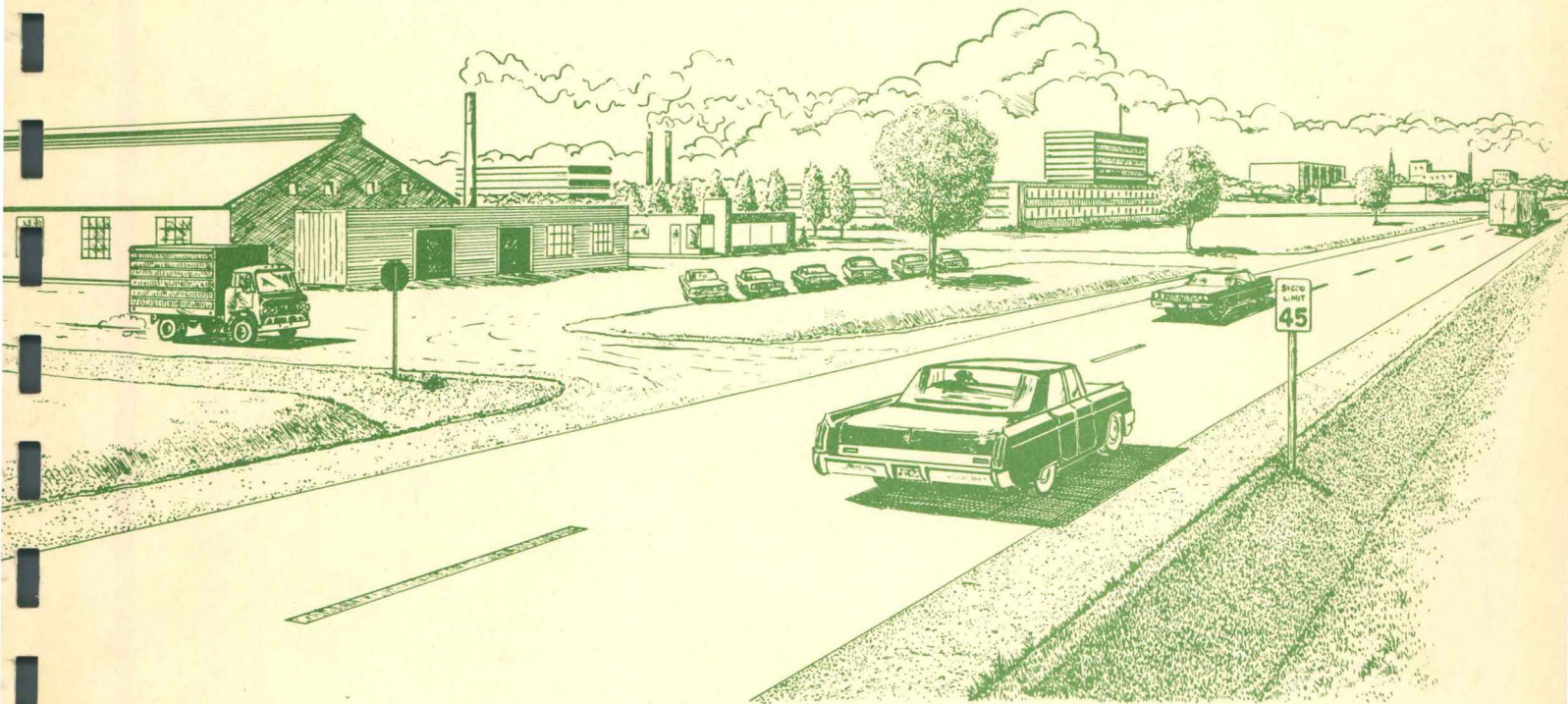


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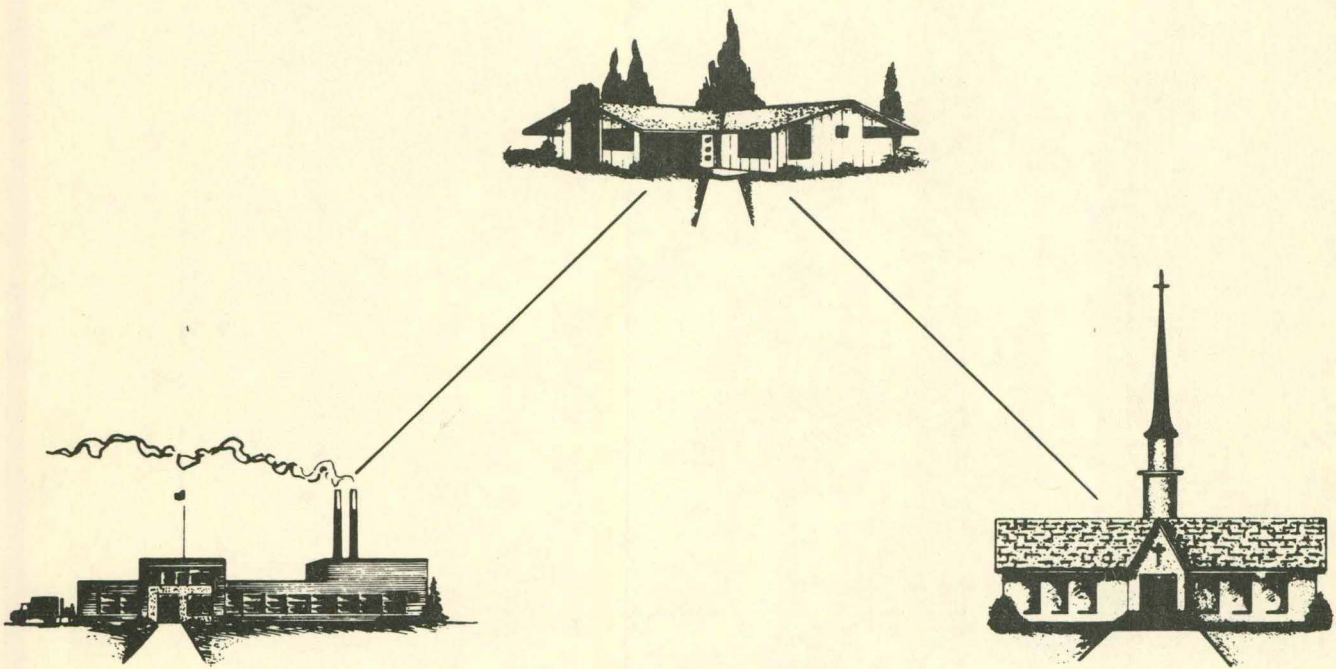


Origin and Destination traffic report

Iowa

JUNE 1963

FORT DODGE
Origin And Destination
Traffic Study
February 1965



PREPARED BY
TRAFFIC AND HIGHWAY PLANNING DEPARTMENT
DIVISION OF PLANNING
IOWA STATE HIGHWAY COMMISSION
IN COOPERATION WITH THE
UNITED STATES DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

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INTRODUCTION

The rapid increase in motor vehicle travel in the State of Iowa in recent years has caused a proportionate increase in the need for adequate traffic facilities. For the most part, cities and their suburban developments find themselves faced with an acute shortage of adequate facilities to accommodate the ever-increasing needs of motorists.

It has become evident, in many cases, that prompt action is necessary to alleviate the traffic problems of our major cities. Haphazard action, however, which is based on insufficient data can be extremely costly. It is for this reason that origin-destination traffic surveys are conducted to gather data which will facilitate the determination of traffic needs and thereby provide the basis for future street and highway planning.

Such a survey was taken in Fort Dodge in June of 1963 by the Iowa State Highway Commission in cooperation with the United States Bureau of Public Roads.

The purpose of this survey was to determine the total number and type of vehicles entering or leaving the study area on primary roads and to obtain origin and destination data from a representative sample of those vehicles.

It is not within the scope of this report to make recommendations concerning the revision or construction of routes. It is rather to organize and present the findings of the survey in a manner which will enable local authorities and their consultants to evaluate the needs and future requirements of the Fort Dodge urban area.

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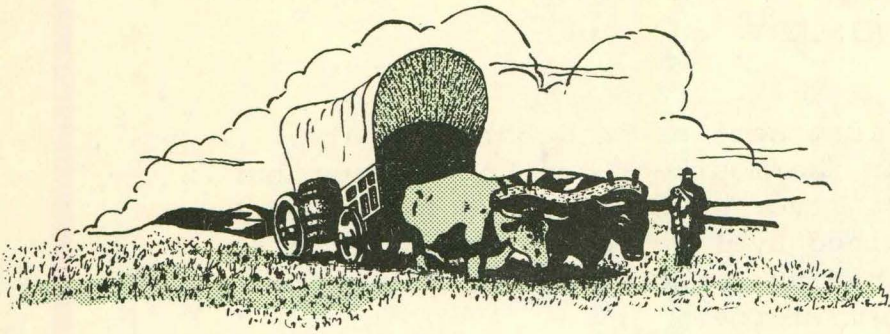
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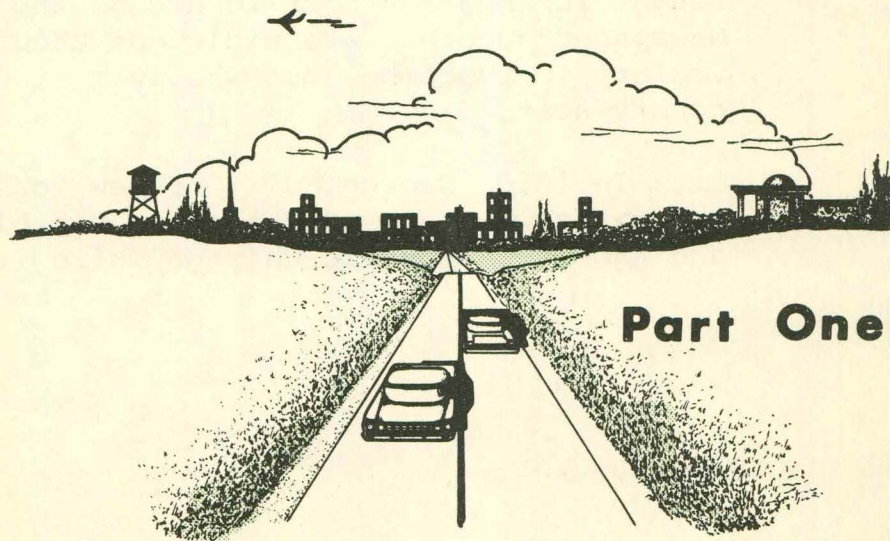
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DEFINITIONS OF TECHNICAL TERMS

Central Business District	The major business district of a city.
Code Station	A location on a minor road at the point where it crosses the cordon line and at which no interviews were taken, or a location on a major road used to designate which route was used by the vehicle before it entered or after it left the study area.
Cordon Line	A hypothetical line determined by the location of traffic interview stations and used to delimit the area under study.
Destination	The location of the objective of a trip.
Desire Line	A straight line between the point of origin and point of destination without regard to routes of travel.
External Local Trip	A trip having <u>either</u> origin or destination within the study area and which passes through only one interview station in the cordon line enroute to its destination.
External Through Trip	A trip having <u>neither</u> origin nor destination within the study area but which passes through it enroute to its destination.
Internal Trip	A trip having both origin and destination within the study area.
Interview Station	A location at which vehicle drivers are stopped and interviewed.
Origin	The location from which a driver started a trip.
Study Area	The area enclosed by a cordon line of interview stations and generally corresponding with corporation lines or urban area lines.
Traffic	The total number of vehicles passing a given point.



History and Development



Part One

HISTORY

Henry Lott was the first settler in Webster County. He had explored the area near the mouth of the Boone River before settling on the Des Moines River near the present site of Fort Dodge. Lott was later joined by Isaac Bell, Jacob Mericle, Tolman Woolsey, D. B. Spaulding, Osborn Brannon, John Tolman, Thomas Holliday and William Pierce.

These early settlers were harassed by Sidominadotah and his followers, who were members of the Sioux Tribe. Sidominadotah, which means "two fingers," accused Henry Lott of illegal possession of his lands. When Lott's wife and 12-year-old son died shortly after the trouble started, he blamed Two Fingers and killed him and his family in retaliation. The incident is believed to be partly responsible for the Spirit Lake Massacre.

Because of the Indian problem, the army built a fort near the settlement in 1850. Originally named Fort Clarke, it was changed to Fort Dodge in 1851 in honor of U.S. Senator Henry S. Dodge. On June 2, 1853, the troops were transferred from Fort Dodge to Fort Snelling as a result of the establishment of peaceful relations with the Indians. The abandoned fort was purchased by a syndicate headed by Major William Williams in 1854, and the land laid out for the town of Fort Dodge.

In 1855, John F. Duncombe arrived in Fort Dodge and within a year began a movement to relocate the county seat in Fort Dodge. In 1856, a county election was held with the county seat of Homer in vehement opposition. According to an age-yellowed newspaper account of the incident, both sides stuffed the ballot box. When the final vote showed Fort Dodge to be the winner, John D. Maxwell, of Homer, lost his temper and accused Duncombe of foul play. Suggestions that the two wrestle it out brought action. In Homer's public square, with the whole town watching, Maxwell and Duncombe fought for over an hour to decide the location of the county seat. Newspaper accounts are ambiguous about the hold that awarded victory to Duncombe, but whatever it was, Fort Dodge became the county seat.

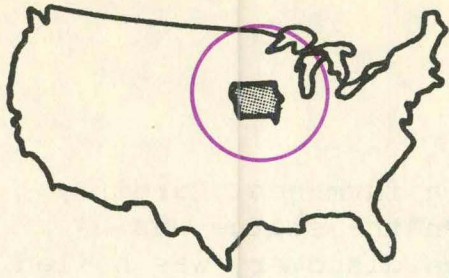
In 1868, George Hull, of New York, and H. B. Martin, of Marshalltown, Iowa, purchased a huge block of gypsum in Fort Dodge and had it shipped to Chicago where it was carved into a ten-foot

statue. The statue was then transported to a farm near Cardiff, New York where it was carefully buried. When the statue was "discovered" a year later by two farmers, the discovery was hailed by anthropologists as a perfectly preserved pre-historic man. P. T. Barnum made a fortune exhibiting the statue before it was finally exposed as a hoax.

While the public demand for plaster giants fell, however, its demand for the white gypsum that it was carved from increased. In 1869 two companies began to quarry the easily accessible mineral from the Fort Dodge hills. More soon followed, including the Cardiff Company that dug where the block for the "giant" was cut.

Today, thousands of tons of gypsum are taken annually from the Fort Dodge deposits. Gypsum, however, is only one of the natural resources in this area. Deposits of coal and clay are also in abundance. Agriculture and industry likewise share prominent roles in the Fort Dodge economy.

The population of Fort Dodge, according to the 1960 census, is 28, 399. The area is served by a network of federal and state highways including U.S. Highways 169 and 20, and Iowa Highways 5 and 413.



STUDY AREA POSITION IN THE MIDWEST

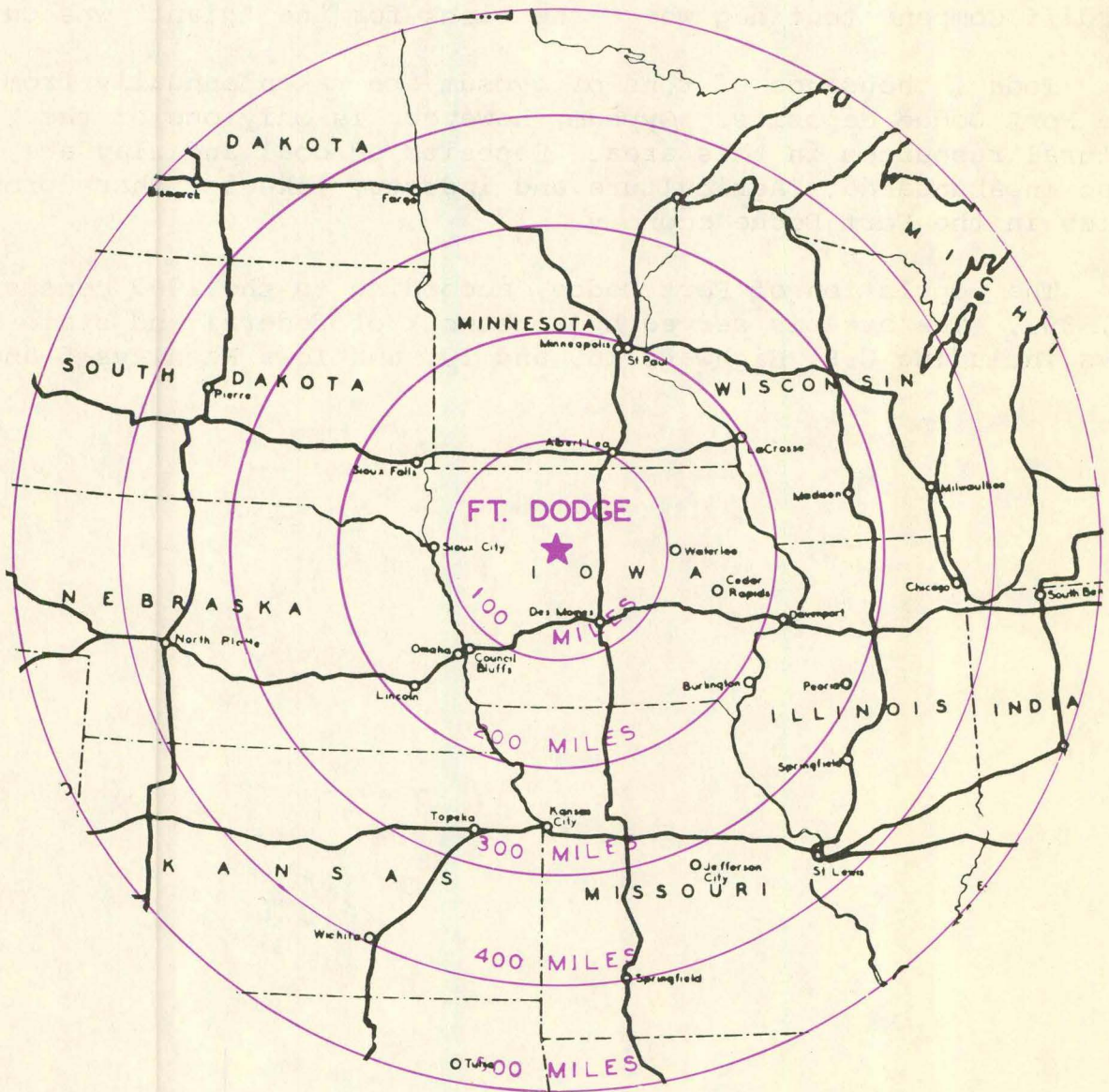


FIGURE I-1

STUDY AREA POSITION IN IOWA

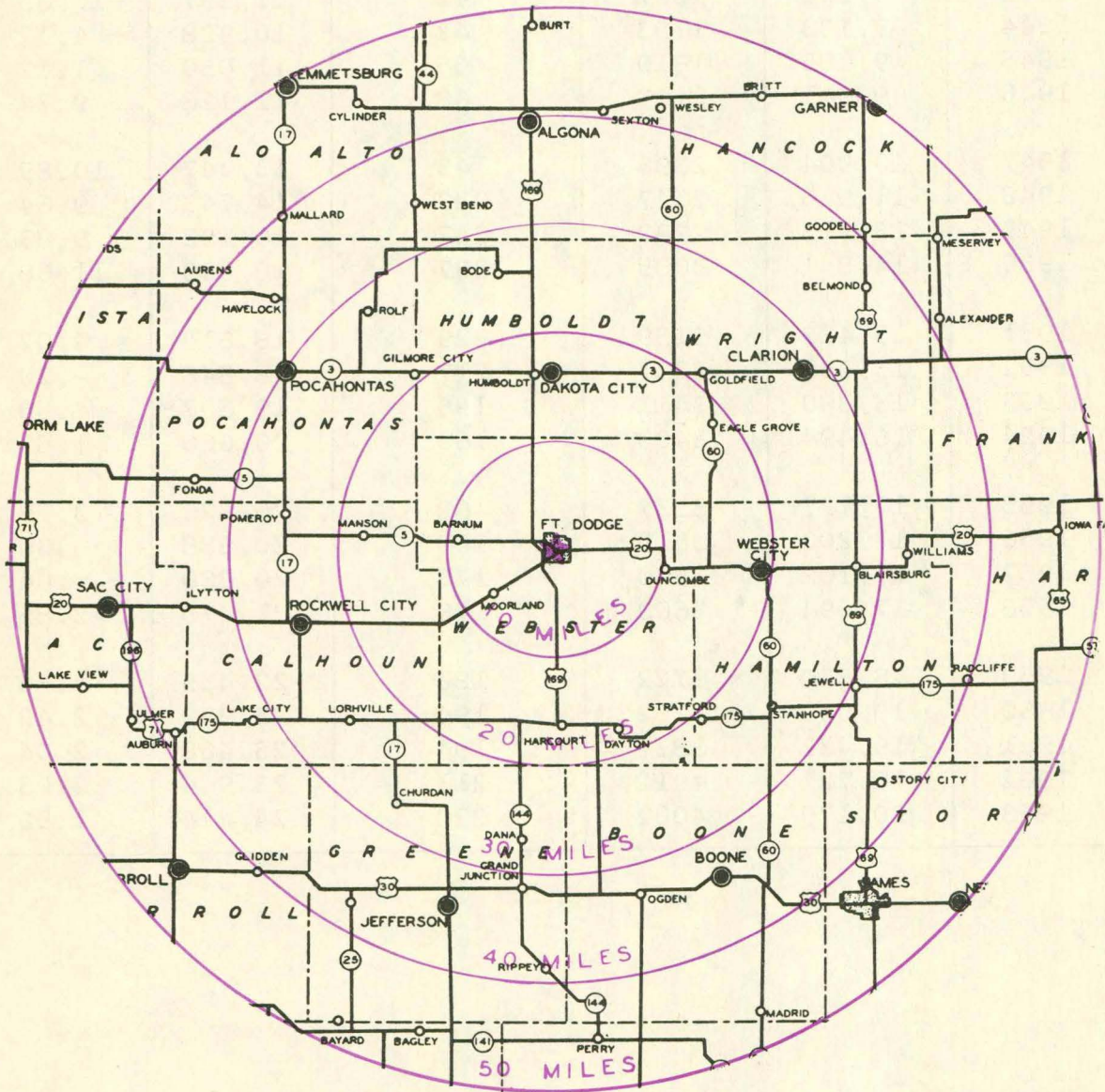
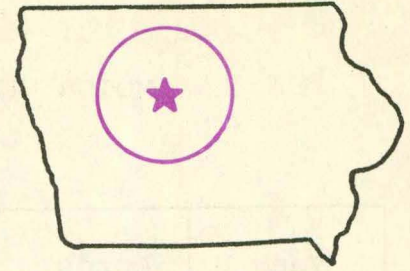


FIGURE 1-2

Table 1-1
 MOTOR VEHICLE REGISTRATION IN WEBSTER COUNTY
 FROM 1939 THROUGH 1963

Year	Autos	Trucks	Motorcycles	Total	Percent Change
1939	11,112	1680	68	12,860	
1940	11,367	1934	79	13,380	4.04
1941	11,758	2087	79	13,924	4.07
1942	10,687	2004	64	12,755	- 8.40
1943	9,528	1827	42	11,397	-10.65
1944	9,133	1753	42	10,928	- 4.12
1945	9,185	1810	55	11,050	1.12
1946	9,941	2117	68	12,126	9.74
1947	10,904	2398	145	13,447	10.89
1948	11,976	2547	220	14,743	9.64
1949	13,213	2732	247	16,192	9.83
1950	14,841	3005	237	18,083	11.68
1951	15,422	3159	229	18,810	4.02
1952	15,394	3237	217	18,848	.20
1953	16,090	3411	196	19,697	4.50
1954	16,494	3403	169	20,066	1.87
1955	17,127	3537	162	20,826	3.79
1956	17,200	3519	169	20,888	.30
1957	17,162	3540	178	20,880	- .04
1958	17,694	3603	178	21,475	2.85
1959	18,550	3722	183	22,455	4.56
1960	19,023	3782	194	22,999	2.42
1961	19,437	3837	194	23,468	2.04
1962	19,721	4012	211	23,944	2.03
1963	20,179	4002	233	24,414	1.96

FIGURE 1-3
MOTOR VEHICLE REGISTRATION IN WEBSTER COUNTY
FROM 1939 THROUGH 1963

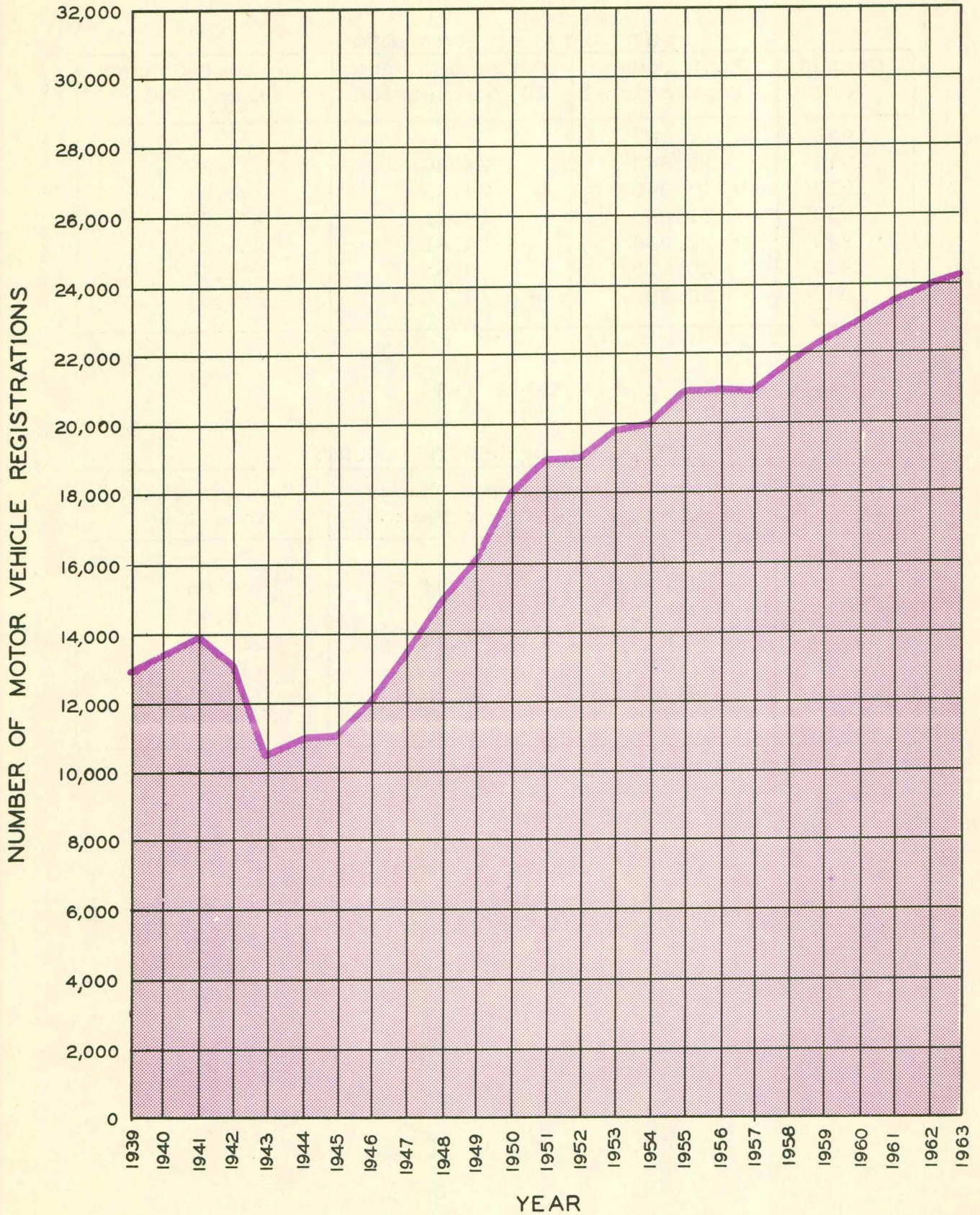


Table 1-2

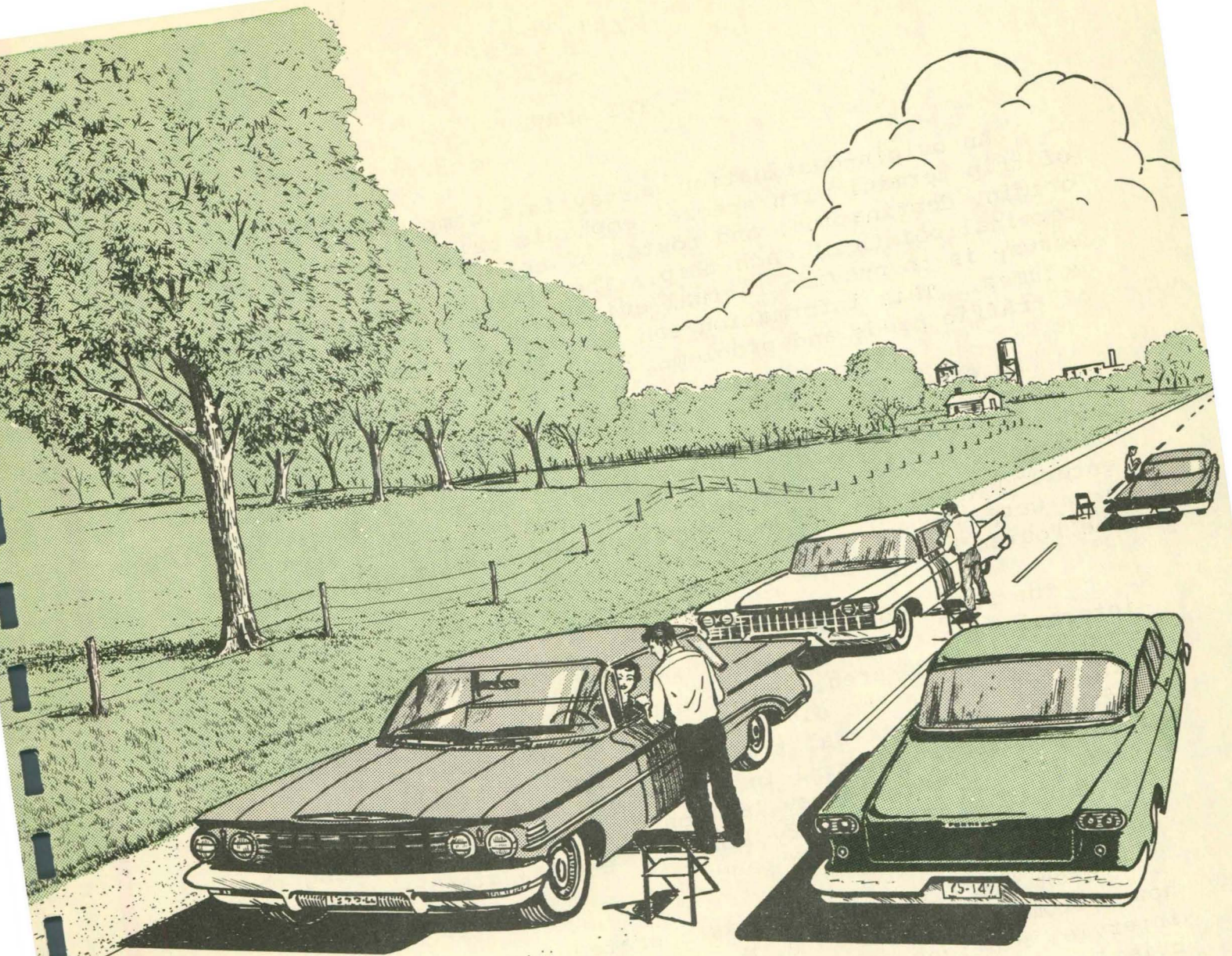
POPULATION OF FORT DODGE

Census Year	Fort Dodge Population	Percent Change 10 Year Period	Percent Change Since 1900
1900	12,162		
1910	15,543	27.80	27.80
1920	19,340	24.43	59.02
1930	21,895	13.21	80.03
1940	22,904	4.61	88.32
1950	25,115	9.65	106.50
1960	28,399	13.08	133.51

Table 1-3

POPULATION OF WEBSTER COUNTY

Census Year	Webster County Population	Percent Change 10 Year Period	Percent Change Since 1900
1900	31,757		
1910	34,629	9.04	9.04
1920	37,611	8.61	18.43
1930	40,425	7.48	27.29
1940	41,521	2.71	30.75
1950	44,241	6.55	39.31
1960	47,810	8.07	50.55



Survey

Procedure

Part IV

THE SURVEY

An origin-destination survey is a comprehensive study of trip termini with special emphasis being placed on the origin, destination, and routes of travel between the terminal points of each trip. The ultimate goal of such a survey is to provide factual evidence of traffic patterns and volumes. This information can then be used in the evaluation of traffic needs and problems.

In order to obtain accurate information, it is necessary to interview vehicle drivers at strategically located interview stations. In Fort Dodge, interview stations were located outside the corporate limits on each of the primary highways entering the study area. Secondary roads entering the study area were given identifying code numbers in order to establish the routes of entry or exit of external through trips.

The Fort Dodge study area was divided into forty-seven internal tracts to facilitate the location of trip termini within the study area. Major streets or highways were used, in most cases, as the dividing lines between tracts. In addition, four external tracts were used to facilitate the location of trip termini in the residential and commercial areas along U. S. Highway 169 south. (A map illustrating the location of tract boundary lines, interview stations, and code stations will be found on page 12.)

Each interview station was operated for a total of sixteen hours from 6 A. M. to 10 P. M. All vehicles passing through interview stations during the period of operations were stopped briefly, and drivers were asked a few simple questions regarding the origin, destination, and purpose of their trip. In addition, interviewers also noted and recorded the type of vehicle, its place of registration, direction of travel and number of occupants.

Mechanical traffic recorders were placed at each interview station location and were operated continuously for a minimum of five weekdays including the day on which interviews were taken. Manual vehicle classification counts were also taken at

a later date and, together with the data provided by mechanical recorders, were used to expand the interview data to twenty-four hour, average June weekday traffic for 1963.

At the conclusion of the field work, the data pertaining to each trip was converted into code and punched on tabulating cards. These cards were then sorted and tabulated by machine according to tract of origin or destination and the station or stations through which each trip passed.

Traffic flow charts indicating trip termini by tract of origin or destination are included in this report along with a series of desire line charts showing desired routes of travel in straight lines between interview stations and internal tracts. All trip data obtained in the survey is presented in terms of the number of trips per average June weekday in 1963. Data pertaining to internal trips is not obtainable from an external survey of the type conducted in Fort Dodge.

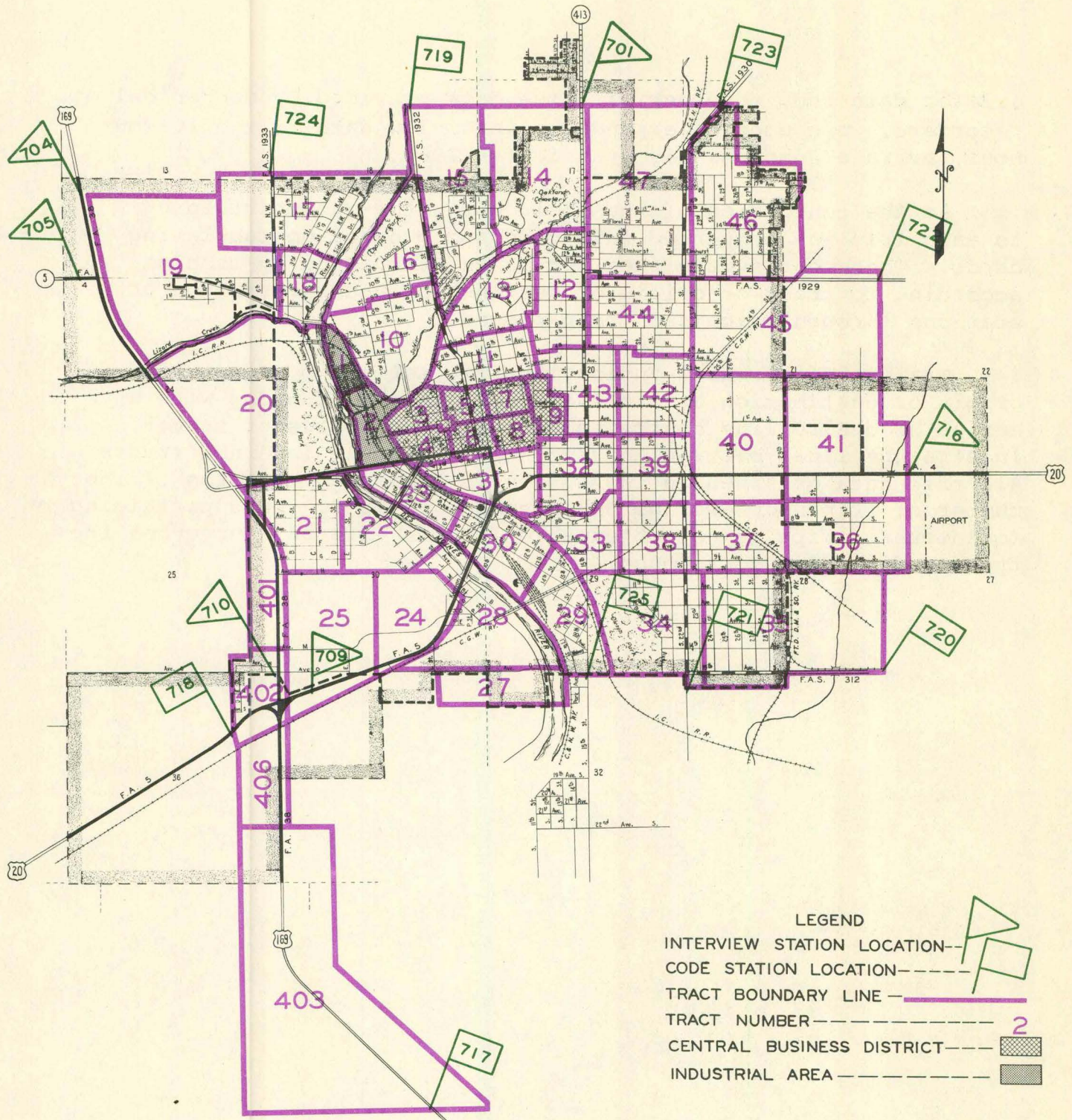


FIGURE 2-1
TRACT MAP OF THE
FORT DODGE STUDY AREA
WITH EXTERNAL STATION LOCATIONS

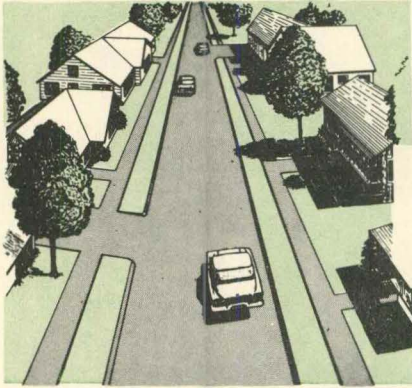


Summary

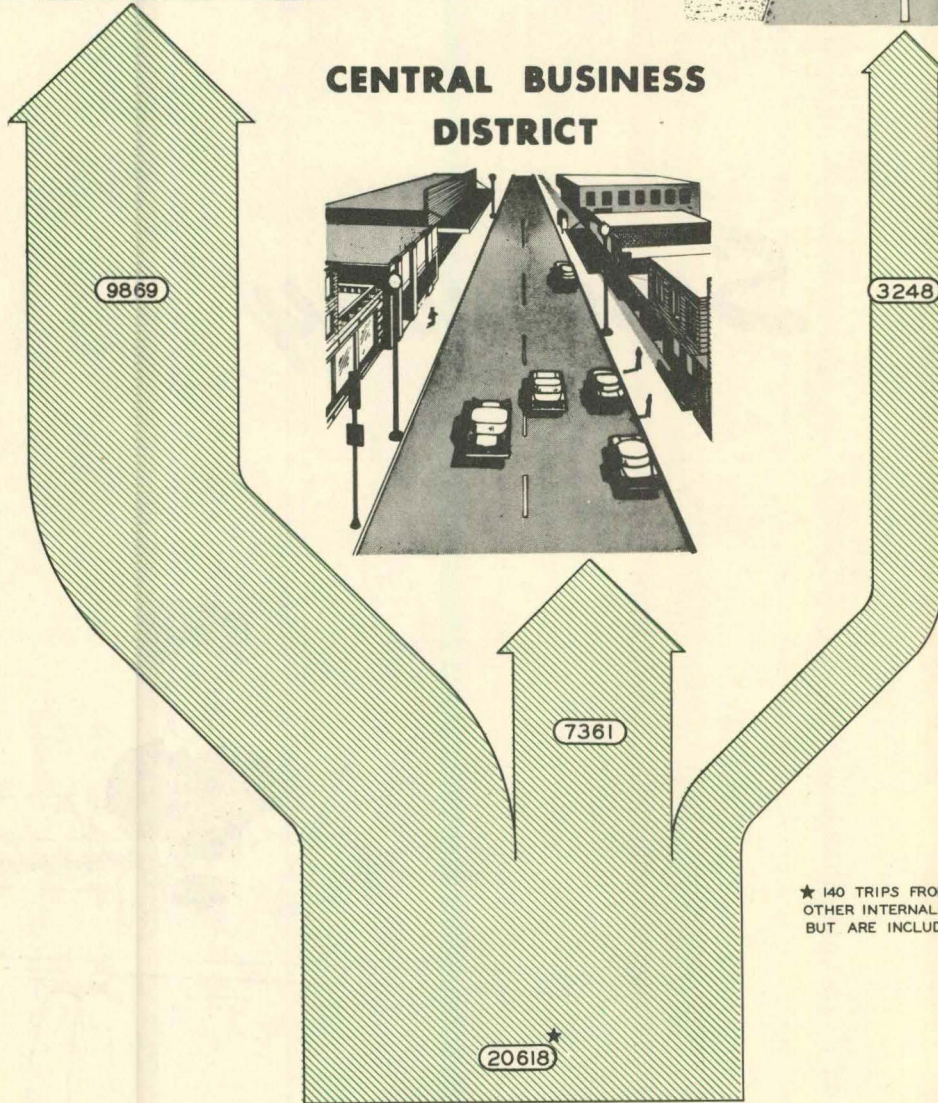
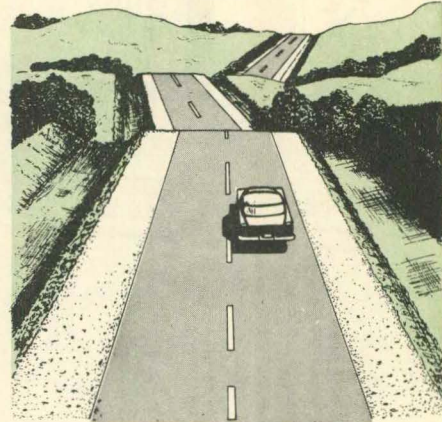


FIGURE 3-1 DISTRIBUTION OF TRIPS

INTERNAL TRACTS



THROUGH TRIPS



* 140 TRIPS FROM INTERNAL TRACTS TO OTHER INTERNAL TRACTS ARE NOT ILLUSTRATED BUT ARE INCLUDED IN THE FINAL TOTAL

EXTERNAL

SUMMARY OF MAJOR TRAFFIC MOVEMENTS

The chart at left graphically illustrates some of the more significant traffic volumes derived from the Fort Dodge origin-destination traffic survey which was conducted in June of 1963. Figure 3-1 is a summary of the data obtained from 31,134 interviews and amounts to 85.28 percent of the expanded average June weekday traffic which passed through interview stations on primary roads in the study area.

A total number of 20,618 trips (excluding duplicate through trips) comprised the average June weekday traffic passing through all interview stations. These trips were divided into three categories: external local trips, external through trips, and internal trips which had both origin and destination within the study area but passed through external interview stations enroute to their destination.

Of the total number of trips, 35.70 percent or 7,361 trips went to or from the central business district. Another 47.87 percent or 9,869 trips went to or from internal areas exclusive of the central business district. A total of 3,248 trips or 15.75 percent were external through trips which passed through Fort Dodge enroute to another destination. A small percentage of the total number of trips (a total of 140 or .68 percent) had both origin and destination within the study area, but found it to their advantage to temporarily leave the area and re-enter at another point. Of these 140 trips, 16 had either origin or destination in the C.B.D.

Table 3-1
VEHICLE TYPE SUMMARY

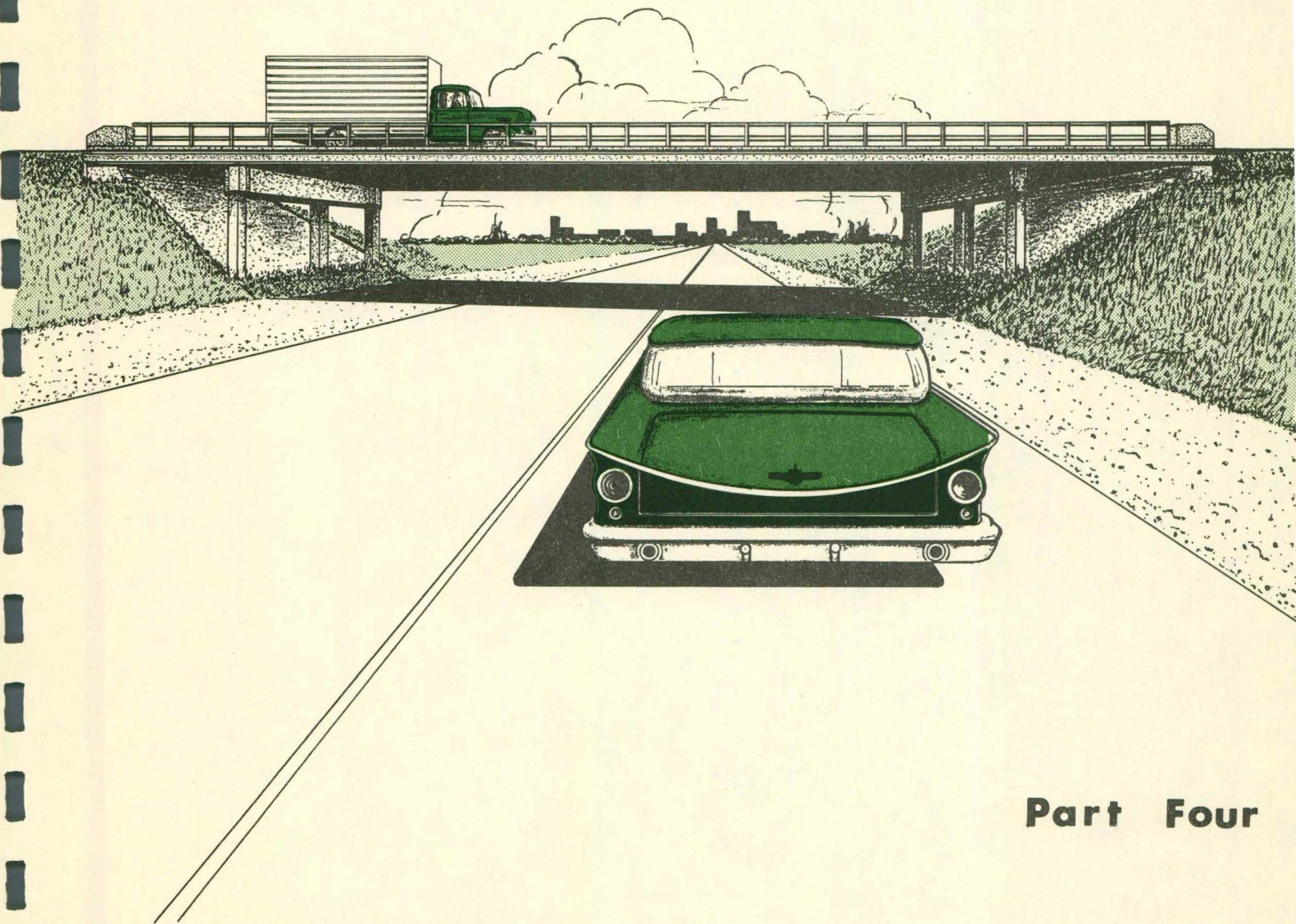
Average June Weekday Traffic 1963

Station	Location	Passenger Cars and Pickups	Single Unit Trucks	Truck Combi- nation	Total	No. of Inter- views	Percent Inter- viewed	Hours of Interviews
701	Iowa 413 North	1918	75	16	2009	2118	105.43*	16
704	U.S. 169 North	2906	216	176	3298	2623	79.53	16
705	Iowa 5 West	2054	127	56	2237	1814	81.09	16
709	U.S. 20 Southwest	6216	312	342	6870	5841	85.02	16
710	U.S. 169 South	4353	274	187	4814	3853	80.04	16
716	U.S. 20 East	4795	315	444	5554	4885	87.95	16
	Total	22242	1319	1221	24782	21134	85.28	

* Higher than average traffic volumes were encountered during the interview period.

Traffic

Movements



Part Four

TRAFFIC FLOW CHARTS

The following traffic flow charts illustrate the internal dispersion of trips between points of origin and/or destination through the stations indicated. These charts are not intended to show exact routes, but rather to show trip volume by tract of origin or destination and the number of trips passing through each interview station. Trip origins and destinations are not differentiated and the tract or station totals shown may be considered as either origin or destination.

The adjoining table of statistics across from Figures 4-1 through 4-6 shows the number of trips to or from each interview station and tracts within the study area along with the percent of the total number of trips to each area.

Table 4-1
INTERNAL DISPERSION OF TRIPS
PASSING THROUGH STATION 701,
IOWA 413 NORTH

	Trips	Percent
Total number of external local trips	1850	92.09
Total number of external through trips	159	7.91
Grand total of all trips through Station 701	2009	100.00
Trips with origin or destination in C.B.D.	778	38.73
Trips with origin or destination in industrial area	19	.95

EXTERNAL LOCAL TRIPS

Tract	Trips	%	Tract	Trips	%	Tract	Trips	%	
C.	3	.85	17	2	.10	36	5	.25	
	4	.55	18	7	.35	37	24	1.19	
	5	9.81	19	2	.10	38	19	.95	
B.	6	4.58	20	4	.20	39	18	.90	
	7	9.56	21	6	.30	40	45	2.24	
D.	8	10.00	22	5	.25	41	43	2.13	
	9	3.38	23	6	.30	42	56	2.79	
C.B.D. Total		778	38.73	24	51	2.54	43	75	3.73
	1	.85	25	15	.75	44	75	3.73	
	2	.10	27	3	.15	45	33	1.63	
Ind. Total		19	.95	28	8	.40	46	43	2.13
	10	.65	29	9	.45	47	57	2.84	
	11	2.94	30	7	.35	401			
	12	2.13	31	21	1.05	402	13	.65	
	13	.85	32	48	2.39	403	4	.20	
	14	4.18	33	40	1.99	404	10	.50	
	15	1.24	34	29	1.44				
	16	1.05	35	8	.40	Total	1850	92.09	

EXTERNAL THROUGH TRIPS

Station	Trips	%	Station	Trips	%	Station	Trips	%
701			717	23	1.14	723		
704	5	.25	718	32	1.59	724		
705	7	.35	719			725	1	.05
709			720	8	.40			
710			721	4	.20			
716	79	3.93	722			Total	159	7.91

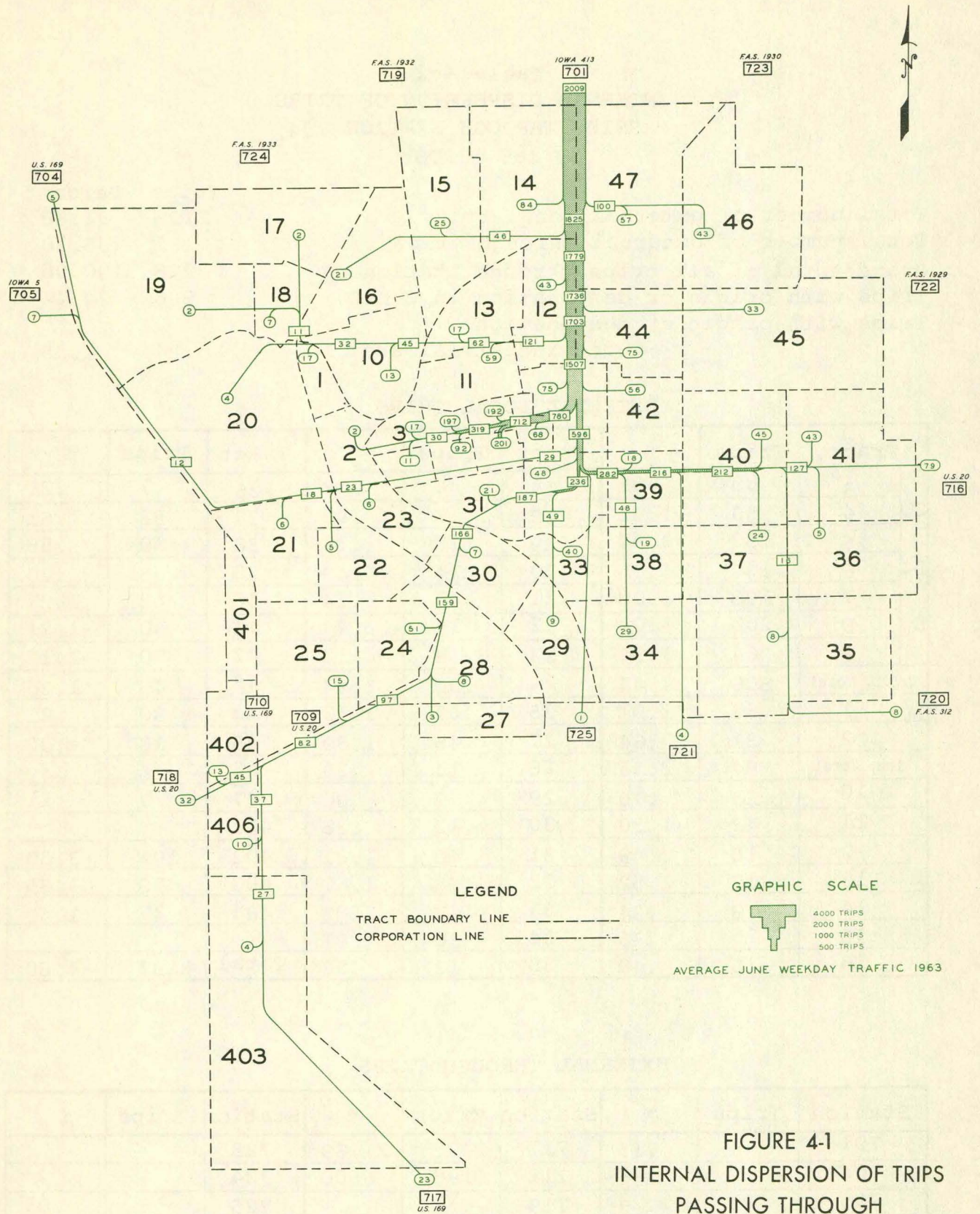


FIGURE 4-1
 INTERNAL DISPERSION OF TRIPS
 PASSING THROUGH
 STATION 701, IOWA 413, NORTH
 OF THE
 FORT DODGE STUDY AREA

Table 4-2
INTERNAL DISPERSION OF TRIPS
PASSING THROUGH STATION 704,
U.S. 169 NORTH

	Trips	Percent
Total number of external local trips	2137	64.80
Total number of external through trips	1161	35.20
Grand total of all trips through Station 704	3298	100.00
Trips with origin or destination in C.B.D.	806	24.44
Trips with origin or destination in industrial area	84	2.55

EXTERNAL LOCAL TRIPS

	Tract	Trips	%	Tract	Trips	%	Tract	Trips	%
C.	3	30	.91	17	4	.12	36	7	.21
	4	50	1.52	18	13	.40	37	53	1.61
	5	130	3.94	19	12	.36	38	19	.58
B.	6	134	4.06	20	14	.43	39	25	.76
	7	198	6.00	21	41	1.24	40	42	1.27
D.	8	200	6.07	22	14	.43	41	40	1.21
	9	64	1.94	23	4	.12	42	70	2.12
C.B.D. Total		806	24.44	24	130	3.94	43	45	1.36
	1	63	1.91	25	37	1.12	44	30	.91
	2	21	.64	27	46	1.39	45	10	.30
Ind. Total		84	2.55	28	13	.39	46	16	.49
	10	25	.76	29	2	.06	47	7	.21
	11	43	1.30	30	12	.36	401		
	12	16	.49	31	40	1.21	402	109	3.30
	13	17	.52	32	53	1.61	403	28	.85
	14	8	.24	33	67	2.03	404	47	1.43
	15	25	.76	34	30	.91			
	16	16	.49	35	17	.52	Total	2137	64.80

EXTERNAL THROUGH TRIPS

Station	Trips	%	Station	Trips	%	Station	Trips	%
701	5	.15	717	722	21.89	723		
704			718	198	6.00	724		
705	41	1.24	719			725	1	.03
709			720	19	.58			
710			721	3	.09			
716	172	5.22	722			Total	1161	35.20

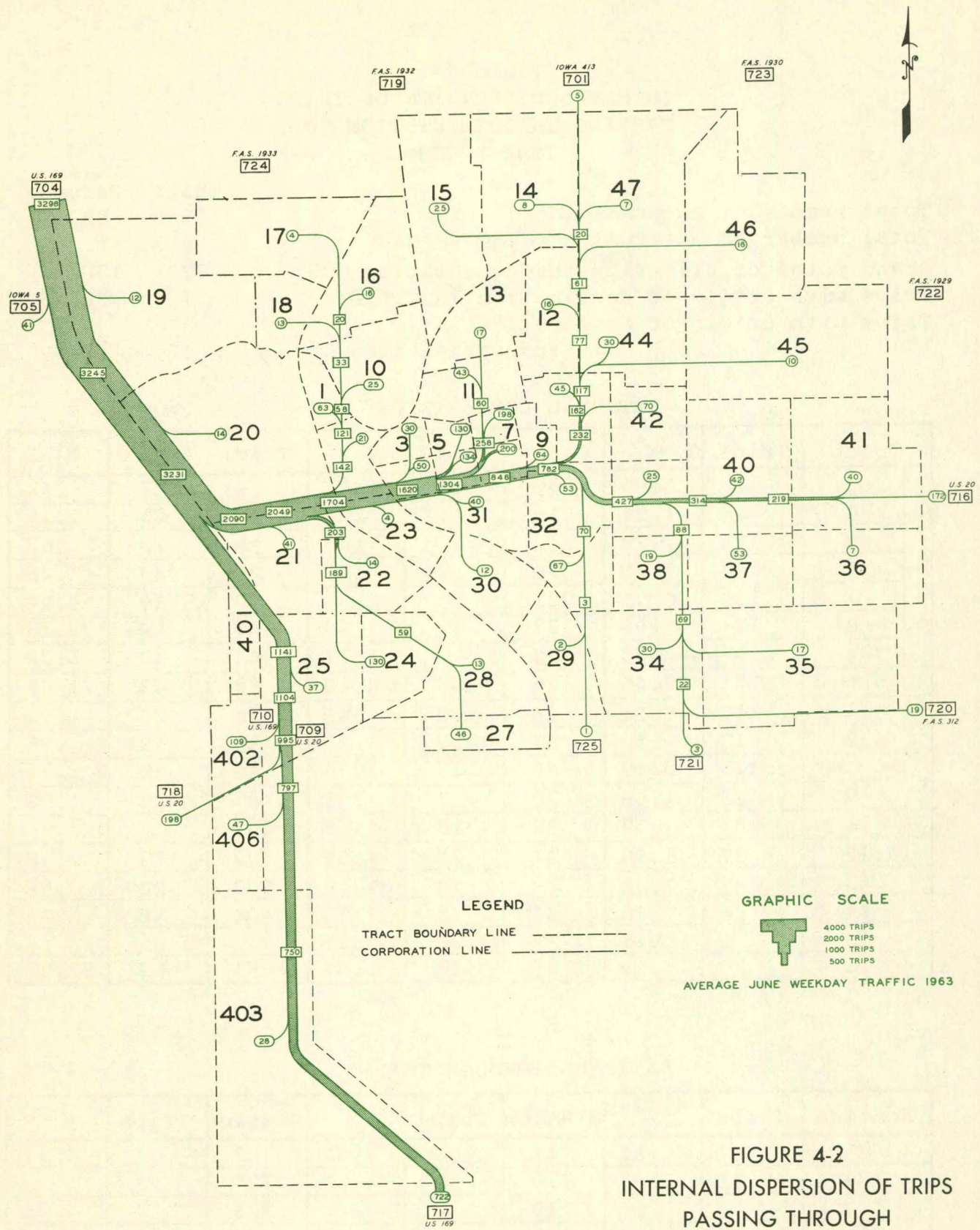


FIGURE 4-2
 INTERNAL DISPERSION OF TRIPS
 PASSING THROUGH
 STATION 704, U.S. 169, NORTH
 OF THE
 FORT DODGE STUDY AREA

Table 4-3
INTERNAL DISPERSION OF TRIPS
PASSING THROUGH STATION 705,
IOWA 5 WEST

	Trips	Percent
Total number of external local trips	1865	83.37
Total number of external through trips	372	16.63
Grand total of all trips through Station 705	2237	100.00
Trips with origin or destination in C.B.D.	726	32.45
Trips with origin or destination in industrial area	125	5.59

EXTERNAL LOCAL TRIPS

	Tract	Trips	%	Tract	Trips	%	Tract	Trips	%
C.	3	20	.89	17	12	.54	36	14	.63
	4	28	1.24	18	15	.67	37	26	1.16
	5	174	7.78	19	10	.45	38	15	.67
B.	6	163	7.29	20	2	.09	39	33	1.48
	7	150	6.71	21	19	.85	40	29	1.29
D.	8	134	5.99	22	19	.85	41	48	2.15
	9	57	2.55	23	6	.27	42	43	1.92
C.B.D. Total		726	32.45	24	105	4.68	43	42	1.87
	1	112	5.01	25	10	.48	44	28	1.24
	2	13	.58	27	32	1.43	45	19	.85
Ind. Total		125	5.59	28	12	.54	46	28	1.25
	10	23	1.03	29	7	.31	47	23	1.03
	11	31	1.39	30	13	.58	401		
	12	27	1.20	31	22	.98	402	60	2.68
	13	33	1.48	32	29	1.29	403	22	.98
	14	16	.72	33	70	3.13	404	8	.36
	15	6	.27	34	22	.98			
	16	20	.89	35	15	.67	Total	1865	83.37

EXTERNAL THROUGH TRIPS

Station	Trips	%	Station	Trips	%	Station	Trips	%
701	7	.31	717	103	4.61	723		
704	41	1.83	718	10	.45	724		
705			719			725	2	.09
709			720	13	.58			
710			721	4	.18			
716	192	8.58	722			Total	372	16.63

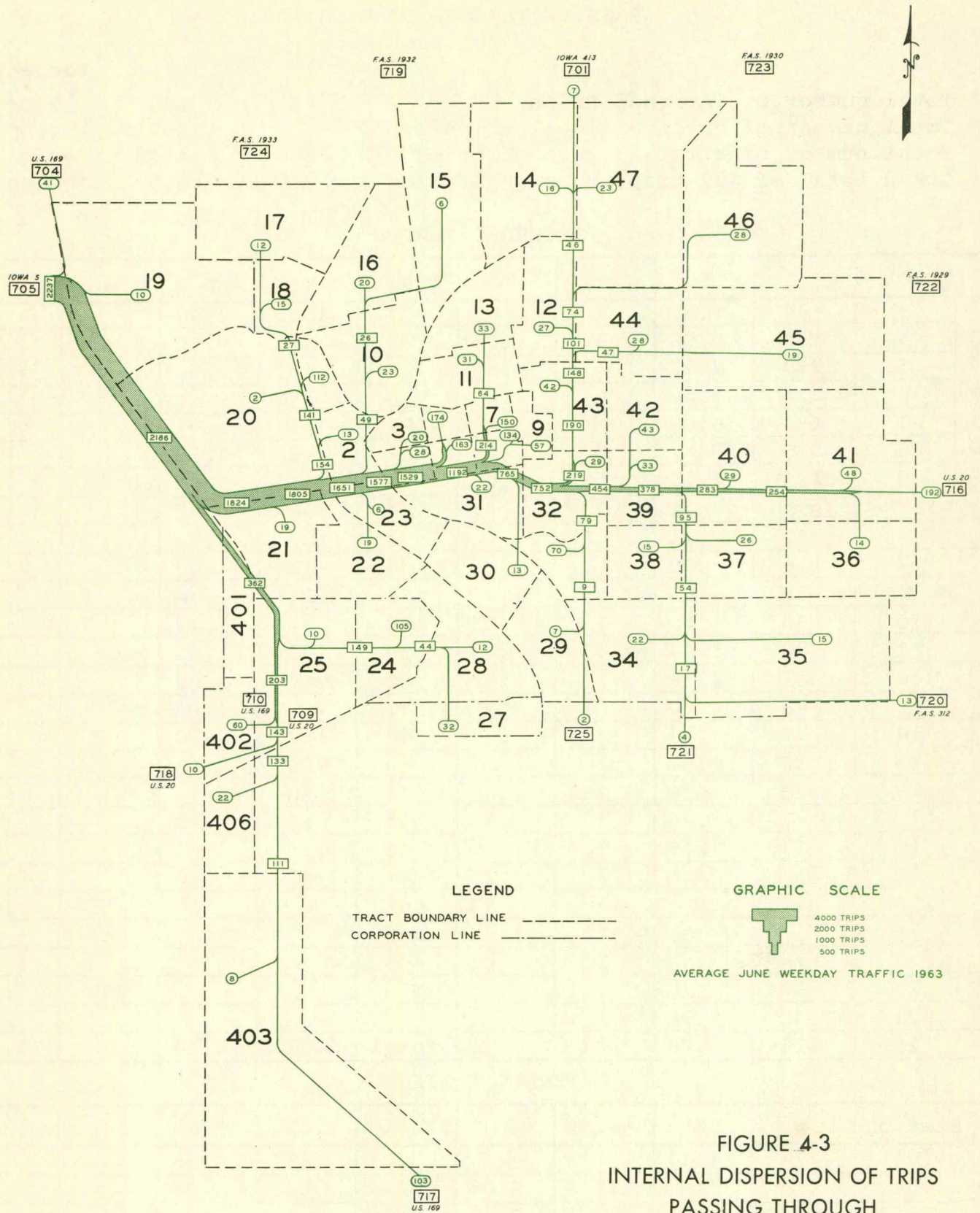


FIGURE 4-3
INTERNAL DISPERSION OF TRIPS
PASSING THROUGH
STATION 705, IOWA 5, WEST
OF THE
FORT DODGE STUDY AREA

Table 4-4
INTERNAL DISPERSION OF TRIPS
PASSING THROUGH STATION 709,
U.S. 20, Southwest

	Trips	Percent
Total number of internal trips	140	2.04
Total number of external local trips	5297	77.10
Total number of external through trips	1433	20.86
Grand total of all trips through Station 709	6870	100.00

INTERNAL TRACTS

	N.E.			%		S.W.			%	
	Tract	N.E.	%	S.W.	%	Tract	N.E.	%	S.W.	%
C.	3	34	.49			27	169	2.46		
	4	55	.80	3	.05	28	62	.90		
	5	283	4.12	2	.03	29	43	.63		
B.	6	313	4.56	1	.01	30	45	.66		
	7	472	6.87	2	.03	31	131	1.91		
D.	8	573	8.34	1	.01	32	173	2.52		
	9	146	2.13	1	.01	33	141	2.05		
C.B.D. Total		1876	27.31	10	.14	34	120	1.75		
	1	52	.76			35	106	1.54		
	2	6	.09			36	63	.92		
Ind. Total		58	.85			37	121	1.76		
	10	30	.44	3	.05	38	77	1.12		
	11	99	1.44	2	.03	39	103	1.50		
	12	81	1.18	1	.01	40	209	3.04		
	13	48	.70			41	126	1.83		
	14	37	.54			42	187	2.72		
	15	39	.57	1	.01	43	155	2.26		
	16	25	.36	3	.05	44	150	2.18		
	17	7	.10	7	.10	45	51	.74		
	18	13	.19	7	.10	46	110	1.60		
	19			12	.18	47	47	.68		
	20			15	.22	401			25	.36
	21	1	.01	74	1.08	402			947	13.79
	22	16	.23	1	.01	403			573	8.34
	23	17	.25	1	.01	406			355	5.17
	24	530	7.71	1	.01					
	25	171	2.49	12	.18	Total	5437	79.14	2050	29.84

EXTERNAL STATIONS

	N.E.			%		S.W.			%	
	Station	N.E.	%	S.W.	%	Station	N.E.	%	S.W.	%
	701	76	1.11			720	45	.66		
	704			320	4.66	721	26	.38		
	705			159	2.31	722	1	.01		
	709					723				
	710					724	2	.03		
	716	1265	18.41			725	18	.26		
	717			1670	24.31					
	718			2671	38.88					
	719					Total	1433	20.86	4820	70.16

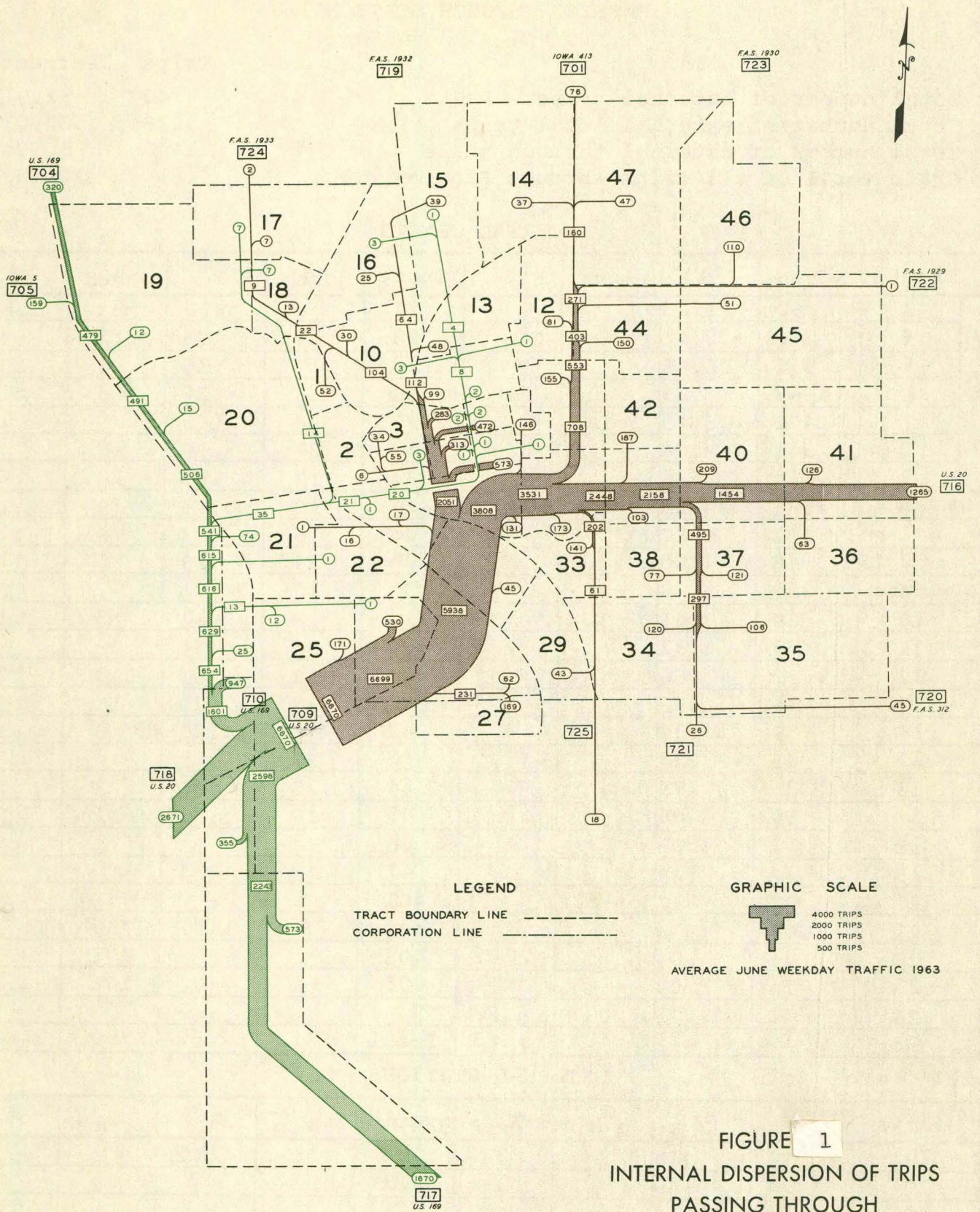


FIGURE 1
 INTERNAL DISPERSION OF TRIPS
 PASSING THROUGH
 STATION 709, U.S. 20, SOUTHWEST
 OF THE
 FORT DODGE STUDY AREA

Table 4-5
INTERNAL DISPERSION OF TRIPS
PASSING THROUGH STATION 710,
U.S. 169 South

	Trips	Percent
Total number of internal trips	140	2.91
Total number of external local trips	3228	67.05
Total number of external through trips	1446	30.04
Grand total of all trips through Station 710	4814	100.00

INTERNAL TRACTS

Tract		North	%	South	%	Tract		North	%	South	%
C.	3	60	1.25			27				81	1.68
	4	116	2.41			28	4	.08		12	.25
	5	311	6.46			29	7	.15		4	.08
B.	6	448	9.30	1	.02	30	13	.27		5	.10
	7	272	5.65	2	.04	31	38	.80		8	.17
D.	8	341	7.08	3	.06	32	27	.56		18	.38
	9	116	2.41			33	15	.31		20	.42
C.B.D. Total		1664	34.56	6	.12	34	10	.21		9	.19
	1	202	4.20			35	16	.33		6	.13
	2	48	1.00			36	14	.29		8	.17
Ind. Total		250	5.20			37	10	.21		12	.25
	10	68	1.41			38	8	.17		5	.10
	11	54	1.12			39	26	.54		6	.12
	12	32	.66	1	.02	40	32	.66		13	.27
	13	14	.29	1	.02	41	10	.21		13	.27
	14	9	.19			42	58	1.20		9	.19
	15	45	.93	1	.02	43	33	.69		4	.08
	16	36	.75			44	25	.52		3	.06
	17	50	1.04			45	16	.33		1	.02
	18	52	1.08			46	16	.33		3	.06
	19	40	.83			47	17	.35			
	20	37	.77			401					
	21	209	4.34			402				709	14.73
	22	31	.64	1	.02	403				403	8.37
	23	14	.29			406				184	3.82
	24	1	.02	203	4.22						
	25	14	.29	40	.83	Total	3015	62.62		1789	37.16

EXTERNAL STATIONS

Station	North	%	South	%	Station	North	%	South	%
701	6	.13			720	1	.02	1	.02
704	1424	29.58			721			2	.04
705	357	7.42			722				
709					723				
710					724	1	.02		
716	10	.21	126	2.62	725			2	.04
717			1957	40.65					
718			937	19.47					
719					Total	1799	37.38	3025	62.84

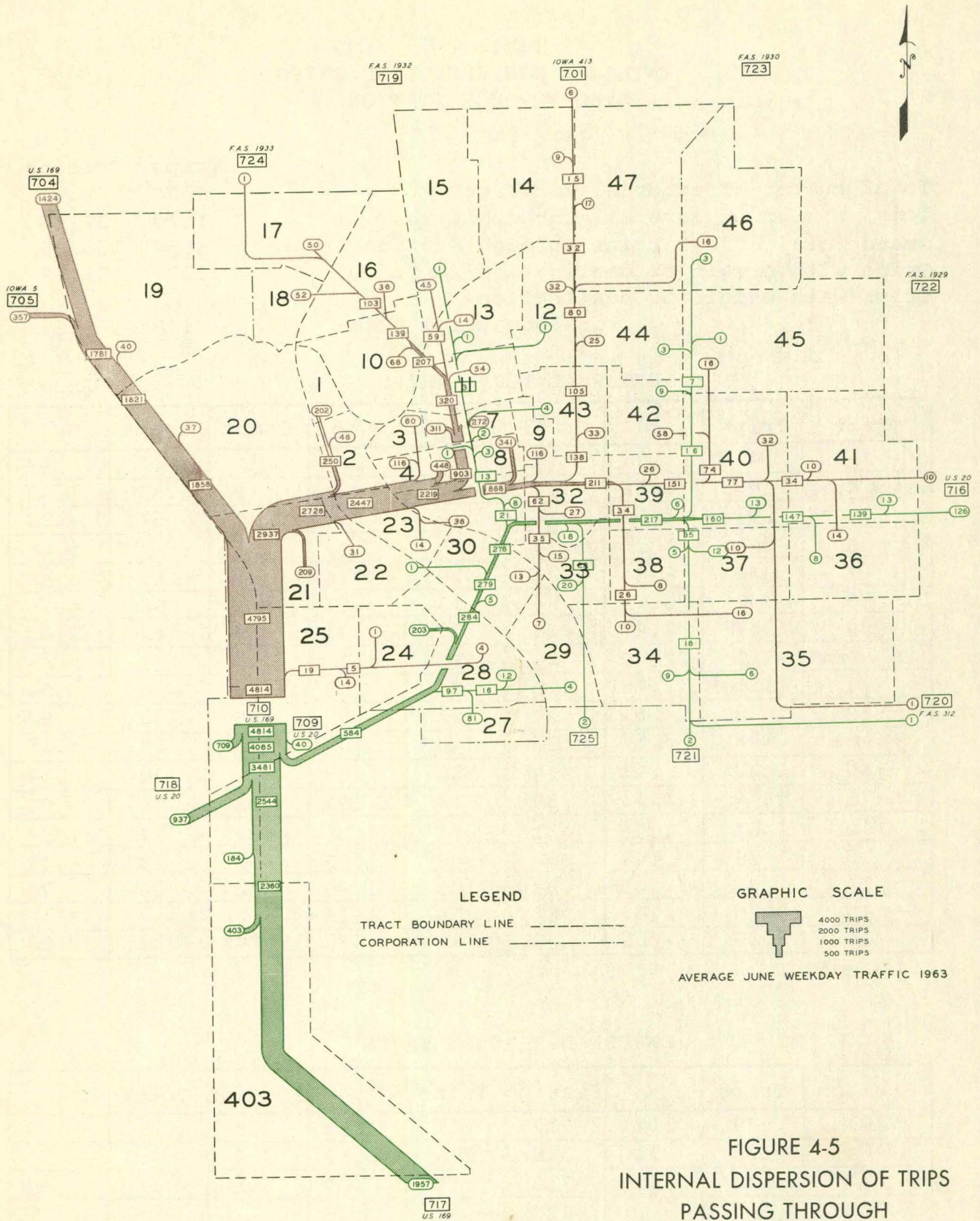


FIGURE 4-5
 INTERNAL DISPERSION OF TRIPS
 PASSING THROUGH
 STATION 710, U.S. 169, SOUTH
 OF THE
 FORT DODGE STUDY AREA

Table 4-6
INTERNAL DISPERSION OF TRIPS
PASSING THROUGH STATION 716,
U.S. 20 EAST

	Trips	Percent
Total number of external local trips	4034	72.63
Total number of external through trips	1520	27.37
Grand total of all trips through Station 716	5554	100.00
Trips with origin or destination in C.B.D.	1527	27.49
Trips with origin or destination in industrial area	148	2.67

EXTERNAL LOCAL TRIPS

	Tract	Trips	%	Tract	Trips	%	Tract	Trips	%
C.	3	41	.74	17	13	.23	36	47	.85
	4	89	1.59	18	20	.36	37	57	1.03
	5	281	5.06	19	8	.14	38	52	.94
B.	6	261	4.70	20	3	.05	39	106	1.91
	7	352	6.34	21	20	.36	40	252	4.54
D.	8	366	6.59	22	15	.27	41	264	4.75
	9	137	2.47	23	17	.31	42	146	2.63
C.B.D. Total		1527	27.49	24	75	1.35	43	136	2.45
	1	120	2.16	25	35	.63	44	54	.97
	2	28	.51	27	55	.99	45	51	.92
Ind. Total		148	2.67	28	18	.32	46	65	1.17
	10	23	.41	29	16	.29	47	30	.54
	11	74	1.33	30	12	.22	401	4	.07
	12	64	1.15	31	77	1.39	402	77	1.39
	13	26	.47	32	90	1.62	403	23	.41
	14	27	.49	33	109	1.96	404	39	.70
	15	26	.47	34	64	1.15			
	16	29	.52	35	40	.72	Total	4034	72.63

EXTERNAL THROUGH TRIPS

Station	Trips	%	Station	Trips	%	Station	Trips	%
701	79	1.41	717	72	1.30	723	3	.05
704	172	3.10	718	926	16.67	724		
705	192	3.46	719	1	.02	725	7	.13
709			720	42	.76			
710			721	25	.45			
716			722	1	.02	Total	1520	27.37

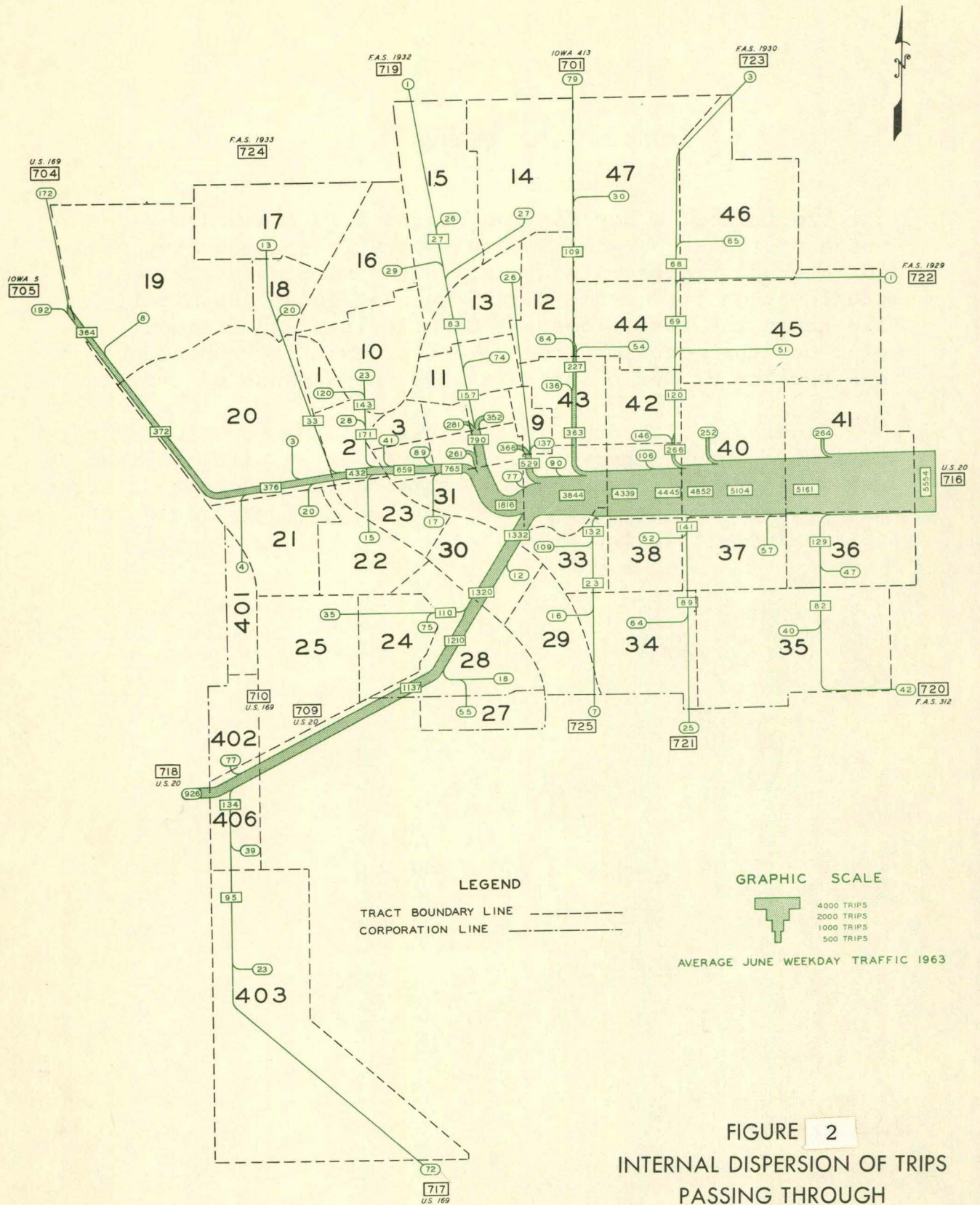


FIGURE 2
 INTERNAL DISPERSION OF TRIPS
 PASSING THROUGH
 STATION 716, U.S. 20, EAST
 OF THE
 FORT DODGE STUDY AREA

DESIRE LINE CHARTS

The following desire line charts illustrate desired routes of travel between interview stations, code stations, and internal tracts without regard to existing streets or actual routes traveled. Charts such as these graphically illustrate the travel desires of motorists and frequently point out the need for improvement of existing routes or construction of new ones to satisfy the demands of traffic.

Figures 4-7 through 4-10 illustrate the movement of trips which had either origin or destination within the study area. Figures 4-11 and 4-12 illustrate the movement of trips which passed through Fort Dodge but had neither origin nor destination within the study area.

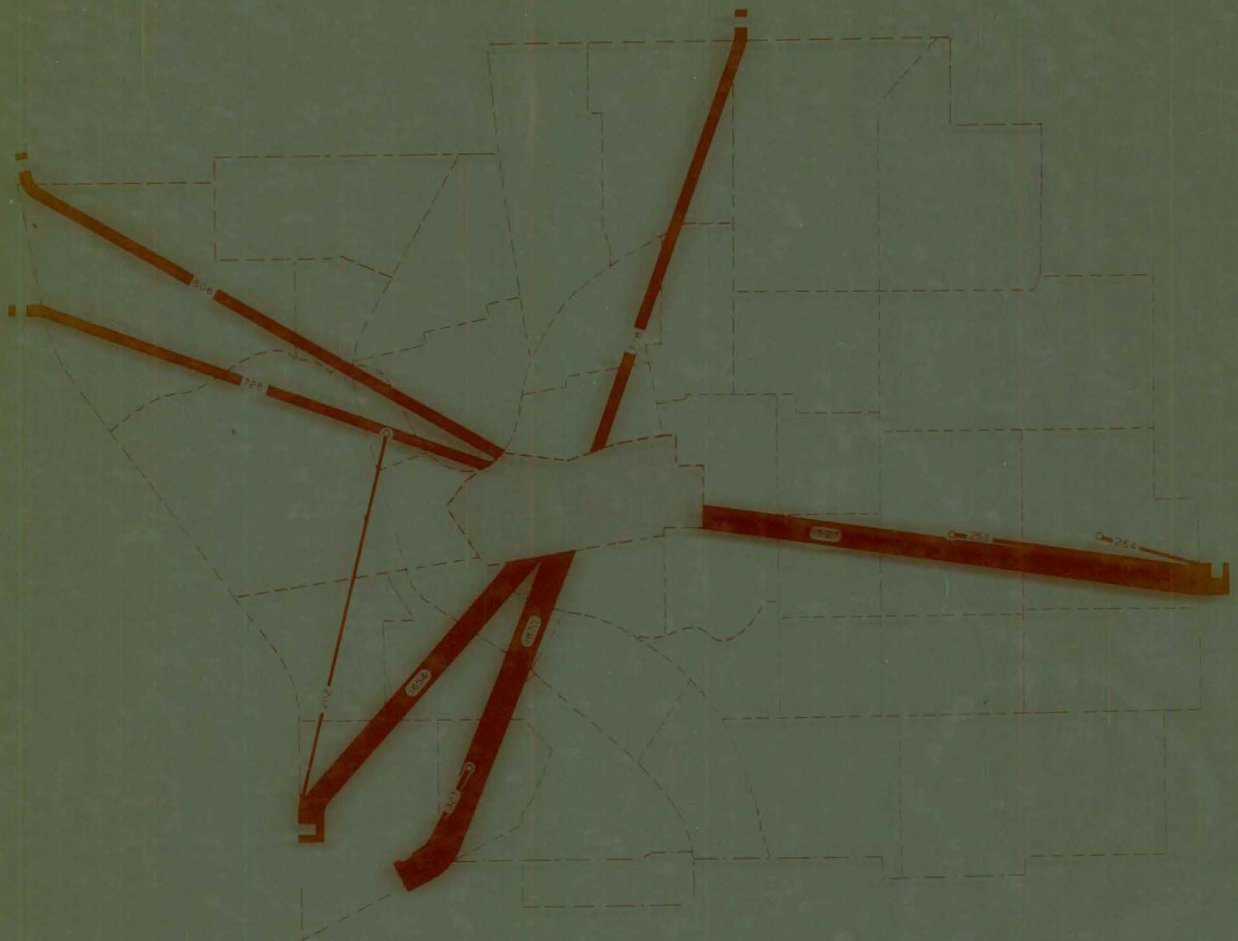


FIGURE 4-7

VOLUMES OF 200 OR MORE

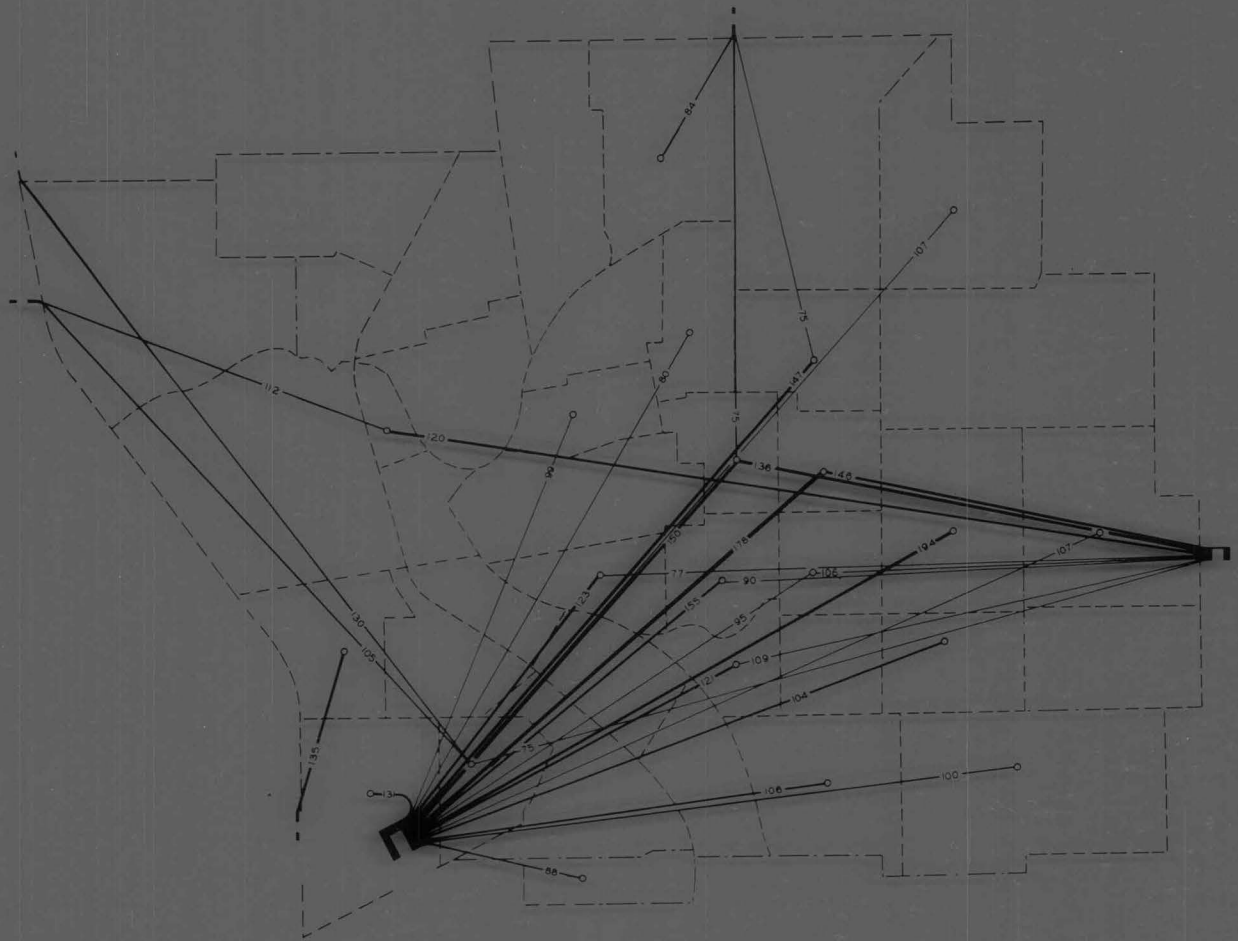


FIGURE 4-8

VOLUMES OF 75 TO 200

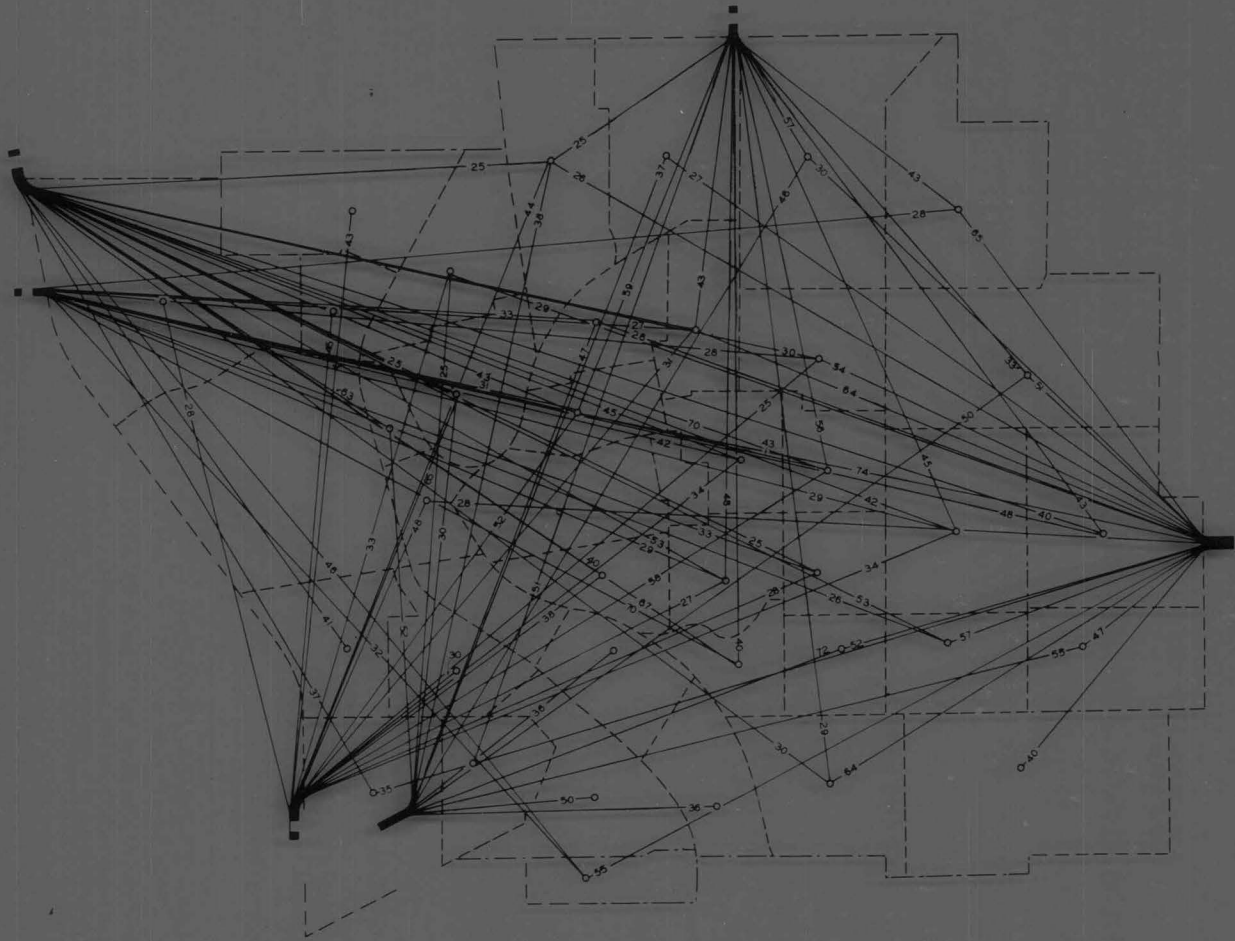


FIGURE 4-9

VOLUMES OF 25 TO 75

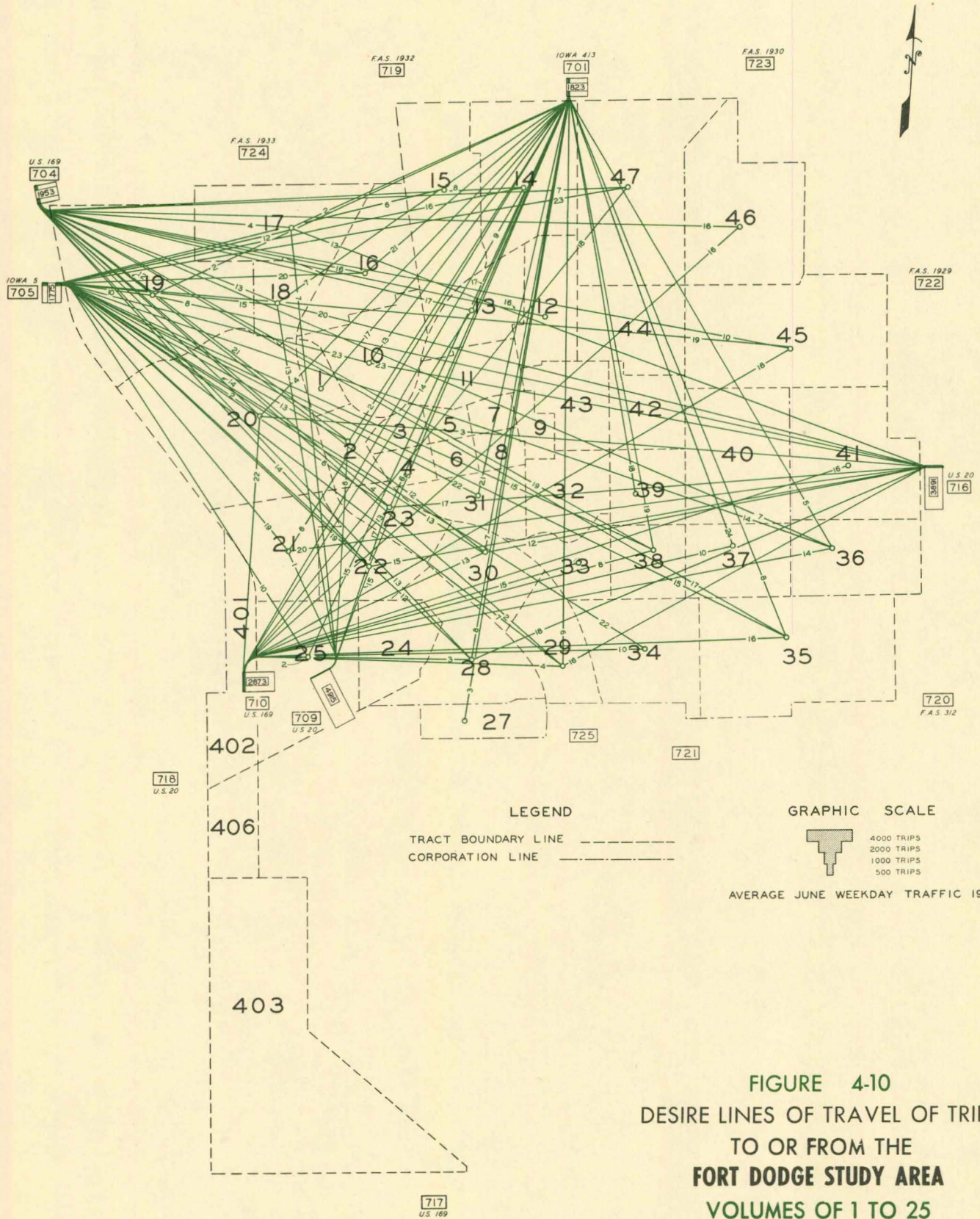


FIGURE 4-10
DESIRE LINES OF TRAVEL OF TRIPS
TO OR FROM THE
FORT DODGE STUDY AREA
VOLUMES OF 1 TO 25

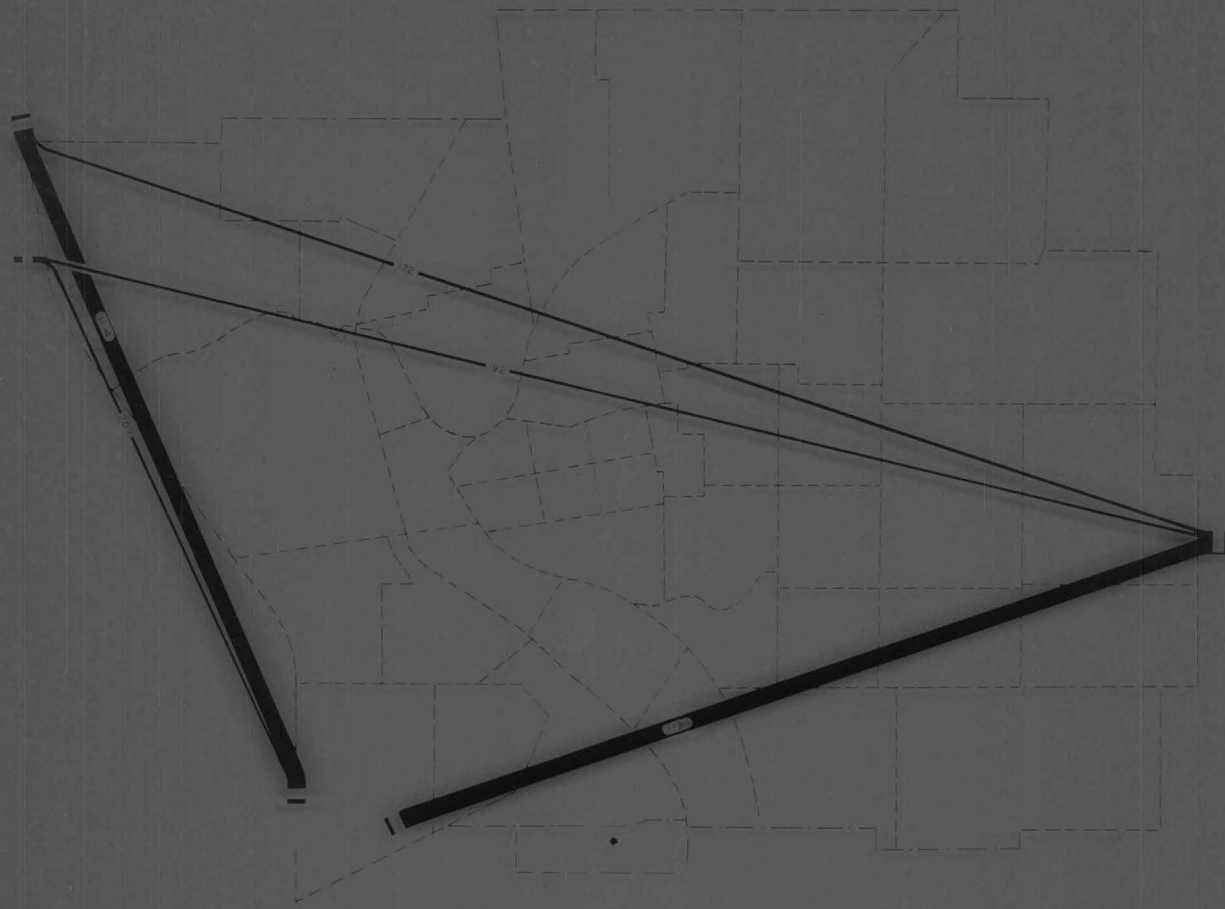


FIGURE 4-11



VOLUMES OF 100 OR MORE

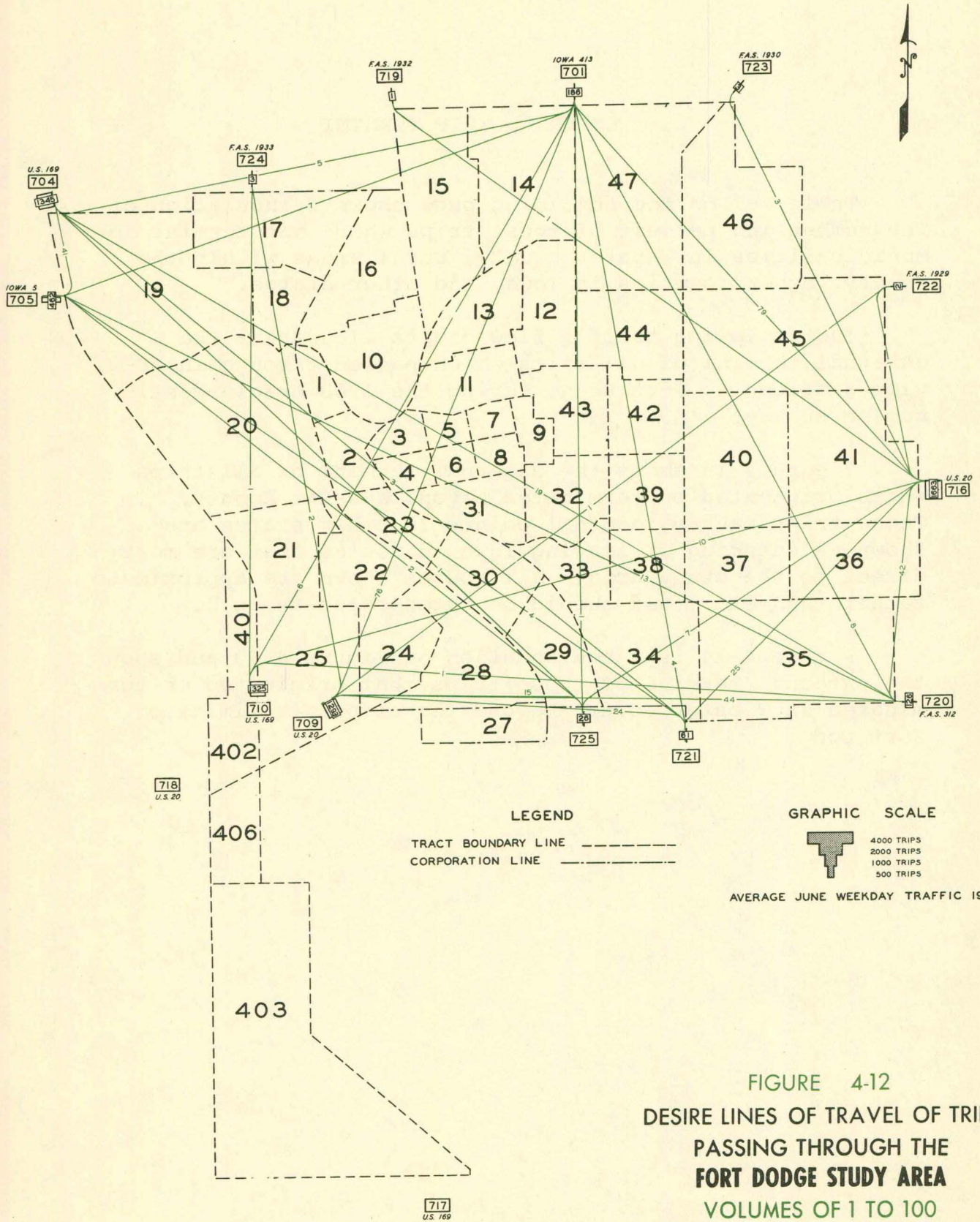


FIGURE 4-12
 DESIRE LINES OF TRAVEL OF TRIPS
 PASSING THROUGH THE
 FORT DODGE STUDY AREA
 VOLUMES OF 1 TO 100

EXTERNAL TRIP TERMINI

Table 4-7 on the adjoining page shows a tabulation of the number and percent of those trips which had termini in municipalities in Webster County, rural areas within the county, other counties in Iowa, and other states.

The following traffic flow charts illustrate the external termini of all trips which passed through interview stations in Fort Dodge during the 1963 origin-destination survey.

Figure 4-13 shows the external termini of all trips which originated or terminated beyond Webster County. Those trips having terminal points in other states are shown as entering or leaving Iowa on routes that are most direct to the study area. All routes shown are approximate rather than exact and should be interpreted as such.

Figure 4-14 is a continuation of Figure 4-13 and shows the external termini of those trips that originated or terminated in Webster County beyond the corporate limits of Fort Dodge.

Table 4-7
SUMMARY OF EXTERNAL TRIP TERMINI

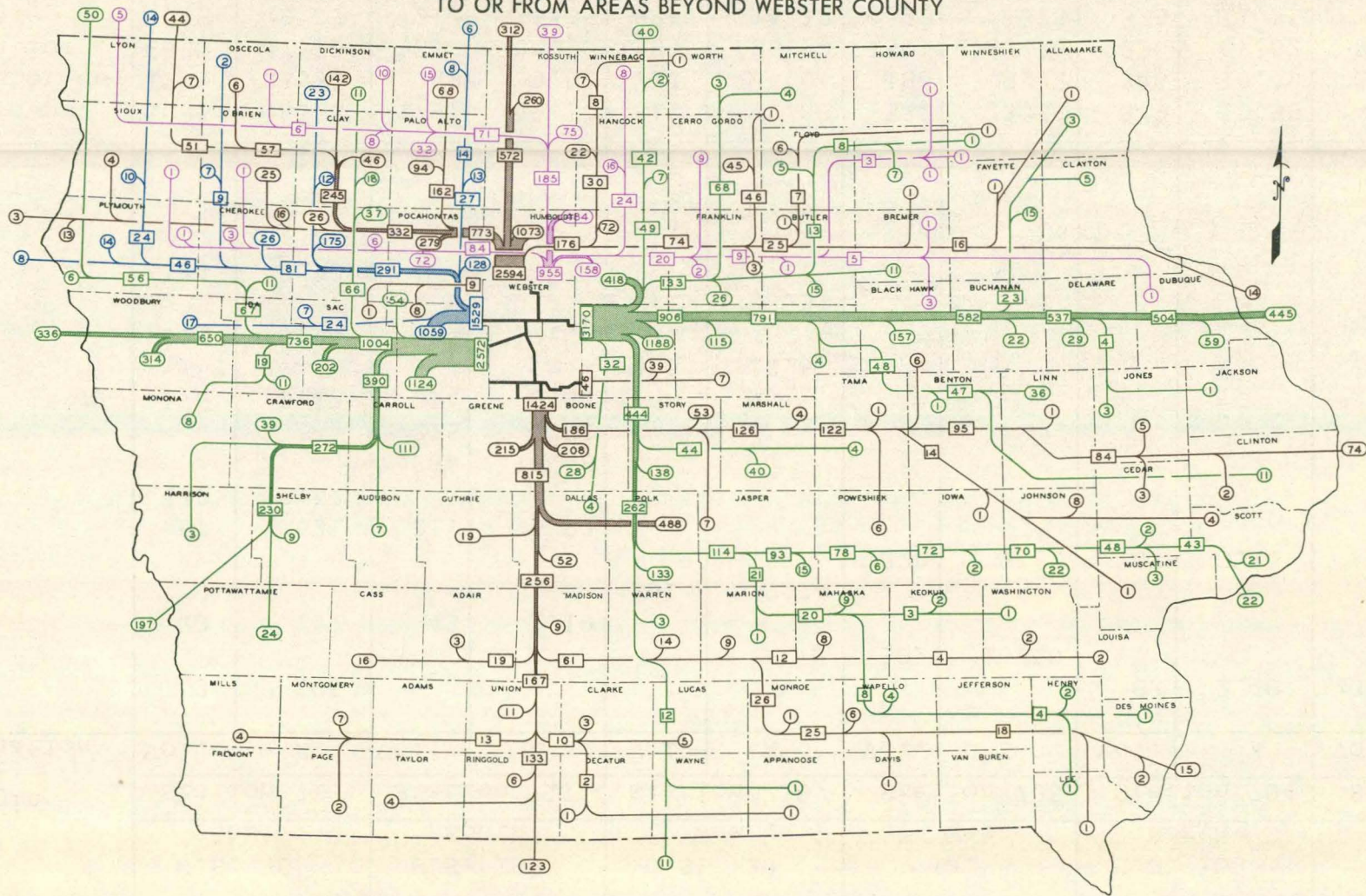
Average June Weekday Traffic 1963

Origin or Destination	U.S. 20 East		U.S. 169 South		U.S. 20 West		Ia. 5 West		U.S. 169 North		Ia. 413 North	
	Station 716		Station 717		Station 718		Station 705		Station 704		Station 701	
	Vol.	%	Vol.	%	Vol.	%	Vol.	%	Vol.	%	Vol.	%
Badger	3	.05							82	2.48	379	18.87
Barnum							302	13.50				
Burnside	23	.41	43	1.19								
Callender					351	9.74						
Clare							220	9.83	267	8.10		
Dayton	67	1.21	211	5.82								
Duncombe	473	8.52										
Gowrie			380	10.48								
Harcourt			215	5.93								
Lehigh	176	3.17	314	8.66								
Moorland					455	12.63						
Otho	219	3.94	634	17.49								
Slifer					11	.31						
Vincent	124	2.23									38	1.89
Total to Towns	1085	19.53	1797	49.57	817	22.68	522	23.33	349	10.58	417	20.76
Rural Webster Co	1299	23.39	359	9.88	214	5.94	186	8.32	346	10.49	637	31.71
Other Counties	2652	47.75	1258	34.70	1989	55.20	1501	67.10	2230	67.62	911	45.34
Out-of-State	518	9.33	212	5.85	583	16.18	28	1.25	373	11.31	44	2.19
Grand Total	5554	100.00	3626	100.00	3603	100.00	2237	100.00	3298	100.00	2009	100.00

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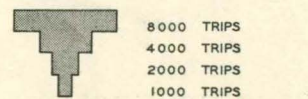
36.2%
of total
trips

FIGURE 4-13
 EXTERNAL DISPERSION OF TRIPS
 PASSING THROUGH INTERVIEW STATIONS IN THE
FORT DODGE STUDY AREA
 TO OR FROM AREAS BEYOND WEBSTER COUNTY



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GRAPHIC SCALE



AVERAGE JUNE WEEKDAY TRAFFIC 1963

LEGEND

TRAFFIC THROUGH INTERVIEW STATIONS

- █ STATION 701, IOWA 413 NORTH
- █ STATION 716, U.S. 20 EAST
- █ STATION 704, U.S. 169 NORTH
- █ STATION 705, IOWA 5 NORTHWEST
- █ STATION 717, U.S. 169 SOUTHEAST
- █ STATION 718, U.S. 20 WEST

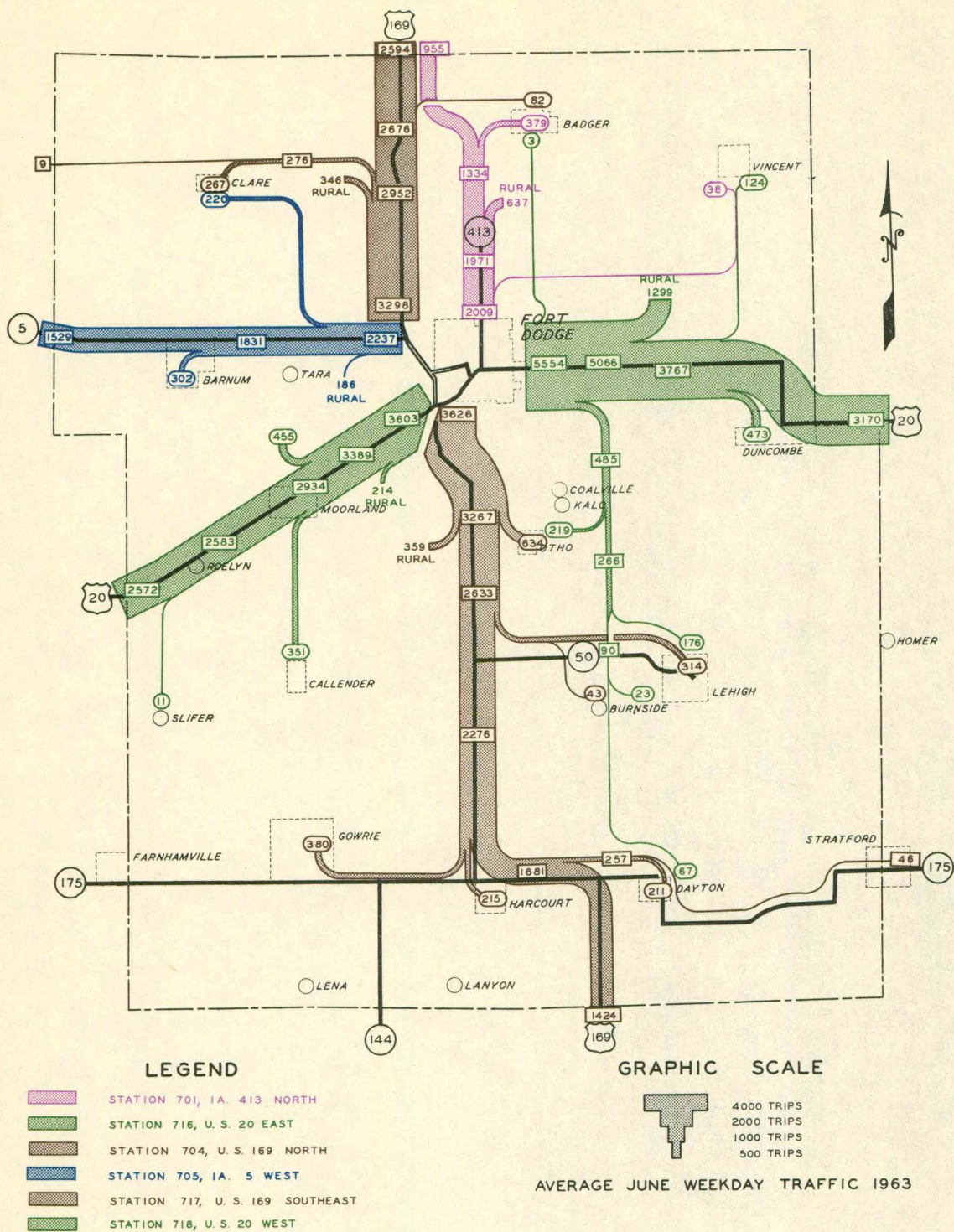
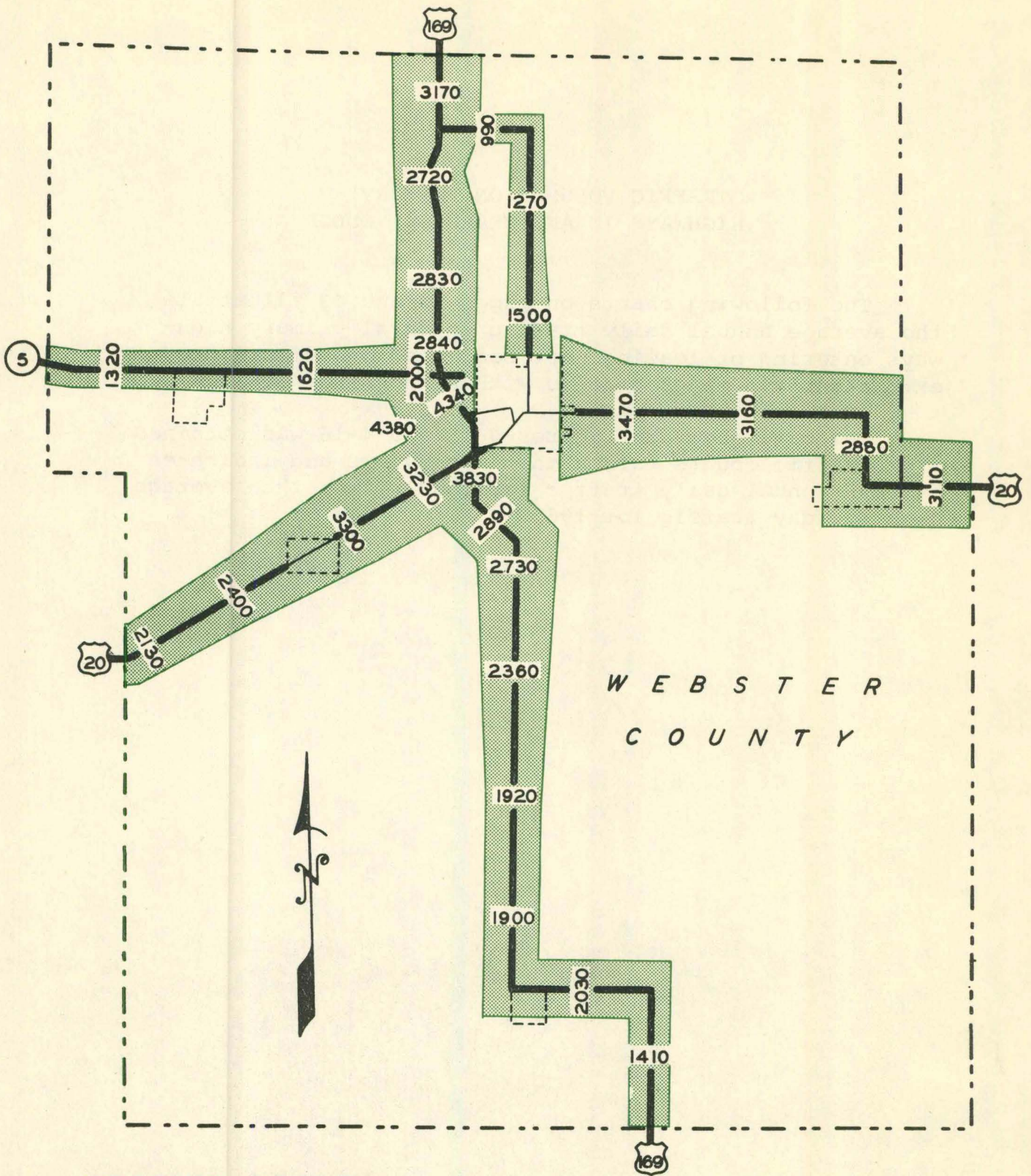


FIGURE 4-14
EXTERNAL DISPERSION OF TRIPS
PASSING THROUGH INTERVIEW STATIONS IN THE
FORT DODGE STUDY AREA
TO OR FROM AREAS WITHIN WEBSTER COUNTY

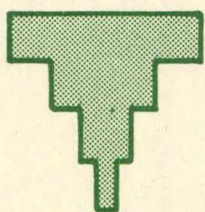
TRAFFIC VOLUMES ON PRIMARY
HIGHWAYS IN AND NEAR FORT DODGE

The following charts on pages 42 and 43 illustrate the average annual daily traffic on rural primary highways entering or leaving Fort Dodge and on primary extensions and major streets within the study area.

The data shown in Figures 4-15 and 4-16 was obtained from traffic counts rather than interviews and indicates average annual daily traffic for 1963 rather than average June weekday traffic for 1963.



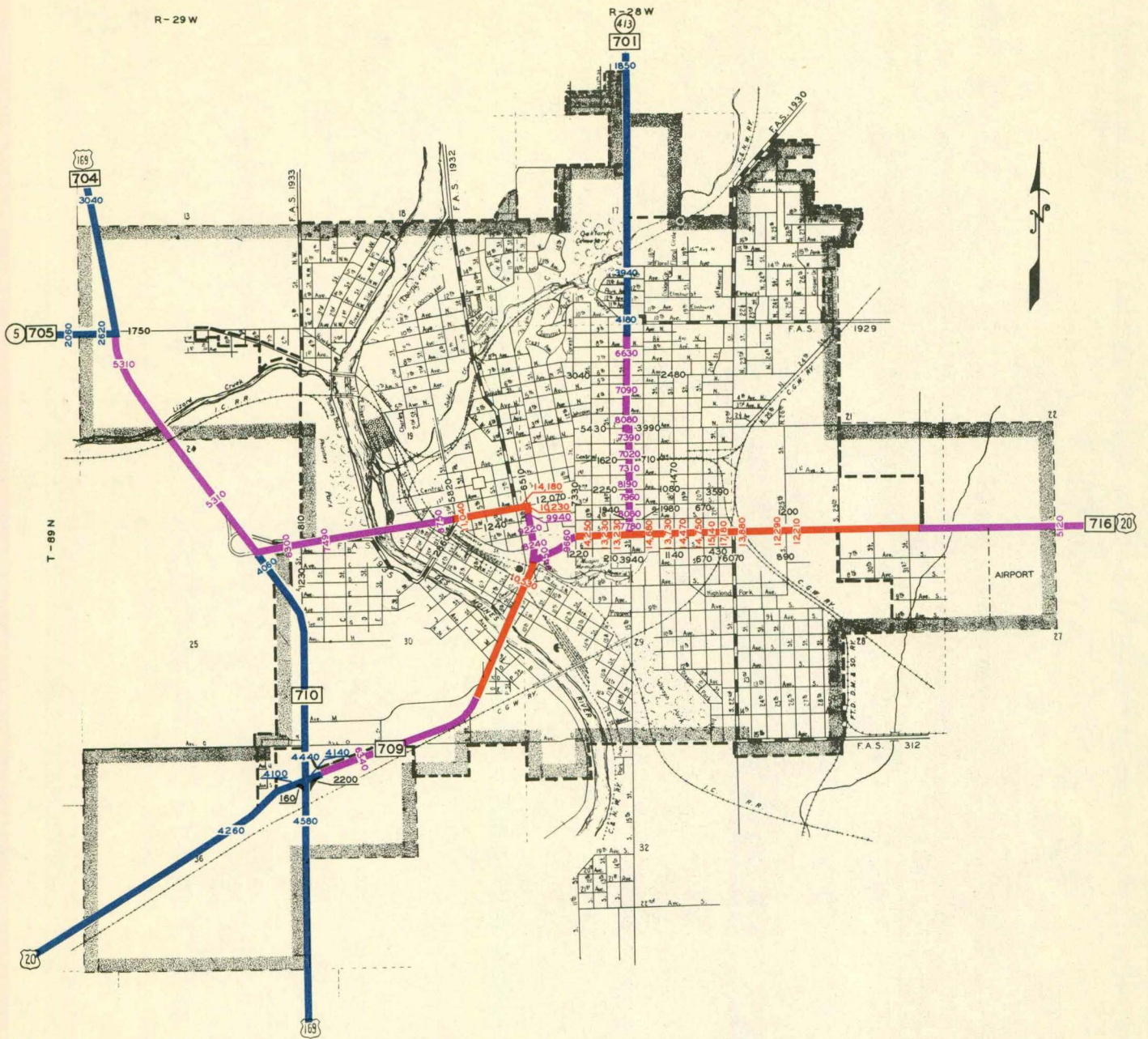
GRAPHIC SCALE



- 5000 TRIPS
- 2500 TRIPS
- 1250 TRIPS
- 500 TRIPS

AVERAGE ANNUAL DAILY TRAFFIC-1962

FIGURE 4-15
TRAFFIC VOLUMES
ON RURAL PRIMARY HIGHWAYS
ENTERING THE
FORT DODGE STUDY AREA



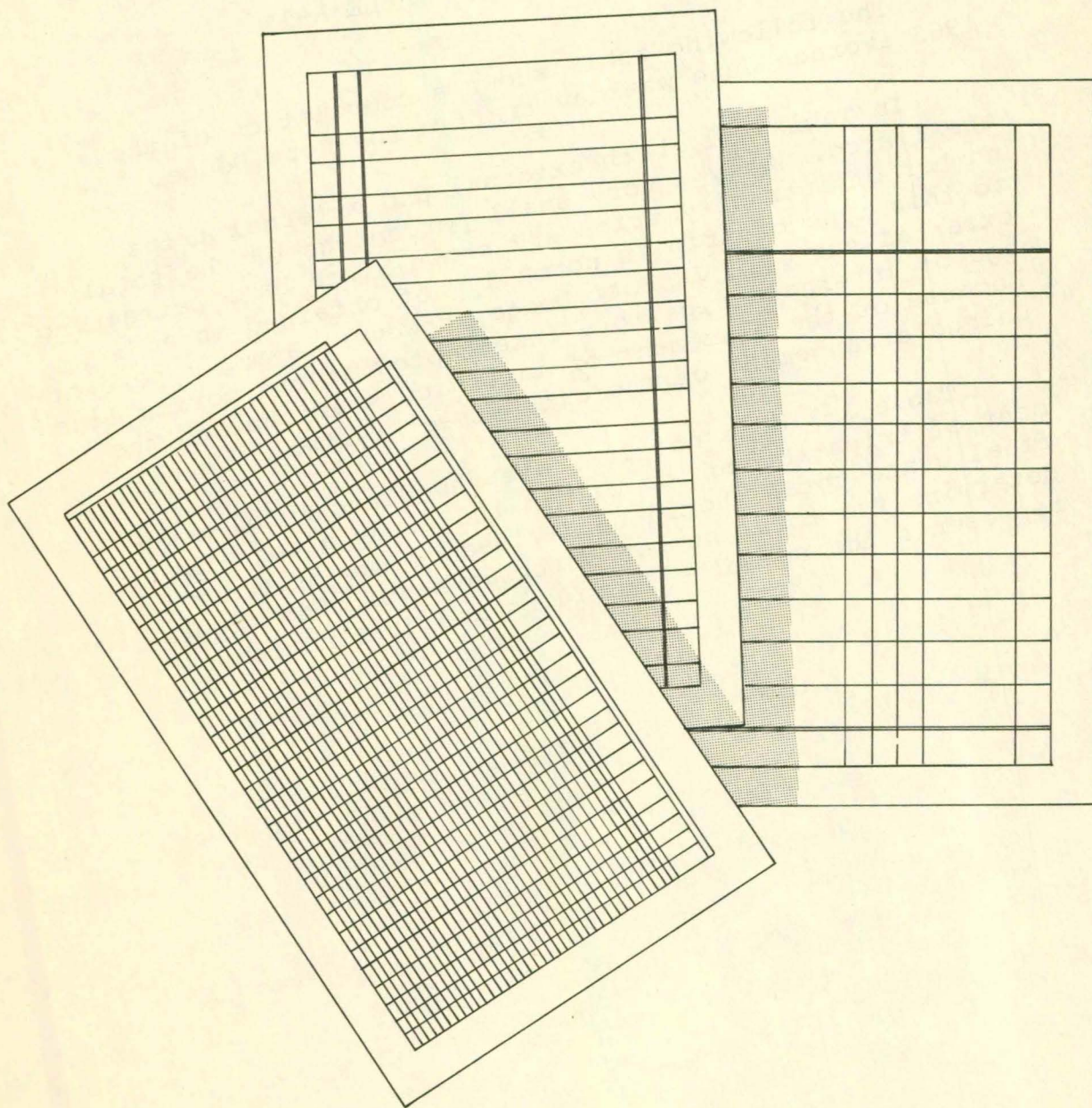
LEGEND

- 1000 TO 5000
- 5000 TO 10,000
- 10 000 — UP

AVERAGE ANNUAL DAILY TRAFFIC 1963

FIGURE 4-16
 TRAFFIC VOLUMES ON PRIMARY
 EXTENSIONS AND MAJOR STREETS IN THE
 FORT DODGE STUDY AREA

Appendix



INTERPRETATION OF TABLE A-1

The following table shows a compilation of the 1963 average June weekday traffic for Fort Dodge.

In Table A-1, both external and internal trips are listed. Only a very small percentage of the total number of intracity trips are shown since data pertaining to this type of trip is normally not obtained in an external survey. In Fort Dodge, however, a small percentage of internal trips were intercepted at the cordon line because of the placement of interview stations and the unique arrangement of the city street system.

Table A-1 does not indicate the directional movement of trips through or within the study area. The final grand total should be divided by two in order to determine the total number of trips since this figure represents the sum of all origins and destinations.

TRACT OR STATION		3
COMMERCIAL AREA	C B D	3
		4
		5
		6
		7
		8
		9
	C B D TOTAL	
	IND AREA	1
		2
INDUSTRIAL AREA TOTAL		
COMMERCIAL AREA TOTAL		
RESIDENTIAL AREA		10
		11
		12
		13
		14
		15
		16
		17
		18
		19
		20
		21
		22
		23
		24
		25
		27
		28
		29
		30
		31
		32
		33
		34
		35
		36
		37
	38	
	39	
	40	
	41	
	42	
	43	
	44	
	45	
	46	
	47	
RESIDENTIAL AREA TOTAL		
FORT DODGE TOTAL		
EXTERNAL	IA 413 N.	701
	U.S. 169 N.	704
	IA. 5 W.	705
	U.S. 20 SW	709
	U.S. 169 S.	710
	U.S. 20 E.	716
	U.S. 169 S.E.	717
	U.S. 20 W.	718
	7TH ST. N.	719
	S. 15TH AVE. E.	720
	S. 22ND ST. S.	721
	N. 10TH AVE. E.	722
	22ND ST. NE	723
	NW 5TH ST. N.	724
	S. 15TH ST. S.	725
EXTERNAL TOTAL		
GRAND TOTAL		
TRACT OR STATION	3	

TRIP PURPOSE OF VEHICLE DRIVERS PASSING THROUGH
STATION 701, IOWA 413, NORTH OF THE
FORT DODGE STUDY AREA

Table A-2

Average June Weekday Traffic 1963

Trip Purpose Origin	Trip Purpose - Destination										Total	Percent
	Work	Transact Business	During Work	Medical or Dental	School	Recreation Social or Cultural	Eat	Shop	Serve Passen- gers	Home		
Work		8	21			2	4	1	4	131	171	8.51
Transact Business	9	9	2			7		3	1	109	140	6.97
During Work	6	2	285				1	1		21	316	15.73
Medical or Dental						1				25	26	1.30
School										2	2	.10
Recreation Social or Cultural		3				19	3	6	6	174	211	10.50
Eat	4	1	3			7			1	36	52	2.59
Shop	1					5			1	206	213	10.60
Serve Passengers	3	1				4			5	32	45	2.24
Home	150	150	28	27		215	20	199	44		833	41.46
Total	173	174	339	27		260	28	210	62	736	2009	100.00
Percent	8.61	8.66	16.88	1.34		12.94	1.39	10.45	3.09	36.64	100.00	

TRIP PURPOSE OF VEHICLE DRIVERS PASSING THROUGH
STATION 704, U.S. 169, NORTH OF THE
FORT DODGE STUDY AREA

Table A-3

Average June Weekday Traffic 1963

Trip Purpose Origin	Trip Purpose - Destination											
	Work	Transact Business	During Work	Medical or Dental	School	Recreation Social or Cultural	Eat	Shop	Serve Passen- gers	Home	Total	Percent
Work		2	9			9			2	183	205	6.22
Transact Business	1	6				6				160	173	5.25
During Work	8	1	775			10		1		47	842	25.53
Medical or Dental						1				29	30	.91
School		1								5	6	.18
Recreation Social or Cultural	5	1	7			87	1	1	3	435	540	16.37
Eat	1		1							13	15	.45
Shop						6				127	133	4.03
Serve Passengers			1	1		2			1	26	31	.94
Home	259	241	10	58	11	572	8	136	28		1323	40.12
Total	274	252	803	59	11	693	9	138	34	1025	3298	100.00
Percent	8.31	7.64	24.35	1.79	.33	21.01	.27	4.19	1.03	31.08	100.00	

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TRIP PURPOSE OF VEHICLE DRIVERS PASSING THROUGH
STATION 705, IOWA 5 WEST OF THE
FORT DODGE STUDY AREA

Table A-4

Average June Weekday Traffic 1963

Trip Purpose Origin	Trip Purpose - Destination										Total	Percent
	Work	Transact Business	During Work	Medical or Dental	School	Recreation Social or Cultural	Eat	Shop	Serve Passen- gers	Home		
Work		9	46			5		1	2	250	313	13.99
Transact Business	2	19	5	1		1				167	195	8.72
During Work	51	1	136							14	202	9.03
Medical or Dental										9	9	.40
School										7	7	.31
Recreation Social or Cultural	3	8		1	1	38	1	6	2	259	319	14.26
Eat		1	2							17	20	.90
Shop						2				199	201	8.99
Serve Passengers						1			2	4	7	.31
Home	264	202	1	32	6	272	12	165	10		964	43.09
Total	320	240	190	34	7	319	13	172	16	926	2237	100.00
Percent	14.31	10.73	8.49	1.52	.31	14.26	.58	7.69	.72	41.39	100.00	

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TRIP PURPOSE OF VEHICLE DRIVERS PASSING THROUGH
STATION 709, U.S. 20, SOUTHWEST OF THE
FORT DODGE STUDY AREA

Table A-5

Average June Weekday Traffic 1963

Trip Purpose Origin	Trip Purpose - Destination										Total	Percent
	Work	Transact Business	During Work	Medical or Dental	School	Recreation Social or Cultural	Eat	Shop	Serve Passen- gers	Home		
Work		45	75			12	35	4	8	767	946	13.77
Transact Business	23	77	2			29	15	1		394	541	7.87
During Work	47	30	946				16			18	1057	15.39
Medical or Dental	1					1		1		51	54	.79
School										18	18	.26
Recreation Social or Cultural	8	18	7			133	10	9	3	634	822	11.97
Eat	34	12	9			33				31	119	1.73
Shop	1		1			10	1	1	1	310	325	4.73
Serve Passengers	5	2				8			5	46	66	.96
Home	777	507	25	105	32	988	56	377	55		2922	42.53
Total	896	691	1065	105	32	1214	133	393	72	2269	6870	100.00
Percent	13.04	10.06	15.50	1.53	.46	17.67	1.94	5.72	1.05	33.03	100.00	

TRIP PURPOSE OF VEHICLE DRIVERS PASSING THROUGH
STATION 710, U.S. 169, SOUTH OF THE
FORT DODGE STUDY AREA

Table A-6

Average June Weekday Traffic 1963

Trip Purpose Origin	Trip Purpose - Destination										Total	Percent
	Work	Transact Business	During Work	Medical or Dental	School	Recreation Social or Cultural	Eat	Shop	Serve Passen- gers	Home		
Work		35	82	1		28	11	9	1	532	699	14.52
Transact Business	19	45	10			9	2	1		264	350	7.27
During Work	37	3	582				1			9	632	13.13
Medical or Dental	1					2				43	46	.95
School										7	7	.14
Recreation Social or Cultural	7	5	3			78		6	3	413	515	10.70
Eat	14	3	1			6				24	48	1.00
Shop		3	1			8			1	441	454	9.43
Serve Passengers	5					2			3	37	47	.98
Home	560	419	11	39	3	590	12	364	18		2016	41.88
Total	643	513	690	40	3	723	26	380	26	1770	4814	100.00
Percent	13.36	10.66	14.33	.83	.06	15.02	.54	7.89	.54	36.77	100.00	

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TRIP PURPOSE OF VEHICLE DRIVERS PASSING THROUGH
STATION 716, U.S. 20, EAST OF THE
FORT DODGE STUDY AREA

Table A-7

Average June Weekday Traffic 1963

Trip Purpose Origin	Trip Purpose - Destination										Total	Percent
	Work	Transact Business	During Work	Medical or Dental	School	Recreation Social or Cultural	Eat	Shop	Serve Passengers	Home		
Work		33	104	1		8	12	6	2	433	599	10.78
Transact Business	5	96	6	2		8	3			384	504	9.07
During Work	49	11	989			3				31	1083	19.50
Medical or Dental						1				36	37	.67
School			1			1				8	10	.18
Recreation Social or Cultural	6	7	7		1	96	1	5	1	542	666	11.99
Eat	7	4	1			5				26	43	.77
Shop		3				7	1	2		350	363	6.54
Serve Passengers	3	1				1			7	29	41	.74
Home	511	415	23	65	17	747	50	344	36		2208	39.76
Total	581	570	1131	68	18	877	67	357	46	1839	5554	100.00
Percent	10.46	10.26	20.36	1.23	.32	15.79	1.21	6.43	.83	33.11	100.00	

TRIP PURPOSE OF VEHICLE DRIVERS PASSING THROUGH
ALL INTERVIEW STATIONS SURROUNDING
THE FORT DODGE STUDY AREA
(Duplicate Through Trips Removed)

Table A-8

Average June Weekday Traffic 1963

Trip Purpose Origin	Trip Purpose - Destination										Total	Percent
	Work	Transact Business	During Work	Medical or Dental	School	Recreation Social or Cultural	Eat	Shop	Serve Passengers	Home		
Work		121	284	2		53	56	20	18	1994	2548	12.36
Transact Business	54	197	23	3		55	18	5	1	1257	1613	7.82
During Work	165	44	2850			9	16	2		117	3203	15.54
Medical or Dental	2					5		1		168	176	.85
School		1	1			1				41	44	.21
Recreation Social or Cultural	27	39	22	1	2	321	15	31	17	1870	2345	11.37
Eat	54	19	16			47			1	135	272	1.32
Shop	2	6	2			35	2	3	3	1550	1603	7.78
Serve Passengers	15	4	1	1		17			20	143	201	.98
Home	2164	1639	83	288	58	2565	143	1505	168		8613	41.77
Total	2483	2070	3282	295	60	3108	250	1567	228	7275	20618	100.00
Percent	12.04	10.04	15.92	1.43	.29	15.07	1.21	7.60	1.11	35.29	100.00	

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