 20 | 57 | 0 |

TABLE A-18

O-D SURVEY

VEHICLE PRODUCTIONS AND ATTRACTIONS



| CENTROID | PRODUCTIONS | | | | ATTRACTIONS | | | |
|---|---|---|---|---|---|---|---|---|
| | HB WORK | HB SHOP | HB OTHER | NHB | HB WORK | HB SHOP | HB OTHER | NHB |
| 75 | 122 | 121 | 265 | 20 | 13 | 61 | 251 | 62 |
| 76 | 39 | 123 | 281 | 2 | 75 | 0 | 178 | 2 |
| 77 | 2 | 0 | 115 | 80 | 1 | 0 | 77 | 58 |
| 78 | 13 | 61 | 27 | 0 | 29 | 0 | 49 | 0 |
| 79 | 23 | 61 | 31 | 0 | 0 | 0 | 4 | 0 |
| 80 | 11 | 20 | 7 | 0 | 1 | 0 | 0 | 0 |
| 81 | 86 | 61 | 134 | 0 | 0 | 0 | 22 | 23 |
| 82 | 113 | 229 | 266 | 32 | 38 | 109 | 123 | 0 |
| 83 | 117 | 74 | 151 | 1009 | 789 | 249 | 1720 | 744 |
| 84 | 73 | 41 | 62 | 2440 | 1353 | 1860 | 3902 | 2128 |
| 85 | 225 | 67 | 363 | 2311 | 1781 | 1589 | 3757 | 2265 |
| 86 | 233 | 185 | 199 | 373 | 375 | 473 | 592 | 391 |
| 87 | 112 | 77 | 271 | 241 | 516 | 1 | 448 | 259 |
| 88 | 661 | 528 | 1005 | 342 | 232 | 22 | 897 | 355 |
| 89 | 187 | 7 | 247 | 678 | 2817 | 0 | 728 | 432 |
| 90 | 82 | 3 | 54 | 483 | 1777 | 3 | 610 | 235 |
| 91 | 59 | 8 | 48 | 354 | 1468 | 44 | 551 | 244 |
| 92 | 74 | 7 | 40 | 423 | 1583 | 3 | 371 | 186 |
| 93 | 7 | 2 | 3 | 64 | 172 | 0 | 137 | 27 |
| 94 | 166 | 180 | 332 | 236 | 267 | 24 | 320 | 89 |
| 95 | 4 | 2 | 6 | 88 | 177 | 0 | 116 | 113 |
| 96 | 477 | 375 | 653 | 730 | 785 | 0 | 3621 | 716 |
| 97 | 757 | 306 | 1674 | 388 | 176 | 321 | 947 | 561 |
| 98 | 415 | 563 | 1439 | 1152 | 240 | 2787 | 958 | 1255 |
| 99 | 119 | 233 | 1029 | 121 | 57 | 2 | 323 | 135 |
| 100 | 392 | 347 | 777 | 140 | 38 | 0 | 459 | 152 |
| 101 | 915 | 704 | 2744 | 649 | 418 | 113 | 1187 | 273 |
| 102 | 419 | 502 | 808 | 658 | 280 | 22 | 3819 | 751 |
| 103 | 342 | 235 | 775 | 1003 | 526 | 629 | 1977 | 1124 |
| 104 | 704 | 415 | 1319 | 450 | 124 | 23 | 1154 | 409 |
| 105 | 697 | 480 | 1436 | 346 | 144 | 89 | 806 | 400 |
| 106 | 772 | 804 | 2078 | 266 | 197 | 43 | 837 | 382 |
| 107 | 894 | 851 | 1598 | 736 | 113 | 814 | 1348 | 758 |
| 108 | 66 | 62 | 442 | 35 | 7 | 0 | 426 | 162 |
| 109 | 573 | 516 | 1019 | 190 | 3 | 2 | 197 | 263 |
| 110 | 292 | 380 | 663 | 60 | 25 | 0 | 184 | 115 |
| 111 | 149 | 137 | 307 | 142 | 446 | 0 | 612 | 35 |
| 112 | 304 | 255 | 521 | 315 | 226 | 87 | 601 | 405 |
| 113 | 50 | 89 | 96 | 34 | 136 | 21 | 53 | 109 |
| 114 | 192 | 226 | 542 | 424 | 531 | 362 | 807 | 594 |
| 115 | 520 | 665 | 1299 | 151 | 76 | 22 | 283 | 175 |
| 116 | 519 | 325 | 665 | 92 | 38 | 0 | 70 | 49 |
| 117 | 368 | 326 | 1046 | 109 | 32 | 83 | 351 | 138 |
| 118 | 669 | 641 | 831 | 166 | 60 | 0 | 409 | 248 |
| 119 | 268 | 298 | 340 | 191 | 191 | 0 | 220 | 84 |
| 120 | 458 | 424 | 1039 | 58 | 29 | 0 | 145 | 151 |
| 121 | 435 | 370 | 1323 | 1315 | 456 | 1335 | 1899 | 1402 |
| 122 | 475 | 410 | 872 | 3888 | 1261 | 6450 | 4320 | 3482 |
| 123 | 524 | 636 | 1206 | 326 | 161 | 191 | 637 | 405 |
| 124 | 389 | 70 | 1062 | 1338 | 226 | 1660 | 1927 | 1523 |
| 125 | 161 | 227 | 214 | 33 | 1 | 43 | 149 | 0 |
| 126 | 378 | 150 | 767 | 119 | 0 | 0 | 195 | 107 |
| 127 | 135 | 43 | 672 | 48 | 5 | 0 | 179 | 45 |
| 128 | 81 | 6 | 14 | 0 | 99 | 0 | 205 | 43 |
| 129 | 237 | 411 | 1118 | 60 | 28 | 111 | 205 | 36 |
| 130 | 328 | 288 | 697 | 120 | 128 | 0 | 154 | 91 |
| 131 | 190 | 357 | 406 | 77 | 6 | 2 | 165 | 54 |
| 132 | 293 | 162 | 337 | 992 | 343 | 3686 | 720 | 1060 |
| 133 | 565 | 586 | 1555 | 102 | 76 | 3 | 424 | 170 |
| 134 | 279 | 181 | 967 | 154 | 34 | 106 | 530 | 210 |
| 135 | 182 | 97 | 889 | 159 | 28 | 0 | 224 | 127 |
| 136 | 298 | 313 | 767 | 54 | 25 | 0 | 127 | 94 |
| 137 | 672 | 709 | 1547 | 517 | 178 | 149 | 1421 | 402 |
| 138 | 444 | 227 | 1131 | 766 | 287 | 1473 | 1319 | 1178 |
| 139 | 158 | 209 | 313 | 73 | 91 | 0 | 109 | 11 |
| 140 | 740 | 416 | 1605 | 216 | 30 | 2 | 818 | 198 |
| 141 | 395 | 372 | 753 | 219 | 161 | 2 | 572 | 310 |
| 142 | 402 | 416 | 796 | 65 | 53 | 85 | 154 | 99 |
| 143 | 30 | 43 | 4 | 11 | 0 | 2 | 50 | 11 |
| 144 | 246 | 270 | 827 | 86 | 2 | 41 | 219 | 66 |
| 145 | 275 | 21 | 372 | 248 | 91 | 41 | 412 | 257 |
| 146 | 70 | 41 | 149 | 15 | 1 | 0 | 9 | 48 |
| 147 | 406 | 293 | 385 | 78 | 1 | 0 | 211 | 121 |
| 148 | 532 | 307 | 712 | 152 | 94 | 0 | 370 | 142 |

TABLE A-18

O-D SURVEY

VEHICLE PRODUCTIONS AND ATTRACTIONS



| CENTROID | PRODUCTIONS | | | | ATTRACTIONS | | | |
|---|---|---|---|---|---|---|---|---|
| | HB WORK | HB SHOP | HB OTHER | NHB | HB WORK | HB SHOP | HB OTHER | NHB |
| 149 | 92 | 63 | 236 | 278 | 400 | 4 | 1128 | 324 |
| 150 | 332 | 246 | 534 | 410 | 166 | 119 | 1453 | 316 |
| 151 | 121 | 81 | 163 | 273 | 383 | 49 | 597 | 312 |
| 152 | 374 | 325 | 973 | 174 | 164 | 351 | 807 | 223 |
| 153 | 603 | 323 | 1036 | 84 | 25 | 42 | 130 | 43 |
| 154 | 98 | 82 | 294 | 2 | 32 | 42 | 259 | 25 |
| 155 | 27 | 40 | 62 | 0 | 3 | 0 | 5 | 0 |
| 156 | 26 | 21 | 129 | 0 | 0 | 0 | 67 | 2 |
| 157 | 122 | 101 | 121 | 11 | 56 | 0 | 23 | 56 |
| 158 | 39 | 42 | 277 | 2 | 59 | 0 | 80 | 2 |
| 159 | 162 | 67 | 197 | 1573 | 617 | 1560 | 2199 | 1641 |
| 160 | 89 | 2 | 249 | 836 | 497 | 883 | 1272 | 944 |
| 161 | 102 | 0 | 51 | 980 | 4705 | 0 | 482 | 422 |
| 162 | 119 | 64 | 212 | 31 | 5 | 0 | 46 | 33 |
| 163 | 252 | 53 | 924 | 410 | 1526 | 42 | 555 | 297 |
| 164 | 131 | 43 | 84 | 616 | 5075 | 2 | 730 | 368 |
| 165 | 376 | 335 | 1092 | 290 | 157 | 22 | 721 | 454 |
| 166 | 701 | 472 | 1372 | 347 | 188 | 0 | 772 | 324 |
| 167 | 0 | 0 | 4 | 0 | 0 | 0 | 2 | 0 |
| 168 | 296 | 161 | 482 | 391 | 624 | 326 | 644 | 327 |
| 169 | 389 | 283 | 663 | 39 | 34 | 5 | 314 | 39 |
| 170 | 871 | 856 | 1673 | 793 | 297 | 114 | 2346 | 877 |
| 171 | 668 | 413 | 1785 | 231 | 38 | 1 | 1026 | 453 |
| 172 | 462 | 524 | 1337 | 363 | 62 | 149 | 1003 | 414 |
| 173 | 389 | 201 | 1178 | 652 | 154 | 128 | 1822 | 671 |
| 174 | 1054 | 558 | 2219 | 306 | 53 | 43 | 521 | 300 |
| 175 | 105 | 154 | 888 | 2 | 4 | 0 | 169 | 45 |
| 176 | 433 | 477 | 1235 | 595 | 268 | 44 | 595 | 350 |
| 177 | 1108 | 1017 | 2941 | 740 | 174 | 1312 | 975 | 890 |
| 178 | 264 | 150 | 197 | 499 | 58 | 0 | 1166 | 330 |
| 179 | 450 | 434 | 1467 | 410 | 151 | 65 | 1237 | 465 |
| 180 | 239 | 376 | 437 | 367 | 159 | 128 | 1429 | 516 |
| 181 | 130 | 203 | 568 | 728 | 507 | 1099 | 1789 | 895 |
| 182 | 7 | 0 | 3 | 242 | 1018 | 0 | 176 | 24 |
| 183 | 163 | 176 | 198 | 369 | 79 | 1298 | 552 | 332 |
| 184 | 705 | 552 | 1883 | 298 | 86 | 43 | 990 | 365 |
| 185 | 576 | 440 | 1254 | 171 | 61 | 0 | 890 | 270 |
| 186 | 136 | 45 | 310 | 52 | 1 | 86 | 210 | 41 |
| 187 | 345 | 473 | 1360 | 151 | 35 | 0 | 517 | 230 |
| 188 | 455 | 258 | 1276 | 55 | 159 | 2 | 711 | 131 |
| 189 | 2 | 0 | 4 | 31 | 46 | 0 | 41 | 31 |
| 190 | 32 | 64 | 58 | 1 | 0 | 0 | 194 | 43 |
| 191 | 6 | 0 | 0 | 0 | 2 | 43 | 2 | 0 |
| 192 | 96 | 150 | 403 | 22 | 2 | 0 | 28 | 12 |
| 193 | 176 | 107 | 95 | 414 | 1280 | 0 | 381 | 189 |
| 194 | 0 | 0 | 72 | 53 | 17 | 0 | 66 | 12 |
| 195 | 237 | 152 | 627 | 66 | 22 | 0 | 463 | 112 |
| 196 | 939 | 774 | 2918 | 481 | 157 | 346 | 1346 | 362 |
| 197 | 397 | 398 | 1141 | 446 | 118 | 401 | 1443 | 552 |
| 198 | 205 | 136 | 454 | 37 | 38 | 0 | 293 | 11 |
| 199 | 92 | 43 | 67 | 0 | 0 | 2 | 1 | 32 |
| 200 | 23 | 43 | 23 | 0 | 0 | 0 | 0 | 0 |
| 201 | 79 | 43 | 398 | 0 | 46 | 0 | 219 | 0 |
| 202 | 0 | 0 | 33 | 0 | 6 | 0 | 5 | 0 |
| 203 | 267 | 150 | 690 | 55 | 29 | 0 | 180 | 0 |
| 204 | 31 | 21 | 313 | 23 | 115 | 21 | 120 | 87 |
| 205 | 431 | 260 | 922 | 102 | 25 | 0 | 297 | 114 |
| 206 | 3 | 4 | 0 | 0 | 3 | 0 | 0 | 0 |
| 207 | 187 | 173 | 501 | 11 | 105 | 1 | 198 | 22 |
| 208 | 2 | 0 | 4 | 11 | 27 | 40 | 0 | 12 |
| 209 | 35 | 21 | 47 | 0 | 3 | 0 | 49 | 0 |
| 210 | 287 | 323 | 1341 | 248 | 18 | 290 | 1121 | 434 |
| 211 | 102 | 64 | 360 | 87 | 0 | 0 | 259 | 0 |
| 212 | 136 | 86 | 630 | 21 | 23 | 0 | 100 | 0 |
| 213 | 24 | 0 | 4 | 0 | 1 | 2 | 3 | 0 |
| 214 | 283 | 177 | 968 | 11 | 41 | 111 | 657 | 87 |
| 215 | 329 | 45 | 532 | 43 | 222 | 78 | 1066 | 13 |
| 216 | 0 | 0 | 0 | 0 | 0 | 42 | 67 | 0 |
| 217 | 10 | 46 | 14 | 0 | 5 | 0 | 6 | 0 |
| 218 | 18 | 25 | 43 | 585 | 555 | 2864 | 1103 | 857 |
| 219 | 551 | 120 | 641 | 327 | 500 | 54 | 812 | 353 |
| 220 | 1050 | 775 | 2508 | 371 | 279 | 335 | 777 | 376 |
| 221 | 506 | 475 | 1345 | 266 | 67 | 59 | 978 | 221 |
| 222 | 11 | 21 | 61 | 10 | 7 | 0 | 57 | 20 |

TABLE A-18

O-D SURVEY

VEHICLE PRODUCTIONS AND ATTRACTIONS



| CENTROID | PRODUCTIONS | | | | ATTRACTIONS | | | |
|---|---|---|---|---|---|---|---|---|
| | HB WORK | HB SHOP | HB OTHER | NHB | HB WORK | HB SHOP | HB OTHER | NHB |
| 223 | 619 | 306 | 1107 | 153 | 263 | 316 | 423 | 238 |
| 224 | 424 | 208 | 575 | 118 | 100 | 6 | 428 | 116 |
| 225 | 787 | 390 | 1309 | 429 | 412 | 405 | 947 | 443 |
| 226 | 184 | 24 | 204 | 968 | 1900 | 438 | 1897 | 985 |
| 227 | 440 | 116 | 731 | 252 | 206 | 324 | 697 | 331 |
| 228 | 65 | 9 | 57 | 245 | 1608 | 181 | 354 | 191 |
| 229 | 508 | 320 | 1078 | 324 | 303 | 252 | 663 | 355 |
| 230 | 141 | 18 | 351 | 39 | 172 | 37 | 65 | 77 |
| 231 | 354 | 163 | 364 | 34 | 116 | 8 | 106 | 44 |
| 232 | 667 | 593 | 999 | 48 | 61 | 162 | 259 | 76 |
| 233 | 26 | 4 | 59 | 18 | 37 | 0 | 47 | 19 |
| 234 | 451 | 254 | 563 | 95 | 54 | 2 | 301 | 189 |
| 235 | 982 | 582 | 1173 | 123 | 99 | 6 | 415 | 153 |
| 236 | 585 | 331 | 947 | 192 | 49 | 35 | 431 | 199 |
| 237 | 507 | 239 | 741 | 320 | 287 | 495 | 475 | 312 |
| 238 | 1 | 0 | 40 | 11 | 0 | 0 | 37 | 11 |
| 239 | 245 | 59 | 188 | 2 | 172 | 32 | 61 | 13 |
| 240 | 178 | 62 | 214 | 211 | 3567 | 1 | 390 | 199 |
| 241 | 67 | 13 | 66 | 266 | 1728 | 18 | 485 | 221 |
| 242 | 503 | 66 | 1000 | 3940 | 6587 | 2412 | 8193 | 3388 |
| 243 | 152 | 28 | 230 | 779 | 1135 | 2119 | 1743 | 747 |
| 244 | 256 | 11 | 386 | 837 | 2126 | 336 | 2723 | 763 |
| 245 | 109 | 11 | 97 | 464 | 518 | 244 | 1579 | 408 |
| 246 | 250 | 45 | 292 | 686 | 828 | 1529 | 943 | 767 |
| 247 | 139 | 45 | 390 | 293 | 598 | 64 | 799 | 322 |
| 248 | 54 | 5 | 69 | 253 | 449 | 41 | 376 | 268 |
| 249 | 563 | 16 | 888 | 409 | 626 | 210 | 655 | 448 |
| 250 | 857 | 332 | 1085 | 357 | 1040 | 143 | 854 | 324 |
| 251 | 65 | 0 | 71 | 311 | 2448 | 34 | 662 | 232 |
| 252 | 196 | 144 | 293 | 852 | 2150 | 1562 | 1945 | 864 |
| 253 | 56 | 65 | 103 | 155 | 348 | 84 | 116 | 96 |
| 254 | 1048 | 490 | 1933 | 389 | 191 | 366 | 909 | 462 |
| 255 | 904 | 318 | 1374 | 402 | 300 | 69 | 914 | 382 |
| 256 | 682 | 278 | 866 | 212 | 351 | 55 | 743 | 257 |
| 257 | 815 | 384 | 1350 | 446 | 393 | 131 | 1087 | 484 |
| 258 | 521 | 260 | 1193 | 106 | 107 | 22 | 307 | 121 |
| 259 | 282 | 142 | 354 | 200 | 162 | 68 | 1155 | 206 |
| 260 | 900 | 386 | 1527 | 514 | 161 | 43 | 1289 | 525 |
| 261 | 1401 | 673 | 2502 | 1509 | 1004 | 1191 | 2964 | 1551 |
| 262 | 993 | 364 | 1093 | 212 | 146 | 17 | 878 | 196 |
| 263 | 1464 | 560 | 1853 | 312 | 179 | 77 | 726 | 367 |
| 264 | 873 | 340 | 1535 | 437 | 344 | 118 | 1096 | 356 |
| 265 | 979 | 326 | 1420 | 707 | 581 | 959 | 1443 | 896 |
| 266 | 774 | 397 | 1473 | 610 | 539 | 50 | 1292 | 523 |
| 267 | 549 | 369 | 1269 | 336 | 397 | 35 | 559 | 299 |
| 268 | 1167 | 405 | 1627 | 923 | 502 | 1529 | 1982 | 1000 |
| 269 | 1224 | 358 | 1860 | 1153 | 1710 | 90 | 2821 | 994 |
| 270 | 145 | 6 | 122 | 223 | 843 | 31 | 609 | 146 |
| 271 | 1208 | 384 | 1950 | 320 | 146 | 96 | 566 | 379 |
| 272 | 1075 | 360 | 1559 | 384 | 190 | 52 | 641 | 323 |
| 273 | 937 | 334 | 1537 | 227 | 199 | 353 | 853 | 450 |
| 274 | 559 | 149 | 754 | 229 | 163 | 48 | 605 | 189 |
| 275 | 883 | 302 | 870 | 691 | 696 | 54 | 1773 | 645 |
| 276 | 1170 | 454 | 1676 | 190 | 92 | 182 | 636 | 160 |
| 277 | 1273 | 555 | 1835 | 233 | 62 | 4 | 743 | 228 |
| 278 | 259 | 212 | 490 | 605 | 730 | 543 | 1541 | 652 |
| 279 | 846 | 429 | 1442 | 556 | 290 | 231 | 1369 | 644 |
| 280 | 629 | 590 | 1121 | 483 | 210 | 122 | 1480 | 456 |
| 281 | 1114 | 388 | 1641 | 217 | 110 | 29 | 553 | 219 |
| 282 | 609 | 316 | 1240 | 304 | 314 | 66 | 844 | 268 |
| 283 | 617 | 375 | 777 | 620 | 671 | 4 | 1557 | 488 |
| 284 | 1124 | 689 | 1636 | 238 | 141 | 205 | 594 | 353 |
| 285 | 13 | 23 | 41 | 428 | 528 | 2183 | 687 | 525 |
| 286 | 438 | 209 | 1005 | 62 | 96 | 31 | 313 | 101 |
| 287 | 929 | 349 | 1078 | 83 | 133 | 26 | 374 | 103 |
| 288 | 1111 | 576 | 2051 | 378 | 1589 | 147 | 986 | 456 |
| 289 | 860 | 444 | 1111 | 322 | 162 | 624 | 395 | 357 |
| 290 | 306 | 89 | 293 | 37 | 26 | 19 | 91 | 41 |
| IL TOT | 65965 | 50248 | 150993 | 72796 | 73782 | 49490 | 149568 | 72470 |
| IA TOT | 43248 | 19158 | 67726 | 30041 | 45853 | 24678 | 70171 | 30358 |
| TOTAL | 109213 | 69406 | 218719 | 102837 | 119635 | 74168 | 219739 | 102828 |

TABLE A-19

OBSERVED VEHICLE TRIPS VS. COMPUTED VEHICLE TRIPS, PRODUCTIONS

COMPUTED VEHICLE TRIPS = OBSERVED PERSON TRIPS / ESTIMATED CAR OCCUPANCY

| CENTROID | HB WORK OBSERVED | HB WORK COMPUTED | HB SHOP OBSERVED | HB SHOP COMPUTED | HB OTHER OBSERVED | HB OTHER COMPUTED | NHB OBSERVED | NHB COMPUTED |
|---|---|---|---|---|---|---|---|---|
| 1 | 175 | 163 | 36 | 32 | 168 | 153 | 808 | 658 |
| 2 | 285 | 267 | 74 | 59 | 271 | 250 | 3009 | 2718 |
| 3 | 74 | 57 | 51 | 44 | 78 | 145 | 518 | 398 |
| 4 | 32 | 0 | 24 | 0 | 65 | 0 | 678 | 528 |
| 5 | 75 | 66 | 43 | 50 | 76 | 66 | 648 | 669 |
| 6 | 14 | 0 | 0 | 0 | 13 | 0 | 228 | 177 |
| 7 | 48 | 0 | 0 | 0 | 36 | 0 | 1279 | 1055 |
| 8 | 167 | 156 | 103 | 97 | 278 | 222 | 591 | 869 |
| 9 | 236 | 284 | 173 | 120 | 619 | 546 | 350 | 302 |
| 10 | 428 | 450 | 356 | 433 | 725 | 738 | 236 | 209 |
| 11 | 177 | 188 | 218 | 196 | 374 | 479 | 412 | 361 |
| 12 | 262 | 317 | 264 | 238 | 587 | 517 | 179 | 178 |
| 13 | 134 | 0 | 8 | 0 | 78 | 0 | 448 | 303 |
| 14 | 213 | 225 | 90 | 78 | 183 | 164 | 573 | 524 |
| 15 | 382 | 325 | 101 | 57 | 637 | 547 | 344 | 386 |
| 16 | 547 | 520 | 262 | 282 | 689 | 608 | 382 | 317 |
| 17 | 857 | 946 | 510 | 420 | 1809 | 1300 | 755 | 639 |
| 18 | 817 | 861 | 223 | 180 | 1366 | 1400 | 905 | 881 |
| 19 | 482 | 448 | 144 | 128 | 1005 | 1075 | 424 | 339 |
| 20 | 844 | 940 | 578 | 505 | 1481 | 1467 | 301 | 261 |
| 21 | 757 | 680 | 464 | 357 | 1636 | 1223 | 481 | 478 |
| 22 | 707 | 762 | 358 | 368 | 1410 | 1142 | 474 | 391 |
| 23 | 710 | 714 | 553 | 547 | 2077 | 1899 | 125 | 90 |
| 24 | 173 | 164 | 207 | 150 | 717 | 843 | 233 | 174 |
| 25 | 406 | 421 | 441 | 344 | 1545 | 1355 | 353 | 305 |
| 26 | 289 | 259 | 210 | 128 | 416 | 320 | 561 | 583 |
| 27 | 248 | 265 | 208 | 234 | 560 | 632 | 418 | 337 |
| 28 | 521 | 507 | 428 | 432 | 1138 | 1097 | 695 | 688 |
| 29 | 805 | 756 | 533 | 514 | 1848 | 1835 | 722 | 753 |
| 30 | 660 | 772 | 360 | 381 | 1600 | 1587 | 338 | 317 |
| 31 | 17 | 0 | 0 | 0 | 5 | 0 | 4 | 0 |
| 32 | 50 | 40 | 44 | 55 | 8 | 13 | 2 | 1 |
| 33 | 519 | 629 | 239 | 254 | 1161 | 1015 | 198 | 245 |
| 34 | 469 | 521 | 561 | 511 | 1413 | 1352 | 798 | 888 |
| 35 | 140 | 141 | 222 | 221 | 403 | 348 | 261 | 182 |
| 36 | 301 | 277 | 273 | 259 | 692 | 584 | 471 | 362 |
| 37 | 73 | 61 | 6 | 5 | 150 | 190 | 101 | 114 |
| 38 | 523 | 601 | 410 | 330 | 1342 | 1244 | 1416 | 1418 |
| 39 | 252 | 274 | 264 | 246 | 222 | 184 | 82 | 57 |
| 40 | 22 | 81 | 0 | 0 | 106 | 109 | 6 | 14 |
| 41 | 612 | 577 | 540 | 492 | 1401 | 1603 | 734 | 678 |
| 42 | 633 | 646 | 347 | 374 | 1191 | 1222 | 383 | 319 |
| 43 | 1001 | 998 | 734 | 793 | 2162 | 2224 | 606 | 564 |
| 44 | 276 | 298 | 31 | 35 | 374 | 358 | 103 | 89 |
| 45 | 72 | 68 | 20 | 35 | 457 | 506 | 129 | 104 |
| 46 | 567 | 545 | 361 | 321 | 1679 | 1989 | 476 | 502 |
| 47 | 702 | 806 | 787 | 735 | 2108 | 2144 | 513 | 429 |
| 48 | 938 | 1076 | 899 | 923 | 2285 | 2290 | 394 | 285 |
| 49 | 357 | 311 | 402 | 331 | 1258 | 1232 | 142 | 109 |
| 50 | 102 | 126 | 111 | 90 | 246 | 278 | 53 | 37 |
| 51 | 152 | 128 | 174 | 131 | 495 | 578 | 57 | 40 |
| 52 | 65 | 62 | 75 | 76 | 377 | 622 | 47 | 53 |
| 53 | 1111 | 1018 | 321 | 341 | 1870 | 2887 | 296 | 321 |
| 54 | 557 | 563 | 377 | 357 | 1190 | 1367 | 148 | 182 |
| 55 | 1018 | 965 | 701 | 635 | 1641 | 1500 | 76 | 77 |
| 56 | 710 | 707 | 610 | 551 | 1892 | 2036 | 400 | 420 |
| 57 | 63 | 59 | 2 | 2 | 152 | 312 | 44 | 32 |
| 58 | 107 | 115 | 105 | 133 | 108 | 151 | 222 | 219 |
| 59 | 57 | 52 | 84 | 42 | 42 | 379 | 56 | 39 |
| 60 | 367 | 338 | 113 | 100 | 1440 | 1407 | 836 | 742 |
| 61 | 583 | 578 | 366 | 275 | 1433 | 1544 | 297 | 266 |
| 62 | 514 | 568 | 385 | 338 | 1821 | 3152 | 304 | 358 |
| 63 | 139 | 157 | 111 | 91 | 692 | 655 | 166 | 142 |
| 64 | 57 | 47 | 0 | 0 | 116 | 102 | 2 | 1 |
| 65 | 178 | 151 | 7 | 4 | 166 | 143 | 48 | 33 |
| 66 | 277 | 220 | 152 | 94 | 216 | 409 | 47 | 33 |
| 67 | 24 | 17 | 84 | 48 | 122 | 119 | 74 | 73 |
| 68 | 225 | 279 | 234 | 200 | 438 | 420 | 134 | 122 |
| 69 | 84 | 90 | 2 | 2 | 117 | 176 | 0 | 16 |
| 70 | 4 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |
| 71 | 0 | 0 | 0 | 0 | 2 | 0 | 21 | 14 |
| 72 | 19 | 0 | 6 | 0 | 8 | 0 | 117 | 80 |
| 73 | 13 | 0 | 0 | 0 | 11 | 0 | 85 | 65 |

TABLE A-19

OBSERVED VEHICLE TRIPS VS. COMPUTED VEHICLE TRIPS, PRODUCTIONS

COMPUTED VEHICLE TRIPS = OBSERVED PERSON TRIPS / ESTIMATED CAR OCCUPANCY

| CENTROID | HB WORK OBSERVED | HB WORK COMPUTED | HB SHOP OBSERVED | HB SHOP COMPUTED | HB OTHER OBSERVED | HB OTHER COMPUTED | NHB OBSERVED | NHB COMPUTED |
|---|---|---|---|---|---|---|---|---|
| 74 | 8 | 0 | 3 | 0 | 2 | 0 | 32 | 36 |
| 75 | 122 | 154 | 122 | 205 | 265 | 214 | 20 | 14 |
| 76 | 39 | 35 | 123 | 121 | 281 | 164 | 2 | 1 |
| 77 | 2 | 19 | 0 | 0 | 115 | 67 | 80 | 72 |
| 78 | 13 | 11 | 61 | 58 | 27 | 22 | 0 | 0 |
| 79 | 23 | 15 | 61 | 31 | 31 | 16 | 0 | 0 |
| 80 | 11 | 8 | 20 | 45 | 7 | 11 | 0 | 0 |
| 81 | 86 | 61 | 61 | 44 | 134 | 101 | 0 | 0 |
| 82 | 113 | 113 | 229 | 227 | 266 | 383 | 32 | 67 |
| 83 | 117 | 116 | 74 | 82 | 151 | 139 | 1009 | 931 |
| 84 | 73 | 63 | 41 | 36 | 62 | 67 | 2440 | 2430 |
| 85 | 225 | 218 | 67 | 130 | 363 | 291 | 2311 | 2333 |
| 86 | 233 | 186 | 185 | 148 | 199 | 469 | 373 | 344 |
| 87 | 112 | 115 | 77 | 66 | 271 | 286 | 241 | 235 |
| 88 | 661 | 628 | 528 | 598 | 1005 | 884 | 342 | 308 |
| 89 | 187 | 167 | 7 | 7 | 247 | 236 | 678 | 699 |
| 90 | 82 | 89 | 3 | 12 | 54 | 45 | 483 | 474 |
| 91 | 59 | 0 | 8 | 0 | 48 | 0 | 354 | 337 |
| 92 | 74 | 0 | 7 | 0 | 40 | 0 | 423 | 359 |
| 93 | 7 | 0 | 2 | 0 | 3 | 0 | 64 | 51 |
| 94 | 166 | 194 | 180 | 240 | 332 | 334 | 236 | 231 |
| 95 | 4 | 0 | 2 | 0 | 6 | 0 | 88 | 60 |
| 96 | 477 | 499 | 375 | 342 | 653 | 617 | 730 | 769 |
| 97 | 757 | 766 | 306 | 325 | 1674 | 2070 | 388 | 325 |
| 98 | 415 | 465 | 563 | 592 | 1439 | 1323 | 1152 | 1139 |
| 99 | 119 | 189 | 233 | 203 | 1029 | 945 | 121 | 111 |
| 100 | 392 | 363 | 347 | 232 | 777 | 560 | 140 | 97 |
| 101 | 915 | 1046 | 704 | 911 | 2744 | 2834 | 649 | 614 |
| 102 | 419 | 390 | 502 | 535 | 808 | 1221 | 658 | 551 |
| 103 | 342 | 442 | 235 | 255 | 775 | 810 | 1003 | 1085 |
| 104 | 704 | 631 | 415 | 468 | 1319 | 1361 | 450 | 347 |
| 105 | 697 | 662 | 480 | 560 | 1436 | 1717 | 346 | 340 |
| 106 | 772 | 822 | 804 | 760 | 2078 | 2150 | 266 | 278 |
| 107 | 894 | 842 | 851 | 738 | 1598 | 1414 | 736 | 734 |
| 108 | 66 | 73 | 62 | 39 | 442 | 535 | 35 | 77 |
| 109 | 573 | 556 | 516 | 440 | 1019 | 1008 | 190 | 169 |
| 110 | 292 | 328 | 380 | 308 | 663 | 807 | 60 | 64 |
| 111 | 149 | 243 | 137 | 199 | 307 | 371 | 142 | 137 |
| 112 | 304 | 363 | 255 | 239 | 521 | 356 | 315 | 287 |
| 113 | 50 | 41 | 89 | 65 | 96 | 84 | 34 | 32 |
| 114 | 192 | 302 | 226 | 242 | 542 | 436 | 424 | 460 |
| 115 | 520 | 480 | 665 | 595 | 1299 | 1437 | 151 | 209 |
| 116 | 519 | 457 | 325 | 435 | 665 | 958 | 92 | 64 |
| 117 | 368 | 413 | 326 | 256 | 1046 | 1060 | 109 | 108 |
| 118 | 669 | 623 | 641 | 927 | 831 | 925 | 166 | 207 |
| 119 | 268 | 227 | 298 | 315 | 340 | 270 | 191 | 199 |
| 120 | 458 | 451 | 424 | 448 | 1039 | 1286 | 58 | 49 |
| 121 | 435 | 606 | 370 | 332 | 1323 | 1119 | 1315 | 1431 |
| 122 | 475 | 537 | 410 | 472 | 872 | 864 | 3888 | 4389 |
| 123 | 524 | 489 | 636 | 571 | 1206 | 1208 | 326 | 343 |
| 124 | 389 | 364 | 70 | 111 | 1062 | 1168 | 1338 | 1624 |
| 125 | 161 | 158 | 227 | 288 | 214 | 213 | 33 | 23 |
| 126 | 378 | 369 | 150 | 184 | 767 | 677 | 119 | 98 |
| 127 | 135 | 151 | 43 | 30 | 672 | 913 | 48 | 34 |
| 128 | 81 | 79 | 6 | 13 | 14 | 11 | 0 | 0 |
| 129 | 237 | 293 | 411 | 423 | 1118 | 1054 | 60 | 88 |
| 130 | 328 | 291 | 288 | 242 | 697 | 635 | 120 | 84 |
| 131 | 190 | 160 | 357 | 388 | 406 | 472 | 77 | 54 |
| 132 | 293 | 277 | 162 | 132 | 337 | 329 | 992 | 1115 |
| 133 | 565 | 605 | 586 | 472 | 1555 | 1462 | 102 | 94 |
| 134 | 279 | 269 | 181 | 159 | 967 | 698 | 154 | 110 |
| 135 | 182 | 181 | 97 | 165 | 889 | 769 | 159 | 196 |
| 136 | 298 | 305 | 313 | 245 | 767 | 778 | 54 | 53 |
| 137 | 672 | 587 | 709 | 574 | 1547 | 1554 | 517 | 528 |
| 138 | 444 | 401 | 227 | 171 | 1131 | 1124 | 766 | 880 |
| 139 | 158 | 170 | 209 | 224 | 313 | 551 | 73 | 51 |
| 140 | 740 | 674 | 416 | 449 | 1605 | 1648 | 216 | 213 |
| 141 | 395 | 409 | 372 | 377 | 753 | 778 | 219 | 214 |
| 142 | 402 | 450 | 416 | 412 | 796 | 829 | 65 | 45 |
| 143 | 30 | 25 | 43 | 33 | 4 | 27 | 11 | 8 |
| 144 | 246 | 208 | 270 | 242 | 827 | 804 | 86 | 90 |
| 145 | 275 | 251 | 21 | 38 | 372 | 381 | 248 | 255 |
| 146 | 70 | 74 | 41 | 35 | 149 | 148 | 15 | 10 |

TABLE A-19

OBSERVED VEHICLE TRIPS VS. COMPUTED VEHICLE TRIPS, PRODUCTIONS

COMPUTED VEHICLE TRIPS = OBSERVED PERSON TRIPS / ESTIMATED CAR OCCUPANCY

| CENTROID | HB WORK OBSERVED | HB WORK COMPUTED | HB SHOP OBSERVED | HB SHOP COMPUTED | HB OTHER OBSERVED | HB OTHER COMPUTED | NHB OBSERVED | NHB COMPUTED |
|---|---|---|---|---|---|---|---|---|
| 147 | 406 | 440 | 293 | 279 | 385 | 319 | 78 | 70 |
| 148 | 532 | 515 | 307 | 214 | 712 | 659 | 152 | 142 |
| 149 | 92 | 85 | 63 | 35 | 236 | 219 | 278 | 240 |
| 150 | 332 | 295 | 246 | 259 | 534 | 624 | 410 | 500 |
| 151 | 121 | 133 | 81 | 97 | 163 | 148 | 273 | 349 |
| 152 | 374 | 345 | 325 | 343 | 973 | 1109 | 174 | 175 |
| 153 | 603 | 471 | 323 | 385 | 1036 | 1044 | 84 | 58 |
| 154 | 98 | 79 | 82 | 222 | 294 | 367 | 2 | 9 |
| 155 | 27 | 36 | 40 | 136 | 62 | 34 | 0 | 0 |
| 156 | 26 | 21 | 21 | 14 | 129 | 121 | 0 | 0 |
| 157 | 122 | 141 | 101 | 101 | 121 | 103 | 11 | 8 |
| 158 | 39 | 33 | 42 | 59 | 277 | 213 | 2 | 1 |
| 159 | 162 | 160 | 67 | 61 | 197 | 251 | 1573 | 1592 |
| 160 | 89 | 89 | 2 | 1 | 249 | 390 | 836 | 732 |
| 161 | 102 | 0 | 0 | 0 | 51 | 0 | 980 | 737 |
| 162 | 119 | 109 | 64 | 60 | 212 | 208 | 31 | 22 |
| 163 | 252 | 242 | 53 | 40 | 924 | 963 | 410 | 350 |
| 164 | 131 | 118 | 43 | 68 | 84 | 58 | 616 | 591 |
| 165 | 376 | 408 | 335 | 322 | 1092 | 1245 | 290 | 239 |
| 166 | 701 | 670 | 472 | 359 | 1372 | 1634 | 347 | 347 |
| 167 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |
| 168 | 296 | 266 | 161 | 158 | 482 | 541 | 391 | 353 |
| 169 | 389 | 351 | 283 | 252 | 663 | 548 | 39 | 124 |
| 170 | 871 | 853 | 856 | 923 | 1673 | 1842 | 793 | 700 |
| 171 | 668 | 739 | 413 | 433 | 1785 | 1901 | 231 | 206 |
| 172 | 462 | 569 | 524 | 478 | 1337 | 1403 | 363 | 406 |
| 173 | 389 | 411 | 201 | 266 | 1178 | 1153 | 652 | 727 |
| 174 | 1054 | 1024 | 558 | 544 | 2219 | 2152 | 306 | 320 |
| 175 | 105 | 133 | 154 | 194 | 888 | 767 | 2 | 1 |
| 176 | 433 | 439 | 477 | 480 | 1235 | 1194 | 595 | 477 |
| 177 | 1108 | 1056 | 1017 | 778 | 2941 | 3212 | 740 | 722 |
| 178 | 264 | 217 | 150 | 120 | 197 | 260 | 499 | 428 |
| 179 | 450 | 444 | 434 | 436 | 1467 | 1195 | 410 | 522 |
| 180 | 239 | 204 | 376 | 415 | 437 | 408 | 367 | 413 |
| 181 | 130 | 194 | 203 | 187 | 568 | 527 | 728 | 640 |
| 182 | 7 | 0 | 0 | 0 | 3 | 0 | 242 | 186 |
| 183 | 163 | 161 | 176 | 129 | 198 | 259 | 369 | 452 |
| 184 | 705 | 777 | 552 | 808 | 1883 | 2408 | 298 | 314 |
| 185 | 576 | 527 | 440 | 324 | 1254 | 1373 | 171 | 286 |
| 186 | 136 | 102 | 45 | 51 | 310 | 299 | 52 | 127 |
| 187 | 345 | 303 | 473 | 381 | 1360 | 1282 | 151 | 181 |
| 188 | 455 | 436 | 258 | 408 | 1276 | 1352 | 55 | 90 |
| 189 | 2 | 0 | 0 | 0 | 4 | 0 | 31 | 21 |
| 190 | 32 | 33 | 64 | 55 | 58 | 37 | 1 | 1 |
| 191 | 6 | 21 | 0 | 0 | 0 | 59 | 0 | 0 |
| 192 | 96 | 95 | 150 | 122 | 403 | 335 | 22 | 15 |
| 193 | 176 | 153 | 107 | 164 | 95 | 143 | 414 | 378 |
| 194 | 0 | 0 | 0 | 0 | 72 | 44 | 53 | 54 |
| 195 | 237 | 267 | 152 | 136 | 627 | 735 | 66 | 114 |
| 196 | 939 | 881 | 774 | 814 | 2918 | 2814 | 481 | 494 |
| 197 | 397 | 349 | 398 | 430 | 1141 | 1354 | 446 | 369 |
| 198 | 205 | 198 | 136 | 172 | 454 | 625 | 37 | 26 |
| 199 | 92 | 68 | 43 | 50 | 67 | 67 | 0 | 0 |
| 200 | 23 | 20 | 43 | 34 | 23 | 14 | 0 | 0 |
| 201 | 79 | 58 | 43 | 25 | 398 | 243 | 0 | 0 |
| 202 | 0 | 0 | 0 | 0 | 33 | 54 | 0 | 0 |
| 203 | 267 | 216 | 150 | 130 | 690 | 686 | 55 | 54 |
| 204 | 31 | 55 | 21 | 24 | 313 | 333 | 23 | 68 |
| 205 | 431 | 417 | 260 | 204 | 922 | 1408 | 102 | 109 |
| 206 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 0 |
| 207 | 187 | 201 | 173 | 220 | 501 | 403 | 11 | 60 |
| 208 | 2 | 20 | 0 | 0 | 4 | 2 | 11 | 8 |
| 209 | 35 | 32 | 21 | 17 | 47 | 81 | 0 | 0 |
| 210 | 287 | 300 | 323 | 348 | 1341 | 1098 | 248 | 344 |
| 211 | 102 | 102 | 64 | 60 | 360 | 344 | 87 | 91 |
| 212 | 136 | 120 | 86 | 133 | 630 | 627 | 21 | 75 |
| 213 | 24 | 14 | 0 | 0 | 4 | 2 | 0 | 0 |
| 214 | 283 | 252 | 177 | 234 | 968 | 830 | 11 | 8 |
| 215 | 329 | 292 | 45 | 40 | 532 | 353 | 43 | 30 |
| 216 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 217 | 10 | 8 | 46 | 33 | 14 | 8 | 0 | 0 |
| 218 | 18 | 0 | 25 | 0 | 43 | 0 | 585 | 728 |
| 219 | 551 | 496 | 120 | 133 | 641 | 659 | 327 | 301 |

TABLE A-19

OBSERVED VEHICLE TRIPS VS. COMPUTED VEHICLE TRIPS, PRODUCTIONS

COMPUTED VEHICLE TRIPS = OBSERVED PERSON TRIPS / ESTIMATED CAR OCCUPANCY

| CENTROID | HB WORK OBSERVED | HB WORK COMPUTED | HB SHOP OBSERVED | HB SHOP COMPUTED | HB OTHER OBSERVED | HB OTHER COMPUTED | NHB OBSERVED | NHB COMPUTED |
|---|---|---|---|---|---|---|---|---|
| 220 | 1050 | 1082 | 775 | 743 | 2508 | 2276 | 371 | 432 |
| 221 | 506 | 548 | 475 | 465 | 1345 | 1227 | 266 | 334 |
| 222 | 11 | 32 | 21 | 15 | 61 | 41 | 10 | 7 |
| 223 | 619 | 727 | 306 | 395 | 1107 | 1086 | 153 | 138 |
| 224 | 424 | 441 | 208 | 282 | 575 | 530 | 118 | 123 |
| 225 | 787 | 864 | 390 | 407 | 1309 | 1078 | 429 | 487 |
| 226 | 184 | 179 | 24 | 26 | 204 | 160 | 968 | 972 |
| 227 | 440 | 450 | 116 | 134 | 731 | 773 | 252 | 290 |
| 228 | 65 | 86 | 9 | 11 | 57 | 64 | 245 | 237 |
| 229 | 508 | 564 | 320 | 416 | 1078 | 949 | 324 | 347 |
| 230 | 141 | 111 | 18 | 10 | 351 | 348 | 39 | 35 |
| 231 | 354 | 301 | 163 | 160 | 364 | 333 | 34 | 37 |
| 232 | 667 | 692 | 593 | 574 | 999 | 939 | 48 | 77 |
| 233 | 26 | 23 | 4 | 3 | 59 | 41 | 18 | 19 |
| 234 | 451 | 423 | 254 | 228 | 563 | 570 | 95 | 80 |
| 235 | 982 | 888 | 582 | 620 | 1173 | 1309 | 123 | 113 |
| 236 | 585 | 536 | 331 | 401 | 947 | 1127 | 192 | 233 |
| 237 | 507 | 430 | 239 | 252 | 741 | 735 | 320 | 313 |
| 238 | 1 | 1 | 0 | 0 | 40 | 48 | 11 | 8 |
| 239 | 245 | 183 | 59 | 51 | 188 | 225 | 2 | 3 |
| 240 | 178 | 210 | 62 | 60 | 214 | 136 | 211 | 214 |
| 241 | 67 | 44 | 13 | 9 | 66 | 53 | 266 | 273 |
| 242 | 503 | 462 | 66 | 60 | 1000 | 638 | 3940 | 3652 |
| 243 | 152 | 159 | 28 | 19 | 230 | 186 | 779 | 838 |
| 244 | 256 | 226 | 11 | 12 | 386 | 318 | 837 | 779 |
| 245 | 109 | 114 | 11 | 7 | 97 | 68 | 464 | 537 |
| 246 | 250 | 289 | 45 | 28 | 292 | 229 | 686 | 822 |
| 247 | 139 | 193 | 45 | 34 | 390 | 323 | 293 | 272 |
| 248 | 54 | 42 | 5 | 2 | 69 | 40 | 253 | 209 |
| 249 | 563 | 554 | 16 | 66 | 888 | 730 | 409 | 406 |
| 250 | 857 | 875 | 332 | 325 | 1085 | 998 | 357 | 349 |
| 251 | 65 | 0 | 0 | 0 | 71 | 0 | 311 | 237 |
| 252 | 196 | 223 | 144 | 149 | 293 | 289 | 852 | 892 |
| 253 | 56 | 61 | 65 | 42 | 103 | 108 | 155 | 113 |
| 254 | 1048 | 1022 | 490 | 632 | 1933 | 1898 | 389 | 378 |
| 255 | 904 | 939 | 318 | 292 | 1374 | 1322 | 402 | 368 |
| 256 | 682 | 651 | 278 | 267 | 866 | 1031 | 212 | 196 |
| 257 | 815 | 848 | 384 | 325 | 1350 | 1110 | 446 | 479 |
| 258 | 521 | 548 | 260 | 329 | 1193 | 985 | 106 | 119 |
| 259 | 282 | 272 | 142 | 121 | 354 | 344 | 200 | 207 |
| 260 | 900 | 892 | 386 | 331 | 1527 | 1503 | 514 | 699 |
| 261 | 1401 | 1421 | 673 | 645 | 2502 | 2382 | 1509 | 1419 |
| 262 | 993 | 1011 | 364 | 395 | 1093 | 1095 | 212 | 252 |
| 263 | 1464 | 1397 | 560 | 578 | 1853 | 1812 | 312 | 331 |
| 264 | 873 | 764 | 340 | 380 | 1535 | 1539 | 437 | 483 |
| 265 | 979 | 1073 | 326 | 389 | 1420 | 1238 | 707 | 673 |
| 266 | 774 | 873 | 397 | 435 | 1473 | 1338 | 610 | 558 |
| 267 | 549 | 702 | 369 | 326 | 1269 | 1126 | 336 | 301 |
| 268 | 1167 | 1306 | 405 | 549 | 1627 | 1336 | 923 | 968 |
| 269 | 1224 | 1330 | 358 | 384 | 1860 | 1550 | 1153 | 1056 |
| 270 | 145 | 127 | 6 | 10 | 122 | 98 | 223 | 243 |
| 271 | 1208 | 1233 | 384 | 337 | 1950 | 1947 | 320 | 282 |
| 272 | 1075 | 1050 | 360 | 395 | 1559 | 1357 | 384 | 326 |
| 273 | 937 | 996 | 334 | 287 | 1537 | 1361 | 227 | 214 |
| 274 | 559 | 604 | 149 | 169 | 754 | 679 | 229 | 186 |
| 275 | 883 | 844 | 302 | 360 | 870 | 955 | 691 | 680 |
| 276 | 1170 | 1137 | 454 | 461 | 1676 | 1541 | 190 | 241 |
| 277 | 1273 | 1190 | 555 | 575 | 1835 | 1828 | 233 | 366 |
| 278 | 259 | 255 | 212 | 195 | 490 | 424 | 605 | 708 |
| 279 | 846 | 793 | 429 | 356 | 1442 | 1465 | 556 | 604 |
| 280 | 629 | 688 | 590 | 593 | 1121 | 1172 | 483 | 598 |
| 281 | 1114 | 1213 | 388 | 506 | 1641 | 1632 | 217 | 240 |
| 282 | 609 | 596 | 316 | 404 | 1240 | 1064 | 304 | 347 |
| 283 | 617 | 573 | 375 | 422 | 777 | 800 | 620 | 634 |
| 284 | 1124 | 1065 | 689 | 783 | 1636 | 1623 | 238 | 278 |
| 285 | 13 | 0 | 23 | 0 | 41 | 0 | 428 | 502 |
| 286 | 438 | 465 | 209 | 223 | 1005 | 980 | 62 | 70 |
| 287 | 929 | 995 | 349 | 348 | 1078 | 1018 | 83 | 70 |
| 288 | 1111 | 1142 | 576 | 688 | 2051 | 1909 | 378 | 442 |
| 289 | 860 | 827 | 444 | 499 | 1111 | 1092 | 322 | 308 |
| 290 | 306 | 287 | 89 | 105 | 293 | 277 | 37 | 39 |
| TOTAL | 109213 | 109358 | 69380 | 69563 | 218719 | 218901 | 102837 | 102005 |

TABLE A-20

OBSERVED VEHICLE TRIPS VS. COMPUTED VEHICLE TRIPS, ATTRACTIONS

| CENTROID | COMPUTED VEHICLE TRIPS = OBSERVED PERSON TRIPS / ESTIMATED CAR OCCUPANCY | | | | | |
|---|---|---|---|---|---|---|
| | HB WORK OBSERVED | HB WORK COMPUTED | HB SHOP OBSERVED | HB SHOP COMPUTED | HB OTHER OBSERVED | HB OTHER COMPUTED |
| 1 | 1436 | 1672 | 166 | 185 | 1519 | 1280 |
| 2 | 2303 | 2552 | 2154 | 2089 | 5511 | 4448 |
| 3 | 734 | 718 | 74 | 52 | 1154 | 768 |
| 4 | 302 | 350 | 257 | 223 | 1013 | 652 |
| 5 | 531 | 533 | 471 | 471 | 549 | 562 |
| 6 | 138 | 138 | 52 | 37 | 72 | 85 |
| 7 | 7136 | 7440 | 3 | 2 | 1857 | 1557 |
| 8 | 760 | 711 | 96 | 75 | 1060 | 871 |
| 9 | 298 | 235 | 42 | 27 | 236 | 316 |
| 10 | 86 | 120 | 1036 | 673 | 600 | 764 |
| 11 | 233 | 265 | 25 | 16 | 1109 | 774 |
| 12 | 399 | 324 | 0 | 0 | 254 | 225 |
| 13 | 1045 | 1074 | 58 | 42 | 723 | 622 |
| 14 | 4141 | 4171 | 0 | 0 | 763 | 618 |
| 15 | 765 | 669 | 6 | 4 | 488 | 374 |
| 16 | 513 | 452 | 111 | 84 | 602 | 432 |
| 17 | 310 | 330 | 388 | 362 | 1190 | 905 |
| 18 | 1432 | 1669 | 54 | 35 | 1465 | 1372 |
| 19 | 66 | 74 | 46 | 31 | 1160 | 1542 |
| 20 | 110 | 93 | 94 | 119 | 780 | 687 |
| 21 | 50 | 53 | 3 | 3 | 685 | 989 |
| 22 | 53 | 82 | 43 | 27 | 782 | 762 |
| 23 | 136 | 148 | 81 | 78 | 861 | 646 |
| 24 | 62 | 54 | 24 | 15 | 168 | 229 |
| 25 | 39 | 73 | 66 | 83 | 907 | 923 |
| 26 | 317 | 574 | 2 | 1 | 2283 | 1940 |
| 27 | 124 | 150 | 63 | 80 | 342 | 239 |
| 28 | 142 | 148 | 1329 | 1079 | 985 | 952 |
| 29 | 122 | 145 | 45 | 49 | 2320 | 4057 |
| 30 | 111 | 135 | 190 | 138 | 776 | 610 |
| 31 | 28 | 21 | 0 | 0 | 295 | 185 |
| 32 | 26 | 20 | 22 | 57 | 5 | 4 |
| 33 | 42 | 34 | 48 | 31 | 614 | 540 |
| 34 | 358 | 311 | 1210 | 1202 | 1465 | 1277 |
| 35 | 356 | 307 | 46 | 29 | 404 | 460 |
| 36 | 278 | 262 | 842 | 818 | 615 | 750 |
| 37 | 593 | 559 | 45 | 29 | 317 | 305 |
| 38 | 670 | 699 | 1914 | 1788 | 2421 | 2842 |
| 39 | 60 | 63 | 21 | 13 | 247 | 174 |
| 40 | 58 | 45 | 2 | 3 | 139 | 203 |
| 41 | 402 | 347 | 31 | 27 | 2679 | 4017 |
| 42 | 359 | 320 | 195 | 153 | 849 | 734 |
| 43 | 122 | 135 | 922 | 750 | 1196 | 985 |
| 44 | 14 | 27 | 2 | 2 | 139 | 77 |
| 45 | 29 | 57 | 0 | 0 | 55 | 37 |
| 46 | 74 | 75 | 46 | 29 | 650 | 1607 |
| 47 | 108 | 116 | 797 | 657 | 766 | 922 |
| 48 | 128 | 143 | 220 | 167 | 1049 | 860 |
| 49 | 73 | 61 | 24 | 20 | 205 | 220 |
| 50 | 1 | 1 | 0 | 0 | 150 | 272 |
| 51 | 2 | 2 | 0 | 0 | 59 | 36 |
| 52 | 31 | 30 | 0 | 0 | 338 | 305 |
| 53 | 59 | 68 | 1 | 3 | 699 | 866 |
| 54 | 51 | 44 | 25 | 31 | 641 | 704 |
| 55 | 27 | 32 | 0 | 0 | 561 | 491 |
| 56 | 92 | 99 | 2 | 3 | 705 | 1006 |
| 57 | 201 | 154 | 0 | 0 | 206 | 189 |
| 58 | 189 | 171 | 0 | 0 | 544 | 452 |
| 59 | 16 | 37 | 21 | 27 | 61 | 51 |
| 60 | 787 | 727 | 840 | 706 | 2213 | 3004 |
| 61 | 334 | 264 | 104 | 94 | 996 | 939 |
| 62 | 347 | 294 | 133 | 85 | 1140 | 1648 |
| 63 | 832 | 720 | 24 | 16 | 228 | 153 |
| 64 | 4 | 3 | 2 | 1 | 22 | 14 |
| 65 | 70 | 79 | 88 | 56 | 228 | 176 |
| 66 | 74 | 57 | 8 | 5 | 250 | 296 |
| 67 | 13 | 10 | 0 | 0 | 344 | 329 |
| 68 | 89 | 77 | 112 | 127 | 202 | 210 |
| 69 | 0 | 0 | 0 | 14 | 4 | 3 |
| 70 | 7 | 5 | 41 | 26 | 25 | 25 |
| 71 | 0 | 0 | 0 | 0 | 2 | 51 |
| 72 | 60 | 67 | 0 | 0 | 60 | 33 |
| 73 | 165 | 132 | 127 | 81 | 123 | 107 |

OBSERVED VEHICLE TRIPS VS. COMPUTED VEHICLE TRIPS, ATTRACTIONS

| CENTROID | COMPUTED VEHICLE TRIPS = OBSERVED PERSON TRIPS / ESTIMATED CAR OCCUPANCY | | | | | |
|---|---|---|---|---|---|---|
| | HB WORK OBSERVED | HB WORK COMPUTED | HB SHOP OBSERVED | HB SHOP COMPUTED | HB OTHER OBSERVED | HB OTHER COMPUTED |
| 74 | 0 | 0 | 20 | 13 | 57 | 66 |
| 75 | 13 | 10 | 61 | 39 | 251 | 195 |
| 76 | 75 | 57 | 0 | 0 | 178 | 173 |
| 77 | 1 | 18 | 0 | 0 | 77 | 102 |
| 78 | 29 | 22 | 0 | 0 | 49 | 27 |
| 79 | 0 | 0 | 0 | 0 | 4 | 2 |
| 80 | 1 | 1 | 0 | 0 | 0 | 0 |
| 81 | 0 | 0 | 0 | 0 | 22 | 24 |
| 82 | 38 | 29 | 109 | 70 | 123 | 123 |
| 83 | 789 | 729 | 249 | 187 | 1720 | 1628 |
| 84 | 1353 | 1275 | 1860 | 1971 | 3902 | 3205 |
| 85 | 1781 | 1799 | 1589 | 1738 | 3757 | 2925 |
| 86 | 375 | 334 | 473 | 514 | 592 | 511 |
| 87 | 516 | 493 | 1 | 1 | 448 | 399 |
| 88 | 232 | 193 | 22 | 14 | 897 | 1266 |
| 89 | 2817 | 2488 | 0 | 0 | 728 | 646 |
| 90 | 1777 | 1755 | 3 | 10 | 610 | 491 |
| 91 | 1468 | 1376 | 44 | 43 | 551 | 505 |
| 92 | 1583 | 1477 | 3 | 2 | 371 | 237 |
| 93 | 172 | 149 | 0 | 0 | 137 | 99 |
| 94 | 267 | 264 | 24 | 15 | 320 | 375 |
| 95 | 177 | 160 | 0 | 0 | 116 | 69 |
| 96 | 785 | 1054 | 0 | 0 | 3621 | 2773 |
| 97 | 176 | 158 | 321 | 260 | 947 | 790 |
| 98 | 240 | 252 | 2787 | 2829 | 958 | 966 |
| 99 | 57 | 45 | 2 | 3 | 323 | 219 |
| 100 | 38 | 29 | 0 | 0 | 459 | 487 |
| 101 | 418 | 380 | 113 | 73 | 1187 | 1285 |
| 102 | 280 | 263 | 22 | 14 | 3819 | 2585 |
| 103 | 526 | 495 | 629 | 525 | 1977 | 2548 |
| 104 | 124 | 107 | 23 | 15 | 1154 | 1079 |
| 105 | 144 | 119 | 89 | 86 | 806 | 773 |
| 106 | 197 | 234 | 43 | 27 | 837 | 616 |
| 107 | 113 | 166 | 814 | 635 | 1348 | 1427 |
| 108 | 7 | 5 | 0 | 0 | 426 | 465 |
| 109 | 3 | 4 | 2 | 9 | 197 | 198 |
| 110 | 25 | 20 | 0 | 0 | 184 | 187 |
| 111 | 446 | 422 | 0 | 0 | 612 | 440 |
| 112 | 226 | 198 | 87 | 126 | 601 | 630 |
| 113 | 136 | 139 | 21 | 13 | 53 | 31 |
| 114 | 531 | 461 | 362 | 299 | 807 | 807 |
| 115 | 76 | 58 | 22 | 28 | 283 | 320 |
| 116 | 38 | 29 | 0 | 0 | 70 | 100 |
| 117 | 32 | 24 | 83 | 53 | 351 | 387 |
| 118 | 60 | 71 | 0 | 0 | 409 | 343 |
| 119 | 191 | 146 | 0 | 0 | 220 | 446 |
| 120 | 29 | 24 | 0 | 0 | 145 | 189 |
| 121 | 456 | 402 | 1335 | 1332 | 1899 | 1332 |
| 122 | 1261 | 1249 | 6450 | 6733 | 4320 | 6508 |
| 123 | 161 | 128 | 191 | 250 | 637 | 577 |
| 124 | 226 | 175 | 1660 | 2269 | 1927 | 1732 |
| 125 | 1 | 1 | 43 | 27 | 149 | 109 |
| 126 | 0 | 0 | 0 | 14 | 195 | 143 |
| 127 | 5 | 4 | 0 | 0 | 179 | 144 |
| 128 | 99 | 86 | 0 | 0 | 205 | 234 |
| 129 | 28 | 21 | 111 | 123 | 205 | 324 |
| 130 | 128 | 98 | 0 | 0 | 154 | 200 |
| 131 | 6 | 30 | 2 | 1 | 165 | 114 |
| 132 | 343 | 378 | 3686 | 4061 | 720 | 623 |
| 133 | 76 | 58 | 3 | 2 | 424 | 377 |
| 134 | 34 | 26 | 106 | 68 | 530 | 425 |
| 135 | 28 | 47 | 0 | 0 | 224 | 273 |
| 136 | 25 | 36 | 0 | 0 | 127 | 185 |
| 137 | 178 | 216 | 149 | 95 | 1421 | 1280 |
| 138 | 287 | 246 | 1473 | 1448 | 1319 | 1485 |
| 139 | 91 | 87 | 0 | 0 | 109 | 124 |
| 140 | 30 | 24 | 2 | 3 | 818 | 549 |
| 141 | 161 | 158 | 2 | 1 | 572 | 639 |
| 142 | 53 | 42 | 85 | 81 | 154 | 214 |
| 143 | 0 | 0 | 2 | 1 | 50 | 27 |
| 144 | 2 | 2 | 41 | 26 | 219 | 148 |
| 145 | 91 | 80 | 41 | 40 | 412 | 412 |
| 146 | 1 | 3 | 0 | 0 | 9 | 5 |

TABLE A-20

OBSERVED VEHICLE TRIPS VS. COMPUTED VEHICLE TRIPS, ATTRACTIONS

COMPUTED VEHICLE TRIPS = OBSERVED PERSON TRIPS / ESTIMATED CAR OCCUPANCY

| CENTROID | HB WORK OBSERVED | HB WORK COMPUTED | HB SHOP OBSERVED | HB SHOP COMPUTED | HB OTHER OBSERVED | HB OTHER COMPUTED |
|---|---|---|---|---|---|---|
| 147 | 1 | 1 | 0 | 0 | 211 | 181 |
| 148 | 94 | 72 | 0 | 0 | 370 | 372 |
| 149 | 400 | 366 | 4 | 3 | 1128 | 1301 |
| 150 | 166 | 145 | 119 | 101 | 1453 | 1283 |
| 151 | 383 | 421 | 49 | 31 | 597 | 436 |
| 152 | 164 | 159 | 351 | 381 | 807 | 788 |
| 153 | 25 | 36 | 42 | 54 | 130 | 124 |
| 154 | 32 | 24 | 42 | 27 | 259 | 234 |
| 155 | 3 | 2 | 0 | 0 | 5 | 3 |
| 156 | 0 | 0 | 0 | 0 | 67 | 37 |
| 157 | 56 | 60 | 0 | 0 | 23 | 37 |
| 158 | 59 | 64 | 0 | 0 | 80 | 92 |
| 159 | 617 | 598 | 1560 | 1571 | 2199 | 1622 |
| 160 | 497 | 487 | 883 | 932 | 1272 | 1064 |
| 161 | 4705 | 4791 | 0 | 0 | 482 | 441 |
| 162 | 5 | 4 | 0 | 0 | 46 | 30 |
| 163 | 1526 | 1392 | 42 | 27 | 555 | 467 |
| 164 | 5075 | 4907 | 2 | 1 | 730 | 799 |
| 165 | 157 | 138 | 22 | 27 | 721 | 784 |
| 166 | 188 | 180 | 0 | 0 | 772 | 870 |
| 167 | 0 | 0 | 0 | 0 | 2 | 1 |
| 168 | 624 | 705 | 326 | 249 | 644 | 558 |
| 169 | 34 | 26 | 5 | 3 | 314 | 277 |
| 170 | 297 | 239 | 114 | 159 | 2346 | 2383 |
| 171 | 38 | 37 | 1 | 1 | 1026 | 1111 |
| 172 | 62 | 67 | 149 | 96 | 1003 | 1457 |
| 173 | 154 | 249 | 128 | 116 | 1822 | 2575 |
| 174 | 53 | 42 | 43 | 27 | 521 | 535 |
| 175 | 4 | 3 | 0 | 0 | 169 | 150 |
| 176 | 268 | 215 | 44 | 29 | 595 | 666 |
| 177 | 174 | 158 | 1312 | 1167 | 975 | 1356 |
| 178 | 58 | 70 | 0 | 0 | 1166 | 1592 |
| 179 | 151 | 138 | 65 | 41 | 1237 | 1228 |
| 180 | 159 | 174 | 128 | 95 | 1429 | 1214 |
| 181 | 507 | 495 | 1099 | 920 | 1789 | 1327 |
| 182 | 1018 | 905 | 0 | 0 | 176 | 96 |
| 183 | 79 | 60 | 1298 | 1212 | 552 | 568 |
| 184 | 86 | 89 | 43 | 27 | 990 | 970 |
| 185 | 61 | 48 | 0 | 0 | 890 | 1514 |
| 186 | 1 | 2 | 86 | 55 | 210 | 348 |
| 187 | 35 | 27 | 0 | 0 | 517 | 867 |
| 188 | 159 | 127 | 2 | 4 | 711 | 695 |
| 189 | 46 | 35 | 0 | 0 | 41 | 45 |
| 190 | 0 | 0 | 0 | 0 | 194 | 247 |
| 191 | 2 | 2 | 43 | 27 | 2 | 1 |
| 192 | 2 | 2 | 0 | 0 | 28 | 39 |
| 193 | 1280 | 1298 | 0 | 0 | 381 | 281 |
| 194 | 17 | 13 | 0 | 0 | 66 | 60 |
| 195 | 22 | 52 | 0 | 0 | 463 | 401 |
| 196 | 157 | 137 | 346 | 275 | 1346 | 1420 |
| 197 | 118 | 102 | 401 | 433 | 1443 | 1351 |
| 198 | 38 | 29 | 0 | 0 | 293 | 277 |
| 199 | 0 | 0 | 2 | 1 | 1 | 1 |
| 200 | 0 | 0 | 0 | 0 | 0 | 0 |
| 201 | 46 | 35 | 0 | 0 | 219 | 132 |
| 202 | 6 | 5 | 0 | 0 | 5 | 3 |
| 203 | 29 | 22 | 0 | 0 | 180 | 117 |
| 204 | 115 | 90 | 21 | 27 | 120 | 111 |
| 205 | 25 | 19 | 0 | 0 | 297 | 482 |
| 206 | 3 | 2 | 0 | 0 | 0 | 0 |
| 207 | 105 | 98 | 1 | 1 | 198 | 197 |
| 208 | 27 | 21 | 40 | 52 | 0 | 0 |
| 209 | 3 | 2 | 0 | 0 | 49 | 50 |
| 210 | 18 | 40 | 290 | 199 | 1121 | 998 |
| 211 | 0 | 0 | 0 | 0 | 259 | 338 |
| 212 | 23 | 34 | 0 | 0 | 100 | 91 |
| 213 | 1 | 1 | 2 | 1 | 3 | 2 |
| 214 | 41 | 33 | 111 | 98 | 657 | 516 |
| 215 | 222 | 175 | 78 | 77 | 1066 | 772 |
| 216 | 0 | 0 | 42 | 27 | 67 | 74 |
| 217 | 5 | 4 | 0 | 0 | 6 | 3 |
| 218 | 555 | 565 | 2864 | 3184 | - | - |
| 219 | 500 | 477 | 54 | 61 | - | - |

TABLE A-20

OBSERVED VEHICLE TRIPS VS. COMPUTED VEHICLE TRIPS, ATTRACTIONS

COMPUTED VEHICLE TRIPS = OBSERVED PERSON TRIPS / ESTIMATED CAR OCCUPANCY

| CENTROID | HB WORK OBSERVED | HB WORK COMPUTED | HB SHOP OBSERVED | HB SHOP COMPUTED | HB OTHER OBSERVED | HB OTHER COMPUTED |
|---|---|---|---|---|---|---|
| 220 | 279 | 319 | 335 | 375 | - | - |
| 221 | 67 | 102 | 59 | 49 | - | - |
| 222 | 7 | 20 | 0 | 0 | - | - |
| 223 | 263 | 270 | 316 | 272 | - | - |
| 224 | 100 | 117 | 6 | 4 | - | - |
| 225 | 412 | 439 | 405 | 466 | - | - |
| 226 | 1900 | 1748 | 438 | 509 | - | - |
| 227 | 206 | 177 | 324 | 350 | - | - |
| 228 | 1608 | 1554 | 181 | 199 | - | - |
| 229 | 303 | 272 | 252 | 222 | - | - |
| 230 | 172 | 187 | 37 | 24 | - | - |
| 231 | 116 | 115 | 8 | 7 | - | - |
| 232 | 61 | 80 | 162 | 184 | - | - |
| 233 | 37 | 42 | 0 | 0 | - | - |
| 234 | 54 | 43 | 2 | 1 | - | - |
| 235 | 99 | 112 | 6 | 5 | - | - |
| 236 | 49 | 79 | 35 | 27 | - | - |
| 237 | 287 | 276 | 495 | 452 | - | - |
| 238 | 0 | 0 | 0 | 0 | - | - |
| 239 | 172 | 164 | 32 | 20 | - | - |
| 240 | 3567 | 3665 | 1 | 2 | - | - |
| 241 | 1728 | 1571 | 18 | 15 | - | - |
| 242 | 6587 | 7518 | 2412 | 2821 | - | - |
| 243 | 1135 | 1392 | 2119 | 2566 | - | - |
| 244 | 2126 | 2348 | 336 | 343 | - | - |
| 245 | 518 | 528 | 244 | 391 | - | - |
| 246 | 828 | 809 | 1529 | 1693 | - | - |
| 247 | 598 | 610 | 64 | 128 | - | - |
| 248 | 449 | 448 | 41 | 41 | - | - |
| 249 | 626 | 574 | 210 | 163 | - | - |
| 250 | 1040 | 884 | 143 | 121 | - | - |
| 251 | 2448 | 2400 | 34 | 38 | - | - |
| 252 | 2150 | 2047 | 1562 | 1521 | - | - |
| 253 | 348 | 354 | 84 | 80 | - | - |
| 254 | 191 | 176 | 366 | 342 | - | - |
| 255 | 300 | 281 | 69 | 72 | - | - |
| 256 | 351 | 332 | 55 | 55 | - | - |
| 257 | 393 | 367 | 131 | 98 | - | - |
| 258 | 107 | 90 | 22 | 14 | - | - |
| 259 | 162 | 181 | 68 | 49 | - | - |
| 260 | 161 | 147 | 43 | 51 | - | - |
| 261 | 1004 | 969 | 1191 | 1180 | - | - |
| 262 | 146 | 144 | 17 | 11 | - | - |
| 263 | 179 | 150 | 77 | 81 | - | - |
| 264 | 344 | 321 | 118 | 122 | - | - |
| 265 | 581 | 604 | 959 | 895 | - | - |
| 266 | 539 | 536 | 50 | 56 | - | - |
| 267 | 397 | 340 | 35 | 45 | - | - |
| 268 | 502 | 470 | 1529 | 1601 | - | - |
| 269 | 1710 | 1703 | 90 | 77 | - | - |
| 270 | 843 | 874 | 31 | 22 | - | - |
| 271 | 146 | 130 | 96 | 78 | - | - |
| 272 | 190 | 200 | 52 | 46 | - | - |
| 273 | 199 | 180 | 353 | 302 | - | - |
| 274 | 163 | 172 | 48 | 100 | - | - |
| 275 | 696 | 797 | 54 | 81 | - | - |
| 276 | 92 | 77 | 182 | 191 | - | - |
| 277 | 62 | 79 | 4 | 3 | - | - |
| 278 | 730 | 707 | 543 | 547 | - | - |
| 279 | 290 | 309 | 231 | 248 | - | - |
| 280 | 210 | 213 | 122 | 118 | - | - |
| 281 | 110 | 155 | 29 | 29 | - | - |
| 282 | 314 | 311 | 66 | 64 | - | - |
| 283 | 671 | 798 | 4 | 3 | - | - |
| 284 | 141 | 160 | 205 | 135 | - | - |
| 285 | 528 | 492 | 2183 | 2309 | - | - |
| 286 | 96 | 112 | 31 | 36 | - | - |
| 287 | 133 | 107 | 26 | 29 | - | - |
| 288 | 1589 | 1546 | 147 | 167 | - | - |
| 289 | 162 | 172 | 624 | 673 | - | - |
| 290 | 26 | 24 | 19 | 12 | - | - |
| TOTAL | 119635 | 119635 | 74168 | 74168 | 149568 | 149568 |