SUMMARY AND AN INTERPRETIVE REVIEW OF TALUS THE DETROIT REGIONAL TRANSPORTATION AND LAND USE STUDY

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This is one of a number of research reports prepared by foreign fellows of the Center for Urban Studies during the last academic year. I am forwarding, for your review and information, this evaluation of the TALUS study prepared by a young Swiss traffic engineer last year. I believe he has done an admirable job and provided one of the few detailed perspectives yet prepared on this major planning effort for the Detroit metropolitan region.

Further copies or additional information will be supplied upon request.

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Contents

List of Figures

List of Figures - cont'd

List of Figures cont'd

List of Tables

List of Tables cont'd

1. INTRODUCTION

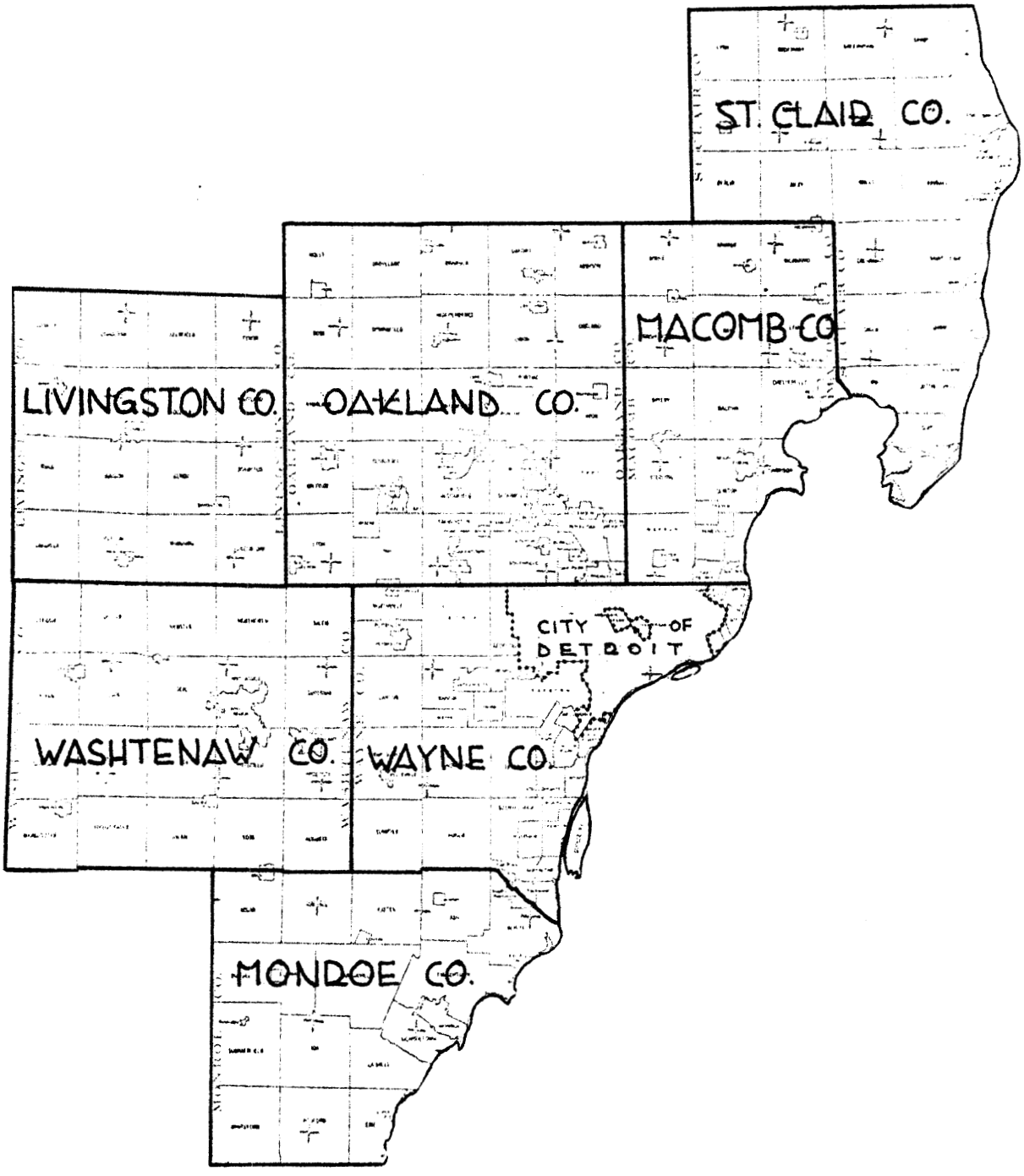
TALUS (Detroit Regional Transportation and Land Use Study) began in July, 1965 as a special project of the Detroit metropolitan Area Regional Planning Commission (now the Planning Division of the Southeast Michigan Council of Governments---SEMCOG). The study deals with an area of 4,454 square miles, including the seven counties--Livingston, Macomb, Monroe, Oakland, St. Clair, Washtenaw and Wayne. There are 373 local units of government and school districts represented in the SEMCOG general assembly.

1.1. Purpose

The major purpose of the TALUS-Study was to prepare a regional guide for growth and development that would relate the major physical facilities, financial, governmental and policy elements to each other. TALUS had to produce a comprehensive plan for 1990 by evaluating alternative patterns of land use as well as alternative balanced transportation networks and programs. The study should also gear itself to the establishment of a continuing planning process.

FIG. 1 MICHIGAN AND THE TALUS REGION

Figure 2 - TALUS Study Area



1.2. Structure

The five steps of the TALUS-Study are as follows:

I. Inventory and Data Collection

II. Analysis and Model Development

III. Plan Formulation and Testing

IV. Plan Review and Adoption

V. Implementation

In step I, TALUS is based grossly on two kinds of datas: information of the 1953 Detroit Metropolitan Area Traffic Study (DMATS) and the TALUS Travel Survey and Land Use Inventory of 1965-66.

Phase II dealt first with the analysis of the datas from step I to determine all of the important relationships, and secondly with the development of computer models capable of giving future projections. Starting with generalized sketch plans in phase III, the plan-making process lead through successive evaluation, elimination and modification, and reformulation of plans through to the final plan for 1990 at the end of phase IV. A supporting and explanatory documentation describes all recommendations. After adoption of the "final plan" by SEMCOG, the TALUS-Study enters phase V, the "implementation."

1.3. Results and Highlights

In August 1969, TALUS published a preliminary 1990 comprehensive plan and a three-volume document, "Growth, Change...and a Choice for 1990," describing the whole planning process and the 1990 plan. Detailed information is given on the land use plan, a highway, and a rapid transit network, as well as on the other physical facilities for each county and the city of Detroit. For both plans, land use and transportation, TALUS prepared a short-range program, too.

In the months of September, October, and November a hearing was held in each county, as well as in Detroit. This caused some modifications to be made before the completion of the final plan which was scheduled for the end of 1969.

Plan highlights are recommendation of:

- nine "metrocenters,"
- sixty "multi-purpose complexes,"
- twenty-six regional "commercial centers,"
- twenty-eight new higher education centers,
- acquisition of 394 square miles of recreation and open space lands,
- detailed consideration of a $1.1 billion, 81-mile rail rapid transit system,
- construction by 1990 of 347 miles of new freeway at a cost of $2.58 billion and 670 miles of arterial roads at $598 million,

- consolidation and improvement of existing bus systems,
- institution of a modernized route and service planning process,
- renewal of most of the residential property within Grand Boulevard and substantial portions in the balance of Detroit, and older suburbs,
- renewal of decaying commercial "strips" in Detroit and older suburbs,
- a policy of "pre-location" for families displaced by renewal projects,
- a public information program to provide guidance in detailing and refining the preliminary plan into a final plan,
- a continuing planning program to monitor growth and development, adjust and modify the plan periodically and aid in plan implementation.

1.4. Purpose of this Paper

The Transportation and Land Use Study--the product of about 75 staff members during 5 years--is quite a complicated and massive work, which demands a lot of time from the reader for its completion and understanding. This is especially true in a case such as this, where a lot of survey information and a great number of publications are made available. Therefore, it is quite difficult to limit such a paper to the most important points of the study. It is not only necessary for the writers to be aware that there should be limitations, but the reader should set such limitations so that he can get as much information as possible in a short time.

The purpose of this paper is therefore (1) to give an idea about what the Detroit Regional Transportation and Land Use Study is, (2) to summarize the planning efforts of the study in a short form, with selected and diversified information so as to provide a quick overview of the metropolitan situation and its problems, with an emphasis on the city of Detroit, (3) critical comments and thoughts attempting to indicate some of the study's weaknesses, (4) a help for quick information as well as for further studies of Talus publications. A data collection with all the main data used in the study is added at the end of the paper, which should help in comparing datas with other areas. The focus is again on the city of Detroit.

B - Base Year and Previous Data

P - Projections

DEF-Definition

2. Existing Conditions and Future Prospects

2.1 The People

2.1.1 Population

Table 1 - Population in USA, Michigan, and TALUS Region
(figures in thousands)

Time	U.S.A.	Michigan	TALUS-Region	
1900	76,212	2,421	582	B
1960	179,323	7,823	4,181	B
1990	288,219	11,411	6,890	P

In 1960, the Detroit SMSA was the fifth largest SMSA in the United States. B

SMSA: Standard Metropolitan Statistical Area in
Detroit: Macomb, Oakland and Wayne County DEF

Table 2 - Population Increase in USA, Michigan and TALUS Region

Period	U.S.A.	Michigan	TALUS-Region	
1900-1960	135%	223%	618%	B
1960-1990	61%	45%	65%	P

While until 1960, Michigan and the TALUS region had a much higher population increase than the United States, the projections for 1990 show a reverse picture with only a very slightly larger increase in the TALUS region than in the United States, and a much slower growth in Michigan.

Population Increase 1965-1990:

TALUS Region	56.1 %
Wayne County	11.4 %
City of Detroit	- 21.4 %

Figure 3 - Past Population and Future Projections in U.S.A.

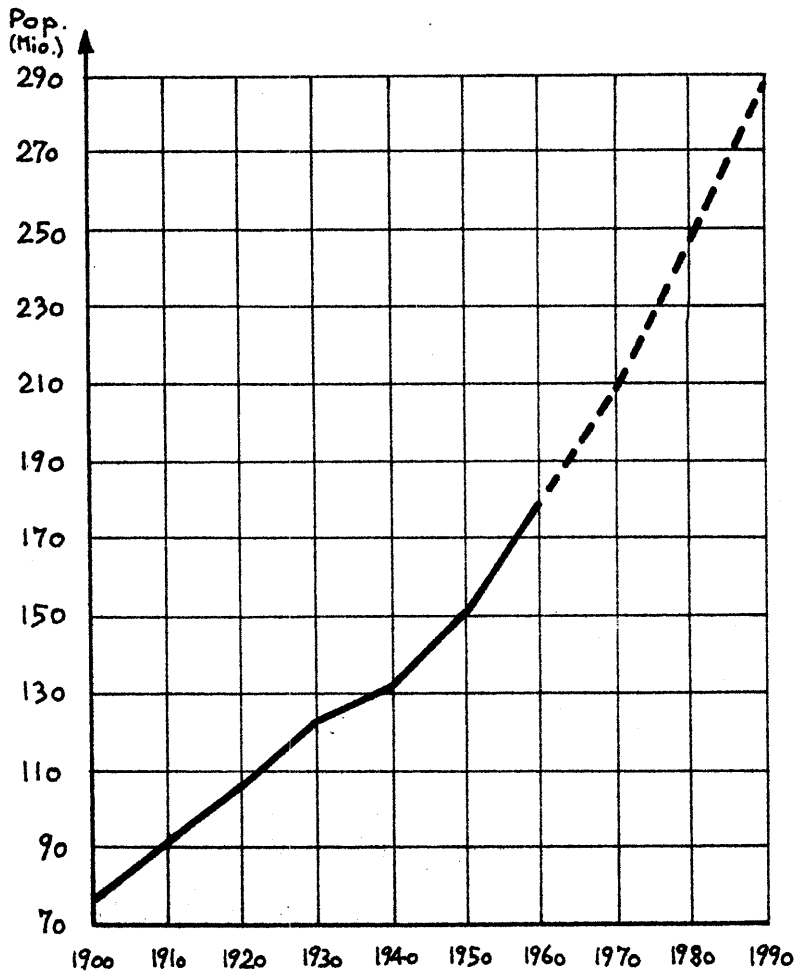
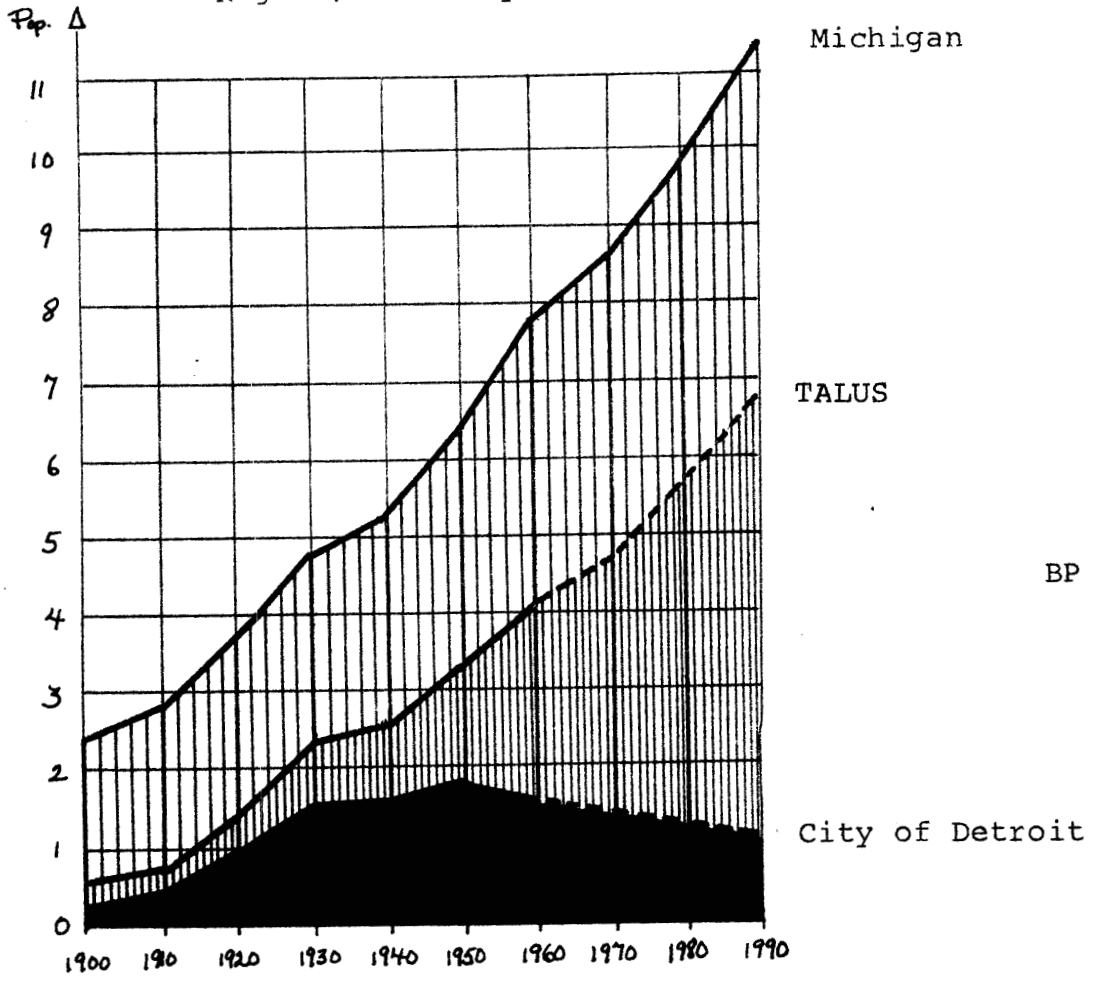


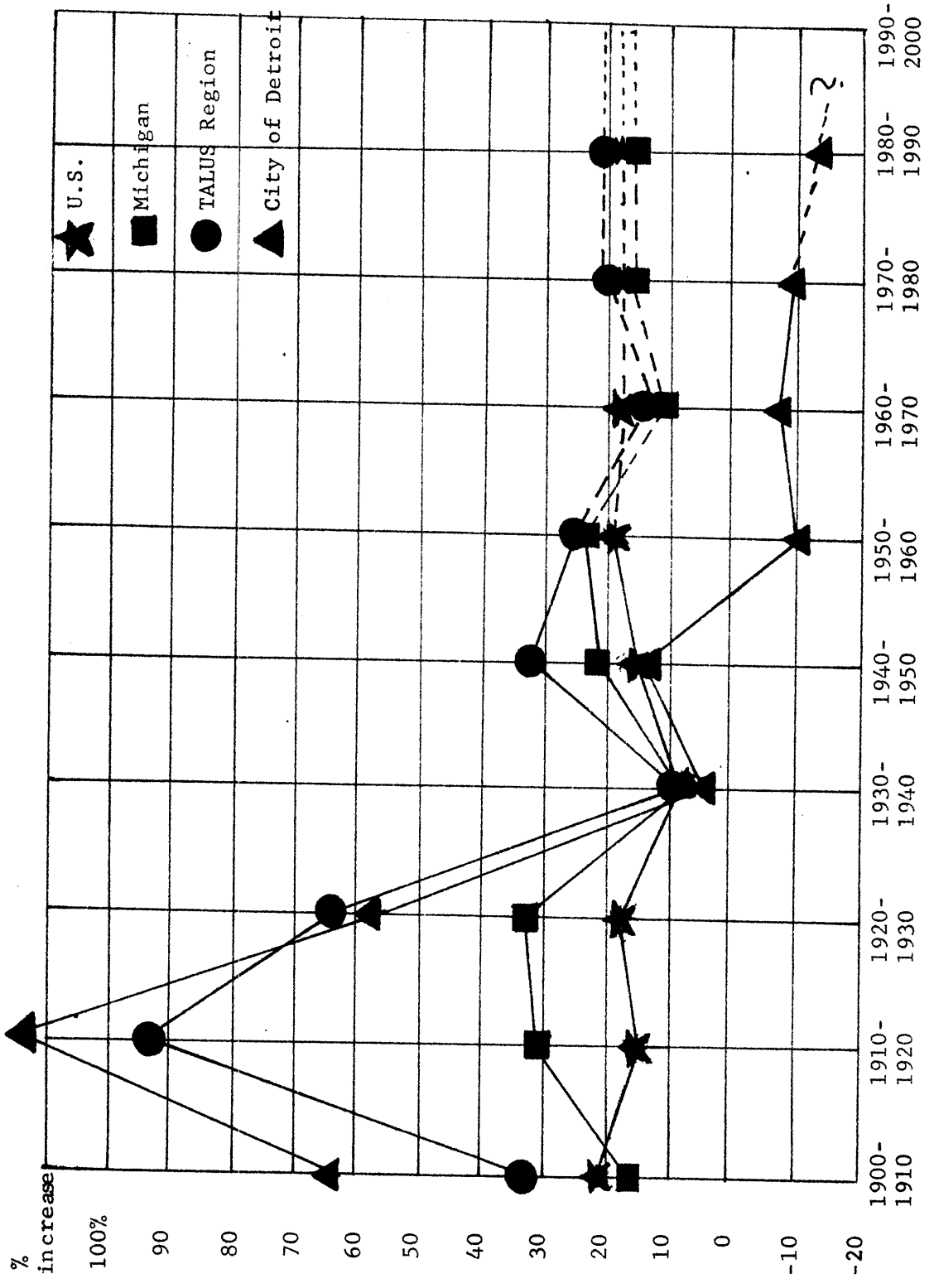
Figure 4 - Past Population and Future Projections Michigan, TALUS Region, and City of Detroit



The decline in the population of the city of Detroit which started in the fifties, should go on also in the next decade, even on a higher scale than before.

The following graph which shows the population increase from decade to decade helps to illustrate very clearly the fantastic growth of the motor city Detroit and the TALUS region between 1910 and 1920. It also demonstrates very drastically the slow down of the 20's and 30's as well as Detroit's trend (after 1950) towards an "empty city."

Figure 5 - Population Increase in Decades for U.S., Michigan, TALUS Region, and the City of Detroit, 1900-2000



In the TALUS region the non-white population will grow more rapidly than the white population, which means there will be a higher non-white population for the future.

Table 3

Year	White%	Non-White%
1965	85.15	14.85
1990	82.7	17.3
2000	82.4	17.6

Non-white: Negroes, Puerto Ricans, Chinese, Indians (American or Asian) and Filipinos

" Contrary to conventional notions, the problems of the city's people are not primarily racial. Although a larger <u>proportion</u> of Negro households than white are found in low income, educational attainment, and other categories which reflect deprivation, a comparison of absolute numbers provides a more complete picture. For example, although 38,000 Negro households in Detroit have incomes below $3,000 per year, nearly twice as many white households, 64,000--are in the same category. When the comparison is widened to the three-county Detroit SMSA, we find white households to be more than two and one half times as numerous--106,000 to 41,500--as Negro households in the under $3,000 income category."

The same figures also show quite drastically that there are only 3,500 low income Negro households outside the city of Detroit while we can find 42,000 white households of the same category outside.

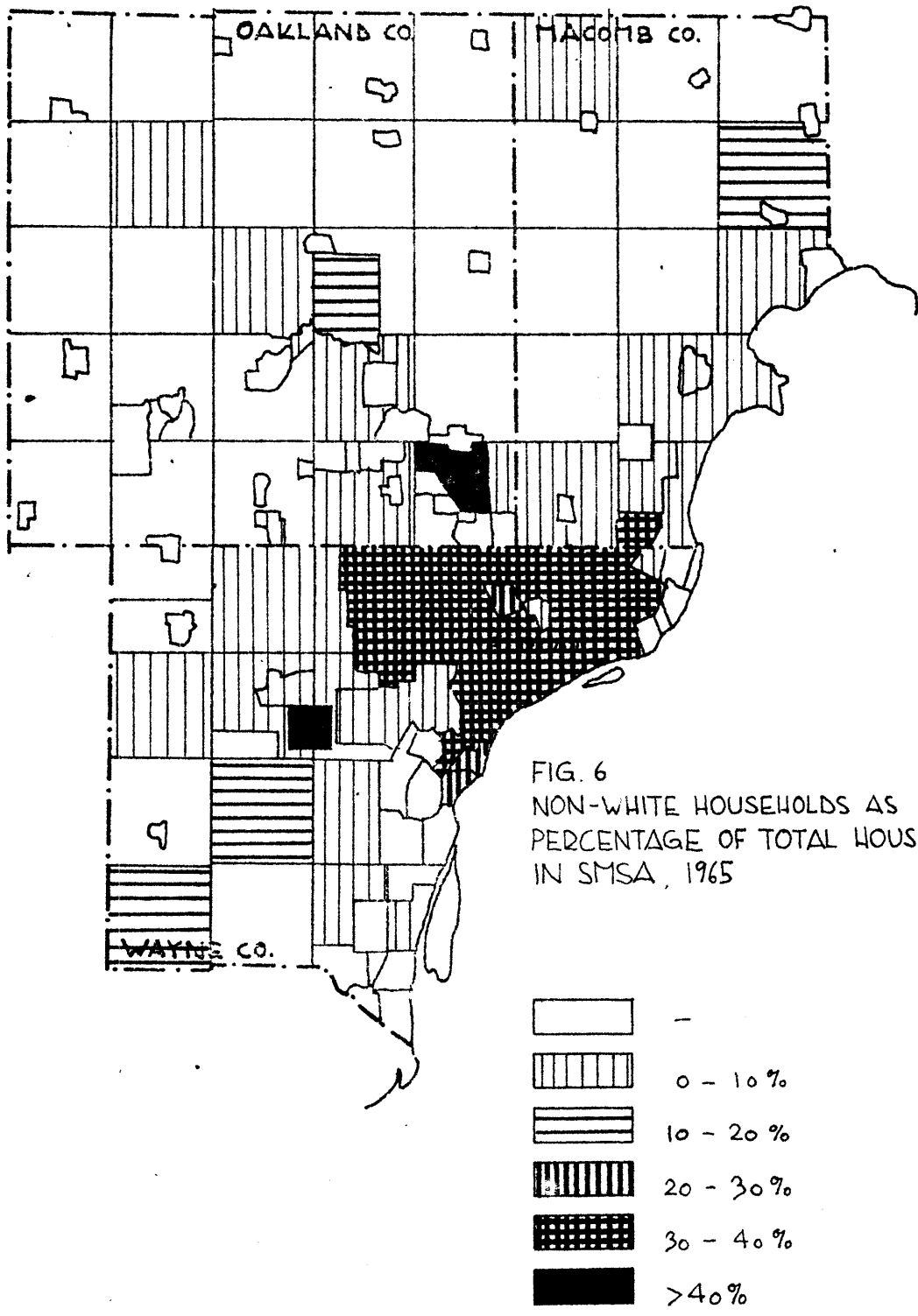


FIG. 6
NON-WHITE HOUSEHOLDS AS PERCENTAGE OF TOTAL HOUSEHOLDS IN SMSA, 1965

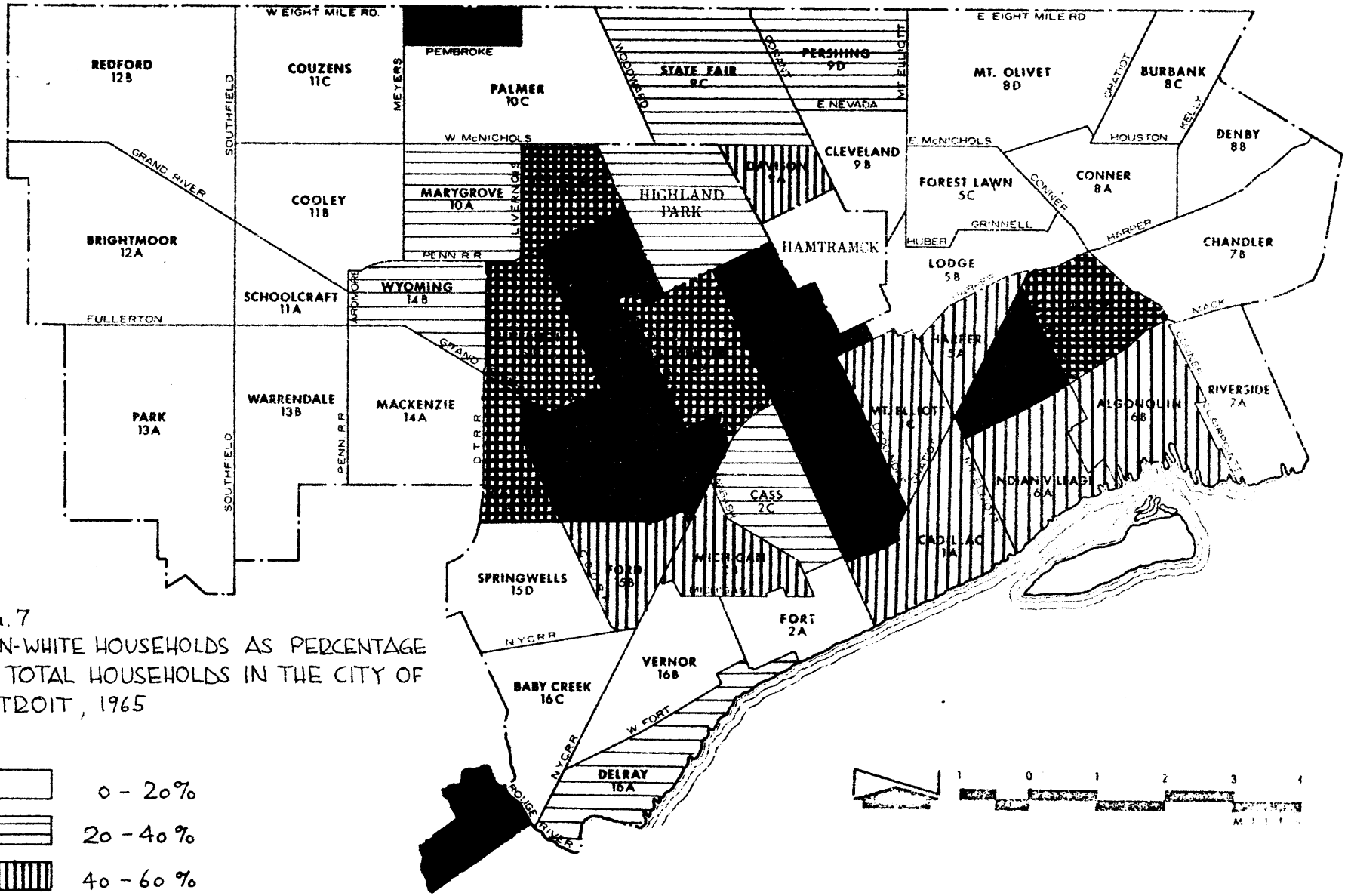


FIG. 7
NON-WHITE HOUSEHOLDS AS PERCENTAGE OF TOTAL HOUSEHOLDS IN THE CITY OF DETROIT, 1965

0 - 20%
20 - 40%
40 - 60%
60 - 80%
80 - 100%

CITY OF DETROIT BY SUBCOMMUNITY

SOURCE: UNITED COMMUNITY SERVICES of METROPOLITAN DETROIT

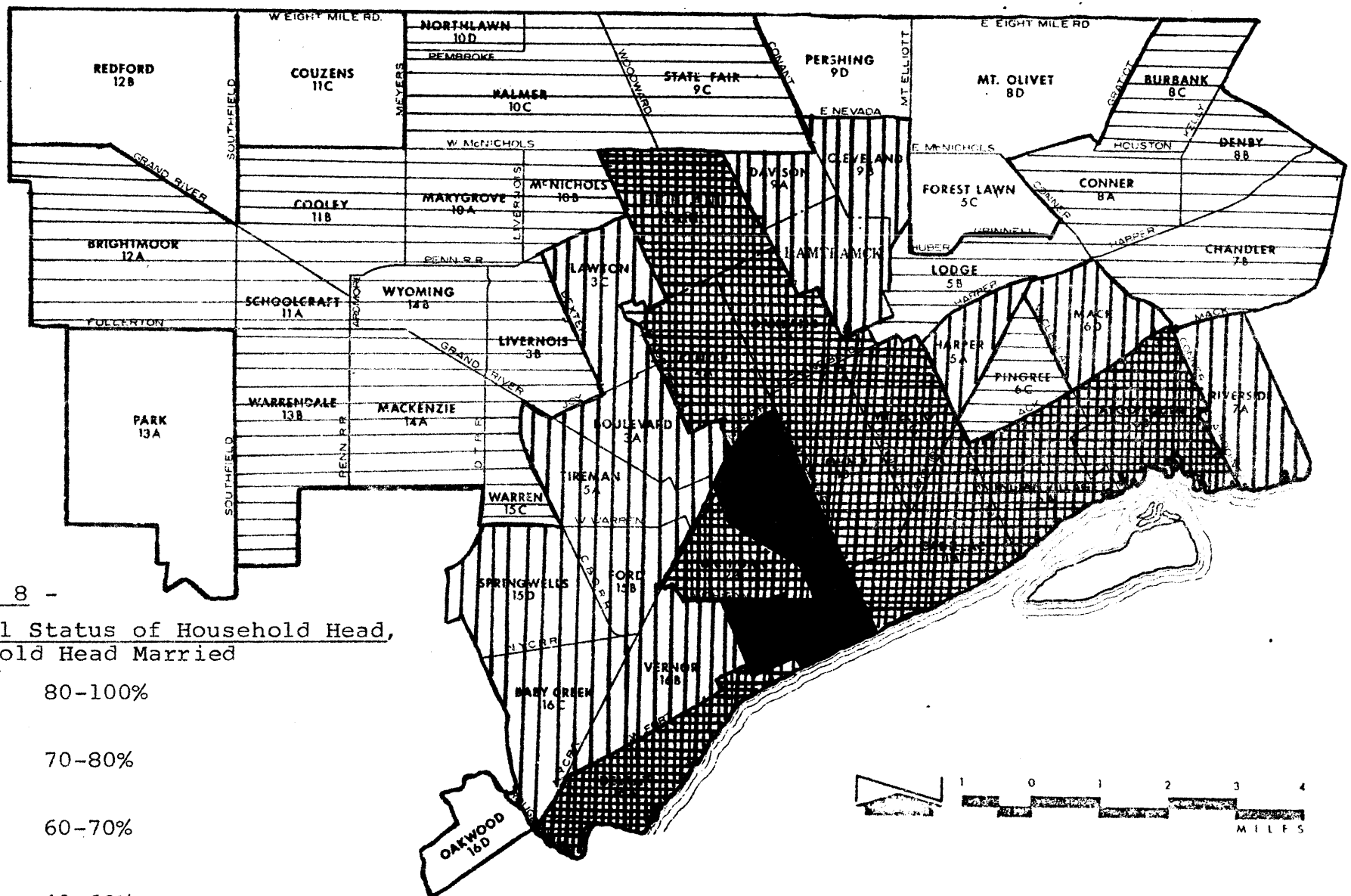


Figure 8 -

Marital Status of Household Head,
Household Head Married

80-100%

70-80%

60-70%

40-60%

< 40%

CITY OF DETROIT BY SUBCOMMUNITY

SOURCE: UNITED COMMUNITY SERVICES of METROPOLITAN DETROIT

Regarding the marital status of the household head in Detroit, the married portion equals 67.7% which is about 10% lower than that in the SMSA with 77.9% and nearly 20% lower than in the surrounding suburbs.

Within the city of Detroit, we can find areas where this share drops to nearly 30%. Figure 8 illustrates the percentage of married household heads in the subcommunities of Detroit.

Life cycle data indicates the variety of concentrations of people. Here again there are larger differences between the city of Detroit and the surrounding suburbs. We can find more older people and less households with younger children within the city. (Figure 9)

Figure 9 - Youngest Child of Head of Household, 1965

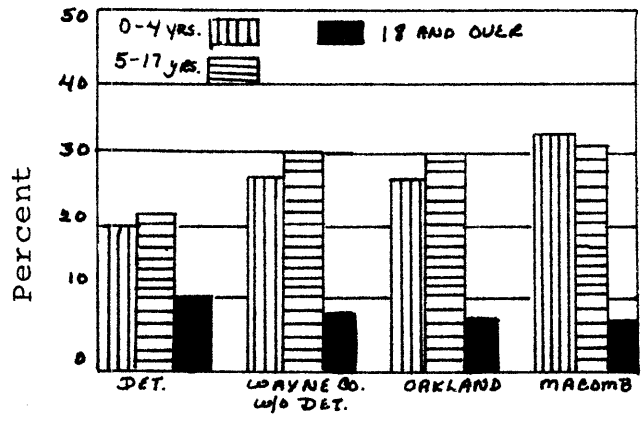


Figure 10 - Household Heads Over 45 (Without Children) 1965

> 50%

40-50%

30-40%

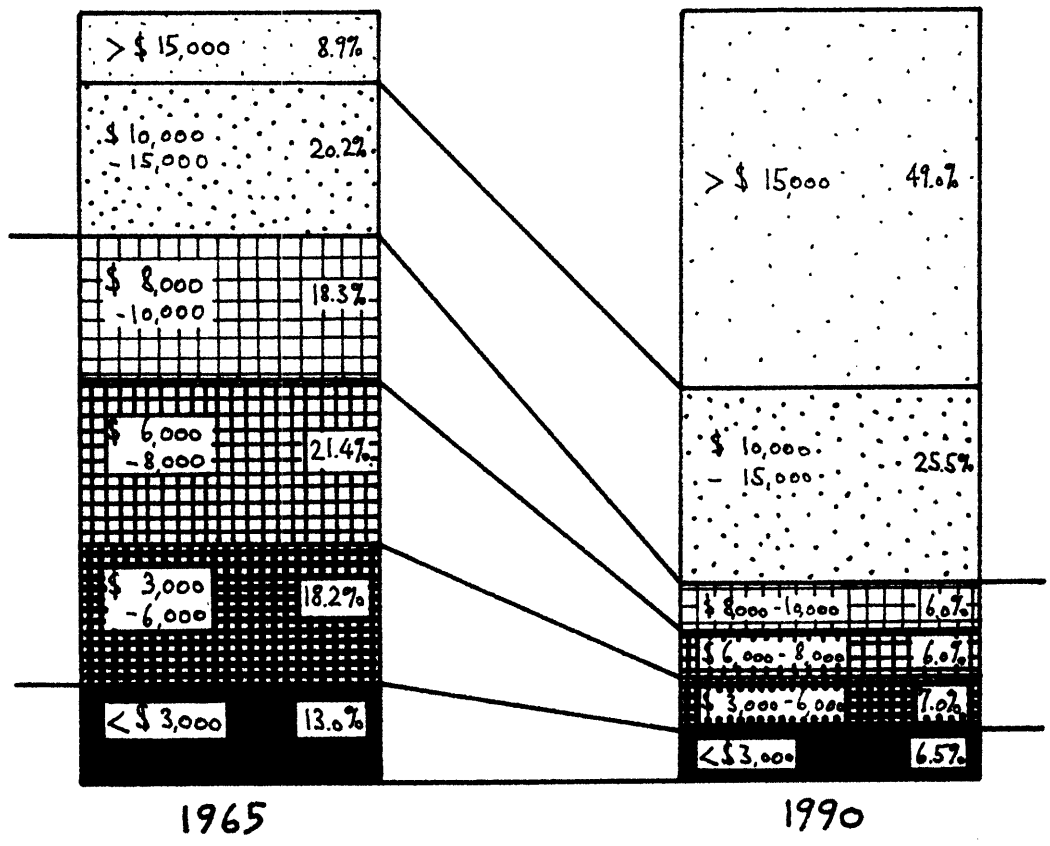
20-30%

CITY OF DETROIT BY SUBCOMMUNITY

SOURCE: UNITED COMMUNITY SERVICES of METROPOLITAN DETROIT

2.1.2 Income

Figure 11 - Distribution of Households by Income Class TALUS Region 1965-1990 (1965 constant $)



Regarding the total household number in the lowest income class ($3,000) there is only a decline of 20.7% from 153,240 in 1965 to 121, 517 in 1990.

At the same time, 75% of the households will have an income of over $10,000 (1965$).

Figure 12 - Households by Family Income, 1965

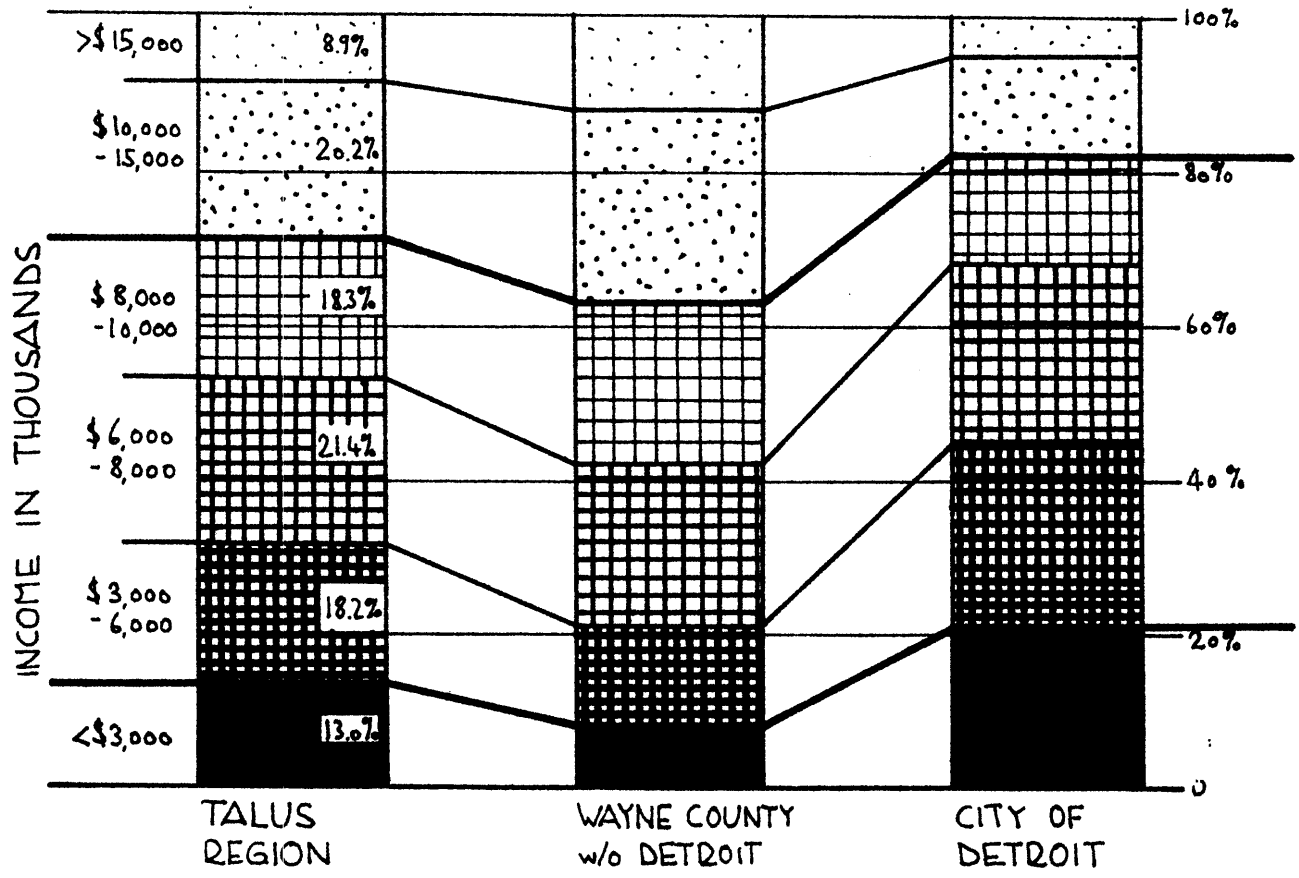


Figure 13 shows the lowest median family income concentrated in the inner city of Detroit.

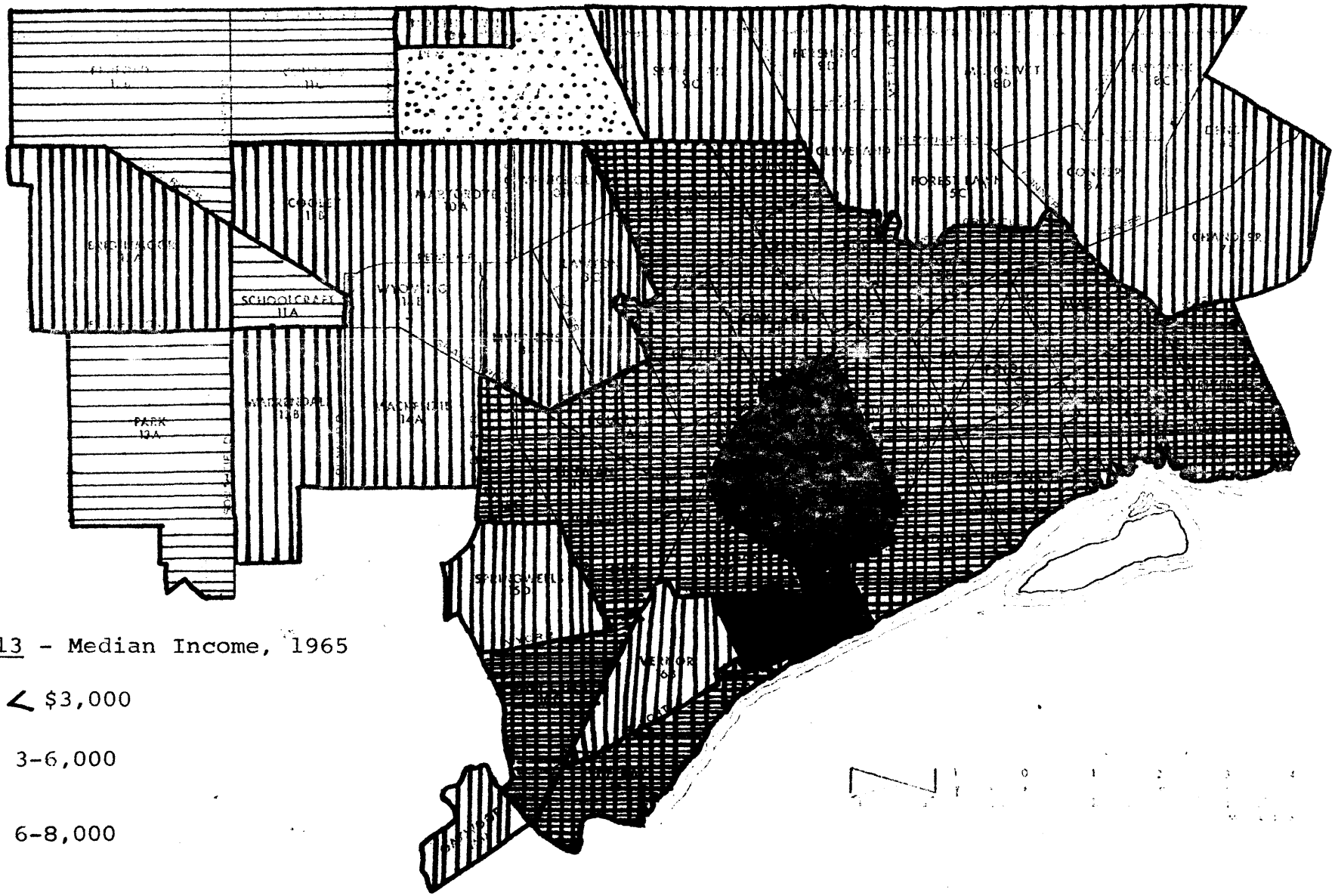


Figure 13 - Median Income, 1965

< $3,000

3-6,000

6-8,000

8-10,000

10-15,000

> 15,000

SOURCE: UNITED COMMUNITY SERVICES of METROPOLITAN DETROIT

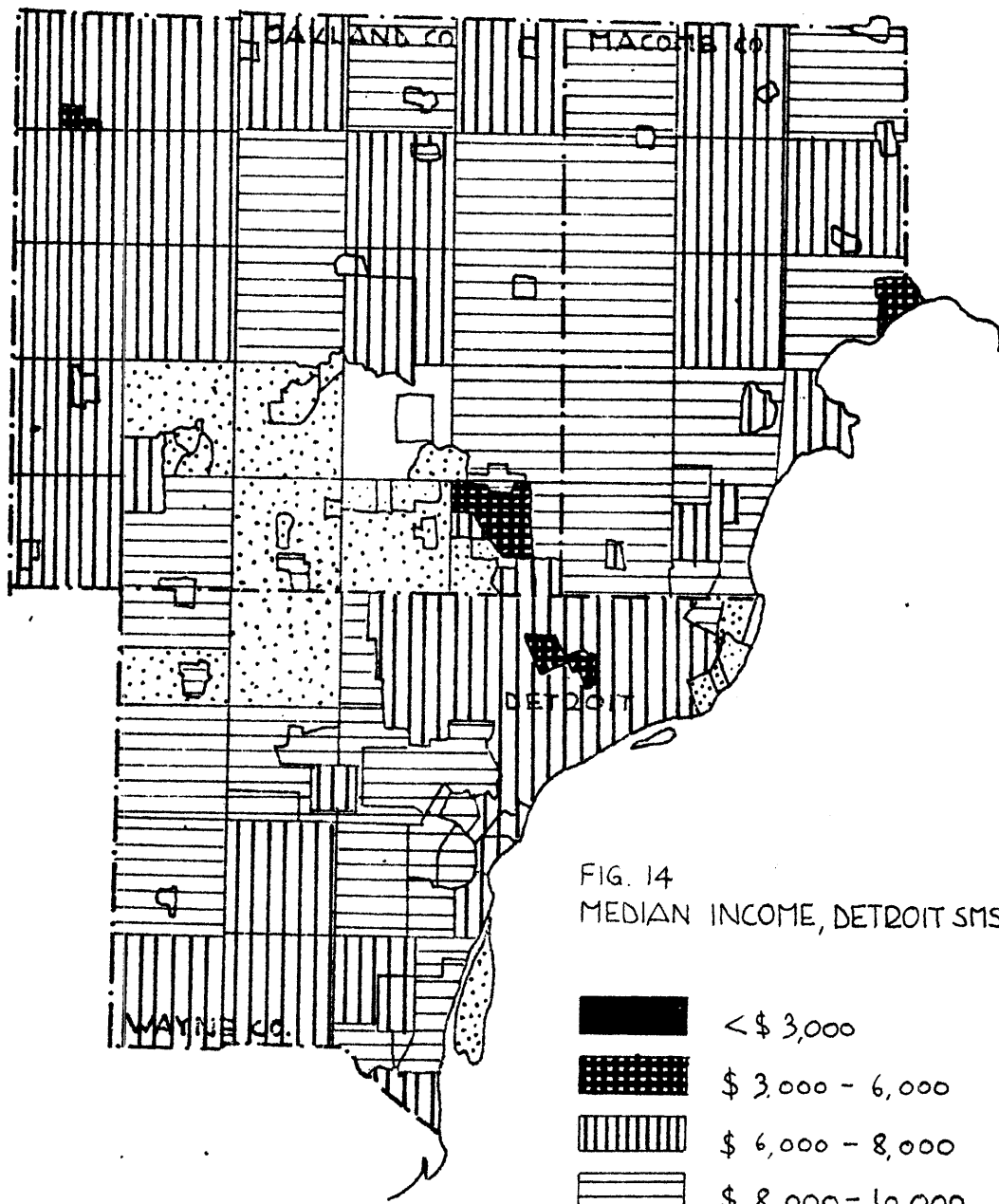


FIG. 14
MEDIAN INCOME, DETROIT SMSA, 1965

2.1.3 Housing

Housing Unit: DEF

A housing unit is defined as a "group of rooms or a single room occupied as separate living quarters by a family, or by unrelated individuals living together, or by an individual living alone."

One-Family Home: DEF

A one-family home is defined as "a free-standing dwelling designed and used as housing for a single family."

(See Figure 15)

Table 4 - Construction Activity and Demolition in TALUS Region

Time	New Dwellings (1)	Demolition (2)	(1)-(2)=(3)	(1)/yr.	(3)/yr.
1950-1960	378,955	14,641	364,314	37,900	36,430
1960-1968	~206,000	40,974	~165,000	25,750	20,600

B

Future Need ~ 50,000 units per year

Figure 15 - Single and Multiple Family Dwellings, 1965

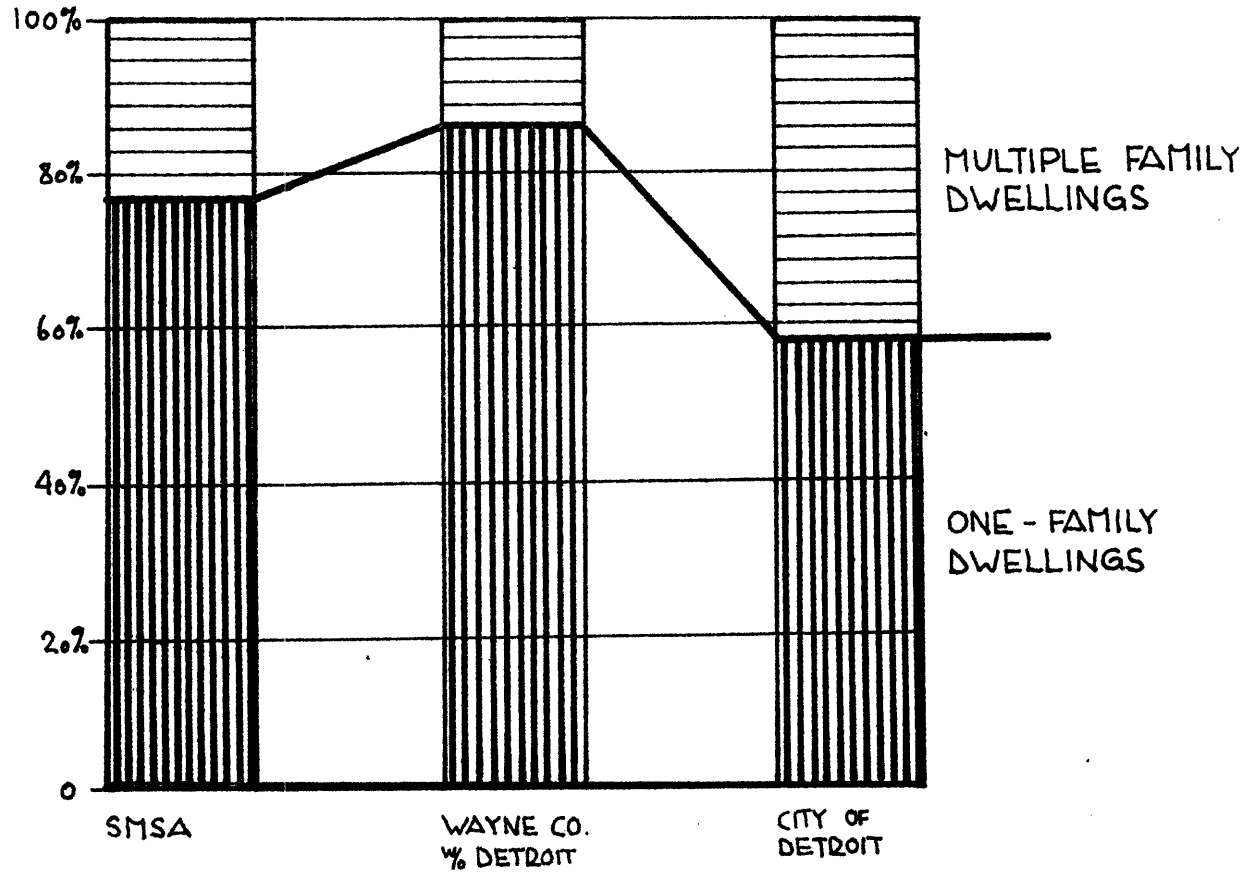


Table 5 - Regional Housing Units

Time	Sing. Family	2 Family Dw.	Multiple Dw.
Census, 1960	76%	5%	19%
New Dwellings 1960	64%	1%	35%

In the city of Detroit, 1968, 84% of the building permits were for multiple-dwelling buildings (in"fifties,"25%).

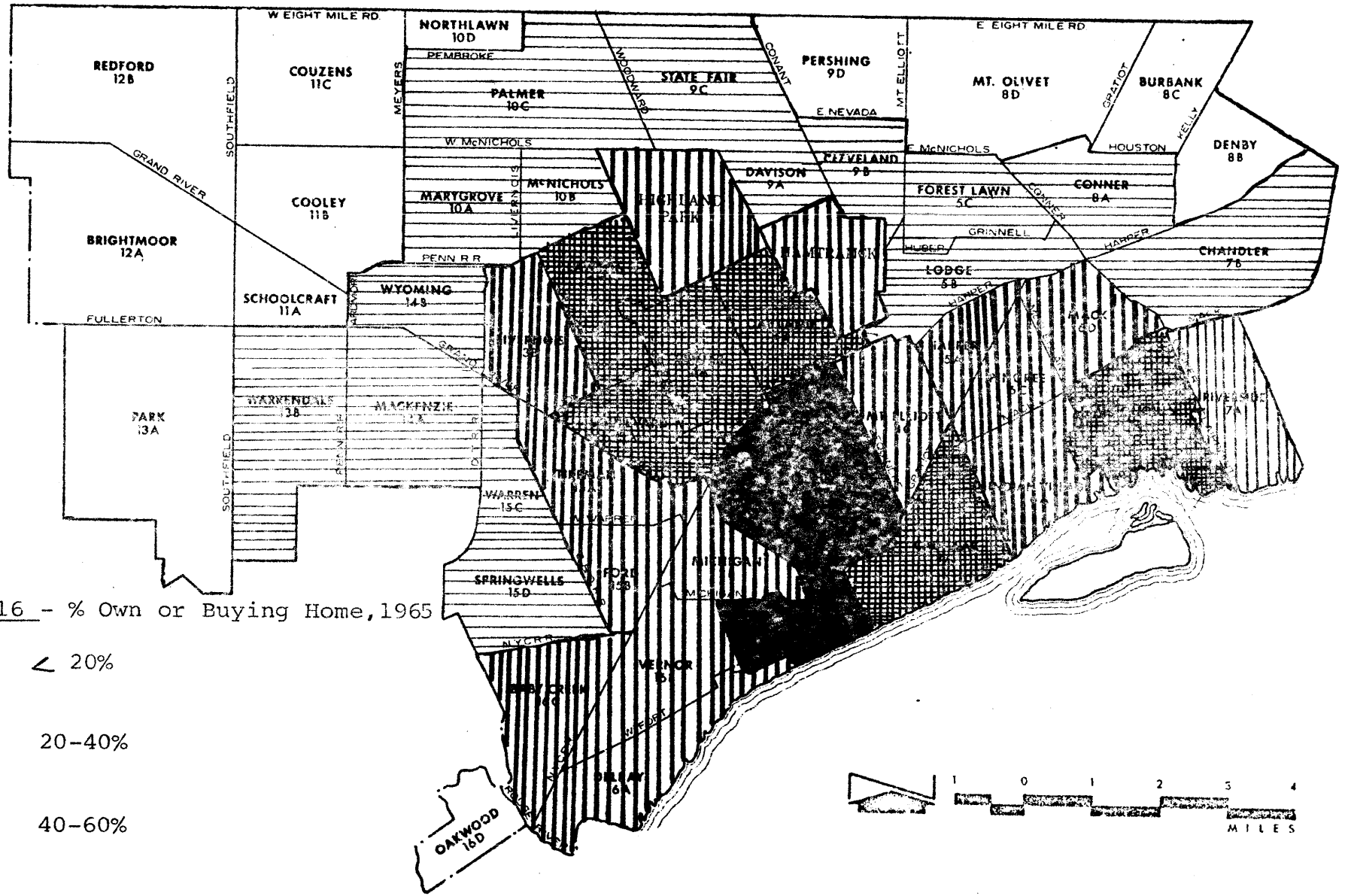


Figure 16 - % Own or Buying Home, 1965

- < 20%
- 20-40%
- 40-60%
- 60-80%
- 80-100%

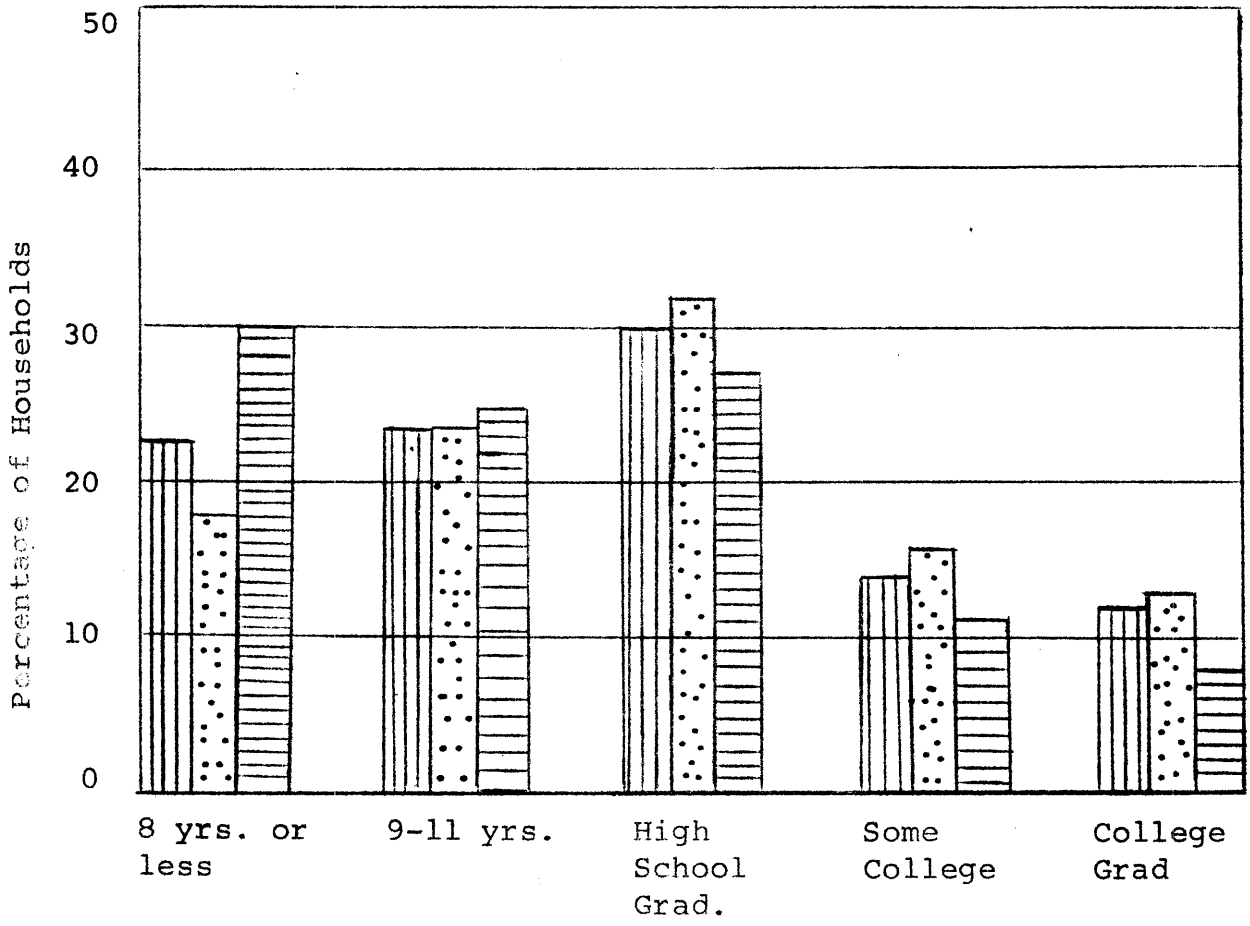
CITY OF DETROIT BY SUBCOMMUNITY

SOURCE: UNITED COMMUNITY SERVICES of METROPOLITAN DETROIT

2.1.4. Educational, Cultural, and Institutional Facilities

The TALUS survey shows quite a difference in the educational backgrounds of the household heads between the city of Detroit, and the suburban Wayne county respective of the SMSA.

Figure 17 - Education of Head of Household, 1965



There are many more households heads with higher education in the suburbs than in the city of Detroit, which automatically means more white-collar jobs and higher incomes in the suburbs.

In some areas of the inner-city more than even 50% of the household heads have had only an education of 8 yrs. or less (Figure 18).

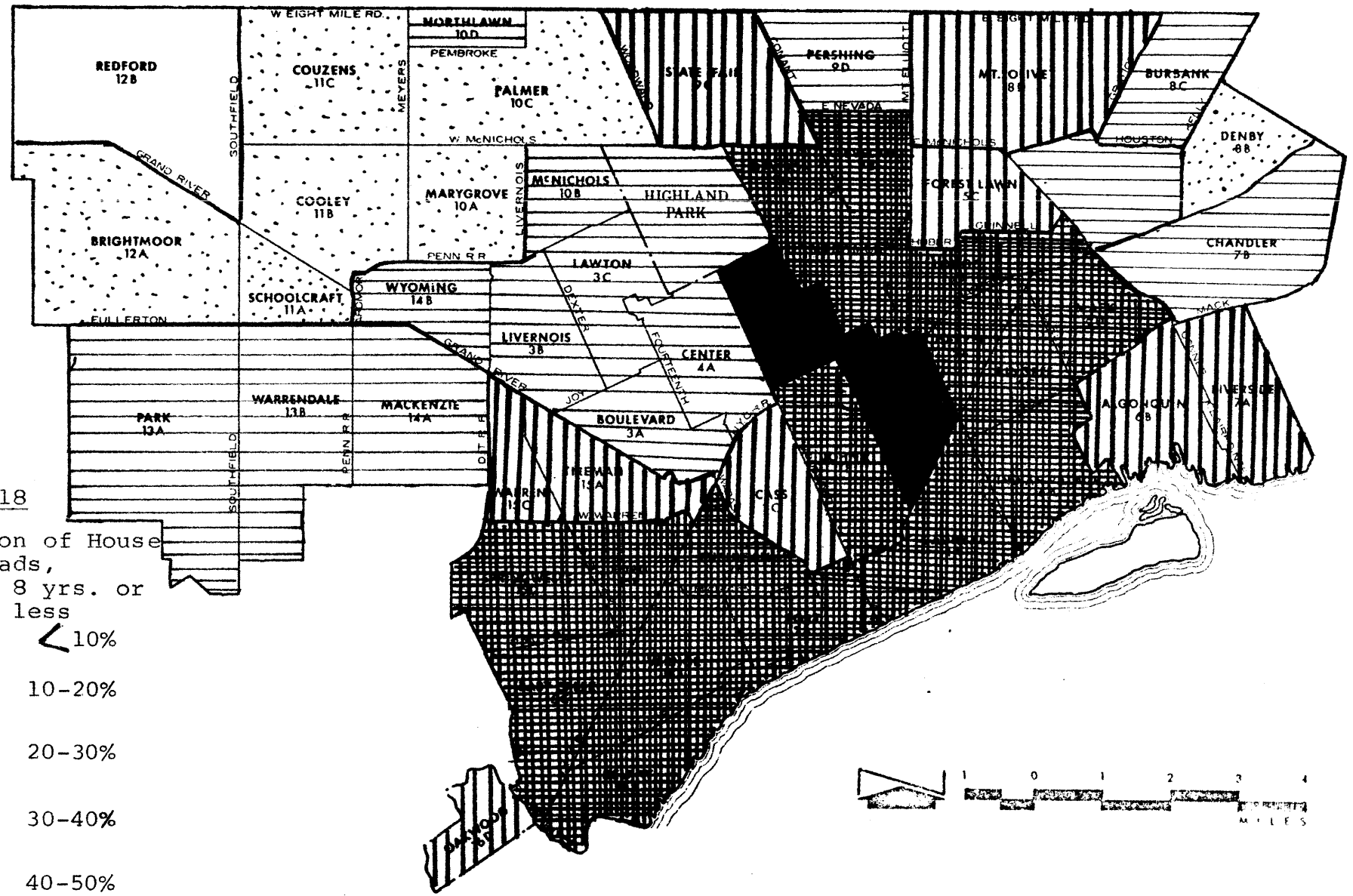


Figure 18

Education of Household Heads, 8 yrs. or less

- < 10%
- 10-20%
- 20-30%
- 30-40%
- 40-50%
- > 50%

CITY OF DETROIT BY SUBCOMMUNITY

SOURCE: UNITED COMMUNITY SERVICES of METROPOLITAN DETROIT

The TALUS-Study is a regional planning study which deals primarily with higher education.

Campuses in Detroit:
Wayne State University
Detroit College of Business
Detroit Institute of Technology
Marygrove College
Mercy College
University of Detroit

The greatest and most varied concentration of cultural offerings is situated in the Detroit Cultural Center:

Detroit Institute of Arts
Detroit Historical Museum
Children's Museum
Detroit Public Library (Main Branch)

The TALUS region offers 103 medical facilities with over 22,500 beds.

Detroit provides 45 medical institutions and 42% of the hospital beds in the region (Wayne County, 70% of the beds).

Detroit hospitals with over 500 beds:

Detroit General Hospital
Harper Hospital
Henry Ford Hospital
Mount Carmel Hospital
St. John Hospital

2.2. The Economy

2.2.1 Economical Growth

The Battelle Institute developed socio-economic models for three levels:

- national
- state
- regional

Table 6 - Manufacturing Employment as a Percent of Total Employment, 1940 - 1990

Year	US	MICH	Detroit Region	New York	Chicago	PA.
1940		38.6%	46%			
1950		41%	45%			
1960	27.1%	38%	41%	26%	35%	36%
1975	23%					
1990			24%			

The estimate percent per annum growth of the gross national product (GNP) is 4.4%, while the productivity growth rate is 3.0% per year. TALUS expects an average unemployment rate of 4.5%. The employment/ population ratio is expected to be .3739.

2.2.2 Employment

TALUS (Battelle) gives two series of employment forecasts:

Series I: Practially no increase in automotive industry because of decentralization of this group over the whole country. Emphasis is on professional and related services, especially education.

Series II: Revision because of new automotive plants built in SMSA in the last few years. More employment in manufacturing, less in professional group.

(TALUS choose Serie I)

Employment by Industry

Industry categories used by TALUS:

Construction:
- Construction
- Agriculture, Forest, and Fisheries
- Mining

DEF

Manufacturing:

Transp./Equip
- Motor Vehicles & Motor Veh. Equip.

Other:
- Furn. & Fixture Manuf. & Lumber & Wood Prod.
- Primary Metals
- Fabricated Metals
- Non-Electrical Machinery Manufacturing
- Electrical Machinery Equipment and Supplies
- Other Durable Goods (Other Transp. Equip, Professional Equip, Other Industries)
- Food & Kindred Products
- Printing, Publishing and Allied Industries
- Chemical and Allied Products
- Other Non-Durable Goods (Paper, Petroleum, Coal Products, Rubber & Plastic Products)

DEF

Transportation, Communications, Utilities:
- Transportation
- Communication
- Utilities and Sanitary Service

Wholesale Trade:
- All business relating to the selling of goods to retailers

Retail Trade:
- All businesses relating to the selling of goods to consumers

Finance, Insurance, and Real Estate:
- Banks
- Credit Agencies and Brokerages
- Insurance Carriers and Agents
- Real Estate Offices

Services:
- Business
- Repair
- Personal
- Entertainment & Recreation

Professional & Related Services:
- Medical Service
- Legal
- Welfare
- Religious
- Public and Private Education

Public Administration:
- Federal, State and Local Administration, (except utilities)

Others:
- Industry not Reported

The industry groups include both white and blue collar jobs.

Table 7 - Employment by Industry 1960-2000
Series I (Series II)
TALUS Region

Ind. Class	1960	1970	1980	1990	2000
Construction	77,167	88,750	101,870	118,670	137,484
Mfg., Trans. Equ.	258,117	258,500	259,100	259,120	262,508
		(287,700)	(299,100)	(307,100)	(307,200)
Mfg. Other	328,311	350,500	363,150	371,570	377,706
		(357,200)	(373,200)	(383,620)	(387,285)
Trans., Comm., Util.	88,310	97,940	111,770	126,720	142,321
Wholesale Trade	45,398	56,800	70,990	88,130	108,064
Retail Trade	216,166	260,480	316,090	376,300	443,645
Fin., Ins., Real Est.	54,768	72,470	97,940	132,590	177,672
Services	120,303	146,060	177,250	213,610	254,608
Prof. & Related	177,232	284,650	479,570	720,020	1,091,700
		(260,800)	(434,600)	(666,000)	(998,400)
Educ. Ser.	79,470	124,070	223,110	321,500	470,436
		(111,400)	(194,200)	(293,500)	(424,200)
Public Admin.	53,663	73,450	100,670	137,270	185,017
Others	55,491	70,400	86,600	106,000	128,204
TOTAL	1,474,926	1,760,000	2,165,000	2,650,000	3,308,929
		(1,772,050)	(2,170,080)	(2,656,010)	(3,270,900)

Table 8 - Employment by Industry as a Percent of Regional Total Employment, 1960-2000

Series I (Series II)

TALUS Region

Industry Class	1960	1970	1980	1990	2000
Construction	5.2	5.0	4.7	4.5	4.2
Mfg.Transp./	17.5	14.7 (16.2)	12.0 (13.8)	9.8 (11.6)	7.9 (9.4)
Mfg. Other	22.3	19.9 (20.2)	16.7 (17.2)	14.0 (14.4)	11.4 (11.8)
Trans, Comm.Util.	6.0	5.6	5.2	4.8	4.3
Wholesale Trade	3.1	3.2	3.3	3.3	3.3
Retail Trade	14.7	14.8	14.6	14.2	13.4
Fin., Ins.Real Es.	3.7	4.1	4.5	5.0	5.4
Services	8.2	8.3	8.2	8.1	7.7
Prof.&Rel.Ser.	12.0	16.2 (14.7)	22.2 (20.0)	27.2 (25.1)	33.0 (30.5)
Education	5.4	7.1 (6.3)	10.3 (8.9)	12.1 (11.1)	14.2 (13.0)
Public Adm.	3.6	4.2	4.7	5.2	5.6
Other	3.8	4.0	4.0	4.0	3.9
Total	100%	100%	100%	100%	100%

Table 9 - Share of Total Employment and Total Population in TALUS Region of Total Employment (Population) in the State of Michigan

Year	Share of Employment	Share of Population	Empl./Pop. SMSA
1940	53.2%	49.7%	.3730
1950	54.7%	52.5%	.3956
1960	54.1%	53.4%	.3531
1990	55.3%	60.5%	.3739

Until 1960 the regional share of employment in the state was larger than the regional share of populations, which means that more people from outside came into the TALUS Region to work. It appears now that for 1990 this trend should reverse.

2.2.3 Labor Force

The occupational groups used by TALUS are:

		DEF
Professional:	• Medical Workers (Salary)	
	• Medical Workers (Self-Employed)	
	• Teachers	
	• Other Professionals	
Farmer & Farm Man:	• Farmer and Farm Manager	
Man., Off., Prop.:	• Managers, Officials, Proprietors	
	• Salaried Managers	
	• Self-Employed Retail	
	• Other Self-Employed	
Cler. & Kindred:	• Clerical & Kindred	
Sales Worker:	• Retail Sales Worker	
	• Other Sales Worker	
Craft., Foremen, & Kindred:	• Craftsmen, Foremen, & Kindred	
Oper.& Kindred:	• Operative & Kindred	
Priv. Household Work:	• Private Household Worker	
Service Workers:	• Cooks, Waitresses	
	• Other Service Workers	
Farm Lab. & Foremen:	• Farm Laborers & Foremen	
Laborers except Farm & Mine:	• Laborers Except Farm and Mine	

Table 10 - Employment by Occupation as a Percent of Regional Total Employment, 1960-2000

Series I (Series II)

TALUS Region

	1960	1970	1980	1990	2000
Professionals	12.4	15.2	18.2	21.8	25.5
		(14.6)	(17.5)	(21.2)	(24.8)
Farm and Farm Manager	.5	.3	.2	.1	.1
Managers, Off. & Proprietors	7.2	7.6	7.9	8.2	8.2
Clerical & Kindred	15.5	17.0	18.3	19.5	20.6
		(16.7)			(20.8)
Sales Worker	7.9	7.8	7.5	7.2	6.7
Craftsman, Foreman and Kindred	15.6	14.4	12.9	11.3	9.7
		(14.8)	(13.4)	(11.8)	(10.1)
Operative & Kindred	21.2	17.8	14.7	12.0	9.7
		(18.6)	(15.4)	(12.5)	(10.1)
Private Household Worker	2.1	1.8	1.6	1.4	1.1
Service Workers	8.8	9.7	10.5	10.9	11.3
		(9.4)	(10.2)	(10.6)	(11.1)
Farm Laborer and Foreman	.3	.2	.2	.1	.1
Laborers Except Farm and Mine	3.8	3.5	3.2	2.7	2.3
Not Reported	4.6	4.7	4.7	5.0	4.7
				(4.5)	(4.3)
TOTAL	100%	100%	100%	100%	100%

B/P

The Manpower Report of the President, by the United States Department of Labor, has four major occupation groups:

1. White Collar Workers
2. Blue Collar Workers
3. Service Workers
4. Farm Workers

DEF

White Collar Occupations:

- Professional Technical and Kindred Workers
- Managers, Officials and Proprietor (excl. farm)

Blue Collar Occupations:

- Craftsmen, Foremen, and Kindred Workers
- Operative and Kindred Workers
- Laborers (excl. farm and mine)

Service Worker Occupations:

- Private Household Workers
- Service Workers (excl. private household workers)

Farm Worker Occupations:

- Farmers and Farm Managers
- Farm Laborers and Foremen

Table 11 - Percentage of Distribution of Employment by Major Occupation Groups, 1960-2000

Series I (Series II)

TALUS Region

	1960	1970	1980	1990	2000
White Collar	45.1	49.9	54.6	59.6	64.0
		(48.8)	(53.7)	(58.9)	(63.4)
Blue Collar	42.7	37.5	32.4	27.3	22.8
		(38.8)	(33.5)	(28.3)	(23.6)
Service Worker	11.4	12.1	12.7	12.9	13.0
		(11.8)	(12.4)	(12.6)	(12.8)
Farm Worker	.8	.5	.4	.2	.2

B/P

There are two definitions for the division of the employment in only white and blue collar workers:

Battelle Def.: Service Workers and Farm Managers Included in White Collar Occupations.

TALUS Def.: Service Workers are Included in Blue Collar; Farm Workers in White Collar.

DEF

Figure 19 - Percentage Distribution of Employment by Major Occupation Groups, 1960-2000, Serie 1, TALUS Region

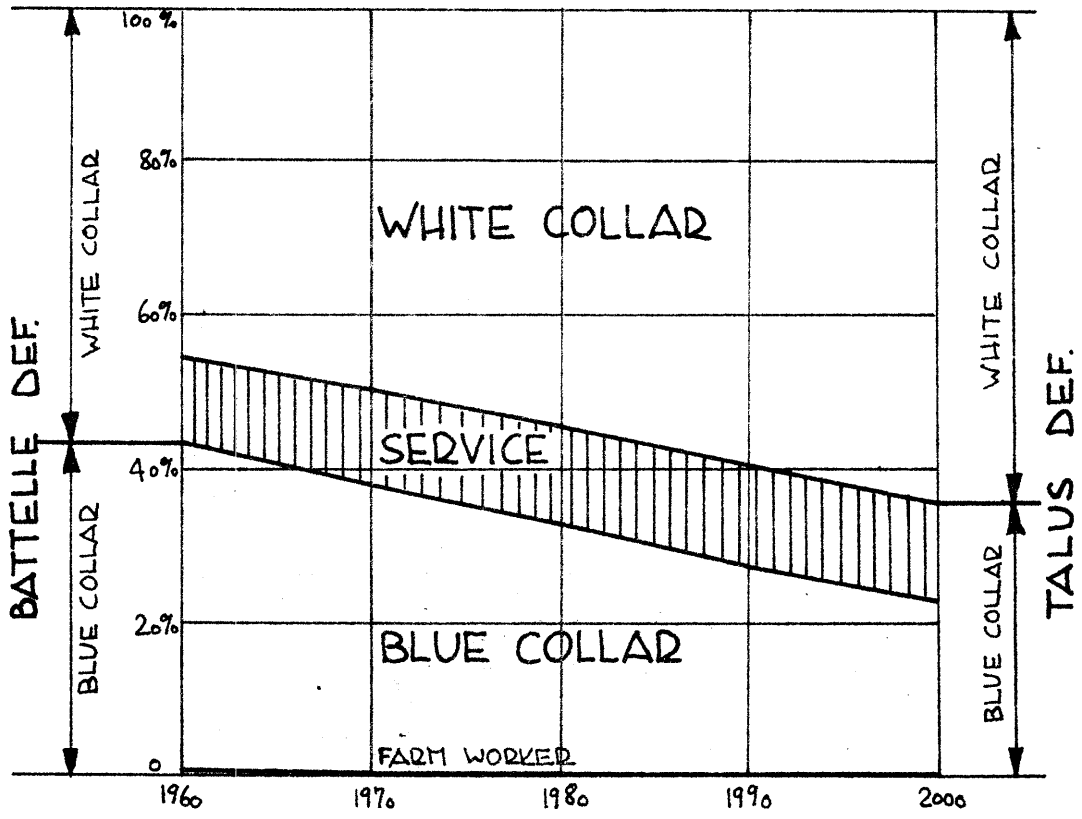


Table 12 - Projection of Percentage of White Collar and Blue Collar Workers, 1960-2000, Serie I, TALUS Region

YEAR	BATTELLE		TALUS	
	White C.	Blue C.	White C.	Blue C.
1960	57.0	43.6	45.7	54.3
1970	62.4	37.6	50.3	49.7
1980	67.5	32.5	54.8	45.2
1990	72.6	27.4	59.7	40.3
2000	77.1	22.9	64.1	35.9

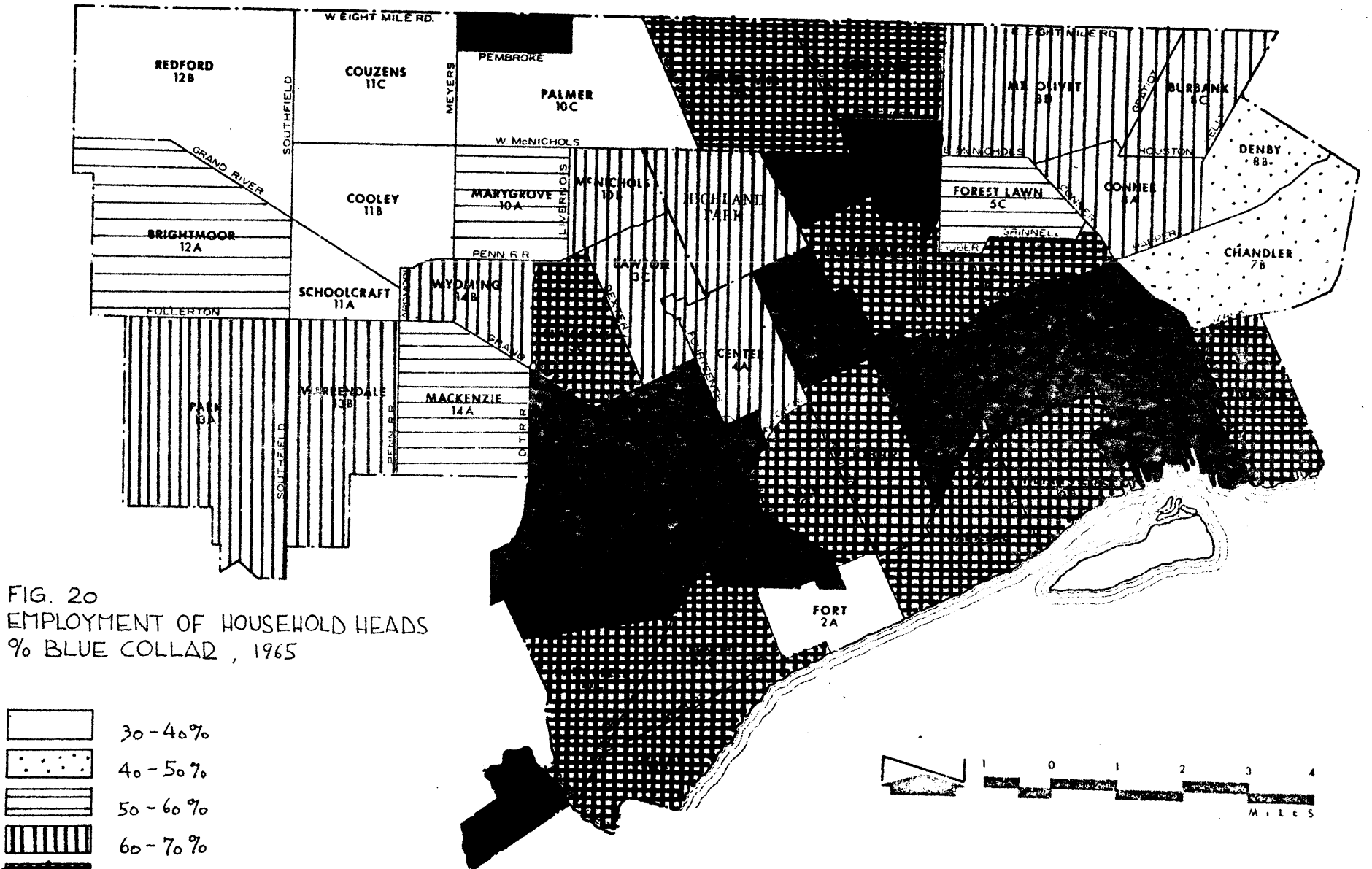


FIG. 20
EMPLOYMENT OF HOUSEHOLD HEADS
% BLUE COLLAR, 1965

30 - 40%
40 - 50%
50 - 60%
60 - 70%
70 - 80%
> 80%

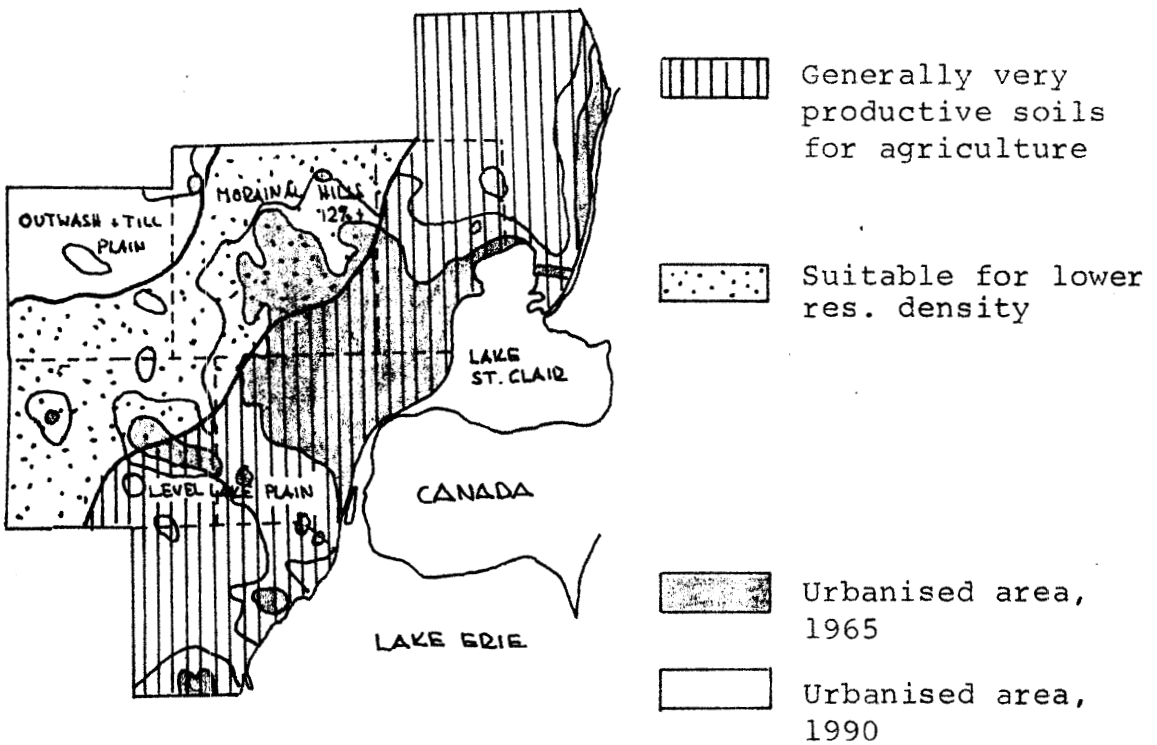
CITY OF DETROIT BY SUBCOMMUNITY

SOURCE: UNITED COMMUNITY SERVICES of METROPOLITAN DETROIT

2.3. Land Use

2.3.1 Topography, Soils, and Water Resources

Figure 21- Topography



The construction of transportation networks is costly where slopes exceed 3%.

Figure 22 - Soils

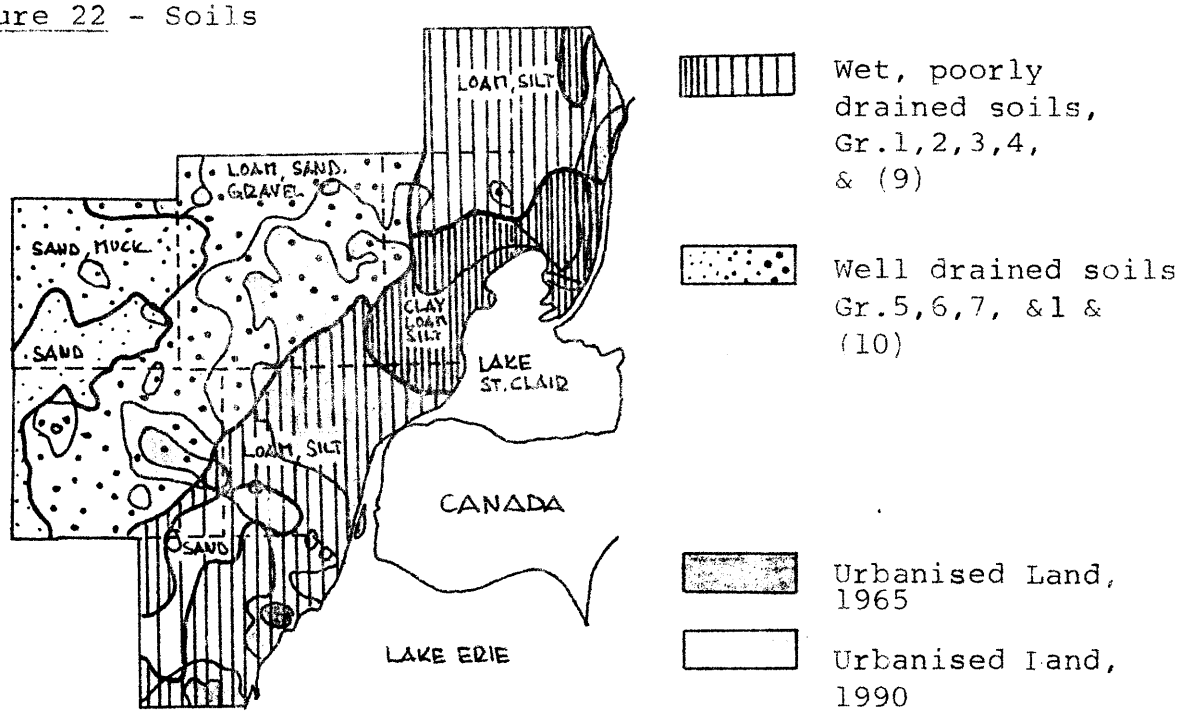
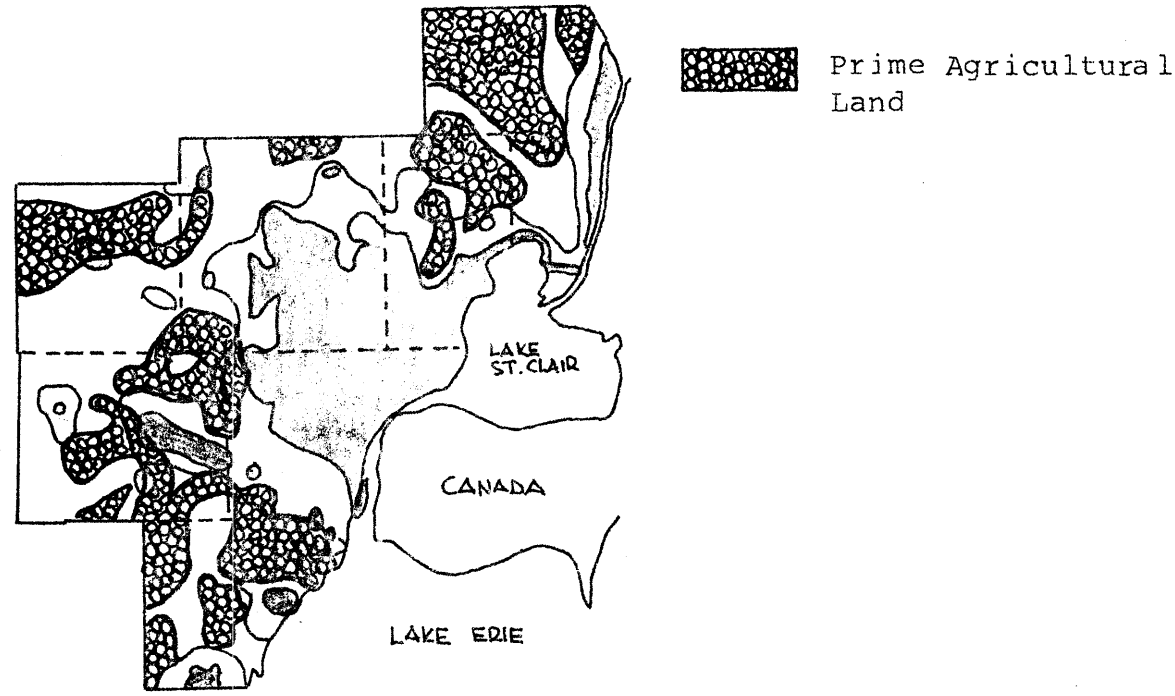


Figure 23 - Prime Agricultural Land

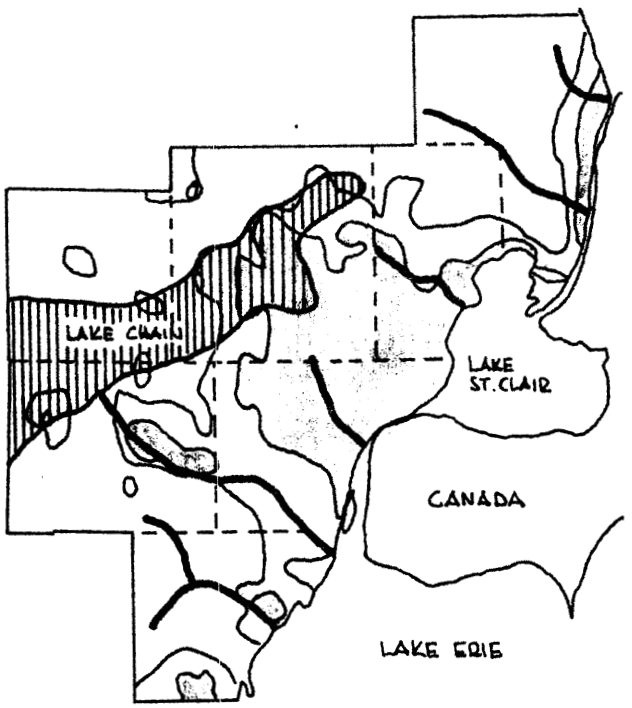


Total land in the region

		Sq.Miles
		4,571
Urbanised Land 65	802	
Excellent Agricultural Land	1,050	
Prime Natural Resource Land	394	
	2,246	2,246

Available land for urbanization 2,325

Figure 24 - Water Resources



More and more urban development will spread out into the lake chain, which automatically means a higher danger of water pollution.

2.3.2. Open Space and Recreation

Open Space Area in TALUS Region, 1990	1,682 sq. miles
Prime Agricultural Land, 1990	1,050 sq. miles
Major Recreation and Conservation Land	632 sq. miles

Four basic policy directions for open space programs:

1. Prime agriculture land in use and based on soils should remain
2. No development of flood plains
3. Land use along waters should be, where possible, functional open space
4. All lands with unique natural features, water bodies, abundant vegetation or steep slopes, should be preserved as prime resource lands.

FIG. 25
OPEN LAND

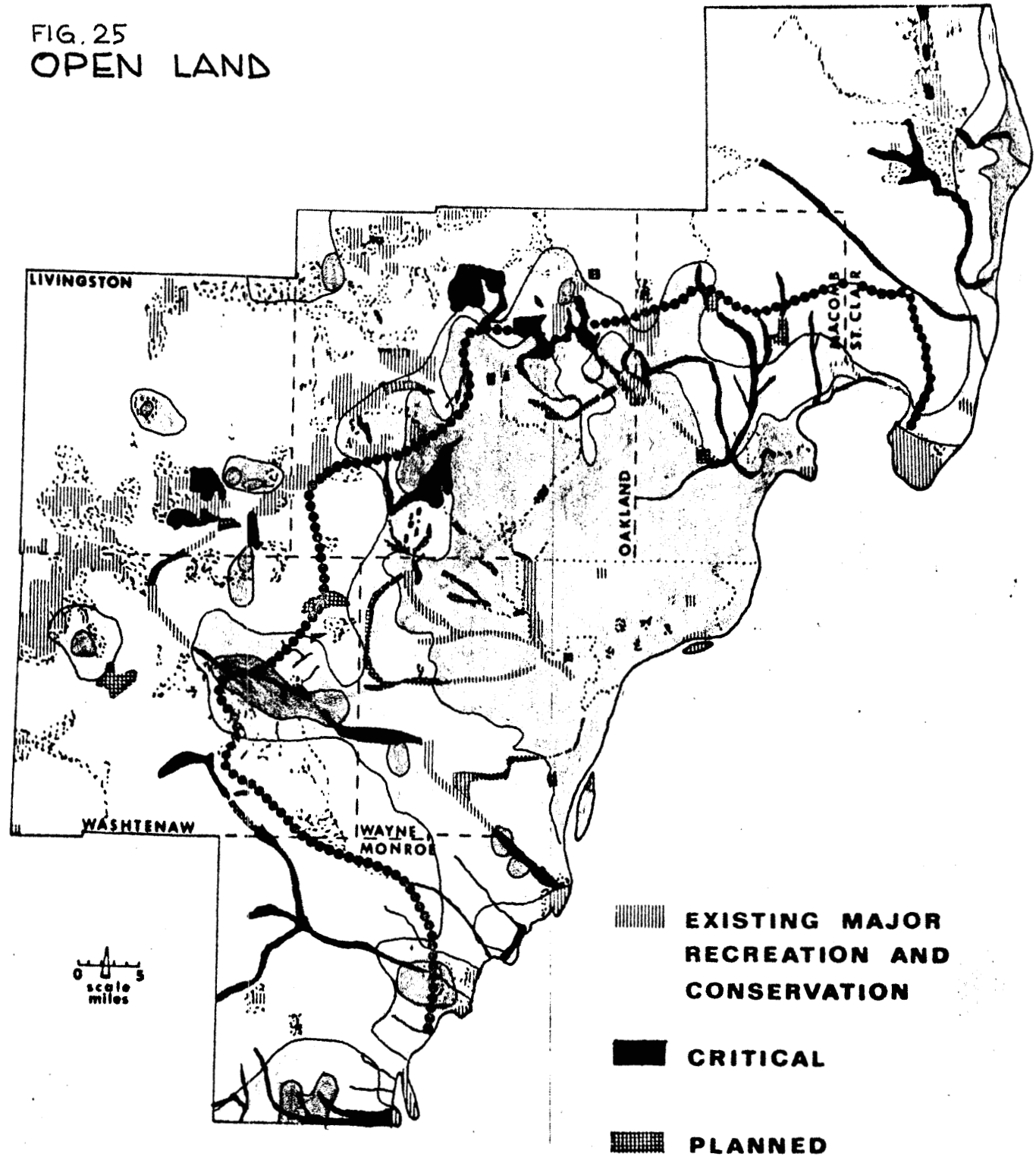


Table 13 - Great Lakes Shorelines

	Total	Public	% Public
Region	195 miles	80 miles	42%
City of Detroit	18 miles	6 miles	33%

Without Belle Isle, the city of Detroit has only 4 miles of public shoreline.

2.3.3 Land Use

Land Use Categories:

DEF

Residential - includes all one- and two-family, multiple and transient housing types

Commercial - all retail, wholesale, office, service, hotel/motel and indoor recreational functions classified as privately-owned

Industrial - all manufacturing and industrially-oriented non-manufacturing activities involved with durable and non-durable production and processing, warehousing, refining, storage and open yard uses

Public/Semi-Public - all institutional (educational, cultural, hospital and church and government functions); transportation facilities, communications and utilities functions and cemeteries

Recreational - all public and privately-owned outdoor and recreation areas

Extractive - all natural resource surface mining quarrying activity areas

Vacant-Agricultural - all non-residential, agriculturally-oriented, undeveloped land areas

Water Areas - all bodies of water determined as relatively permanent in character

Table 14 - Land Use in Region; SMSA, Outer Counties, Wayne County and City of Detroit, 1965

	TALUS REGION	SMSA (Det. incl.)	4 OUTER COUNTIES	WAYNE COUNTY	CITY OF DETROIT
Gross Area, sq.mi.	4,571.6	1,977.8	2,593.8	609.6	140.0
%	100.0	43.3	56.7		3.1
Devel. Land, sq.mi.	985.6	690.7	294.9	333.0	128.2
%	100.0	70.1	29.9	33.8	13.0
% of gross area	21.6	34.9	11.4	54.6	91.6
Residential, sq.mi.	535.1	400.2	134.9	199.6	84.0
%	100.0	74.8	25.2	37.3	15.7
Commercial, sq.mi.	56.4	42.1	14.3	21.6	9.2
%	100.0	74.6	25.4	38.3	16.3
Industrial, sq.mi.	84.5	63.1	21.4	35.5	13.4
%	100.0	74.7	25.3	42.0	15.9
Public Land, sq.mi.	126.0	88.9	37.1	48.2	11.9
%	100.0	70.6	29.4	38.3	9.4
Recreational Land, sq.mi.	183.6	96.4	87.2	28.1	9.7
%	100.0	52.5	47.5	15.3	5.3
Vacant, sq. mi.	3,426.5	1,223.3	2,203.3	267.3	10.3
%	100.0	35.8	64.2	7.8	0.3

Between 1953 and 1965 we can find the largest increase of residential land in the SMSA in suburban areas. The concentration of growth occurs within 25 miles of the center of Detroit. The strongest directional thrust has been to the north and west, in Detroit between Woodward and Grand River, in Southfield, in Lathrup Village, Farmington, Bloomfield, West Bloomfield, Commerce, Waterford, etc.

Commercial development was mainly following the residential patterns especially to Oakland (Northland), Macomb, and western Wayne County.

Industrial development growth has occurred to the north and south of Detroit. The southerly-oriented growth area includes the "Downriver" Wayne County industries, while the northern sector comprises development in the Mound-Van Dyke corridor. Automotive research and testing land is classified as industrial.

Table 15 - Land Use Per 1,000 Pop., TALUS Region, 1965, SMSA and City of Detroit

	TALUS REGION	SMSA (Det. incl.)		CITY OF DETROIT
Residential acres/1,000 pop.	77.2	63.8		34.1
m^2/P	309	255		136
% (Reg. = 100%)	100	82.6		44.2
Commercial acres/1,000 pop.	8.1	6.7		3.7
m^2/P	32	27		15
%	100	82.7		45.7
Industrial acres/1,000 pop.	12.2	10.1		5.4
m^2/P	49	40		22
%	100	82.8		44.3
Public acres/1,000 pop.	18.1	14.2		5.0
m^2/P	72	57		20
%	100	78.5		27.6
Recreational acres/1,000 pop.	26.5	15.4		3.9
m^2/P	106	62		16
%	100	58.1		14.7
Total: acres/1,000 pop.	142.1	110.2		52.1
m^2/P	568	441		209
%	100	77.6		36.8

2.4 Sewer and Water Facilities

2.4.1. Sewer Service

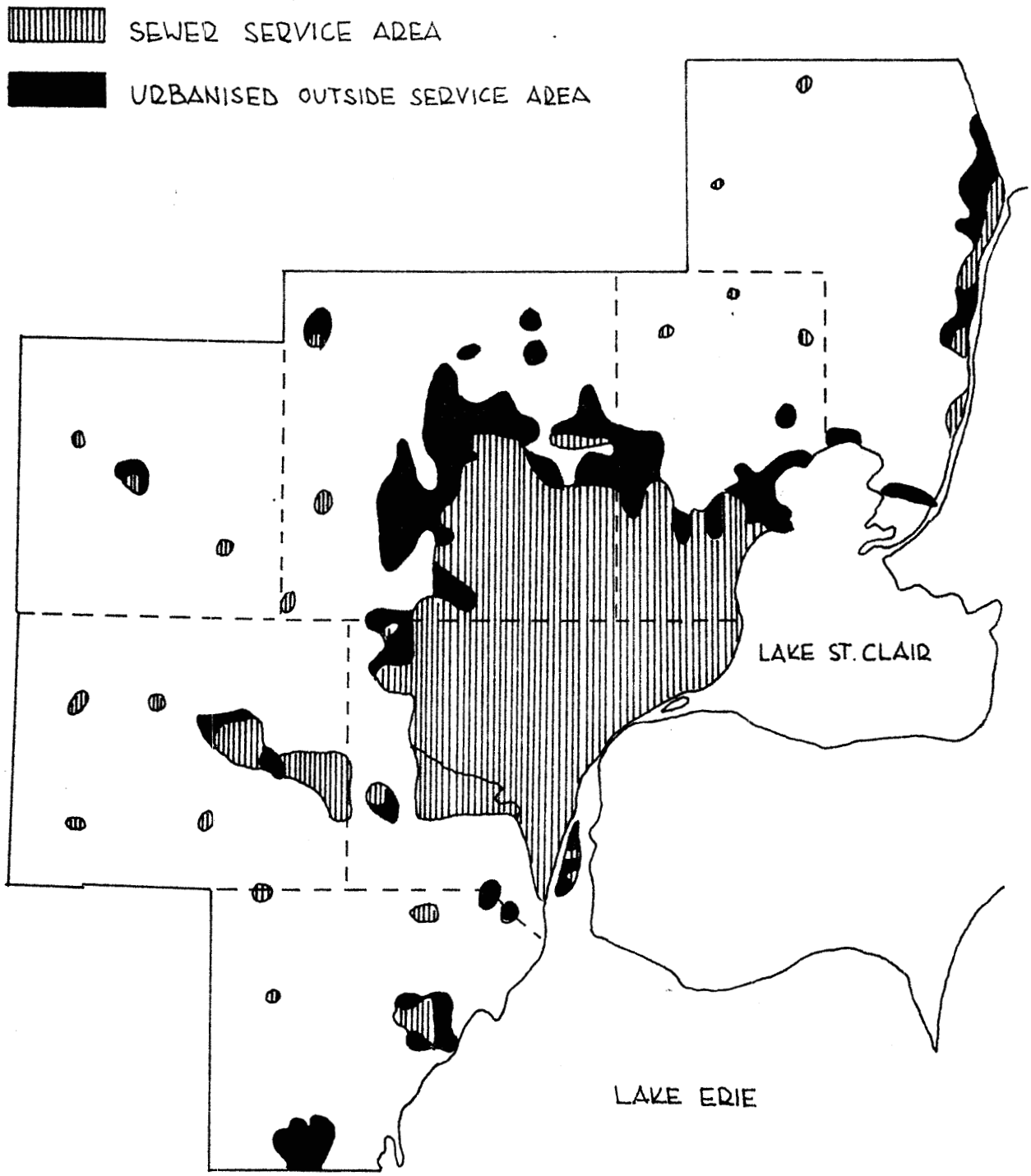
The city of Detroit and parts of the surrounding areas of Wayne, Oakland and Macomb counties have a well established sewer service system consisting of collection and disposal facilities. It is divided into several service districts.

Outside this major population center there are some independently-operated systems for small areas. But not all small streams in the region have the necessary flow for the assimilation of wastes from the existing waste water treatment plants. The remainder of the developed area has mostly private septic tank systems which do not work sufficiently and should be replaced in the future.

Figure 23 illustrates clearly the areas which were not included in a collection and treatment system in 1965.

The 1990 Land Use Plan is much more related to the sewer service area compared to the 1965 situation. In the future practically all developments are to be included in a system of collecting, treatment and disposal facilities.

FIG. 26
SEWER SERVICE AREA 1965



2.4.2 Water Service

Water supply will never be a big problem in the southeast region of Michigan because there are--besides Lake Huron--a great number of wells which make large quantities of water available.

The largest water system in the TALUS region is the Detroit Water System which not only serves the city of Detroit, but also large parts of Wayne, Oakland, and Macomb counties--in all, a total of about 3,600,000 persons.

A new region-wide water supply system, the Lake Huron-Flint Project, will be able, together with the existing system, to serve the region for the next fifty years.

Figure 27 - Lake Huron-Flint Water Supply System

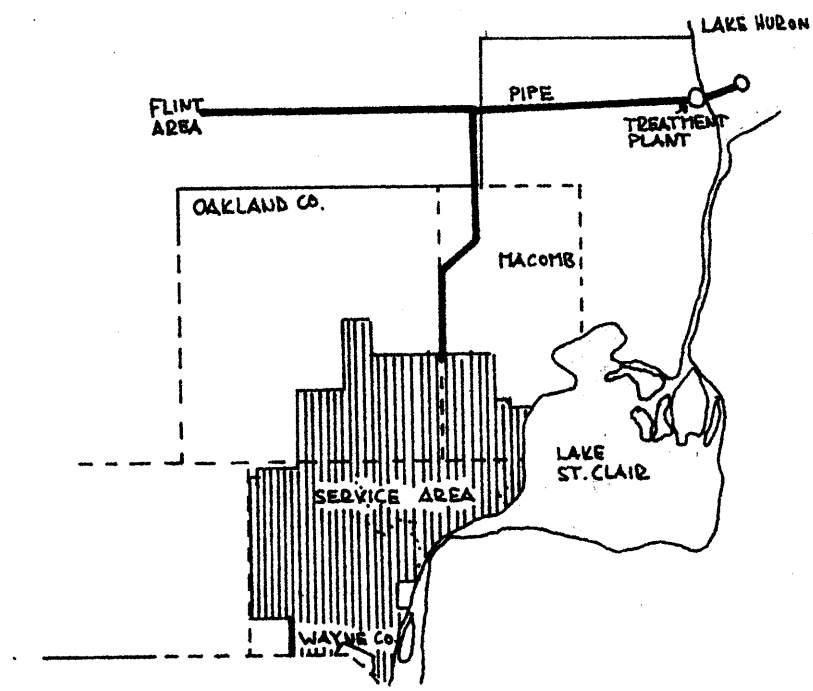
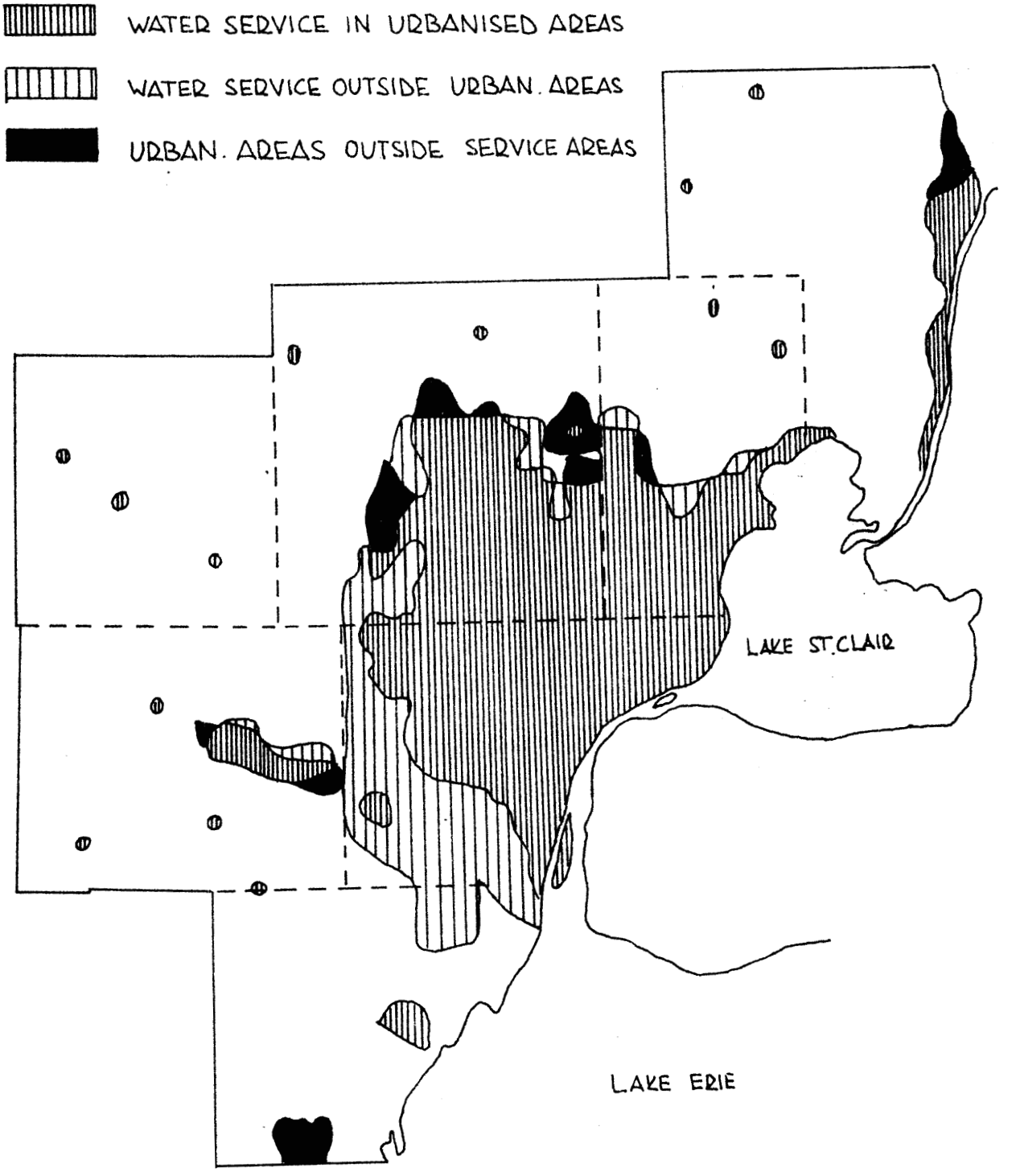


FIG. 28
WATER SERVICE AREAS 1965



2.5 Transportation

2.5.1. Travel Characteristics

A complete origin destination survey (OD survey) of travel in the study area was made between August, 1965 and February, 1966. The survey was composed of three parts:

- Home Interview Study

  Survey with 4% samples to determine the existing travel demand and for developing a model to estimate the future travel demand.

  Information about trips made by household members; mode; purpose; time; origin and destination; land use, etc. At the same time some information about the household members like age, sex, race, income, occupation, auto availability, etc.

- External Survey

  Interviews made at 43 locations with an overall sampling rate of 46.4 % to get information about trips made by persons who live outside the study area.

- Truck-Taxi Survey

  For information about travel patterns of trucks and taxis, like origin and destination, purpose, etc. 12.5% samples for heavy, 4.2% for light vehicles.

Accuracy checks on the reporting of trips were made for both auto and transit trips:

- Accuracy Checks for Auto Trips:

  - Screenline checks
    Special counts to compare with the trips reported in the O-D Survey

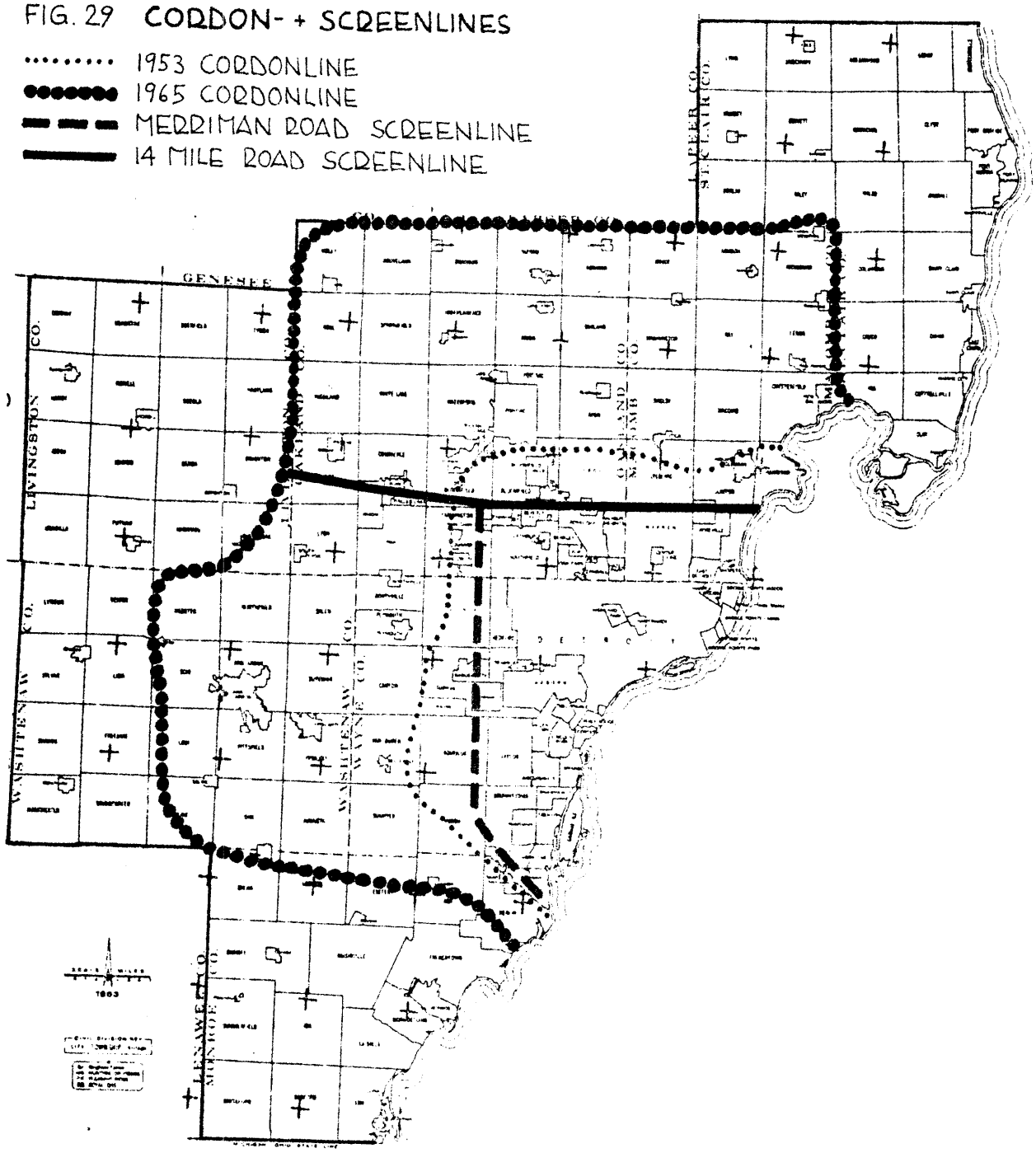
  - Auxiliary Screenline
    Counts on 63 screenlines to evaluate the distribution of the reported trips

  - Vehicle miles of travel (VMT)

- Accuracy Checks for Transit Trips:

  - Comparison of bus passenger screenline crossings and the total number of bus passenger with independent estimates.

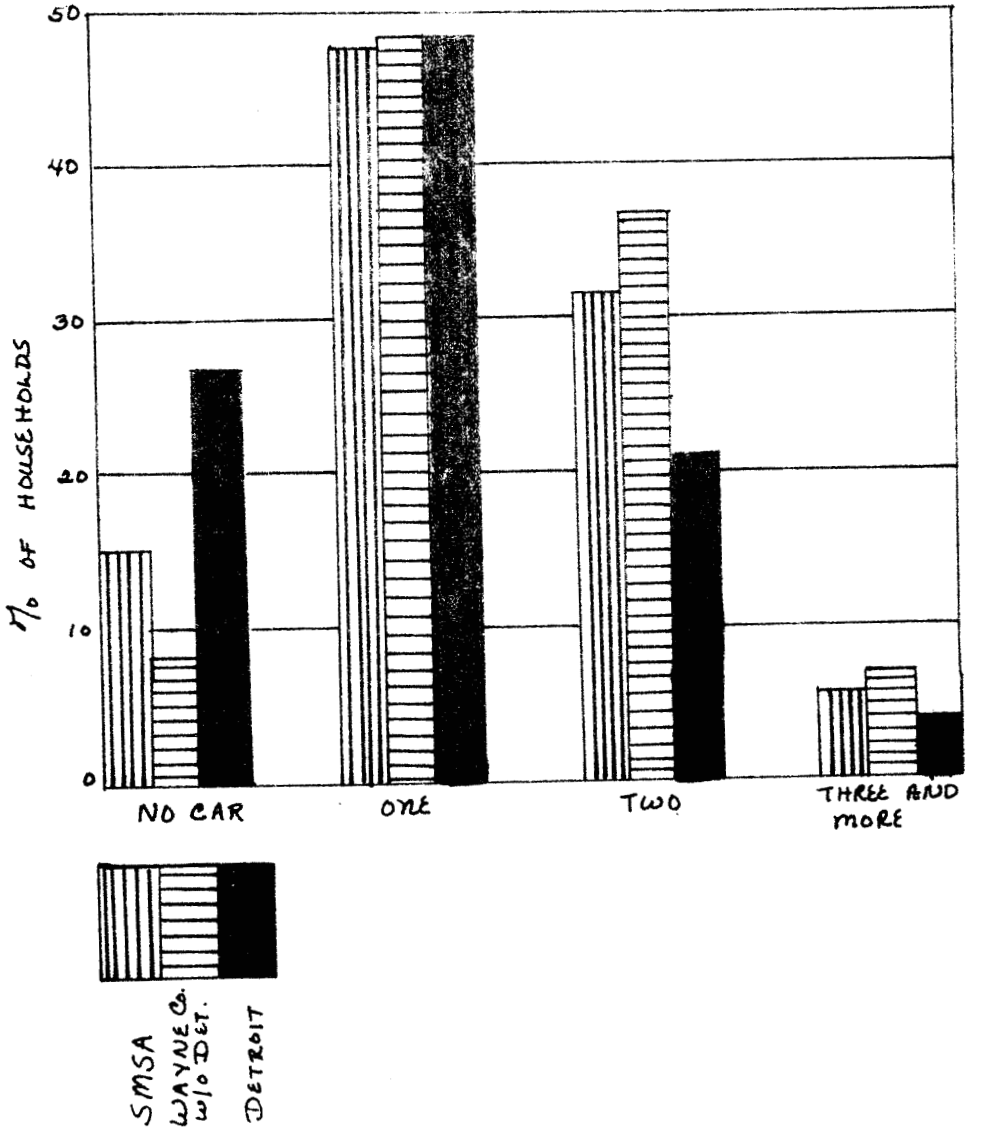
FIG. 29 CORDON- + SCREENLINES



Trip Generation

From 1953 to 1965 the number of trips per household increased 15.9 percent to 8.67 trips. Almost all of the increase can be explained by the increase in auto ownership which rose from .285 autos per person in 1953 to .353 autos per person in 1965 (or 2.83 persons per auto). The largest increase can, of course, be seen in the suburbs, where we can find the most rapid rise in incomes. The survey also showed that auto availability was 8.6 percent higher than auto ownership.

Figure 30 - Car Availability, 1965 - SMSA, Suburban Wayne, City of Det.



In contrast to the high average of car availability in the region, there are also areas in the inner city where we can find a surprisingly high percentage of households without a car, which are ranging to more than 60%. (Figure 31)
A very interesting relationship can be found between the number of person trips generated and income because the latter has its influence on auto ownership and residential location (see Figure 32, and Figure 13).

Trip Purpose

A large portion of the trips, about 78%, begin or end at home.

Table 16 - Trips by Purpose, 1965

Purpose		% Trips	Length Miles
Home-Based-Work		21.6	8.9
	Personal Business	16.8	4.4
	Social-Recreation	16.3	6.1
	Shop.	15.0	3.3
	School	8.3	3.9
Non-Home-Based		22.0	4.8
TOTAL		100.0	

Important for peak hours are especially the home-based-work trips because of their concentration and length. But for certain streets, the social-recreation trips may also create congestion.

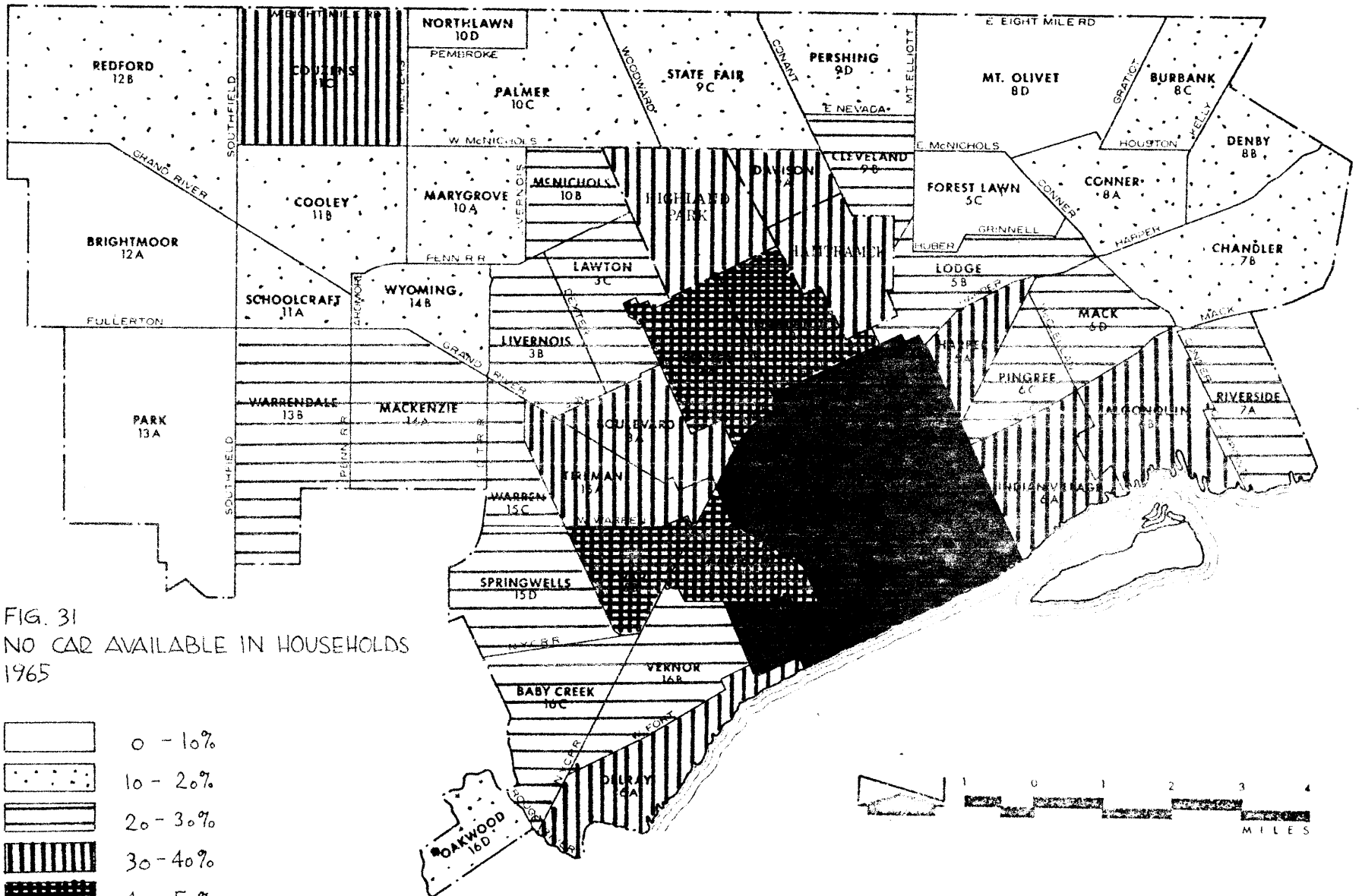


FIG. 31
NO CAR AVAILABLE IN HOUSEHOLDS
1965

0 - 10%
10 - 20%
20 - 30%
30 - 40%
40 - 50%
50 - 70%

CITY OF DETROIT BY SUBCOMMUNITY

SOURCE: UNITED COMMUNITY SERVICES of METROPOLITAN DETROIT

FIG. 32
AVERAGE DAILY TRIPS
PER HOUSEHOLD, 1965

<2
2-4
4-6
6-8
8-10

CITY OF DETROIT BY SUBCOMMUNITY

SOURCE: UNITED COMMUNITY SERVICES of METROPOLITAN DETROIT

Mode Choice

91% of all trips in 1965 were made by private automobile.

Table 17 - Trips by Mode, 1965

Mode	% Trips
Auto Driver	61.9
Auto Passenger	29.5
Bus Passenger	4.6
Other	4.0
TOTAL	100.0

Transit accounted for eight percent of all home-based work trips and 36 percent of CBD home-based work trips.

Where no automobile was available 63.4 percent of all the work trips were by transit.

Automobile Occupancy

Social-recreation and school trips have the highest auto occupancy levels while work and personal business trips have the lowest.

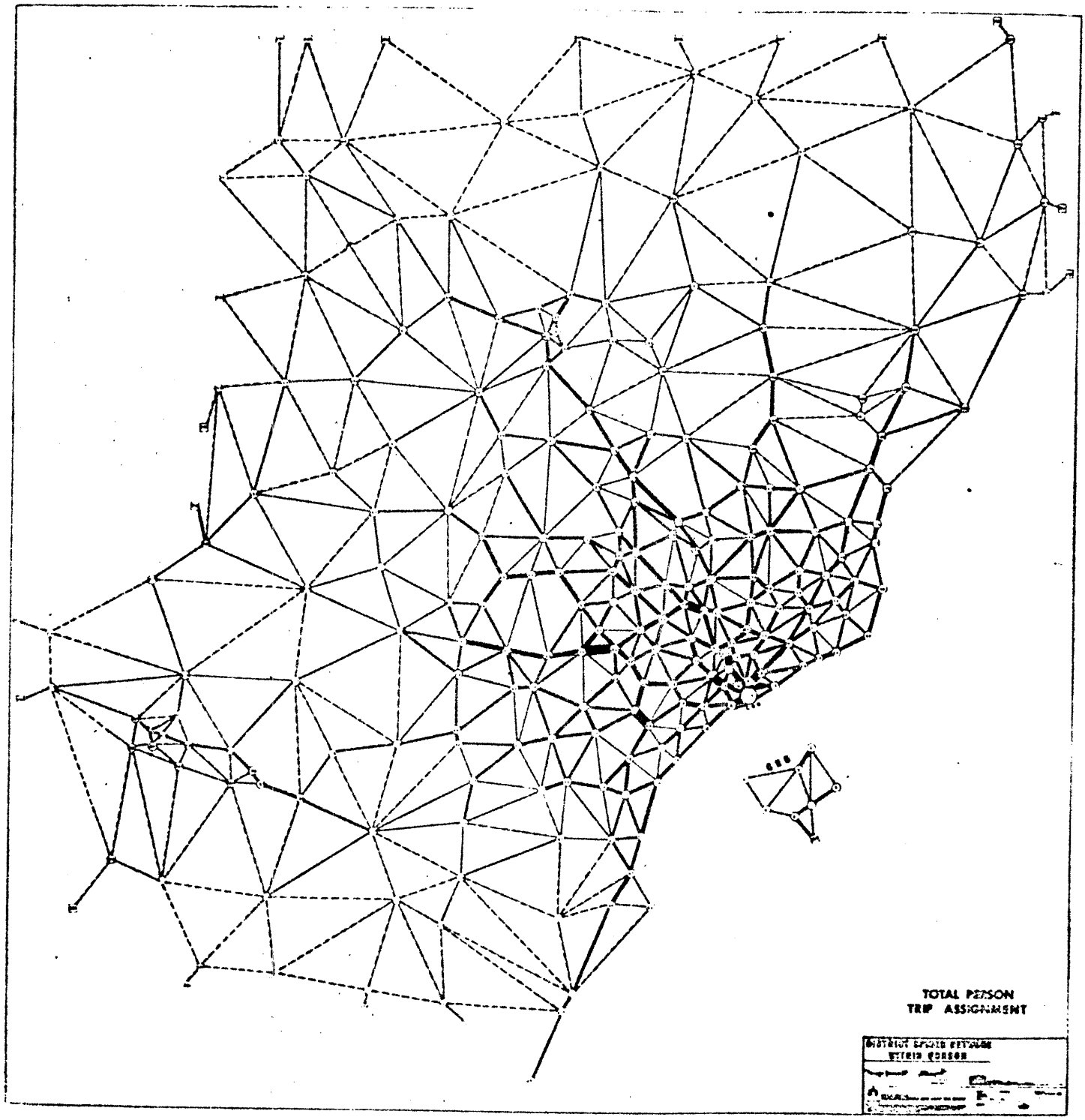
Table 18 - Average Automobile Occupancy by General Purpose (Internal Trips Only)

Trip Purpose		Average Occupancy
Home-Based Work		1.19
	Pers. Business	1.29
	Soc. Rec.	2.31
	Shop	1.39
	School	3.49
Non-Home-Based		1.46

Trip Assignment

The total person trip assignment on a hypothetical transportation network (Figure 30) shows the highest concentration within three miles of the CBD with a few high density links six to eight miles out. Almost one-third of the person trips in the study area either begin or end in the city of Detroit, which means that Detroit still is the major activity center in the urban area.

Fig. 33 Total Person Trip Assignment



Travel Time

Freeway construction and arterial street improvements between 1953 and 1965 have decreased travel time and thus increased the travel distance possible in a given amount of time (Figure 34).

Time Distribution of Travel

Peeks occur in the morning, at mid-day and in the afternoon with the latter being the largest.

Table 19 - Person Trips by Mode and Trip Purpose, 1965

Mode	Home Based					Non-Home Based	Total
	Work	Per. Bus.	Soc. Rec.	Shop	School		
Auto Driver	23.4	20.2	11.1	16.9	1.8	23.7	100.
Auto Pass.	10.7	12.6	30.6	13.7	9.3	23.1	100.
Bus. Pass.	38.8	9.4	6.2	10.3	28.3	7.1	100.
Other	10.1	2.8	2.5	1.2	78.5	5.1	100.

Table 19, cont'd

Mode	Work	Per. Bus.	Soc. Rec.	Shop	School	Total
Auto Driver	75.4	74.7	42.2	69.6	13.2	66.6
Auto Pass.	14.5	22.1	55.4	26.9	33.0	30.9
Bus Pass	8.2	2.6	1.7	3.2	15.7	1.5
Other	1.9	.7	.6	.0	38.0	.9
Total	100.	100.	100.	100.	100.	100.

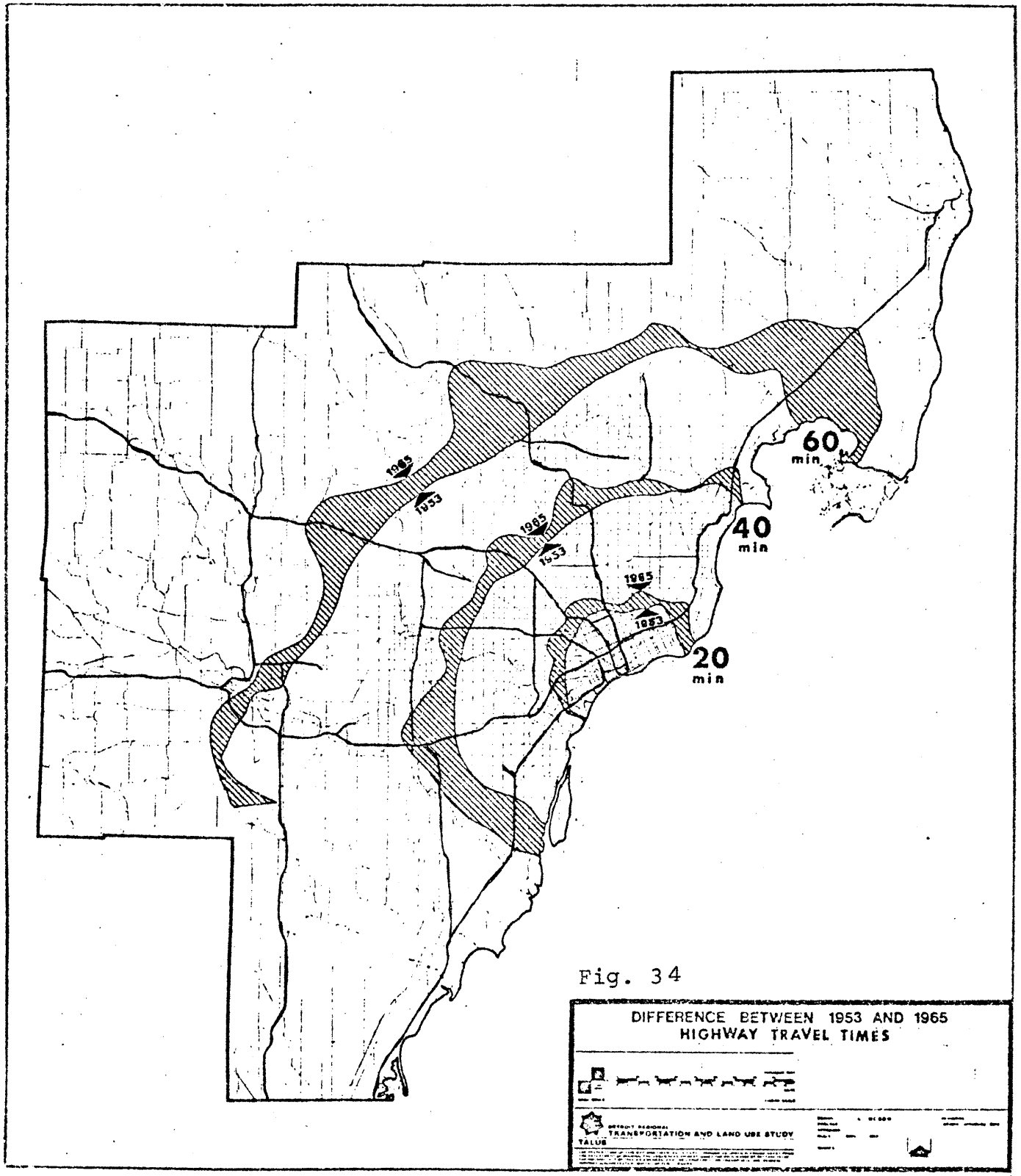

60 min
40 min
20 min
1965
1953
1965
1953
1965
1953
DIFFERENCE BETWEEN 1953 AND 1965
HIGHWAY TRAVEL TIMES
DETROIT REGIONAL TRANSPORTATION AND LAND USE STUDY
TALUS

Fig. 34

2.5.2. Streets and Highways

Street Use Function

1965 network of all roads of regional significance

trunklines (including freeways)	1200 miles
county roads	3400 miles
major city streets	800 miles
	5400 miles

Generalized Functional Classification Criteria

Freeways - Serve longer intra-regional and through-trips with the following characteristics:

- Full limited access
- Minimum desirable trip length of 5 miles
- Speed assumption 40 to 65 miles per hour

Major Arterial - Provide limited land service with some through movement considerations

- Six or more continuous traffic lanes
- At least 16,000 vehicles per day over 5 miles
- Speed assumption 30 to 50 miles per hour

Intermediate Arterial - Provide intra-regional traffic movement with moderate emphasis on land service

- Four or more traffic lanes
- Minimum of 8,000 vehicles per day

- Speeds 20 to 45 miles per hour
- State trunkline routes not classified as major arterials

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Minor Arterials - Acting as connector links to the remainder of the arterial system while providing a moderate level of land access.

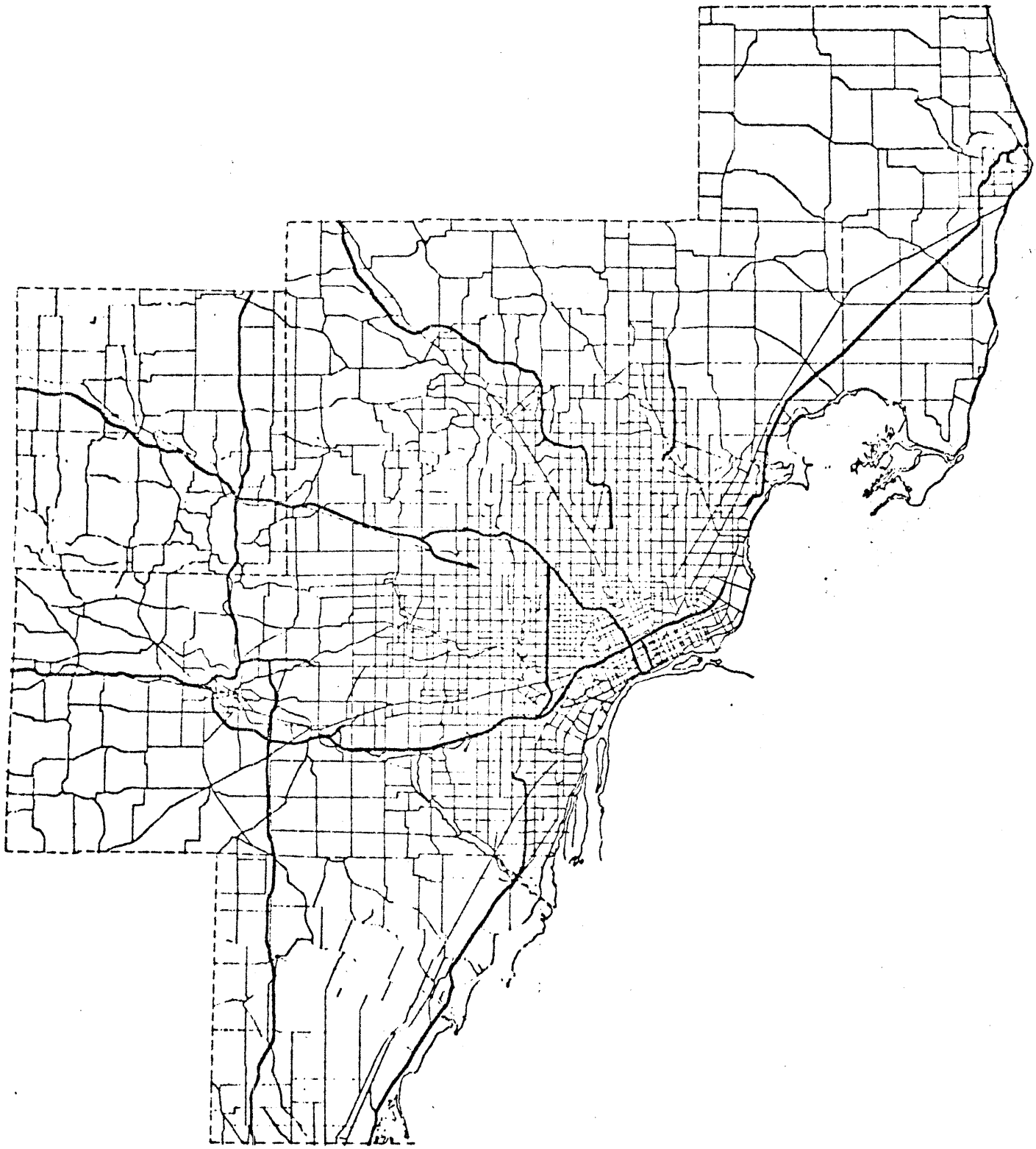
- Speed 20 to 40 miles per hour

Approximately 22% of the vehicle miles of travel (VMT) were on the freeways, 25% on the major arterials, and 45% on the intermediate and minor arterials.

Supplementing the freeway system are the major arterials forming a combined radial-grid pattern. Fort Street, Michigan, Grand River, Woodward, Gratiot, and Jefferson Avenue from the basic radial major arterial system serving the regional core area.

Fig. 35

1965 Assignment Network (Freeways and Arterials)



DEF

Service Deficiencies

Service Definitions:

Measures of the performance provided by the highway system is the ratio of the counted traffic volume on the road to its vehicular capacity

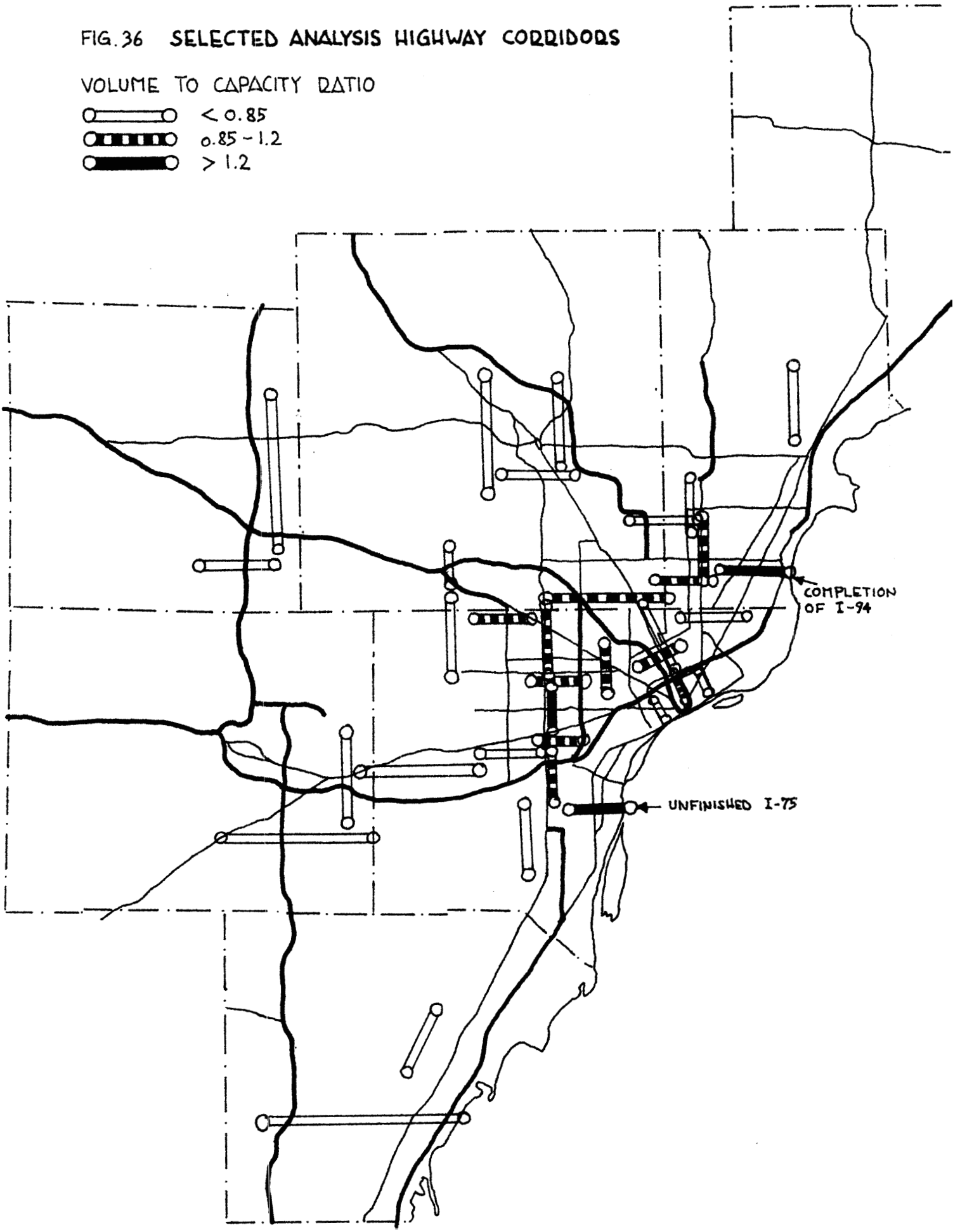
< 0.80 - 0.85	freely flowing traffic and good service
0.85 - 1.20	Frequent peak-period congestion and more difficult driving conditions
> 1.20	frequent mid-day congestion, slow speeds and unpleasant driving conditions

The Highway Capacity Manual 1965, Bureau of Public Roads, defines levels of service from "A" - " condition of free flow, with low volumes and high speeds," to level "F" - "a forced flow condition, where volumes exceed capacity and speeds are intolerably low."

Capacity calculations for TALUS 1965 assignment network assumed level of service "C" -"a condition at which substantial volumes can be carried at reasonable operating speeds."

In general, the existing highway network provides a better than average level of service to the region, with a few exceptions, where freeways are under construction or completion.

FIG. 36 SELECTED ANALYSIS HIGHWAY CORRIDORS



Financial Aspects

There are three groups of funds for highway construction and operation:

Raised by the Federal Government and transferred to the State

Raised by the State

Raised by local governments

Most of the funds are from gasoline taxes and registration taxes. Besides these user charges, there are federal aid payments, and borrowings.

Additional highway funds are available through the cities and villages but except for the city of Detroit, only a small portion of the municipal funds are expended on the freeway and major arterial systems.

2.5.3. Mass Transit

Services:

Mass transit in the region is provided by the following companies:

— Rail Service:

- Grand Trunk Western Railroad, Detroit-Pontiac

— Bus Service:

- Detroit Department of Street Railways (DSR) serves mainly the city of Detroit
- Three major, privately-owned companies: Great Lakes Transit Corporation, Lake Shore Coach Lines, and Metropolitan Transit, Inc., connect suburban areas with the central city
- Pontiac Transit Corporation, providing intra-community service in Pontiac
- Martin Lines, Inc., Northville Coach Lines, Inc., and the Beeline, Inc., providing inter-city service in the region
- Detroit and Canada Tunnel Corporation, run the tunnel bus.

— Non-Commuter Carriers:

- Eastern Greyhound Lines
- Short Way Lines
- Brooks Transportation Company
- Continental Trailways
- Indian Trails
- Tower Bus Line
- Delux Motor Stages, Inc.

The city of Detroit is presently almost completely covered by transit service if we extend 1/4 mile on either side of the transit lines.

Regarding the rolling stock, the DSR owned about 79% of the total region's (commuter) bus inventory of 1,517 units. The fleet also shows the lowest average age of 7.2 years compared with the total region's average of 7.7.

Passenger Volumes

DSR dominates the area, accounting for over 86% of the regional total of bus passenger volumes in 1968.

Table 20 - Passenger Volume Data, DSR and Regional Total

COMPANY	Fiscal Year Ending June 30 1964	1965	1966	1967	1968
DSR Reg. Route	110.1	112.7	119.7	127.3	123.3
Charter & Other	2.5	2.3	3.1	3.4	3.3
Total	112.6	115.0	122.8	130.7	126.6
Estimated total of all companies	128.9	130.4	138.9	147.2	143.1

All volumes in millions

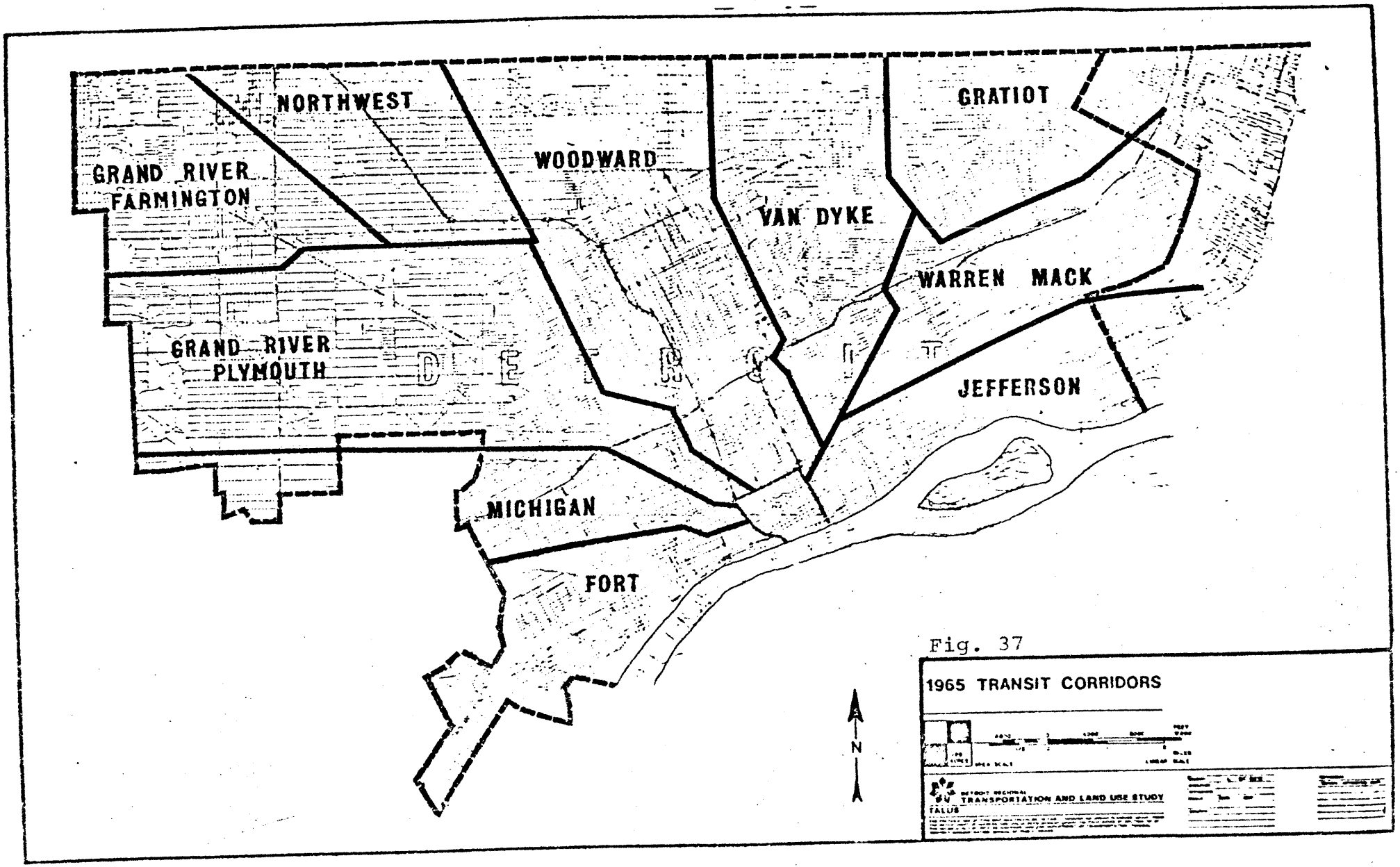

NORTHWEST
GRAND RIVER
FARMINGTON
WOODWARD
VAN DYKE
GRATIOT
WARREN MACK
GRAND RIVER
PLYMOUTH
JEFFERSON
MICHIGAN
FORT
N
1965 TRANSIT CORRIDORS
DETROIT REGIONAL
TRANSPORTATION AND LAND USE STUDY

Fig. 37

DSR - Service

Based on its historical pattern, Detroit still has radial traffic corridors starting in the CBD and spreading out in the region.

The function of the service provided by the line-routes has been classified in five groups:

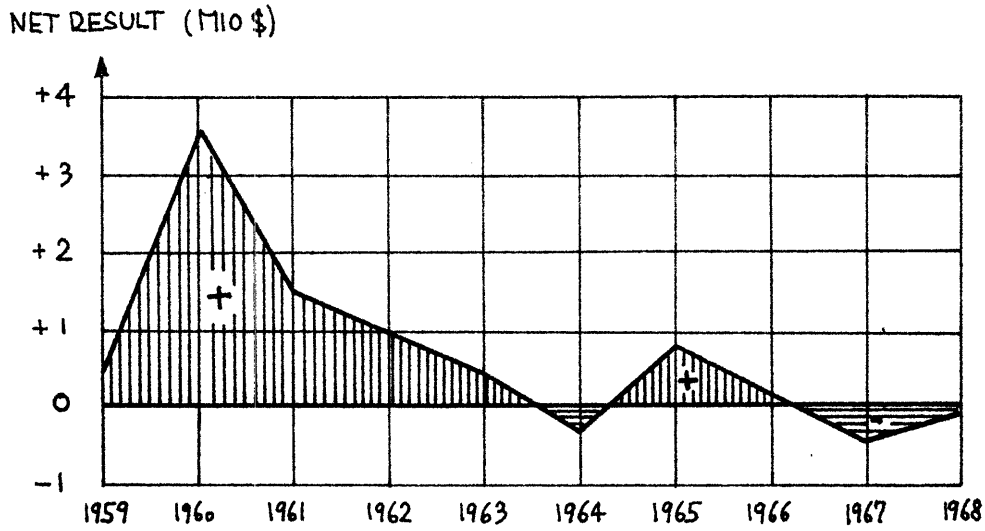
1. Radial, direct service to the Central Business District (CBD)
2. Corridor arterial, indirect service to the CBD
3. Cross-corridor feeders, including crosstown service
4. Peak period service
5. Neighborhood spinner

Woodward-West with 123 miles, Grand River-Plymouth with 122 miles, and Van Dyke with 65 miles, are the three corridors with a higher number of route miles than all other corridors, which are ranging from 40 to 55 miles.

362 route miles are CBD-serving, 264 route miles are feeder or crosstown lines.

Speeds on CBD-oriented arterial routes range from 9 mph in the inner areas to 22 mph in outlying districts. Feeder and crosstown routes are about 10 per cent faster.

FIG. 38 DSR NET RESULTS FOR 10 YEARS



2.5.4 Railroads, Truck Terminals, Habors, Pipelines, Airports

Railroads

The different railroads operating in the TALUS area are mainly freight oriented but four companies still have passenger service. Major focus points in the region are Detroit and Port Huron, where we can find the connections to Canada. Figure 39 shows the regional railroad network.

Truck Terminals

Over 120 of the 150 truck terminals in the region are located in Wayne County. The largest concentration is found in southwestern Detroit, and eastern Dearborn. Truck traffic which is increasing at a more rapid rate than automobile traffic becomes more and more important, especially on the interstate highway network.

Habors

Of the 122 commercial docks, piers and wharves in the TALUS region, 76 are active in the handling of waterborne cargo. Several are for-hire port terminals which handle practically all of the overseas waterborne commerce. But its share is only about 2% of the total tonnage handled in all habors. All other docks are privately owned.

Pipelines

Three types of pipelines are found in the TALUS area:

- crude petroleum lines, for unrefined petroleum
- petroleum products lines for petroleum products at various levels of refinement
- natural gas pipelines

Nine companies operate 522 miles of crude lines and 655 miles of product lines within the study area.

Quite a dense network of natural gas pipelines is covering the TALUS Region. In 1964, gas fields in the study area produced 93% of all natural gas in Michigan, while the gas sales in the study area accounted for 60 % of total gas sales in Michigan.

Airports

The major airports in the TALUS area are:

- Detroit Metropolitan Wayne County Airport
- Willow Run
- Detroit City
- Oakland-Pontiac

Detroit Metropolitan Airport became the principal commercial airport. Detroit City Airport provides a facility for general aviation.

Commercial airports serve or provide scheduled commercial airline traffic. DEF

General aviation is particularly business flying or sport flying by a private craft.

FIG. 39 RAILROADS

FREIGHT + PASSENGER SERVICE
FREIGHT ONLY

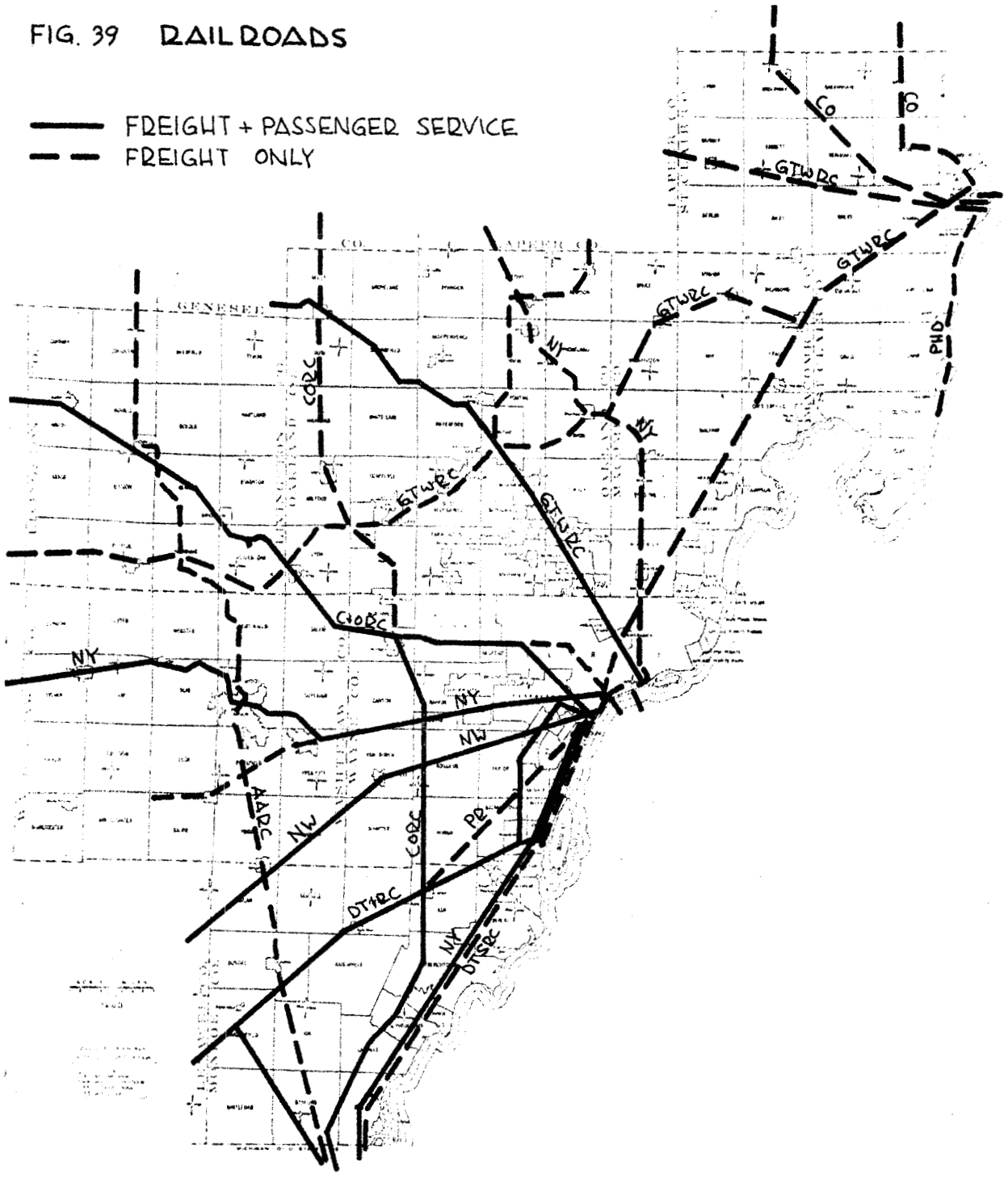


FIG. 40 TRUCK TERMINALS

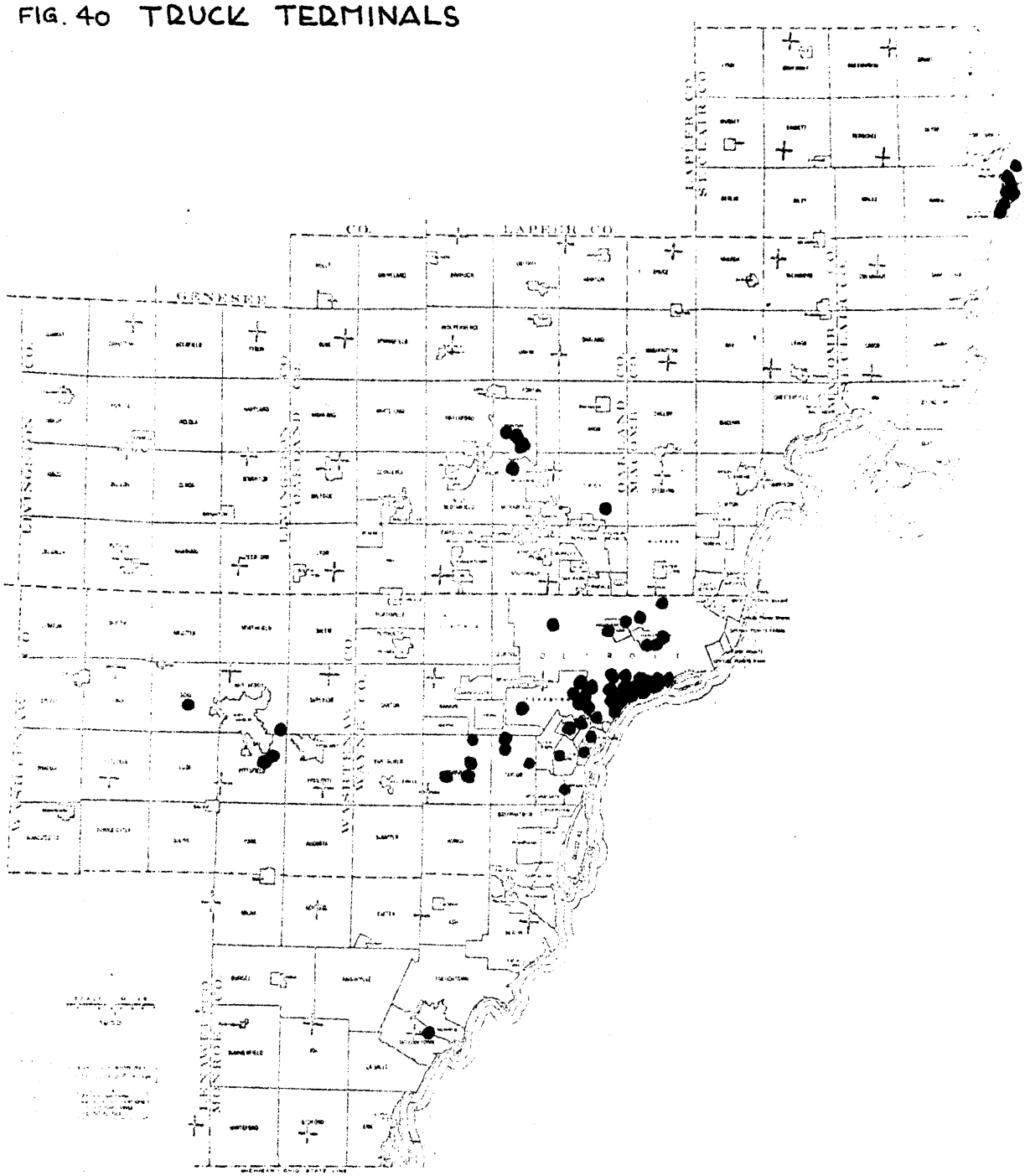


FIG. 41 PORT FACILITIES

● PRIVATE DOCKS
□ FOR HIRE TERMINALS

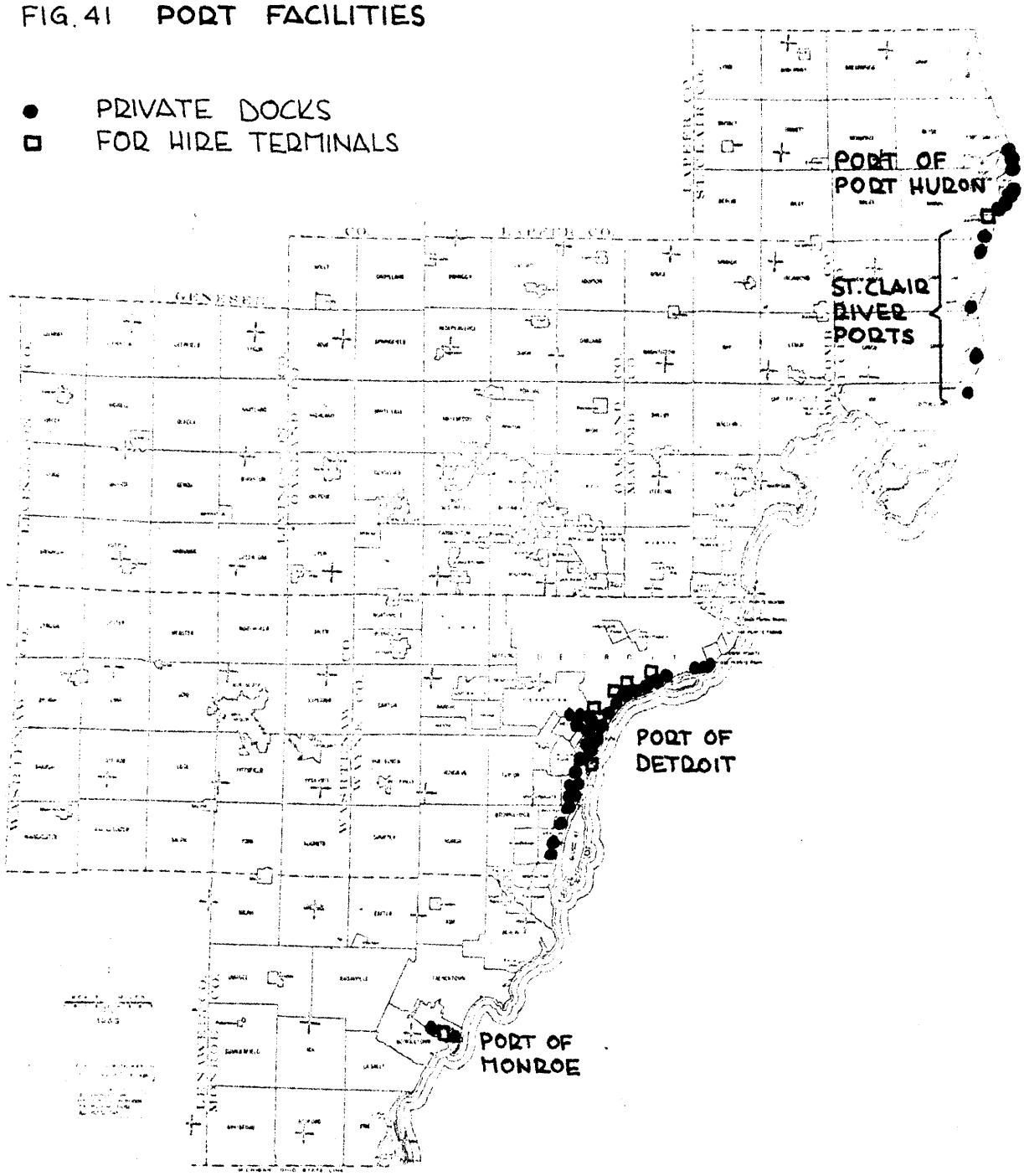
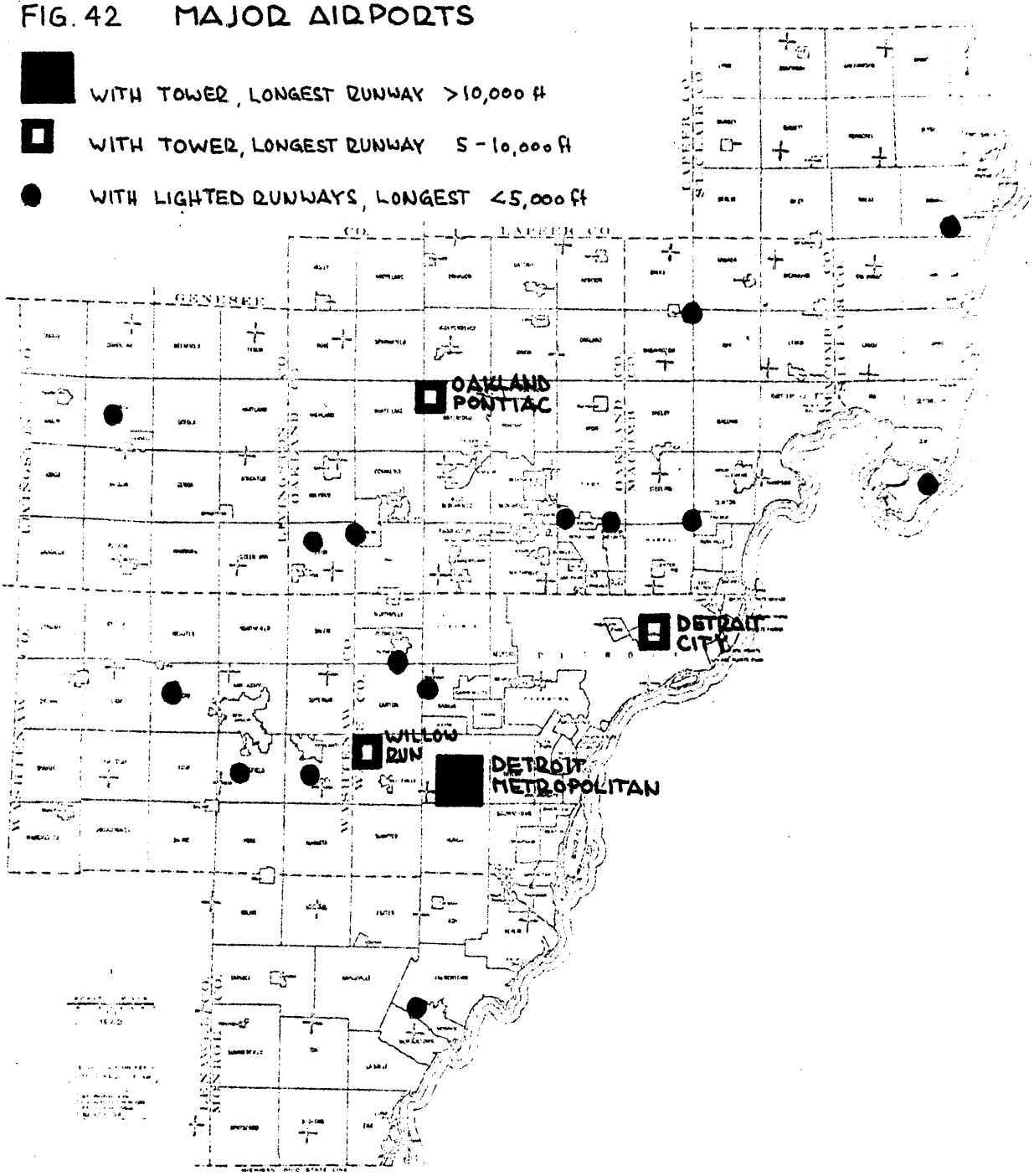


FIG. 42 MAJOR AIRPORTS



3. ANAYSIS, GOALS AND OBJECTIVES

3.1. Analysis

Transportation

Considering the increase of average highway speeds between 1953 and 1965, highway congestion does not seem to be a problem in most corridors at the present time. However, a slow-down in the rate of highway improvements could rapidly cause a significant amount of congestion since the population is expected to increase by 57% by 1990, and travel demands will thus be more than double.

The existing public transportation system is not adequate to serve the requirements of a major metropolitan region and the level of service has been declining almost steadily since the end of World War II. If any improvements are to be made, existing regional and local policies have to be changed to gain public financial support for mass transit.

Housing

In the past, housing inadequacies have existed because of political, institutional and attitudinal unwillingness to do much about the problem. There is an adequate housing supply in the region for middle- and upper-income ranges, but

demolition and removal largely reduce the supply for those in the lower-income ranges. The idea that enough new housing at the upper ends of the income curve would automatically provide enough older housing for lower income families, did not work. The number of people in need of housing at the lower end of the scale has continued to increase--and urban renewal did not help to solve the problem because almost all new housing units were in the middle and upper-middle cost ranges, while demolitions and removals, as stated, happened to be in the lower cost ranges.

Detroit and Other Older Cities

We can find the most critical problems of the region existing in the city of Detroit as well as in the other older cities like Highland Park, Hamtramck, Pontiac, Mount Clemens, Ann Arbor, Inkster, Port Huron, and many other older parts of the region. Detroit and its people differ in many respects from the rest of the region, as shown in Chapter 2. The problems of the city are quite complex, and they cannot be solved with an effort toward just one or two aspects of the problems--They are physical, social, economic, technological, political, institutional, and racial.

Regarding education, something has to be done to "equalize" schools in the region. This is most necessary in order to encourage middle- and upper-income families to stay in the city--and even to attract additional families who are in this income range back to the city. At the present time, Detroit spends about $650 per pupil compared to expenditures of $1,000 and more per child in some suburban areas.

Most of the area within the bounds of Grand Boulevard is very old, decayed, and blighted, or in advanced stages of deterioration, and needs urban renewal in the very near future. The rest of the inner city, however, is also old and most of the residential structures are of wood-frame construction. Selective clearance and renewal should be directed toward these areas.

In addition to residential renewal, there are miles of streets with strip commercial development which need redevelopment. These strips are ugly, inefficient, marginal, and in many cases, vacant.

3.2. Goals and Objectives

The general goal is "to improve the quality of the environment," so that the region becomes a more attractive and satisfactory place for life, work, recreation, and to visit.

3.2.1 Transportation

The two major goals for a future transportation system are:

- to serve future travel demand with good transportation, and
- to encourage growth and development in accordance with the land-use plan.

Good transportation means safe movement of people and goods with minimum delay. The rate of improvements in highway transportation should at least follow the increase of demand for highway transportation. This includes freeways as well as non-limited facilities. The provided highway level of service should remain "C" for the future also (as defined in the 1965 Highway Capacity Manual; see 2.5.2).

The general objectives with respect to public transportation are:

- to provide mobility for those to whom public transportation is a necessity--to the people without cars
- to provide a choice for people who would like to have an alternative to the automobile
- to aid in shaping regional patterns of growth and development

The quality of service must make mass transportation a desirable alternative for travelers whose destinations are along its route. Such service requires average scheduled speeds of at least 40 to 45 miles per hour, including station stops. Off peak-hour headways should not be longer than 15 minutes, while rush-hour headways might be as short as 90 seconds. Stations must provide local feeder buses, park-and-ride, and kiss-and-ride facilities in residential areas. To be competitive, rapid transit fares have to be lower than--or equal to--the out-of-pocket costs of operating an automobile--which includes gas, oil, and parking fees.

Major considerations must be given in rapid transit, as well as in highway planning, to minimize:

- air pollution
- noise
- disruption of neighborhoods and displacement of homes and business facilities
- disturbance of historical sites

3.2.2 Housing

The major goal is an integrated society, which provides adequate residential opportunities throughout the region for all people in the region regardless of race, religious or ethnic origin, life style, social or economic standard .

Different designs, medium- and high-density in addition to low-density developments, and new and better construction techniques, should provide a wide range of housing varieties at all costs and rental levels.

New communities must be well organized developments and planned communities. In any future cases of renewal, relocation housing has to be provided before any clearance begins.

3.2.3 Natural Resources, Open Space, and Recreation

Urban development should be guided to preserve the region's natural resource potentials, and concentration of natural amenities.

Prime agricultural land, streams and river basins, lake areas, flood plains, and areas of extensive ground water deposits should be considered in a region-wide, open-space recreation program, and preserved from exploitation by urban developers.

Public transportation must accommodate those in central cities and low-income areas so as to provide access to these outlying recreational facilities.

3.2.4. Economy

A major goal is a stable economy with a wider variety of industries, retail businesses, and professional services providing a highly-diversified employment base. These should be located so as to provide for the most efficient access by the labor force.

Reserves of land within areas which are highly accessible to public utility systems should allow space for future warehouses, truck terminals, etc.

Commercial concentrations have to be an integrated part of multi-use complexes.

3.2.5. Public Service Facilities

Land-use activity distribution has to be efficiently related to the transportation/public utility systems to insure:

- maximum protection of health and safety
- adequate and efficient operational levels
- equitable distribution of costs and benefits

Coordinated water supply, sewer service, gas and electric systems have to encourage development in accordance with the regional plan, and restrict it in unfavourable areas.

3.2.6. Regional Structure

Considering regional structures and development, there should be a balanced allocation of regional lands among various land-use categories--satisfying basic social, economic, and physical needs of the region's population and reducing waste, inefficientcy and detrimental social and environmental effects of haphazard development.

Besides the necessity for orderly new developments of the region, the quality of development within the existing urban areas should be upgraded.

New multi-use areas have to be developed with either accommodations for industrial functions, or for a mixture of commercial and medium-to high-density residential activities.

For Detroit's central core area to be a dominant and vital regional nucleus concentrating both national- and regional-scale commerce, recreation, institutional services, and cultural facilities should be maintained and strengthened.

4. MODELS AND ALTERNATIVES

4.1. Models

4.2.1 Transportation and Land Use Modelling Process

TALUS is charged with the development of a transportation and land-use plan for 1990, as horizon year. To work out such plans TALUS proceeded through three parallel and independent processes:

- Development and application of a Regional Growth Model System to predict future growth as well as distribution of activities.
- Development and application of a Regional Transportation Model System, capable of predicting trip generation and attraction, system loading, modal choice, and other characteristics.
- Sketch Planning, to create alternative land-use configurations and supporting transportation systems as a result of the goals and policies. These alternatives are tested through the models.

For modelling purposes, the TALUS Region was divided into 1446 zones. The models are iterative, predicting future development in five-year steps from 1970 to 1990. The Regional Growth Model includes two types of independent models:

- Regional forecast of activity levels
- Allocation models to distribute these totals in space (Land-Use Models)

Figure 43 illustrates the planning process with its three parts, the Regional Growth Model (Steps G1-G5), the Transportation Models (Steps T1-T5) and the creative and judgmental sketch planning activities (steps S1-S5).

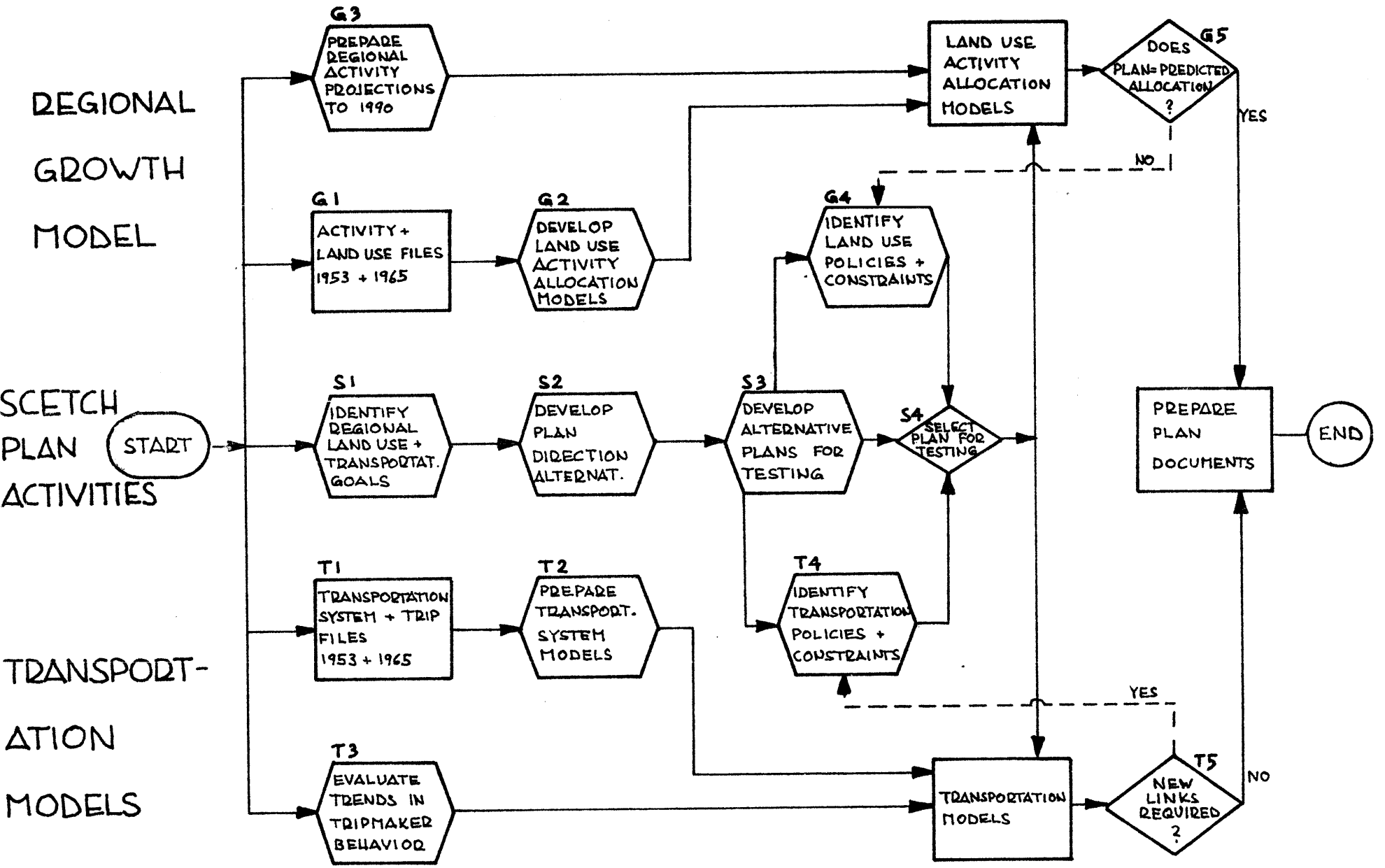


FIG. 43 TALUS TRANSPORTATION AND LAND USE MODELLING PROCESS

4.1.2 Land Use Allocation Model System

Six separately developed models are linked together to form the TALUS SEMOD (Southeast Michigan Model) System. To facilitiate time series, and alternative plan comparisons, the TIRES (TALUS Information Retrieval System) was developed for use with the model outputs. The 6 models are:

- Employment Allocation Model
- Household-by-Income-Class Model
- Life Cycle Model
- Population Allocation Model
- Auto Availability Model
- Recreation Participation Model

The Employment Allocation Model predicts emoployment by nine industry classes for each district (297 districts) of the region. Its output becomes one of the inputs for the Household-by-Income-Class Model, which predicts the distribution of households for each district by income class.

The Life Cycle Model is based on the attractiveness of the zones for a particular life cycle group by neighborhood

type, reflecting that households of a similar life cycle tend to attract households of the same life cycle. This model produces its results at the zone level.

The Population Allocation Model basically uses the life cycle model output as its input and predicts the distribution of the population by age and sex for each zone.

The Auto Availability Model estimates the total number of cars owned, for each zone, and the distribution of households by the number of cars owned, also for each zone.

The estimations of the Recreation Participation Model are mainly based on outputs of the Household-by-Income-Class Model and the Life Cycle Model. Predictions are in nine recreational activities by zone.

All models are linked, each accepting inputs from the prior model in the sequence and providing inputs to the next model in line. The SEMOD outputs are controlled by independently developed regional projections.

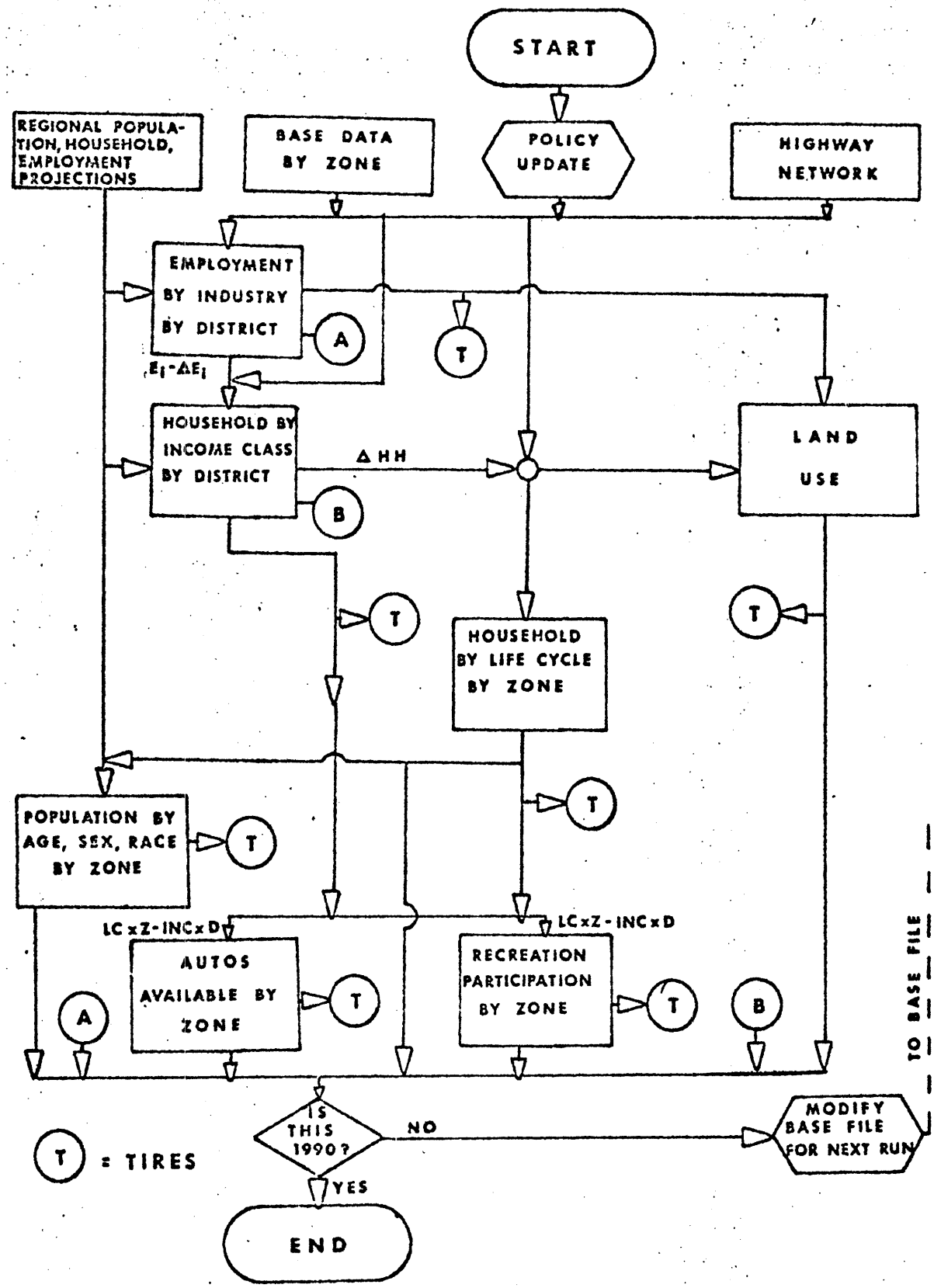
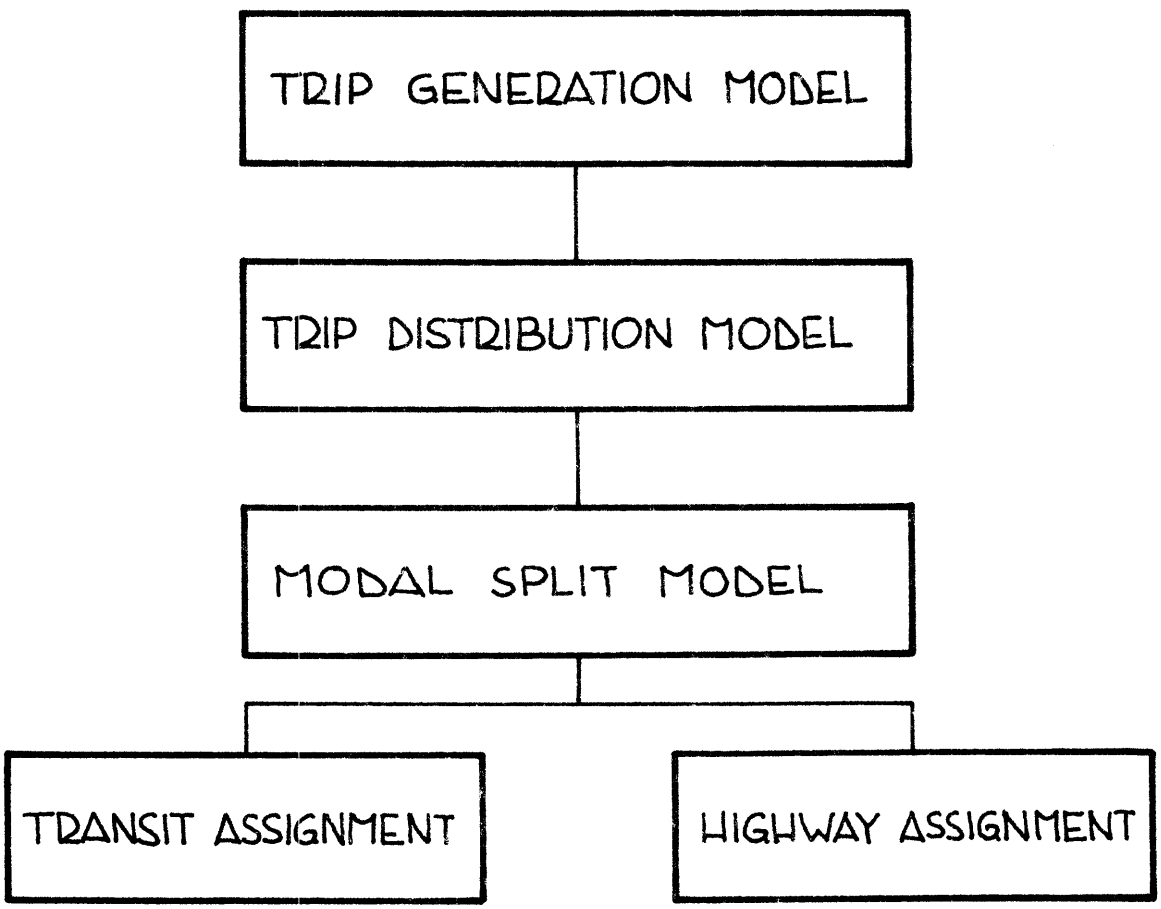


Fig. 44 **GENERALIZED SEMOD PROCESS**

4.1.3 Transportation Models

The development of a long-range transportation plan requires a series of computer models. The first model, the Trip Generation, had to estimate future volumes of trips; the Distribution Model was used to calculate zonal interchange. The trips were split through the third model, the "Modal Split Model," and afterwards assigned to the transit and highway network.

Figure 45 - Transportation Planning Process



In the TALUS area, 75% of all persons' trips are home-based trips with origins or destinations at home. The used trip purpose types are:

- Home-Based Work trips
- Home-Based Personal Business Trips
- Home-Based Social Recreation Trips
- Home-Based Shopping Trips
- Home-Based School Trips
- Non-Home-Based Trips
- Truck-Taxi Trips

Trip General Model

This model, which is based in regressive analysis, predicts the production and attraction of trips for all 1,446 analysis zones. The input to this model comes from the Regional Growth Model. The used variables are:

- Number of Cars Available (4 categories)
- Household by Income Class (6 classes)
- Households by Life Cycle (6 categories)
- Total Employment (7 categories)
- Total Population

All inputs are at the level of zones.

Trip Distribution Model

It is a gravity model, which precicts the distribution of the generated trips within each zone among all other zones in the region. Major inputs to the model are:

- Travel times between all zones and within each zone

- Trip productions and attractions by general purposes by zone
- zone-to-zone volume data by general purpose
- Initial set of friction factors for each general purpose
- Social and/or economic data (commonly income).

Modal Split Model

This post-distribution model gives first a split between public and private transportation and converts then the auto-person trips to auto-driver trips. It is based on diversion curves, which are the results of correlation analysis between the variables and travel time, distance, time ratio, time difference, cost ratio, or cost difference. Inputs to the model are:

- zone-to-zone person trip, auto-driver trip, and transit trip tables by general purpose
- Zone-to-zone travel times for the highway, and the transit system
- Zone-to-zone fare matrix for transit
- Households by auto availability
- Households by income class
- Land use
- Parking cost
- Population by age and sex

At the end of the model chain the assignment models assign the highway trips to the highway system of the planning year, and the transit trips, to the future transit system.

4.2. Alternatives

4.2.1 Land-Use Alternatives

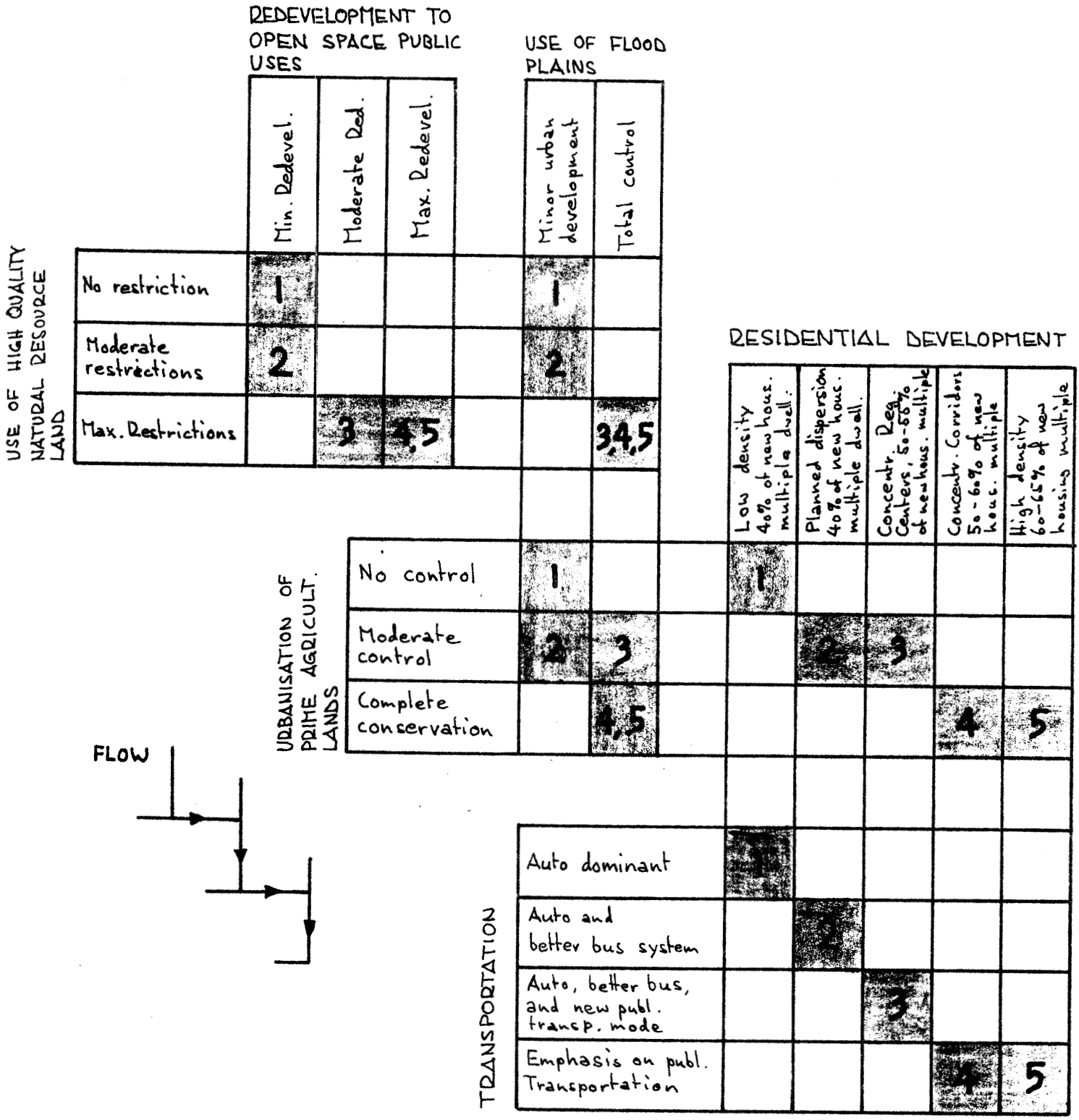
To get different land-use alternative plans, TALUS developed policy sets by seven functional elements:

- Redevelopment to open space public uses
- Use of high-quality natural resource lands
- Use of flood plain
- Urbanization of Prime Agricultural Lands
- Residential Development
- Transportation

With each element policies ranged from an emphasis on private interests to an emphasis on strong public control on the other hand. Policies of the seven elements were grouped in order to have some levels of public interventions and to get five sufficiently distinct alternatives. Figure 26 illustrates the different sets of policies which lead to the five alternatives. These are:

1. Trend Alternative: Low Density Expansion
2. Modified Trend: Planned Dispersion
3. Bent Trend Center: Multiple Urban Centers
4. Bend Trend Corridor: Corridor Development
5. New Direction: Trend Reversal

FIG. 46 POLICY GROUPINGS FOR ALTERNATIVES

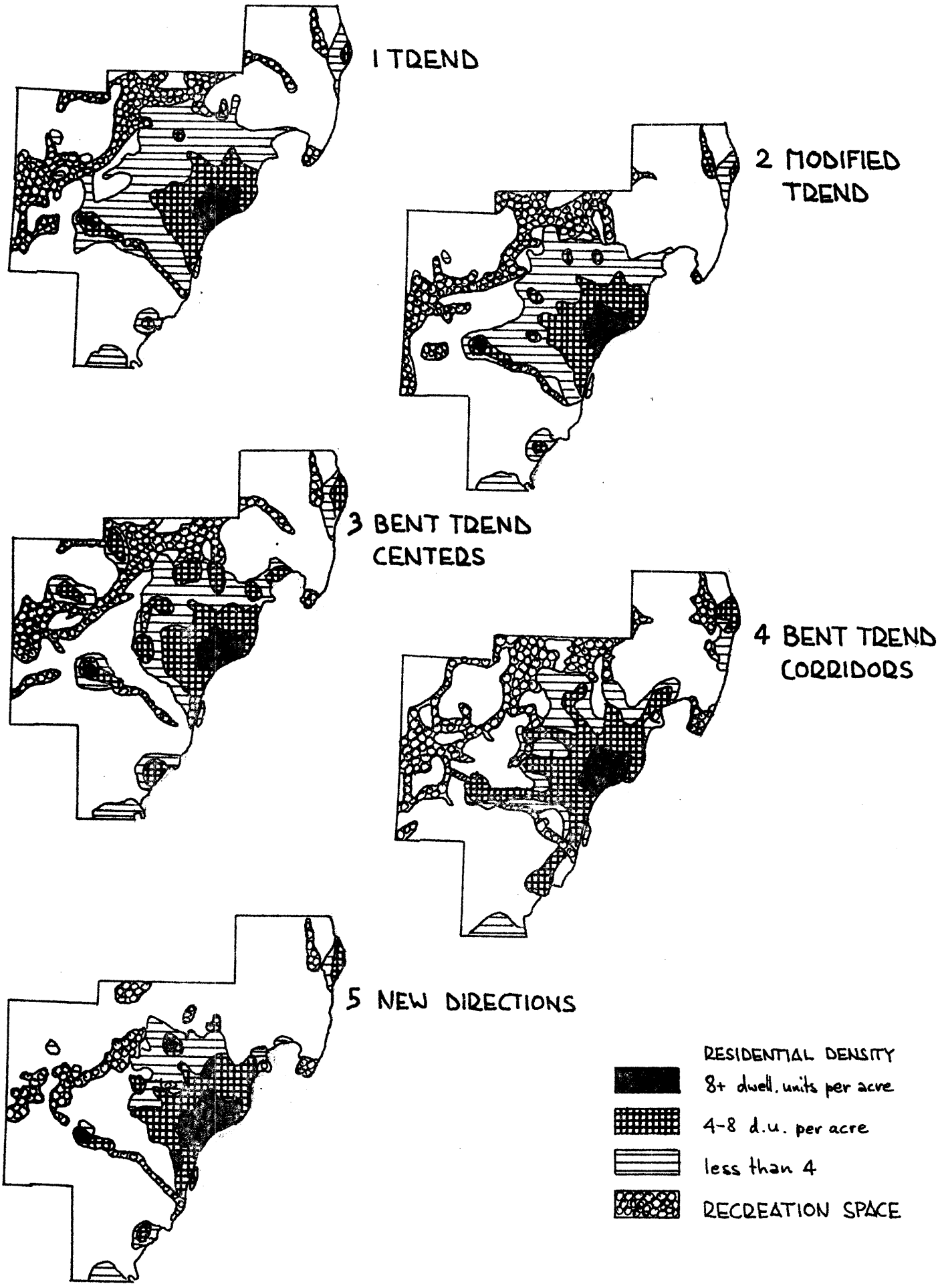


ALTERNATIVES:

1 TREND
2 MODIFIED TREND
3 BENT TREND CENTERS
4 BENT TREND CORRIDORS
5 NEW DIRECTIONS

After first sketch plans of the land-use alternatives, more detailed plans were worked out. The TALUS staff developed an evaluation system for the five land-use allocations. This evaluation, and public reviews of professionals and citizens at the county level, led to a first preliminary land-use plan based on different elements of the five alternatives. Through further refinements and tests, the 1990 preliminary land-use plan was developed.

FIG. 47 ALTERNATIVE SCETCHES



4.2.2 Alternative Transportation Systems

In addition to the existing highway network, quite a large part of the future expansions are already under construction, committed, or planned. A lot of decisions have been made earlier and the new plans have to be based on this network. TALUS has developed two alternative highway systems for the 1990 land-use plan:

- Minimal Highway Plan, with minor adjustments of the existing and planned freeways and arterials
- Maximal Highway Plan with substantial additions of freeways

These two alternatives were developed and tested and led to an interim highway plan. The five elements of the evaluation were:

- Capability of the alternatives to serve the preliminary land-use plan
- Degree of accordance with goals and objectives
- Estimation of costs
- Ability to accommodate the expected level of travel demand
- Compatibility between highway plan and transit plan

The development of transit alternatives was much less dependent on the existing transit system. Based on the 1990 preliminary land-use plan and the highway plan, there were two transit

alternatives:

- All bus system with local, express, and inter-urban bus routes (minimal plan)

- Rapid Transit System with local and feeder bus network (maximal plan)

The evaluation of these two alternatives occur in a way similar to the highway evaluations, with the same elements. While the maximum alternative included 118 miles of rail rapid transit, the proposed preliminary transit plan predicts some parts of the rapid transit network be replaced by bus service.

5. SELECTED PLAN

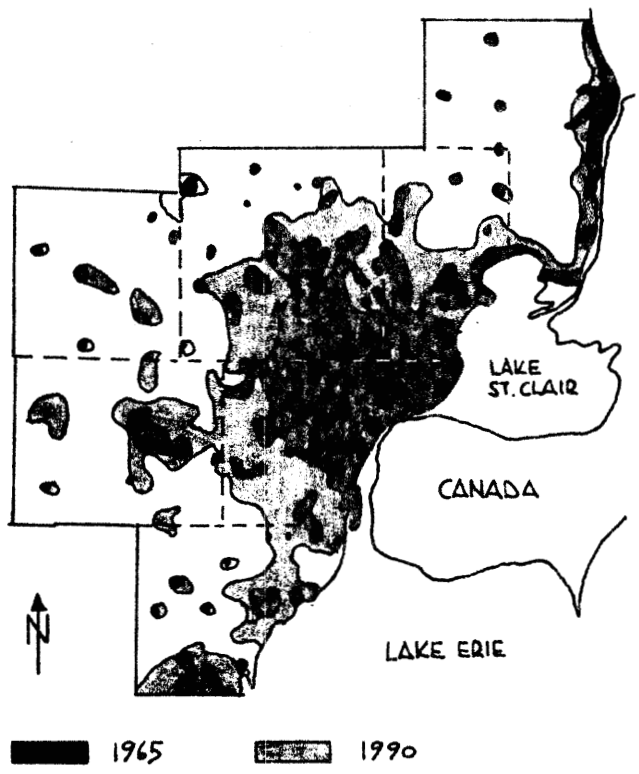
5.1. Land Use Plan

5.1.1 Long Range Plan

A large amount of decision-making for regional growth and development between 1965 and 1975 was already made independent of the TALUS Plan. But also, the long-range 1975-1990 plan is based on a lot of things already determined.

Out of the five alternatives, three preliminary land-use plans were developed which led, primarily through staff discussions, to the proposed 1990 Land Use Plan. This plan incorporated elements of all five of the conceptual alternatives.

Figure 48 - Urban Development, 1965-1990



In 1965 the TALUS region had 800 square miles of developed land. By 1990 an additional 1,120 square miles of land will have been urbanized. During the same time, the population will have increased by 57%. The residential densities will be very low: over 85% of the development beyond 10 dwelling units per net acre.

Table 21 - Residential Density Distribution - TALUS Region, 1990

Dwelling Units per Net Acre	% of Total Rapid Devel.	Cumulative %	Floor Area Ratio (1
0.5 - 1.0	1.8	1.8	0.01 - 0.026
1.1 - 2.0	24.0	25.8	0.03 - 0.055
2.1 - 4.0	28.2	54.0	0.06 - 0.10
4.1 - 6.0	21.6	75.6	0.11 - 0.16
6.1 -10.0	10.9	86.5	0.16 - 0.26
10.1 -15.0	5.1	91.6	0.26 - 0.39
15.0 -20.0	3.4	95.0	0.39 - 0.53
20.1 -30.0	4.7	99.7	0.53 - 0.79
30.1 - 40.0	.1	99.8	0.79 - 1.05
40.1 +	.2	100.0	1. 05 +

(1 The floor area ratio is roughly calculated under the assumption of about 330 sqare feet floor space per person.

Around Detroit, it is proposed to have "metro center" developments or "new towns." These are totally a new, planned, balanced community developments with future populations projected at being between 25,000 and 100,000. Beside these "new towns" a whole series of multi-purpose centers and corridors are planned. They are either industrially-oriented concentrations and include industrial, commercial, residential, institutional, semi-public and recreational uses; or, they are non-industrially-oriented, with commercial, residential, institutional, semi-public, and recreational uses. There is a medium to high density of uses within these areas. High density linear concentrations with residential use varying from 25% - 75%, and are mainly planned along major arterials; especially for the city of Detroit, this would be the renewal of older strips.

Regional commercial centers, similar to the existing suburban shopping and office centers, ranging between 100,000 and over 500,000 square feet of retail floor space. Some of these centers are included in multi-purpose centers and some others are proposed to redevelop older downtown areas in the region. TALUS planns twenty-eight universities (30,000 students) and community colleges (40,000 students) throughout the region. The new campuses will be within "new town" or near multi-purpose complexes.

Regarding water and sewer service all future development for 1990 will occur in the planned service areas.

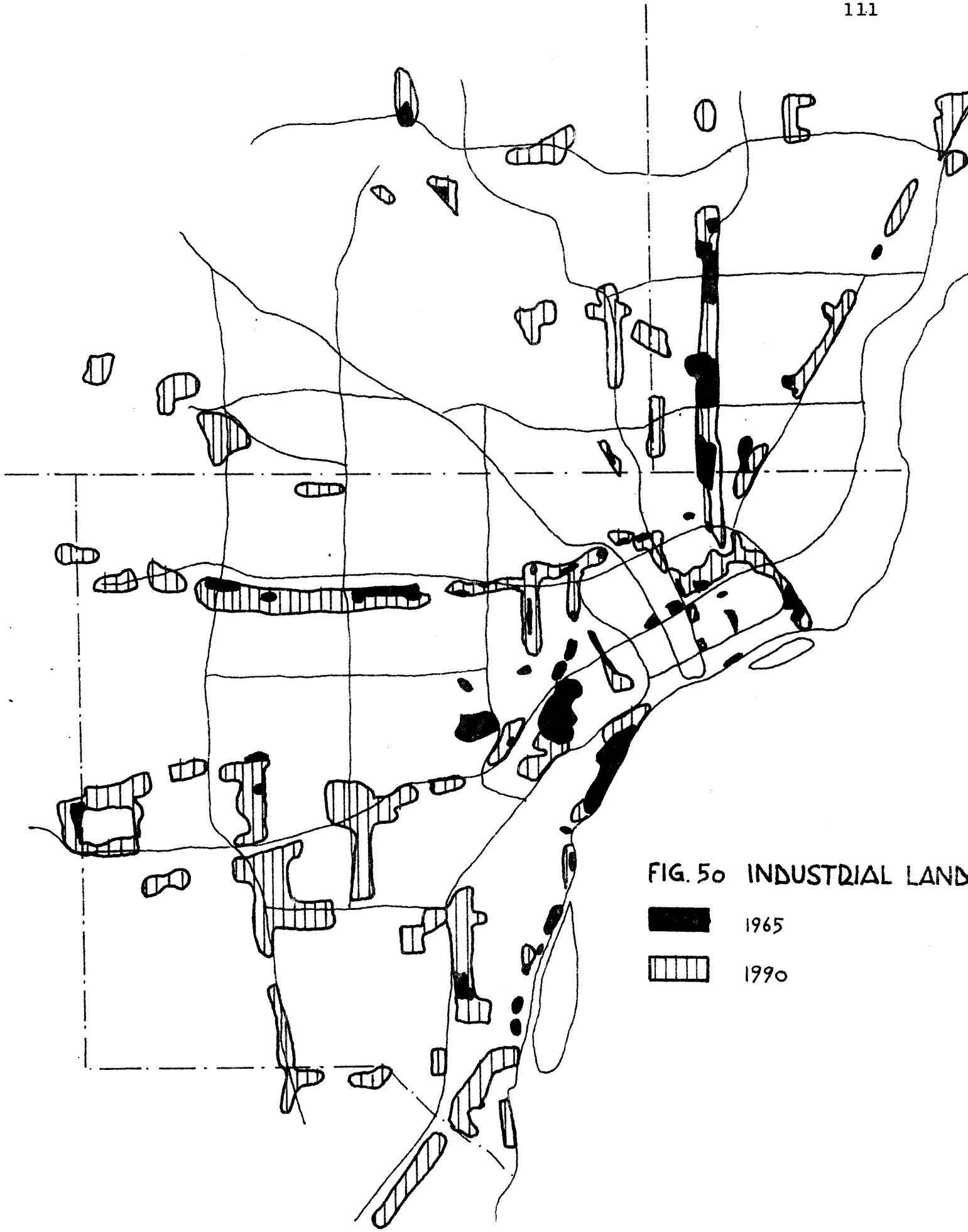


FIG. 50 INDUSTRIAL LAND

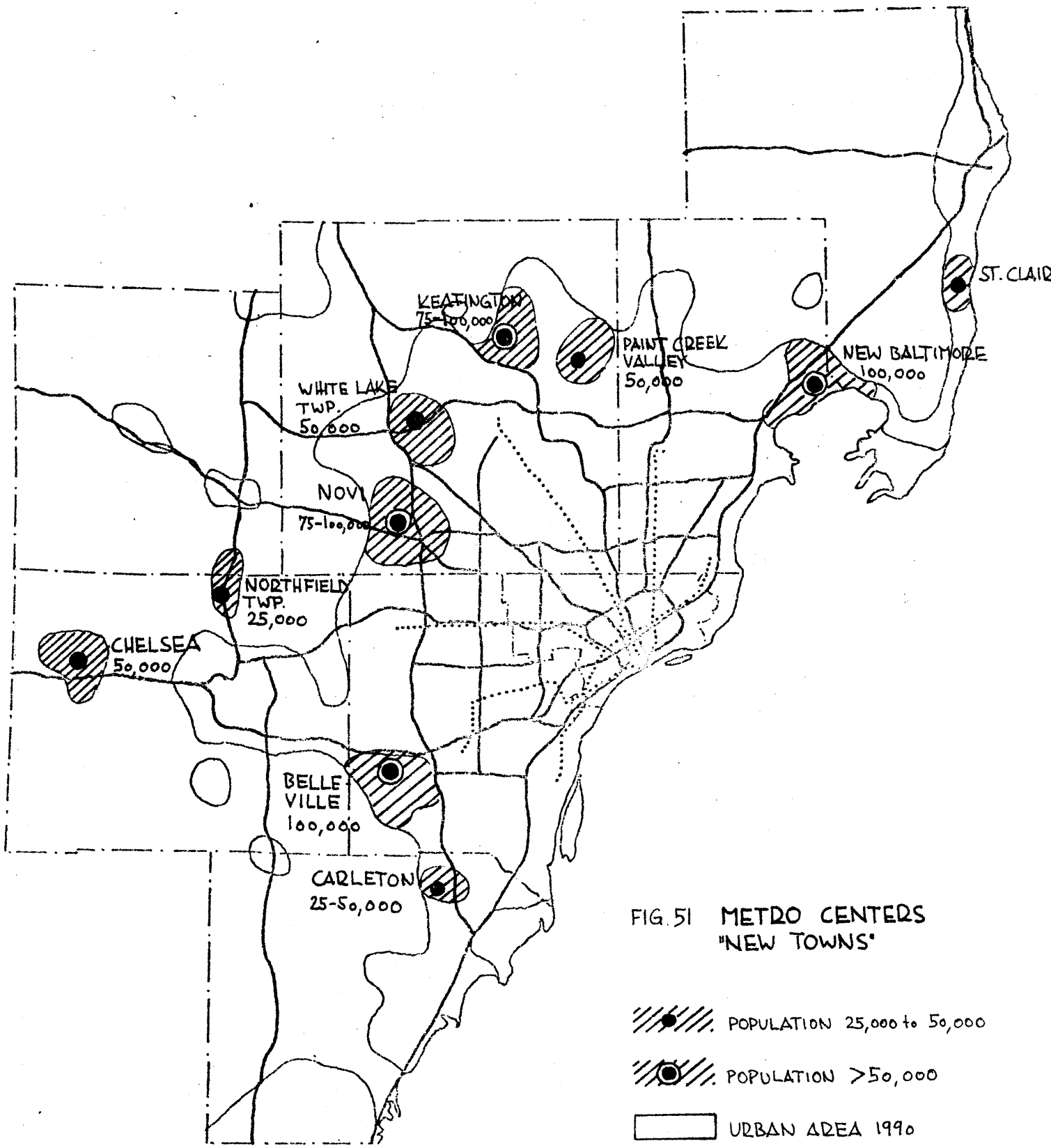


FIG. 51 METRO CENTERS
"NEW TOWNS"

POPULATION 25,000 to 50,000

POPULATION >50,000

URBAN AREA 1990

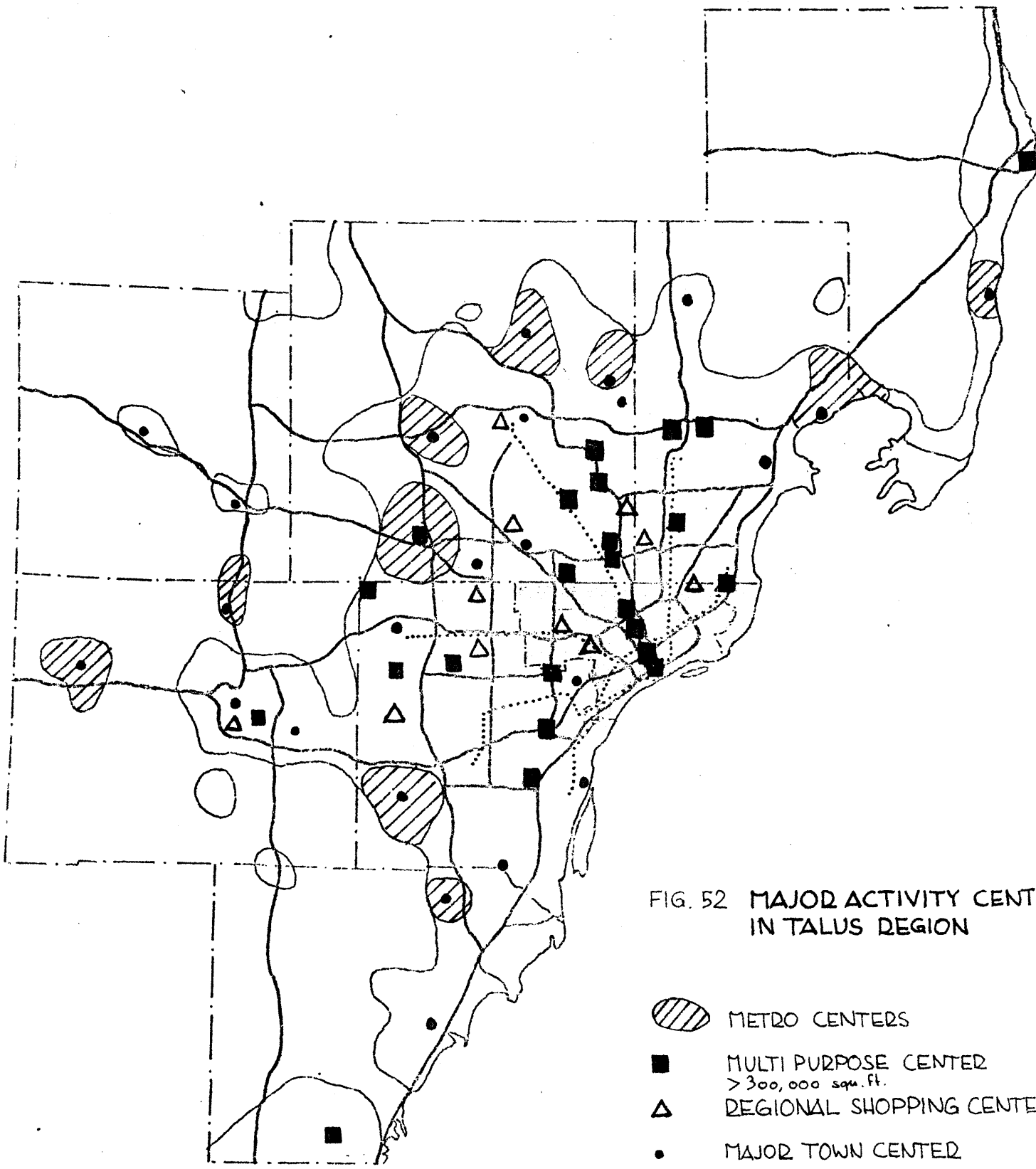


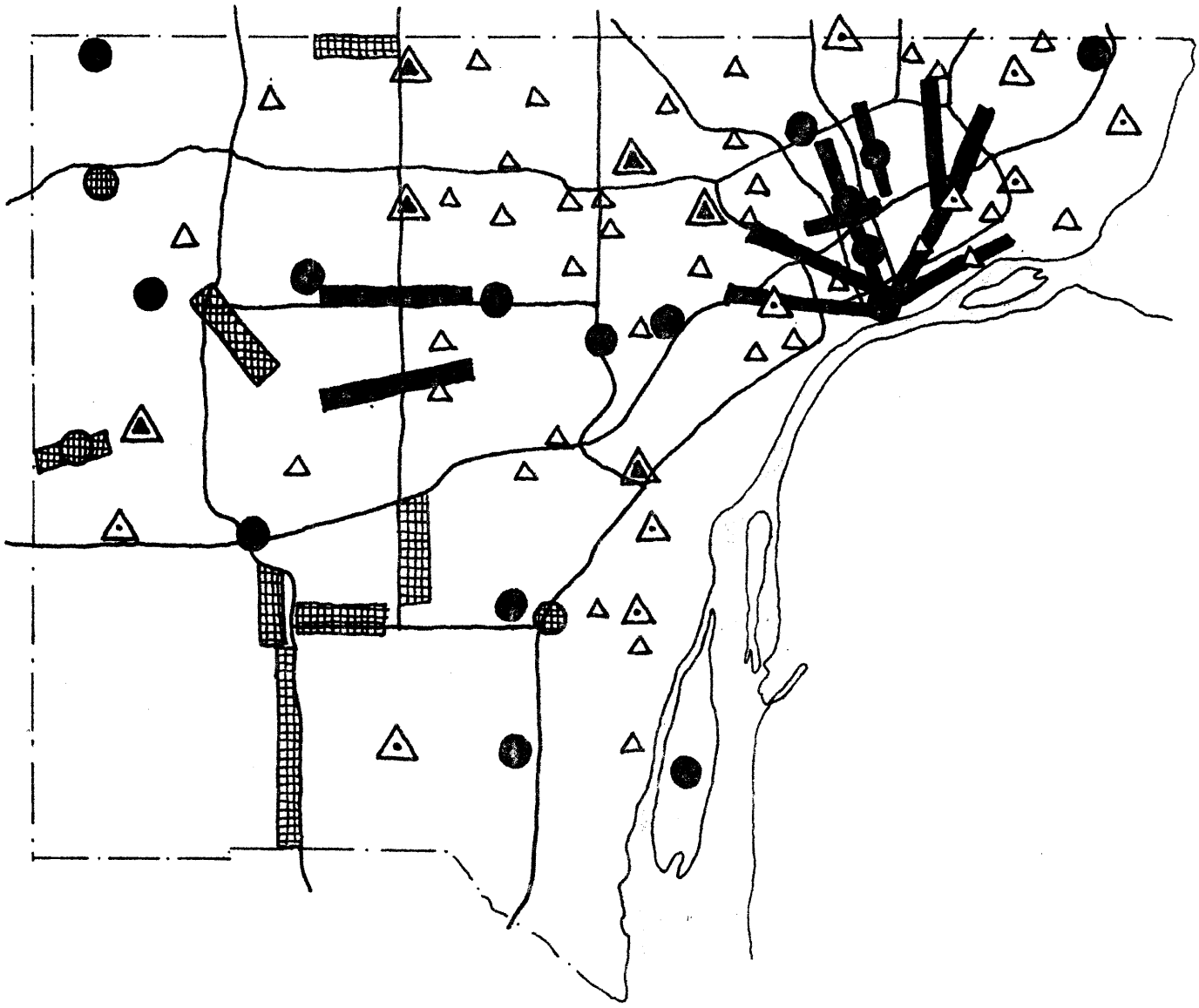
FIG. 52 MAJOR ACTIVITY CENTERS IN TALUS REGION

Wayne County will have an overall population increase of 12 percent from 1965 to 1990, while suburban Wayne County grows by 62 percent. In 1990 residential densities will average about four dwelling units per acre which is a bit lower than past and present averages, which range from 4.4 to 5.1.

While commercial centers are to be spread all over the country, industrially-oriented multi-purpose centers and corridors are mainly proposed to be in the western part of Wayne County around Metropolitan Airport or along major railroad trunks, freeways and arterial highways. In Detroit, commercially-oriented multi-purpose corridors are mainly to be concentrated along the major arterials.

In contrast to the outer parts of Wayne County the population of the city of Detroit will decline. Its population of 1.2 million in 1990 will be 40.4 percent. The highest residential densities will be found within the regional core with over 40 dwelling units per residential acre and 30 to 40 net dwellings per acre within the Grand Boulevard area. Outside Grand Boulevard there will be a four-mile ring with ten to twenty dwellings per acre. The rest of Detroit will have a density of 6 to 10 dwellings per acre.

FIG. 53 MULTI-PURPOSE DEVELOPMENTS AND COMMERCIAL CENTERS IN WAYNE COUNTY



COMMERCIAL CENTERS
SQ. FT. RETAIL AREA

- +500,000
- 300,000 - 500,000
- 100,000 - 300,000

MULTI-PURPOSE CENTERS + CORRIDORS

- IND. ORIENTED MULTI-PURP. CENTER
- IND. ORIENTED MULTI-PURP. CORRIDOR
- COMM. ORIENTED MULTI-PURP. CENTER
- COMM. ORIENTED MULTI-PURP. CORRIDOR

Table 22 - Residential Density Distribution in the City of Detroit, 1990

Dwelling Units Per Net Acre	% of Total Resid.Devel.	Cumulative %	Floor Area Ratio (1
4.1 - 6.0	.9	.9	0.11 - 0.16
6.1 - 10.0	28.6	29.5	0.16 - 0.26
10.1 - 15.0	27.0	56.5	0.26 - 0.39
15.1 - 20.0	24.7	81.2	0.39 - 0.53
20.1 - 30.0	13.7	94.9	0.53 - 0.79
30.1 - 40.0	1.9	96.8	0.79 - 1.05
40.1 +	3.2	100.0	+ 1.05

In the area between CBD and New Center and between Lodge Freeway and Chrysler Freeway, TALUS proposes the development of a "Regional-Core" complex, including the Cultural Center, Wayne State University, and the Medical Center. There will be regional scale functions concentrated within this area.

In addition to the Regional Core redevelopment, Detroit's five major radials should become high-density, linear-activity corridors with residential, commercial, and recreational use. Along some other arteries, redevelopment should take place in a similar way.

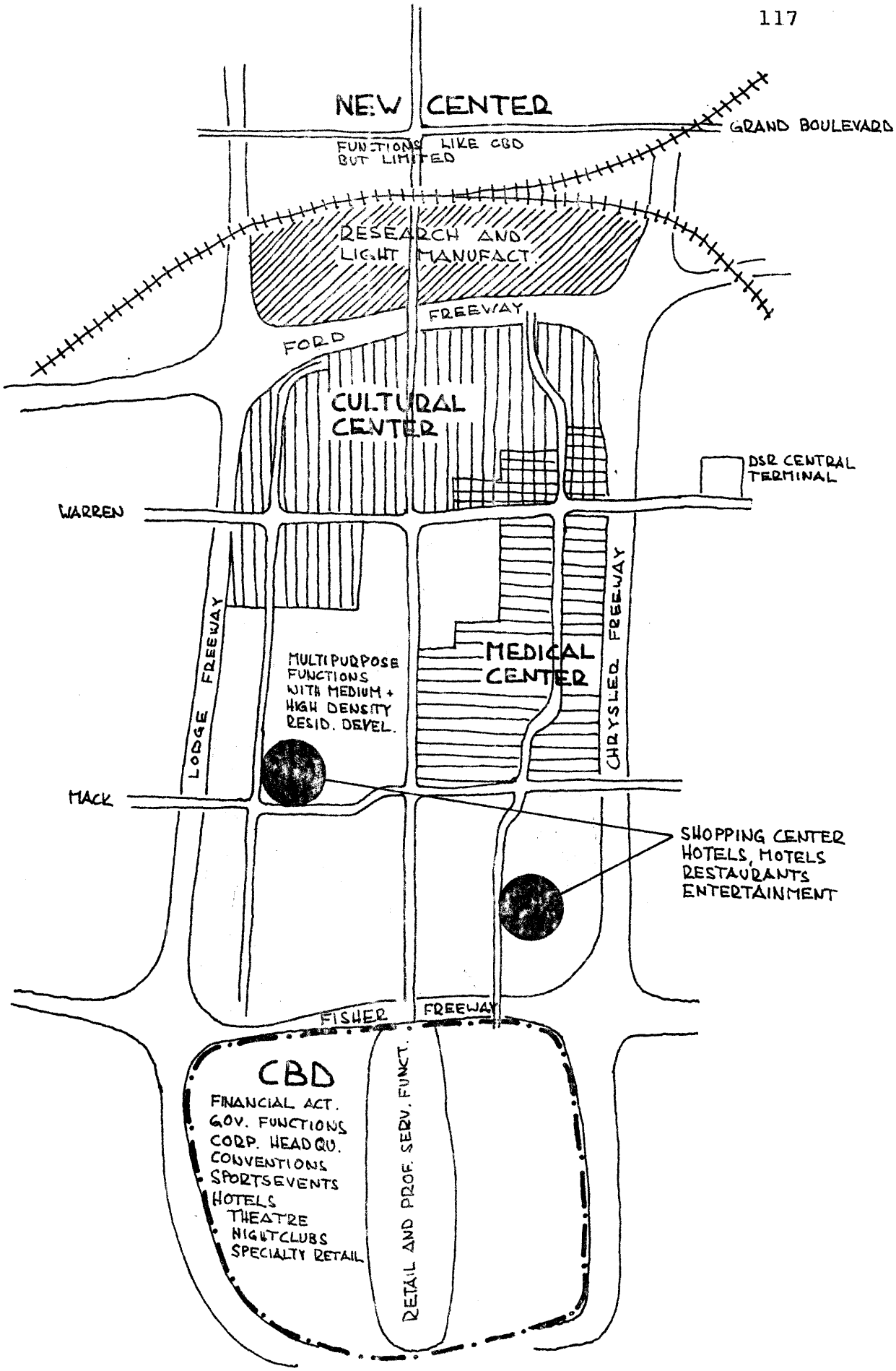
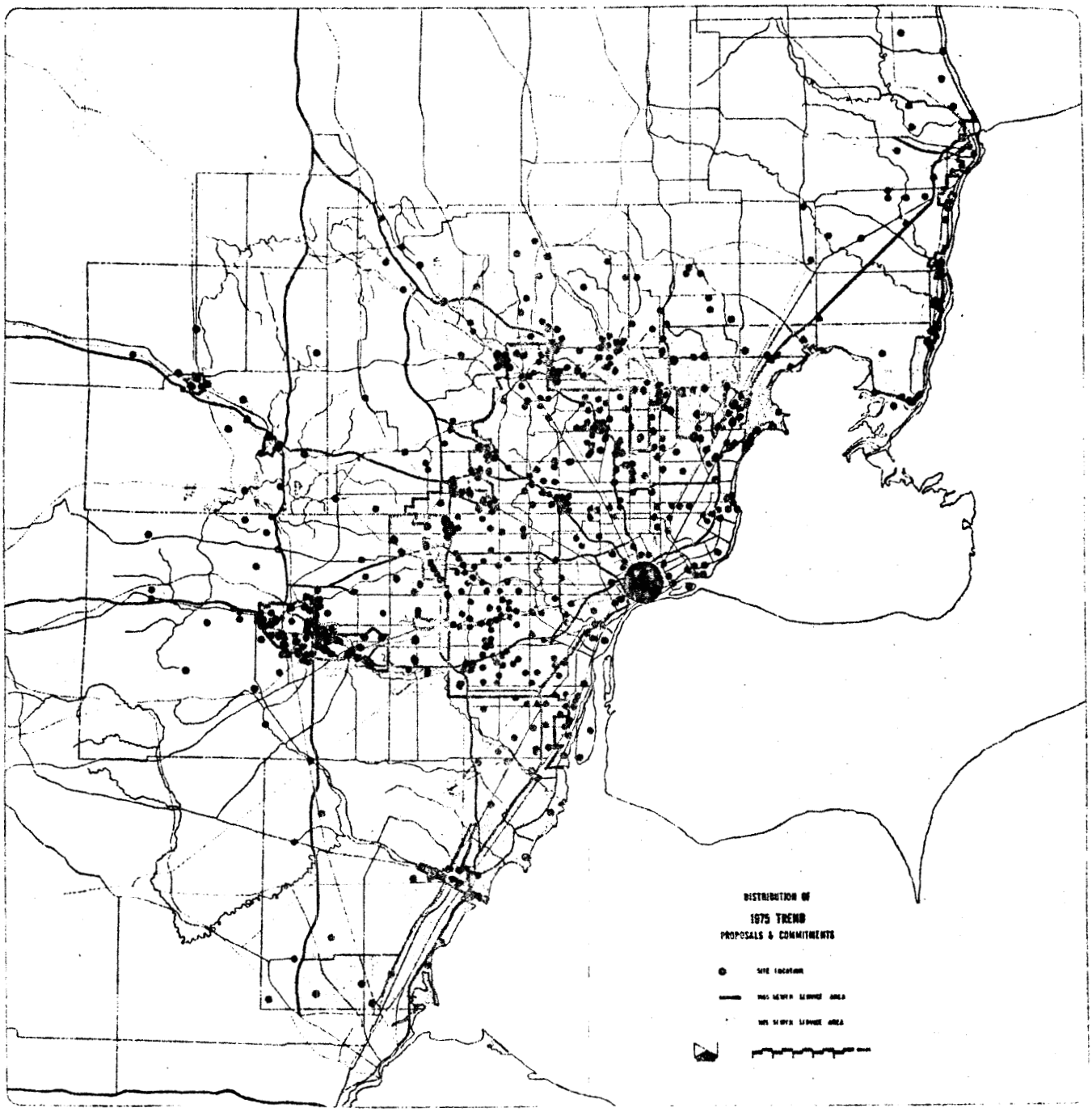


FIG. 54
REGIONAL CORE AREA

5.1.2. Short Range Developments

It is quite obvious that a lot of growth and development has already been planned up to 1975, or is under construction. So, TALUS had practically no possibility to influence all the ongoing developments. In order to register and illustrate these current trends, TALUS collected material and information from different agencies, even newspaper articles. These trend maps show a concentration of activities within the Grand Boulevard Area in Detroit, and again in a belt around the city of Detroit. The largest portions of of residential growth in the region will occur in Macomb and Oakland counties with 70 percent. Major industrial expansions can be expected to be around Metropolitan and Willow Run Airports. Wayne County will account for more than half of the region's industrial and research-oriented activities. Because of future increases in retail and office development around Northland Center and in Troy, Oakland County has, with 38 percent, the largest share of commercial developments forecast in the region. One of the biggest institutional concentrations should be in the "Regional Core" where Wayne State University, the Cultural Center, and the Medical Center are located and are still expanding.

Figure 55 - 1975 Trend Map for TALUS Region



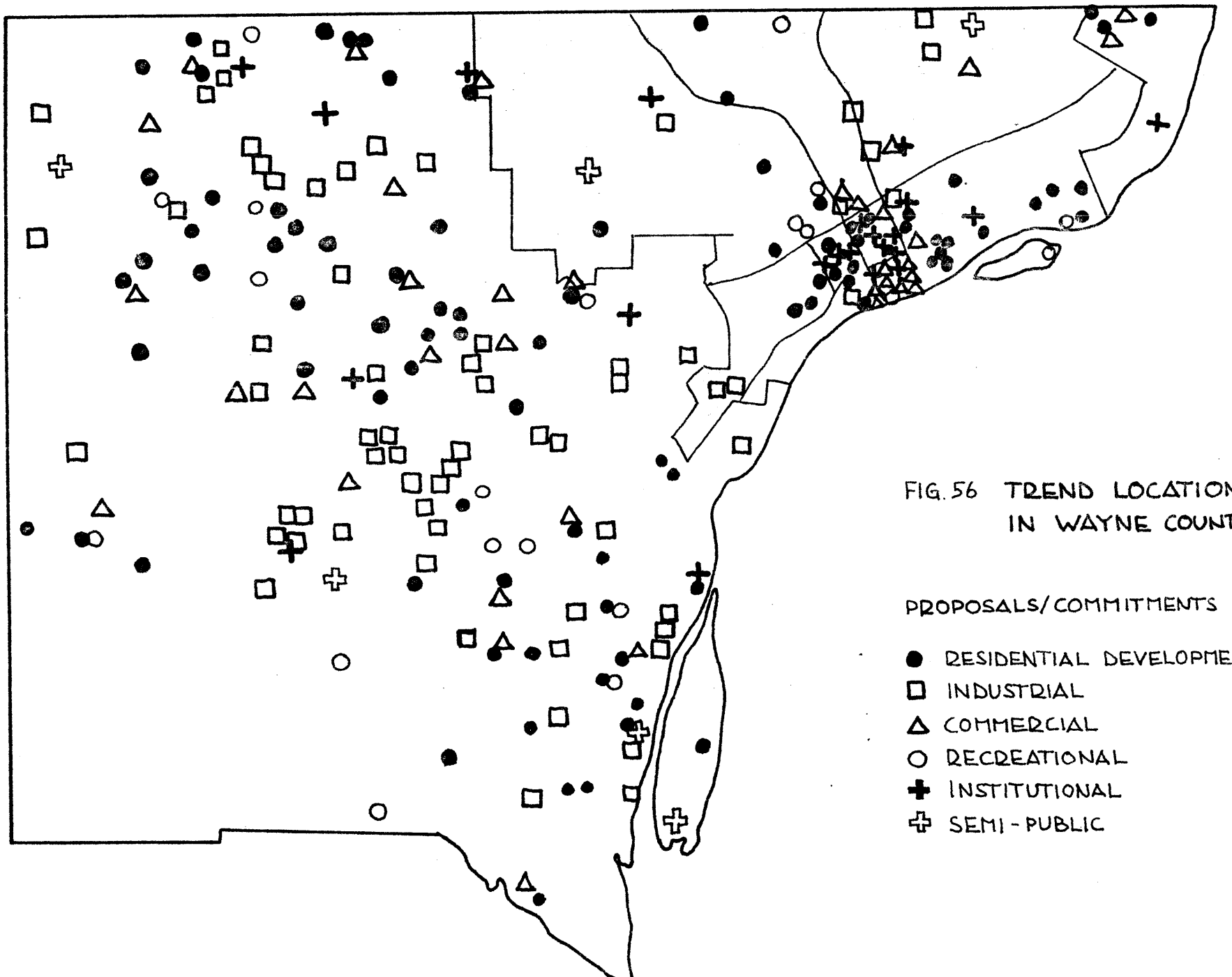
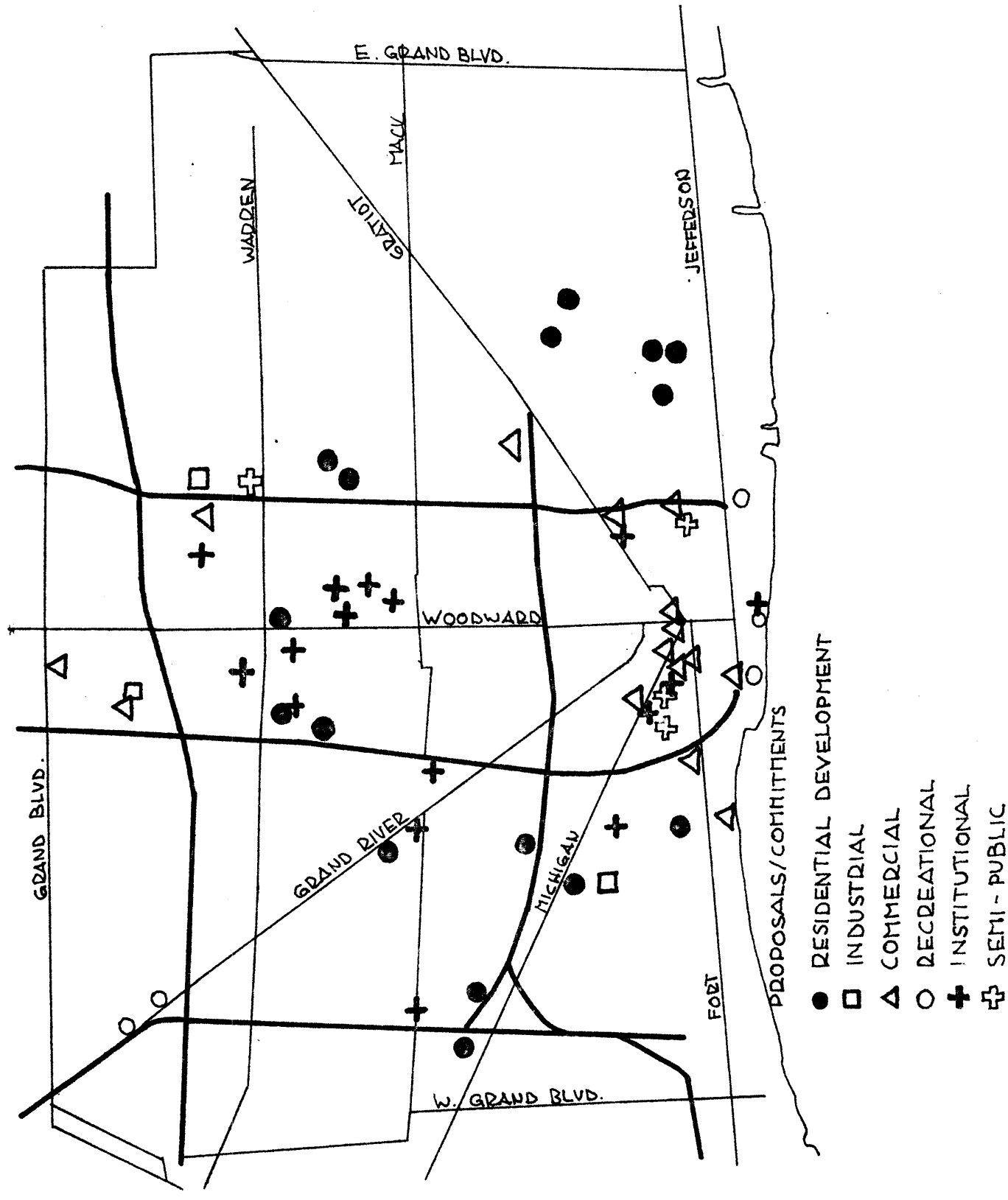


FIG. 56 TREND LOCATIONS IN WAYNE COUNTY

FIG. 57 TREND LOCATIONS IN DETROIT'S BOULVARD AREA



5.2. Transportation Plan

5.2.1 Highway Plan

Similar to the Land Use Plan, a lot of decisions about future highway expansion were made years ago. TALUS had practically no influence on the portion of new freeway and major arterials which are already under construction, or committed, up to 1975. Figure 58 shows the committed freeway network until 1975.

For the Long-Range Highway Plan, TALUS selected the 1990 Test Highway Network II (Max. Plan) described in chapter 4.2.2. This network should serve the travel demands according to the land-use plan but should also help to reinforce and further the desired land-use pattern. This plan has to be preliminary too, because new tests are needed to adjust to changes in the land-use plan.

The total costs of the proposed highway construction and the right-of-ways for the period between 1975 and 1990 will be $1,415 million for freeways and major arteries; $1,114 million will be required for construction, and $315 million for right-of-ways. These costs do not include maintenance. The large amount of additional high-speed freeways will reduce travel time for many trips. Figure 60 shows highway travel time contours for 1965 and 1990.

The highways in the urbanized parts of Wayne, Oakland and Macomb counties will have a "level of service D" as defined in the 1965 Highway Capacity Mannual. The rest of the region will have "level of service C". Out of the forecast and capacity calculations, volume-to-capacity ratios were calculated for selected corridors.

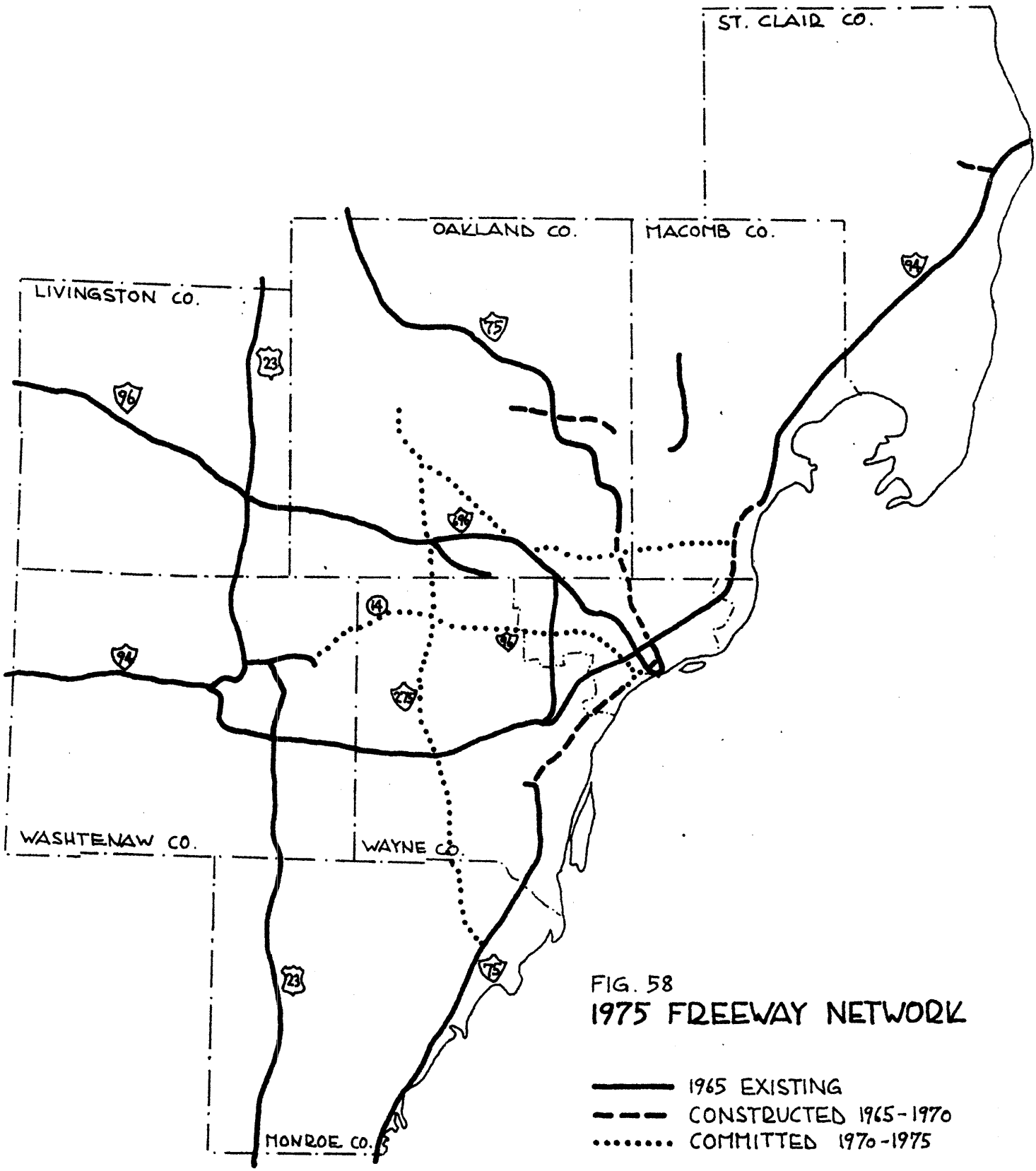


FIG. 58
1975 FREEWAY NETWORK

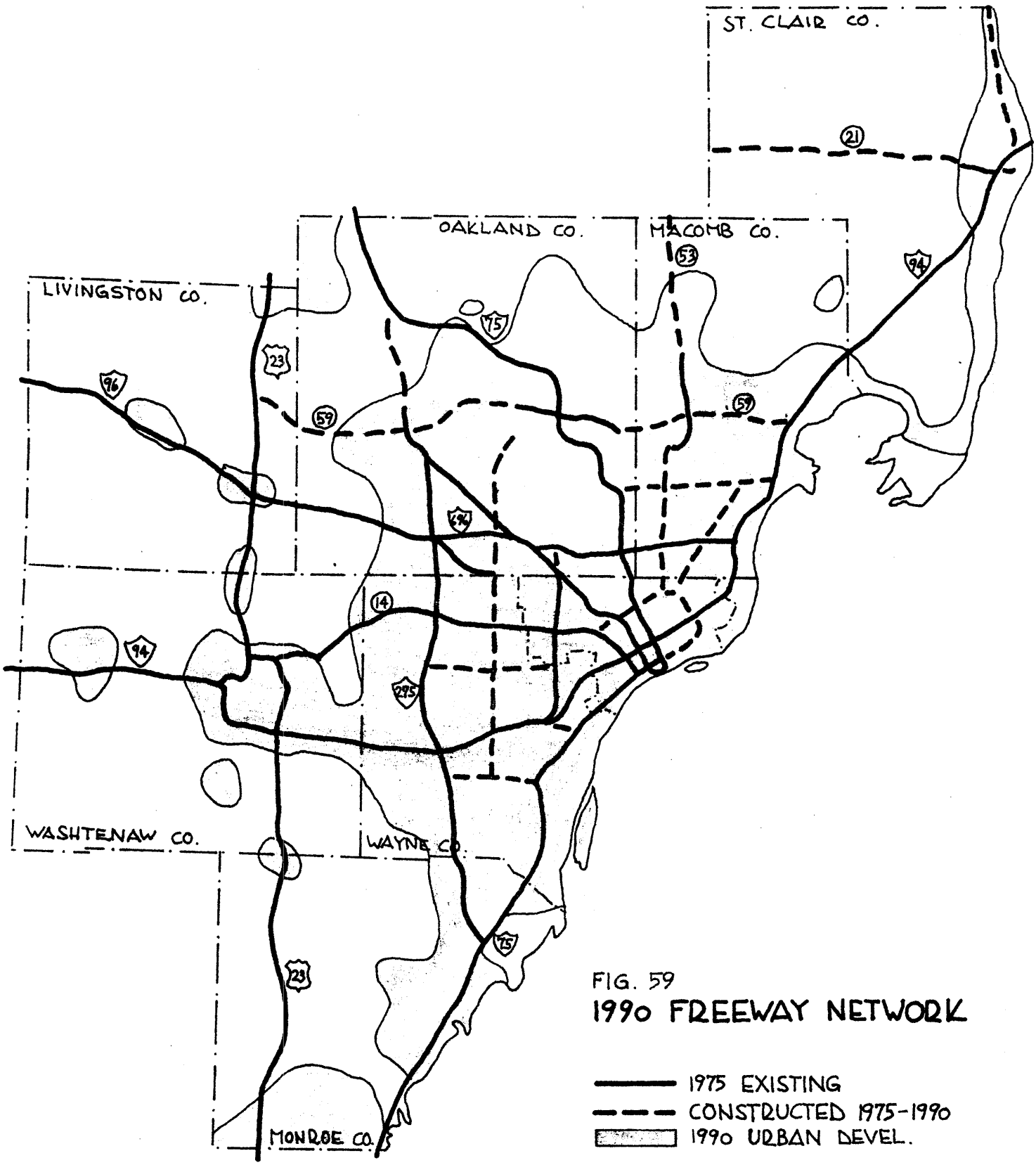


FIG. 59
1990 FREEWAY NETWORK

1975 EXISTING
CONSTRUCTED 1975-1990
1990 URBAN DEVEL.

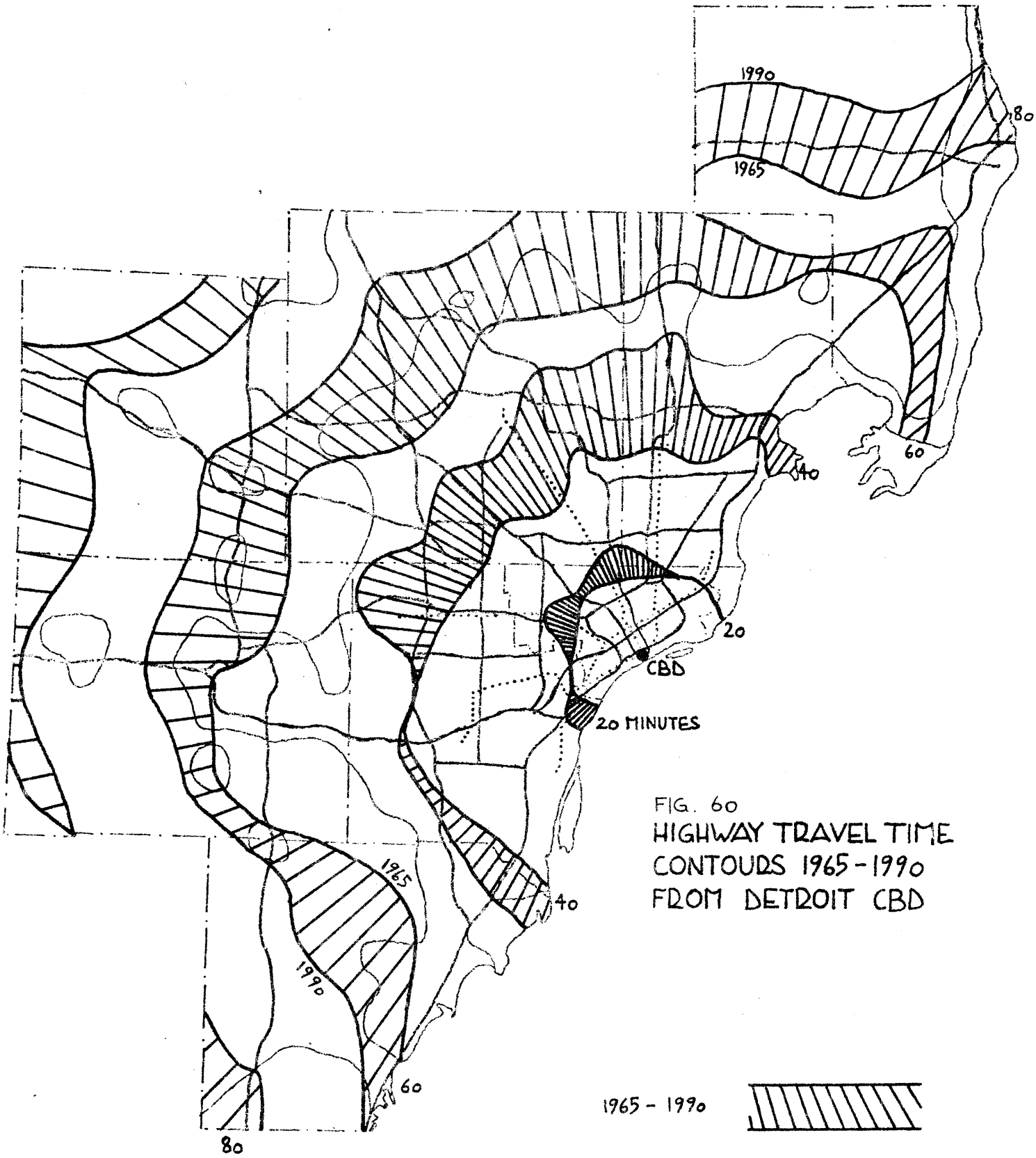
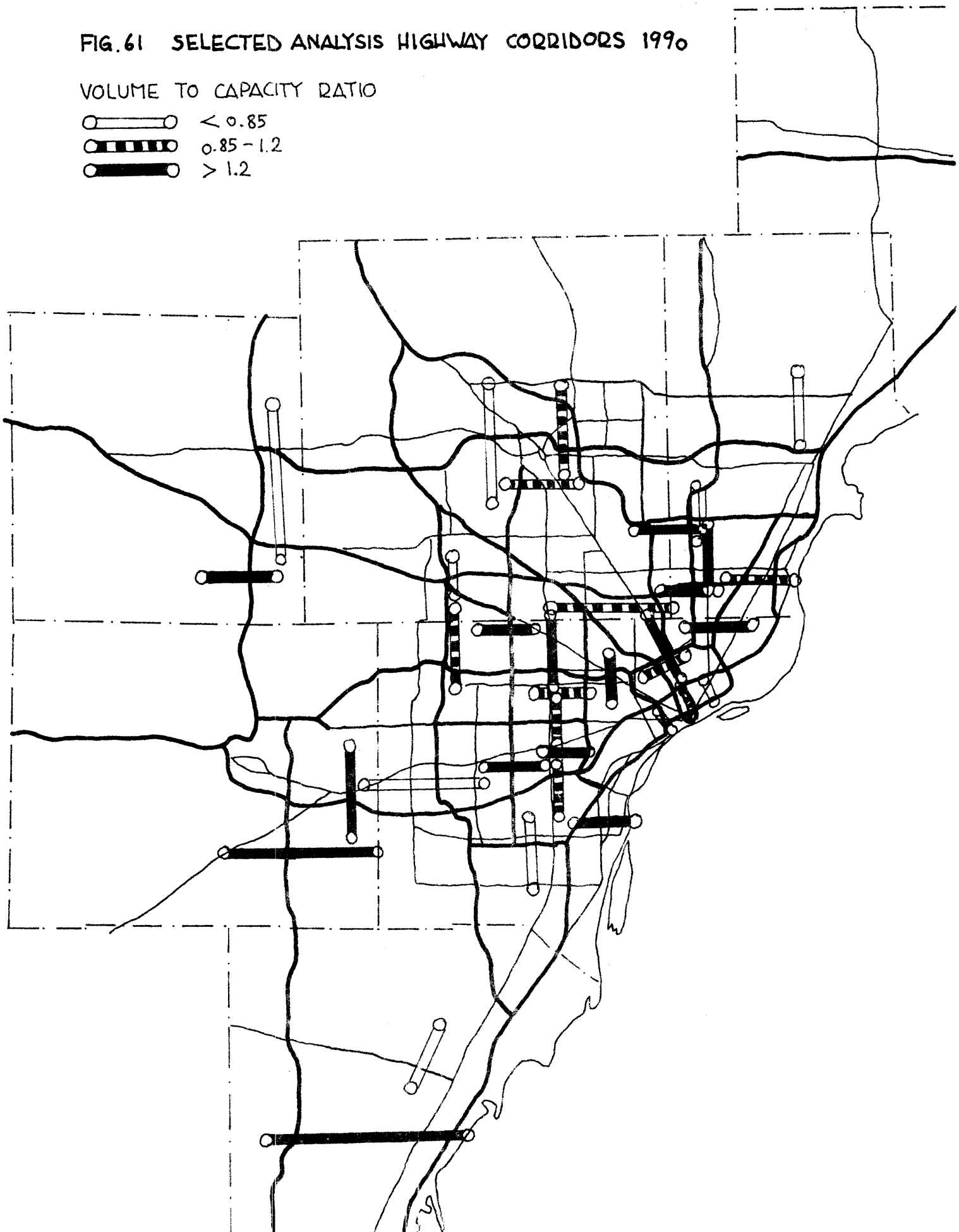


FIG. 60
HIGHWAY TRAVEL TIME CONTOURS 1965 - 1990 FROM DETROIT CBD

FIG. 61 SELECTED ANALYSIS HIGHWAY CORRIDORS 1990



5.2.2 Transit Plan

The long-range transit plan TALUS proposes includes a rail rapid transit system and a bus system. The rapid transit system is expected to be similar to the Bay Area Rapid Transit (BART) System in San Francisco which is a steel-wheel on steel-rail system. The proposal represents a reduced and varied form of transit alternative two. It is broken down into three priority groups.

Table 23 - Mileage of Rapid Transit System

Rapid-Transit Line	MILEAGE				
	Priority I	Priority II	TOTAL	Priority III	TOTAL
Van Dyke - Mound	10.9	4.1	15.0	5.0	20.0
Woodward	25.6	--	25.6	--	25.6
Grand River - Schoolcraft	*9.0	7.0	16.0	5.4	21.4
Michigan-Airport	9.5	10.7	20.2	--	20.2
Fort Street Extension	--	4.1	4.1	4.7	8.8
Crosstown	--	--	--	17.7	17.7
TOTALS	55.0	25.9	80.9	32.8	113.7

*Does not include 1 mile of route common to Michigan Airport Line in CBD

The average station spacing will be 1.2 miles in Priority I and 1.7 miles in Priority II. All lines with the exception of crosstown originate at Kennedy Square Station in the CBD of Detroit. The crosstown line will follow Grand Boulevard through the New Center Area.

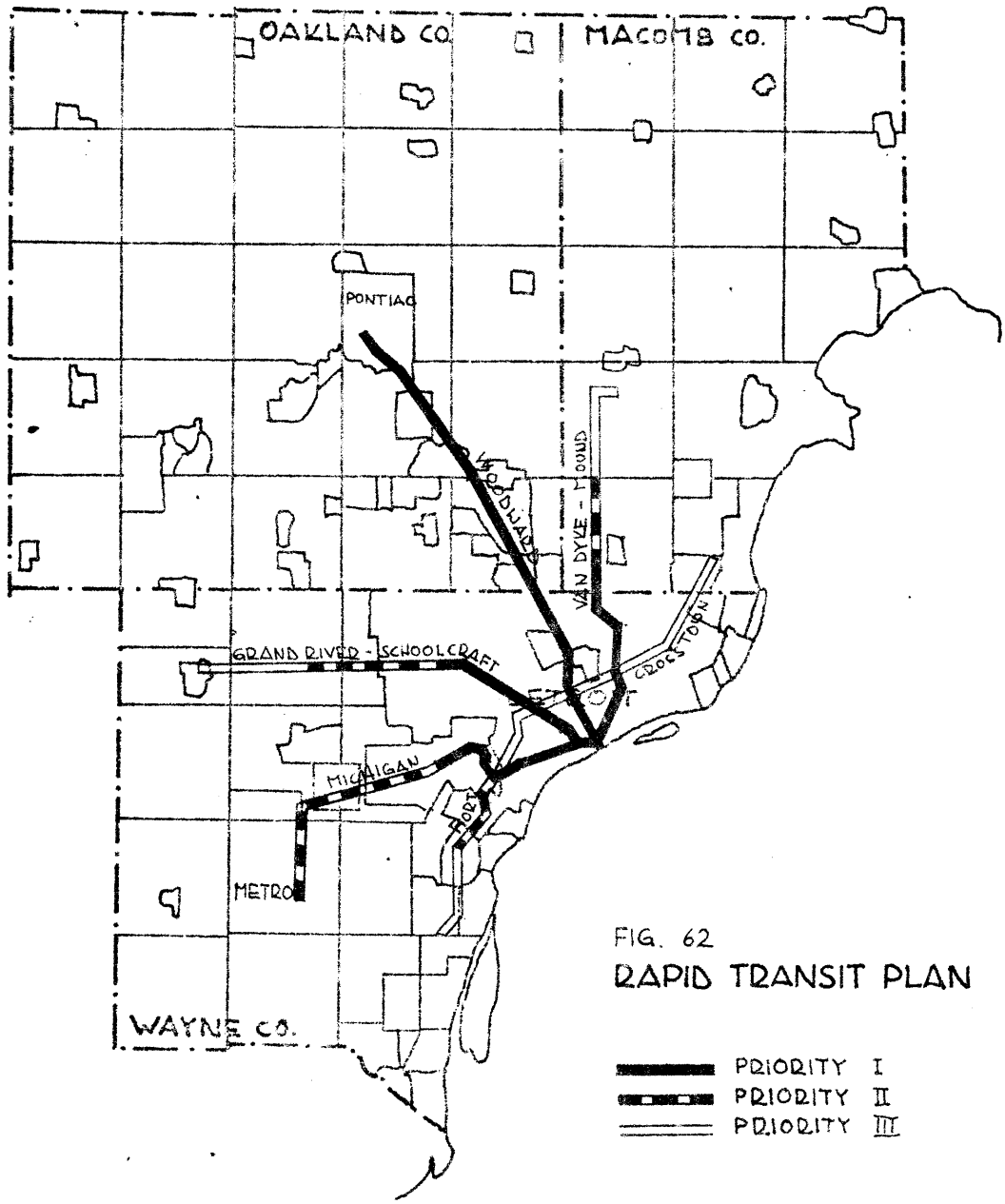


FIG. 62
RAPID TRANSIT PLAN

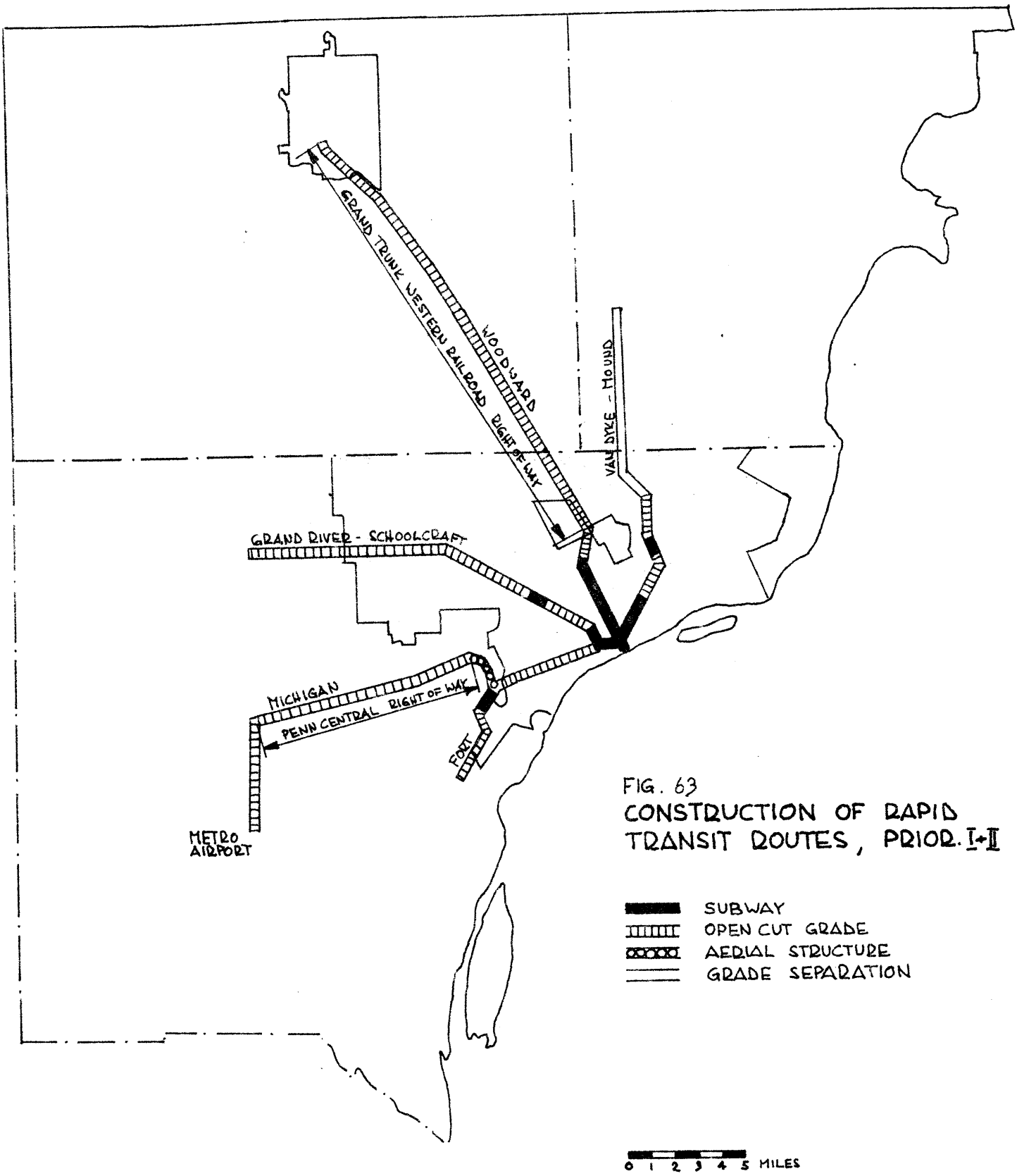


FIG. 63
CONSTRUCTION OF RAPID TRANSIT ROUTES, PRIOR. I-II

The TALUS Rapid Transit plan calls for 460 vehicles at $230,000 (1968 $). Each vehicle is 75 ft long and has a seating capacity of 80 and will be air-conditioned.

The 1990 daily transit trips were assigned to a network including rapid transit priorities I and II. Rapid transit trips will account for about 60% of the total daily transit trips in 1990. Figure 64 shows the 1990 daily rapid transit trips. "The proposed Washington, D. C. Transit System, which is close to the beginning of actual construction, expects 1990 daily volumes between 100,000 and 160,000 on line sections approaching the downtown area, with the outer ends of most lines in the 10,000 to 30,000 daily passenger range. Washington, D. C., of course, is significantly different from Detroit in terms of the proportion of total regional employment in and near the CBD." (TALUS, Growth, Change. . . and a Choice for 1990, page V-C-32)

In addition to the rapid transit, an extensive surface bus network is planned to provide the following services:

- Feeder service to rapid transit system
- Local service along rapid transit routes
- Service in corridors not served by rapid transit
- Crosstown and circumferential service

The bus system has to complement and supplement the rapid transit system. Further planning of bus routes still has to be done.

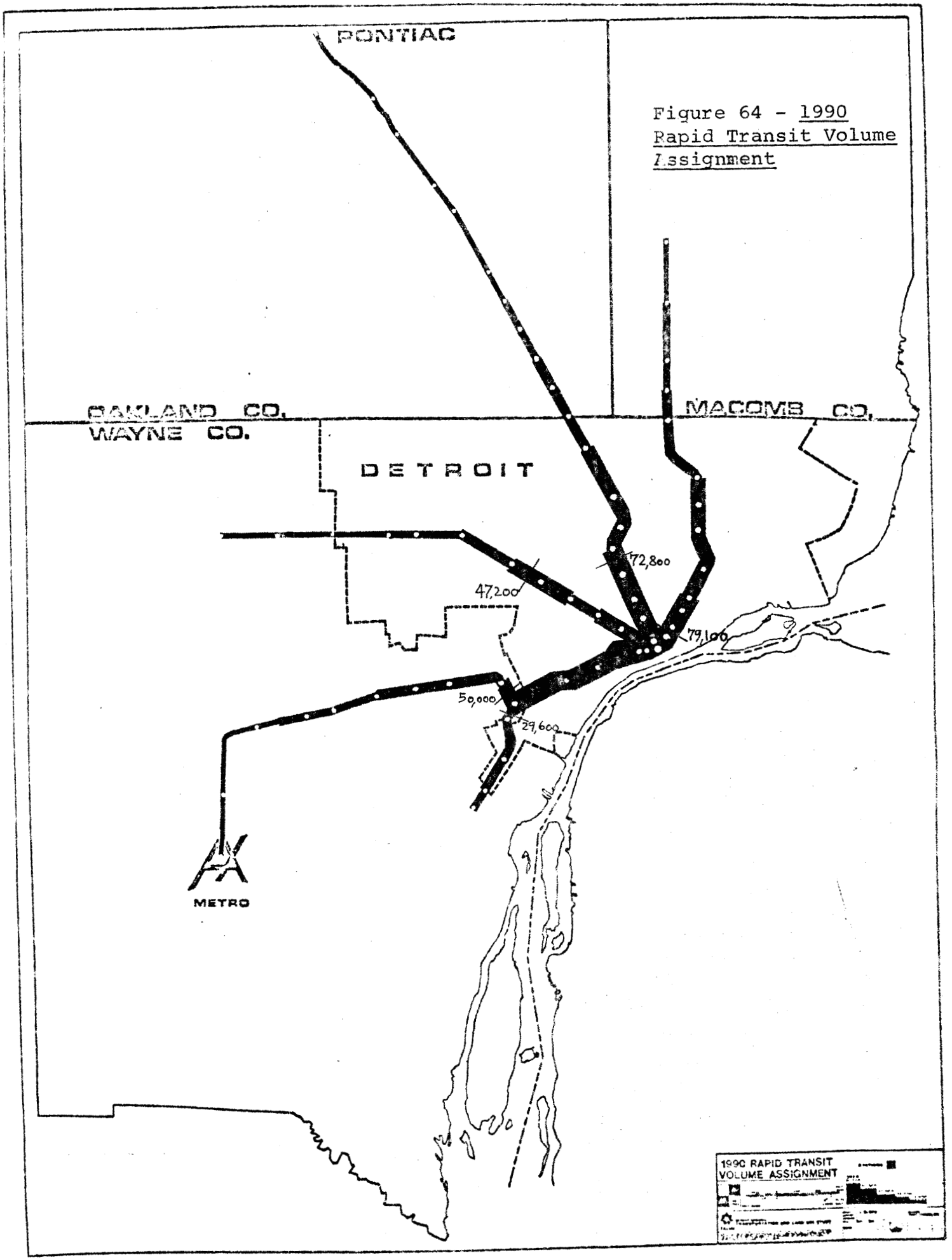


Figure 64 - 1990
Rapid Transit Volume
Assignment

Comparing the average per-mile costs of rapid transit construction with that of other systems, the TALUS proposal shows quite a low figure because only a little part of the system is built as subway:

Detroit	$12.5 million/mile
Los Angeles	$16.2 million/mile
Washington,D.C.	$15.2 million/mile
Atlanta	$11.1 million/mile

To estimate the financial result of operations of the transit system, TALUS calculated the operating revenues and expansions for 1990.

The revenues are estimated on the base of 619,000 daily transit trips with an average fare of 41 cents. The daily revenues were converted to annual figures by multipying by 2 %, which included a reduction because of less ridership on Saturdays and Sundays. The annual passenger revenue totals $73,613,000. Together with other revenue, the total revenues from operations in 1990 are estimated at $74,717,000 (1968 $).

The operating expenses and depreciation are calculated for the rapid transit and for the bus system separately.

Table 24 - Operating Expenses and Depreciation, 1990 for Rapid Transit and Bus Operations

Account Group	Costs/ Car Mi.	Costs/ Bus Mi.	Annual Costs Rapid Transit	Bus
Maintenance	7.3	10.3	2,541,000	4,832,000
Maintenance of Ways and Streets	11.1	--	3,872,000	--
Garage and Fuel	--	7.3	--	3,452,000
Power	10.0	--	3,501,000	--
Transportation	23.8	42.3	8,311,000	19,939,000
Traffic Promotion	--	0.3	--	122,000
Administration and General	14.2	25.6	4,989,000	12,061,000
Taxes (Operating)	--	0.4	--	203,000
Subtotal	66.4	86.2	23,214,000	40,609,000
Depreciation-Vehicles	10.1	6.9	3,527,000	3,262,000
Depreciation-Other	1.8	1.8	644,000	829,000
TOTAL	78.3	94.9	27,385,000	44,700,000

Annual Train/ Bus Hours	320,200	4,930,000
Annual Car/ Bus Miles	35,006,000	47,084,000

The above estimation shows that the expenses are $2,632,000 less than the revenues. The system would generate sufficient revenues to sustain itself, but it becomes obvious that the capital costs cannot be met with passenger revenues. They can cover only a fraction of the capital investment. The rest will be public investments, federal, and state grants.

Because the capital expenditures of the proposed rapid transit system are, with over one billion dollars, representative of a very large invesment, TALUS tries to demonstrate in an estimation of regional spending on transportation that this amount is not extraordinary.

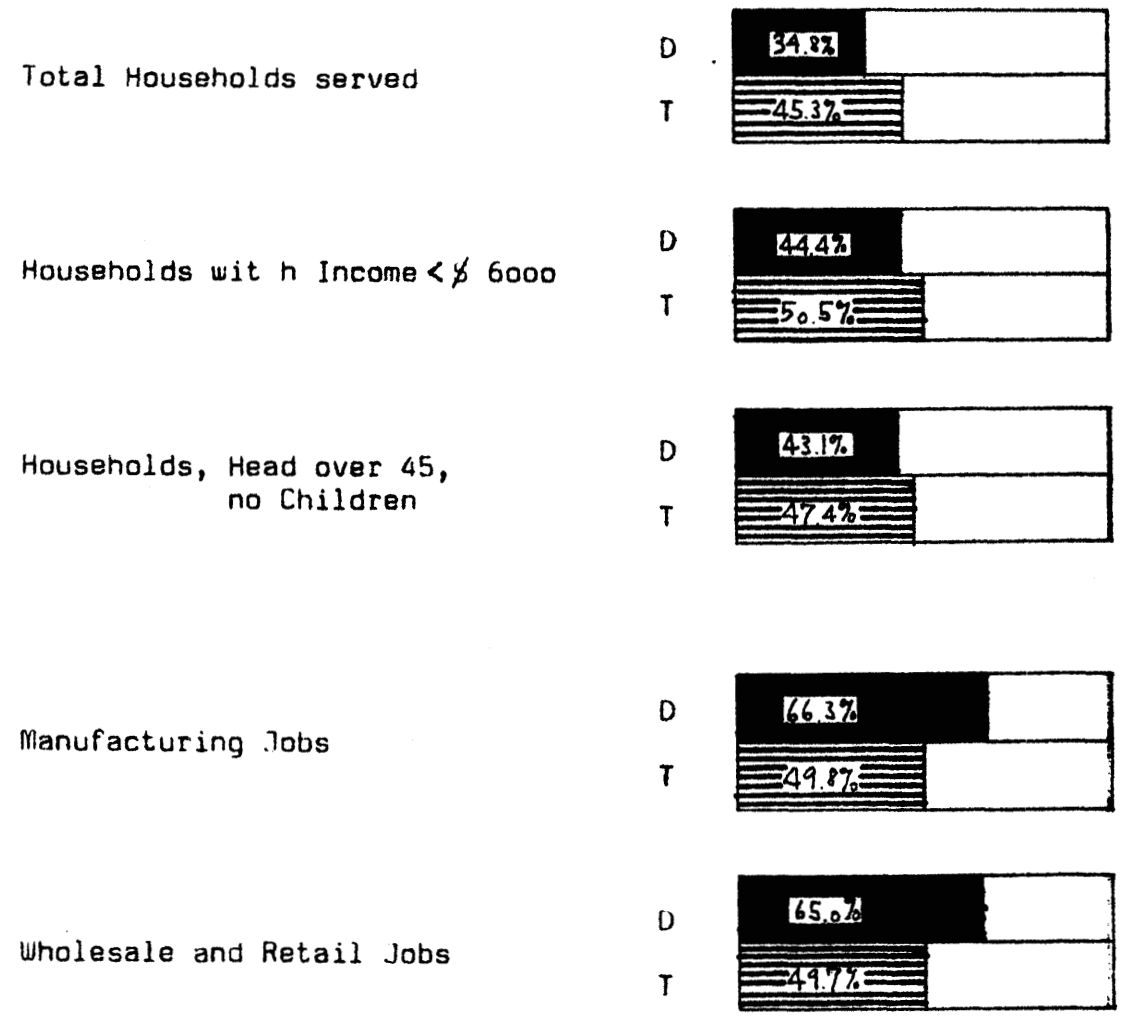
Table 25 - The Annual Regional Spending for Transportation Purposes, 1990 (millions of dollars)

Highway		
Construction Costs	$ 222.1	
Maintenance Costs	14.4	
Vehicle Operation (incl. deprec.)	4,006.2	
Travel-Time Cost (1$ per hour)	1,724.7	
Parking costs (CBD)	83.2	
	$6,050.6	97%
Transit		
Capital Costs	$ 68.3	
Operating & Maintenance Costs (incl. deprec.)	72.1	
Travel-Time Cost	55.9	
	$196.3	3%
TOTAL: All Trans. Spending	$6,246.9	100%

The travel forecast for 1990 predicts that transit trips will represent only 3% of total trips.

Figure 65 shows the impact of the proposed Rapid Transit System on some household and employment groups.

Figure 65 - Service of Rapid Transit Network on Selected Groups; City of Detroit and TALUS Region, 1990 (percentage)



Areas served by Rapid Transit are corridors, consisting of aggregated superdistricts, one to three miles wide in the City of Detroit and two to five miles wide in the suburbs.

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The impact of rapid transit will not only be limited regarding the provision of transportation to poor and handicapped people. Such a system will also have a great impact on the pattern of land use.

Beside the long-range transit plan for 1990, TALUS also proposed some short-range transit improvements. This program makes interim recommendations which will have to be refined by the Southeastern Michigan Transportation Authority (SEMTA) and the Detroit Department of Street Railways (DSR). TALUS calls for a unification of all public transportation facilities under one authority, SEMTA. This system would provide equal services and more economical operations, maintenance and administrative, and other personnel.

The TALUS program recommends a series of service and capital improvements. Some specific recommendations are:

- New express bus routes and tests with bus lanes for higher speeds
- Equipment of all buses with two-way radios
- To bring the average "age" of buses down to six years
- To equip buses with air-conditioning
- New operating terminal, garage, and central repair facility
- More park-and-ride and kiss-and-ride facilities
- More bus stop shelters
- Improvement of Grand Trunk Western Railroad commuter service

All these improvements are needed urgently. This short-range program should be implemented as soon as possible.

6. REMARKS AND THOUGHTS

The Detroit Transportation Land Use Study is a huge and complex planning operation. It seems quite obvious that it is very difficult for a newcomer to Detroit to understand such a work in a relatively short time. The situation today in the TALUS Region is not only different from that in European countries, but it is the result of a long process and has grown out of different ideas and policies in the last centuries. Besides the differences regarding the political, economic, and social history in this country, the planning tradition has also passed through stages other than planning in European countries. Nevertheless, the following remarks and thoughts in relation to the TALUS Study are written down in an attempt to understand this work, and the American situation as well as possible. One must be aware, however, that these comments are subjective.

6.1. Remarks and Findings

This chapter could be broken down into another two parts: (1) more general remarks and (2) more technical, detailed questions; both are more or less connected to each other. Also, I do not intend to start with large, counter-theories and counter-proofs. I attempt to express some weak and discussable points in the study starting with more general remarks.

Reading, "Growth, Change. . . and a Choice for 1990" and other TALUS publications, it is very impressive to see how large the survey and data collection is. Most of the money and time for the study seems to have been spent on the survey and the model development. Therefore, the following planning activities automatically suffered. The development of alternatives, the evaluation and the development of the preliminary land-use and transportation plans, must have been under the pressure of time. With regard to the working-out of land-use alternatives, the different steps became less and less clear and the result is a relatively detailed preliminary plan which does not show the "how and why." Due to time shortage, the highway and the transit network alternatives are only partly tested and there is no complete evaluation. Also, the evaluation of the transit plan preceeded a calculation of costs. This costs estimate could only be done for the selected alternative. It seems that some important information was missing for the evaluation. It should be mentioned that some supplementary studies were made after the publication of the report, "Growth, Change. . . and a Choice for 1990" in August, 1969.

There is no doubt that TALUS did not have enough time for the hearings and the associated plan revisions, corrections and adoptions, which should have led to the final plan by the end of 1969. It is clear that TALUS could not finish its work before

the end of its operation. The data collection, in my opinion is a bit too detailed and for this reason might not be analyzed and utilized 100%. As a second factor, the data processing of the whole survey material takes a lot of time and, therefore, the data collection might lose its actuality.

Generally the whole TALUS planning system seems too rigid, too limited and heavy for changes. Instead of being flexible and staying within reasonable ranges and limits, TALUS tries to come out with one huge, and complex solution. Computer models are used in planning to test and illustrate influences and changes which otherwise could not be surveyed. But it costs a lot of money to test alternatives, for computer time as well as for paying the staff, and the costs increase the larger and the more complex the models are. TALUS uses one of the biggest and most difficult land-use models, which is probably the reason why the number of model runs is very limited. This again means that just a few variables were changed and tested. The final model output is based on various staff decisions. If it is not possible to test all kinds of alternatives by computer, the use of complicated models and computers becomes questionable. The whole computerized planning process should not be considered a mysterious "black box" which feigns that a lot of alternatives can be, and are, tested before the final plan is created. After

the detailed descriptions for the preliminary 1990 plan, TALUS mentions that urban renewal and rapid transit could bring great changes. To see the real consequences it would be necessary to start again with the whole complicated planning process. Therefore TALUS is speaking of new model-runs with less growth in the outer counties and more emphasis on the city of Detroit and the SMSA.

In my opinion, the TALUS Study is far too detailed for regional planning. The descriptions of the preliminary plan are too exact and detailed, especially regarding more important questions (i.e., rapid transit, yes or no) are not yet solved (except for TALUS). As long as nobody cares about these plans, there is little need for so much exactness. Until today, most expansions of development are still done by private developers.

Besides the above mentioned reasons there are very strong local interests. Each independent community within the region likes to have as good taxpayers (industries) as possible. This seems to be the reason why TALUS predicted such a great deal of industry-land (and reserves) for 1990 as compared to 1965. It is quite obvious that not all these reserves can be built up and developed, which, as a matter of fact, would not be so bad if other land uses were not prevented.

Besides some "new towns" and certain concentrations along corridors, the 1990 preliminary plan of TALUS shows a continuation of the previous trend movements. Unfortunately, these trends do not quite demonstrate the real needs and wishes of the population, but rather profit from the motives of some single persons and interest groups. In most cases, there is practically no choice. For example, in housing: In Detroit's Inner City one can hardly find multi-family complexes for middle and higher income as im Chicago. These trend projections only prolong a more or less chaotic situation into the future. The TALUS projections are too pessimistic to make Detroit into a lively and "concentrated" city as is Chicago, Montreal or Toronto, for example. On the other hand, since there are too many large investments planned Detroit could not become a suburbanized city. The result is that the plan for 1990 which feigns a nice and better image, shows in reality a sad future very similar to the present situation. The projections are, in fact, very deterrent. The preliminary plan for 1990 shows, for example, practically the same residential densities in the Inner City as in 1965. TALUS, on the other hand, expects for 1990 a population decrease for the city of Detroit to 1.2 million. This means that in the future there will still be a great many vacant houses and lots. Therefore, I do not

believe that Detroit's physical aspects will improve because these vacant lots will hardly be better kept than they are today. In my opinion, TALUS should deal more with these kinds of problems instead of making nice plans which do not really show the true facts.

Concerning the proposed rapid transit system, the calculated passenger figures are either too pessimistic or otherwise a good bus system should be sufficient. A rough estimate with TALUS data and information showed me that there is relatively small use of the rapid transit system. Let's take the Woodward line, which has with 72,800 the highest number of daily passengers. In the rush hours, TALUS expects trains with 6 cars at 80 passengers and headways of three minutes. This line, therefore, is able to transport 19,200 passengers per hour in both directions. Under the assumption that there are two daily rush hours, this means about 38,400 passengers. Subtracting the above mentioned figure from the total, the remaining passenger number is 34,000. With four-minute headways during the remaining 18 service hours (20 service hours a day) only 65 passengers will show up for each train, and these passengers could easily be carried by bus. During the rush hours buses with 80 seats and headways of 30 seconds would provide the needed service. Of course, in several cases, exclusive bus lanes would be needed.

On the other hand, it is possible that the TALUS projections are too pessimistic because the Modal Split Model is based on today's low level of transit service. There is a chance that a modern rapid transit system could attract many more passengers than a bus system would do.

The reader should pay attention to the income distribution for 1990. The middle- and upper-income groups are growing very fast and it is great to have 75% of the households in 1990 in income groups of over $10,000 (1965$). On the other hand, it is very disappointing to watch the bottom of the scale. While the percentage is declining, the effective number of families with an income under $3,000 (1965$) stays about the same. Either these projections are wrong, or it should be mentioned in the report how such a situation can be handled. A widening of the gap between the different income classes should be prevented. This gap is already far too large today, and is the cause of so many unsatisfied people. Such problems could bring new riots regardless of race differences.

TALUS dealt with three important points, but did not point out enough with regard to conclusions. The problems are (1) sewer service, (2) equal schools, and (3) equalization of revenues. Sewer service is a very important topic in the TALUS study,

and it is one of the major policies to have future development in sewerable areas. The 1990 plan provides the whole urbanized area with sewer service. This is all right, but it is taken too much for granted. There is only a little remark in the report, indicating that septic tanks only are insufficient. Because a lot of houses around Detroit still operate with septic tanks, this insufficiency has to be emphasized more. To prevent additional water pollution, new developments should only be allowed in areas connected with a sewer system. All waste water outside a system ought to be treated such as it would be in a sewage-treatment plant. With such control, the urban development and proliferation could be guided.

With regard to the school systems, the necessity of the equalization should not only be mentioned en passant. This problem seems to me to be very important and one of the main points to be solved. The importance and urgency is very clear if you think of all the people who chose their residence only because of the school system. A quick solution has to be found in order to stop the exodus from the city of Detroit and to give poor and handicapped people the same educational opportunities. Only with new solutions concerning this matter would middle- and higher-income people be attracted back to Detroit.

The third point, equalization of revenue, is again not emphasized enough. This question, as well, has priority for the future of the city. Detroit and the poor communities urgently need help and the only just solution would be that richer communities help to solve the problems within the region. Such equalization of revenue, whereby richer communities give money to the poorer ones, should be organized on a state level. At the same time, this system could effect an equalization of the tax base within the region and the state.

In finishing this chapter, I have some rather technical remarks to make. In August, 1969 TALUS published its three-volume preliminary report "Growth, Change. . . and a Choice for 1990." The descriptions and illustrations are very detailed. Unfortunately, it seems that this publication was also under the pressure of time because it is not done carefully, especially with regard to tables and graphs. Some mistakes in the tables, and the insufficiently inscribed graphics make the reading much more difficult and often lead to misunderstandings. Also, most maps are drawn in different scales which make the comparison very difficult. This is true also regarding the data where different measurements are often used.

A transportation study as big as TALUS's should deal with traditional and new transit technology. Unfortunately, though, TALUS

only mentions newer systemswith a few words. This description also follows the detailed rapid transit plan based on the assumption that a steel wheel on steel rail system similar to the BARTD (Bay Area Rapid Transit District) system in San Francisco would be used. In times when conventional transit technologies are very much discussed, a transportation study should not only make a short description of other possibilities. TALUS ought to take a much clearer standpoint and as a consultant, help to solve the technology questions. Probably time restrictions led to an early decision here, too.

In an attempt to justify the large capital expenditure of the proposed rapid transit system, TALUS estimates the total regional annual spending for transportation purposes in the year 1990. This calculation includes government agencies, individuals, and business. The main cost groups for highway and transit transportation are: capital costs, operating and maintenance costs, parking costs and travel time costs. The estimate comes out with a 3% share of total costs for total transit costs. This figure corresponds with a regional trip projection which shows that about 3% of total regional trips will be made by transit. It is very good to have such estimates, but they should not be over valued because the calculations are based on uncertain factors such as travel time costs.

As a conclusion, I would like to say that the TALUS study was built upon a very productive and detailed survey, and very good data material. The developed models for this study are rather too voluminous and complicated to possibly render a flexible planning process. The 1990 preliminary plan needs to be revised again and cannot yet be regarded as a final proposal. In general, the study seems very realistic and tries to remain within the framework of feasibility. The TALUS report is not at all revolutionary and mainly follows trends, but what Detroit really needs for a better future are some big and important changes.

6.2. Thoughts

Reading the TALUS study, as well as trying to understand and know a city like Detroit, poses quite a few questions. The main questions, in my opinion, are: Where is Detroit today? and,What is Detroit going to be?

Regarding the population, Detroit is the fifth largest SMSA (Standard Metropolitan Statistical Area) in the United States. It is, therefore, very, very surprising how few mentions the city gets here and abroad. In practically all fields, smaller SMSA's--such as Boston, San Francisco, Cleveland, etc., are more important. The only reputation Detroit still has, is to be America's "Motor City." Detroit may be a good and profitable place to work, but it is an unpleasant place to live, and nobody would think of spending either spare or recreational time in this city. Everywhere in this city, one gets the feeling of economy and of profit striving, as well as a tendency to rational and efficient thinking--along with too many differences and struggles. Detroit's problems, and especially those of the city itself are increasing rather than decreasing. But it is certainly not necessary to mention more in this regard; a drive through the Inner City demonstrates the real, desparate situation. These problems have been recognized by many people, and lots of committees have been formed in an attempt to help the region and the city.

Sometimes, however, it seems that there is only "lip service," because real help, as we all know, is not "profitable" in terms of money. In order to do something in these huge areas of the Inner City today which need renewal--not only the CBD--the plan making should have been started five or more years ago. Unfortunately, this does not seem to have been the case, and doubts exist as to whether plans are being made today for the near future. New projects, such as the stadium or the Edison complex downtown, are necessary but not at all sufficient. To compare Detroit to Montreal or Chicago, for instance, one can see to what extent renewal is possible for a city this size.

Before this renewal begins, the decisions must be made as to which of the two alternatives for Detroit's structure in the future should be chosen. The possibilities are: (1) a decentralized auto-oriented city, suburbanized such as Lafayette Park, or (2) a much more concentrated and lively city, which is again the center of the region--by this, not a concentration and density of a European city is meant, but a moderate density which is not terminated at the CBD limits. In this case, an increased number of apartment building developments should provide a transition to the one-family-house areas. Again, I am using Chicago and Montreal as examples, where huge residential complexes have been built in and around the CBD.

Between the two above mentioned possibilities of suburbanization or concentration, there is still another way which in my opinion should not be considered as an alternative: It is the situation that exists today and the present trend towards a suburbanized city around an artificial CBD, which still is the regional center in some cases but also has lost a lot of importance in other fields. With its plans and projections, TALUS represents this attitude, which is more or less a modified trend development. For a city in which the population is to decrease further in the future, a large rapid transit system is proposed, and has its focus in the CBD where employment total should remain constant. According to TALUS, though, this same CBD will no longer be the regional center. Today's situation will be more or less extended without foreseeing big changes. In this case, a rapid transit system must become a failure, because there certainly would not be enough people to use it.

On the other hand, such a system can help to revitalize a city, as it happened in Montreal, but a rapid transit system alone does not help. Also necessary is the "good will" and desire for renewal, and a positive belief in a city on the part of authority, business people, and the entire population -- a strong "will for community" instead of escaping to privacy, could help to solve the problems

of the Inner City and to make it attractive again. In a city which is lively 24 hours a day, the crime rate and at the same time the crime hysteria would partly be eliminated. The condition is, that many more people again live downtown and that complexes are built with mixed land-use functions, providing shopping and window shopping, restaurants, coffee shops, and entertainment in all price categories. Such a development should not be limited to the CBD, but should also extend beyond the artificial boundaries which went along with the construction of the freeways. The above mentioned mixture of functions is valuable for the medical and cultural centers, too, which should not become isolated deserts of monuments. Instead of function separation, function mixture must be the goal. Anyway, political and business agencies should make a relatively quick decision regarding the future city structure. Such a decision requires courage, but helps to clarify today's situation and new development could be undertaken at the right place and in the proper dimensions.

The population should also participate in decisions of such an importance. The most ideal solution would be if the population could be directly involved through the whole planning process. Unfortunately, this is impossible in most cases, but the population should at least be well informed and allowed to choose between alternatives. Citizen participation may not be just an opposition

against the only government proposal.

I already mentioned revenue equalization once before. This seems to be the most urgent concern besides school equalization--it is much more important than to establish a metropolitan government and this issue should be handled separately. Such a taxation equalization could help to see and to understand problems outside one's community and to think on a more regional scale. This taxation revision should by all means undertake shiftings between income and property tax, as well as between taxation of houses and land. It would probably help to spur people to improve their houses and to favor parking structures instead of parking lots.

Here two more thoughts about mass transit: In my opinion, mass transit should be a self-evident public service, like other social services such as welfare, unemployment compensation, etc. This does not mean that the service should be free, but that one should not expect mass transit to be a profitable business. The spiral of fare increases and passenger losses should be stabilized. It is quite obvious that, again, poor and handicapped people depend on mass transit and have to accept higher fares and worse service. For most people, the possession of a car is automatically assumed; I think therefore that it should be at least as much of an automatic assumption for the minority to have an inexpensive

and efficient mass transit. But mass transit should also provide a choice for persons with cars. This means, again, the necessity of attractive, comfortable and inexpensive service. New people will be attracted only by an efficient, comfortable system. The vehicles must be clearly marked, the map system very legible, and the stopping-stations equipped with time destination and time tables, which are the most primitive elements of a mass transit system and are absolutely necessary for people who are not commuting each day.

Public housing for low income families seems to be another severe problem. It is surprising and disappointing to see how, until now, public housing was only huge complexes. This means isolation for low-income families, and such a separation from the rest of society should not happen. One should not be able to recognize public housing from far away, but it must instead be integrated as much as possible. Public and private housing could be mixed within the same building complex, or even the same apartment house. The income limit for public housing ought to be higher, in order to achieve a better mixture of persons from different incomees, and also so as not to discourage people from attempting to reach a better income level.

To work for a better environment, developments and buildings out to be much more "outside oriented." If everyone would be also concerned about how his property looks from the outside, and how he could help to embellish the environment--and if private as well as business people would have this attitude--Detroit could already be helped a great deal! New developments on a large scale, with a mixture of residential and business uses could replace the ugly commercial strips, which show, anyway, an enormous vacancy rate. Parking lots must disappear and be replaced by parking structures. Public parks, sidewalks, etc., seem sometimes to be quite neglected, and should also be improved. Parks, especially, need better landscaping, and sidewalks should be attractive for pedestrians, and not a hilly concrete desert. I am sure all these actions, although "superficial," would help to make Detroit into a more pleasant city.

Detroit could certainly be a very attractive city, which has more to offer than businesses and suburban privacy. To reach this goal, actions and not only "words"--and courage, in addition to cost-benefit calculations--are necessary.

APPENDIX: DATA COLLECTION

General data from "Growth, Change . . . and a Choice for 1990."

Other Sources:

a - "A Profile of Southeastern Michigan" TALUS Data.

b - "Population Study," Technical Report.

c - "Household by Income Class 1965-1990," Technical Report.

d - "Economic Study. . . Employment Trends," Technical Report.

e - "Employment Allocation Model"

f - "Open Space and Recreation in the TALUS Region"

g - City Planning Commission

h - Census Figures

( ) Own Calculations

SMSA: Wayne, Macomb, Oakland counties

Outer Counties: Livingston, Monroe, St. Clair, and Washtenaw counties

Wayne County includes City of Detroit

Inner City:

Boulevard Area: Area within Grand Boulevard

1.1 Population, Employment, Income

Population, Households		U.S. Mio.	MICH. Thous.	TALUS REGION Thous.	SMSA Thous.	OUTER COUNTIES Thous.	WAYNE COUNTY Thous.	CITY OF DETROIT Thous.	INNER CITY Thous.	BLVD AREA Thous
Population	1900	76.2	2,421	582	427[h]	(155)		286[h]		
	1910	92.2	2,810	761	614[h]	(147)		466[h]		
	1920	106.0	3,668	1,468	1,306[h]	(162)		994[h]		
	1930	123.2	4,842	2,382	2,177[h]	(205)		1,569[h]	1,218g	407.
	1940	132.2	5,256	2,614	2,377[h]	(237)	2,016[h]	1,623[h]	1,175g	390.
	1950	151.3	6,372	3,345	3,016[h]	(329)	2,435[h]	1,950[h]	1,137g	392.
	1960	179.3	7,823	4,181	3,762[h]	(419)	2,665[h]	1,670[h]	905g	264.
	1965		8,317	4,419	3,997	422	2,677	1,533[a]		
Households	1950									
	1960		2,239[h]	1,150	1,080[h]		784.7[h]	514.8h		
	1965			1,179	1,070	108.8	735,			

Population, Households		U.S.	MICH	TALUS REGION	SMSA	OUTER COUNTIES	WAYNE COUNTY	CITY DETROIT		
Persons/Household	1960		3.42[h]		3,44[h]		3.35[h]	3.2[h]		
	1965				3.5		3.64	3.2		
Non-White Pop. %	1960		9.4[h]		15.1[h]		20.1[h]	29.2[h]		
	1965			14.85						
Marital Status House-hold head	1965									
Married %					78		74[a]	68		
Single %					11.4[a]		13.3[a]	16.2[a]		
Widowed %					4.9[a]		5.6[a]	7.2[a]		
Divorced %					5.9[a]		7.0[a]	8.9[a]		
Female Head					15.7[a]		18.5[a]	22.8[a]		
Life Cycle Status	1965									
Under 45, no children %					9.9[a]		10.4[a]	11.9[a]		
With children %					59.2[a]		55.4[a]	49.0[a]		
Over 45, no children %					30.9[a]		34.2[a]	39.1[a]		
Educational Attainment of Household Head	1965									
8 yrs. or less					22		25[a]	30		
College Grad					11		9[a]	8		

Employment, Labor Force		U.S.	MICH	TALUS REGION	SMSA	OUTER COUNTIES	WAYNE COUNTY	CITY OF DETROIT		
Employed,	1940 - thousands			968[d]	887[e]	82.0[e]	764.3[e]			
	1950 "			1,309[d]	1,198[e]	115.8[e]	984.4[e]			
	1960 "			1,475	1,334[e]	146.7[e]	955.7[e]			
	1965 "			1,607	1,429[e]	171.0 178.1[e]	1,020[e]			
Employed/Pop.	1950			.393	.396[d]					
	1960			.353	.353[d]					
	1965			.364	.358		.381			
Labor Force Participation Rate	1960	.574[d]			.570[d]					
Unemployment	1950 %				4.2[e]					
	1960 %				6.8[e]					
	1965 %				3.5[e]					
Labor Force										
White Collar Work* 1960 %				45.7						
Blue Collar Work* 1960 %				54.3						
White Collar Work. 1965 %										
Blue Collar Work. 1965 %										

Employment, Labor Force cont'd	U.S.	MICH	TALUS REGION	SMSA	OUTER COUNTIES	WAYNE COUNTY	CITY OF DETROIT		
Employment data for Household Heads 1965									
% employed				78.6[a]		75.1[a]	69.6[a]		
% retired				12.3[a]		14.3[a]	17.1[a]		
% white collar				41.6[a]		38.3[a]	34.8[a]		
% blue collar				58.4[a]		61.7[a]	65.2[a]		

* (from first page of this chart) TALUS Definition: Service Workers = blue collar, farm managers = white collar

Income	U.S.	MICH.	TALUS REGION	SMSA	OUTER COUNTIES	WAYNE COUNTY	CITY OF DETROIT		
Mean Income (1965$) 1965 per Household			9,724						
Median Income " " per Household			7,757	7,710		7,220[a]	6,350		
Family Income 1965									
Under $3,000 (1965$) %			13.0	13		16[a]	21		
3,000 - 5,999 %			18.2						
6,000 - 7,999 %			21.4						
8,000 - 9,999 %			18.3						
10,000 -14,999 %			20.2						
15,000 and over %			8.9	9		7[a]	5		
1953									
Under $3,000 (1965$) %				12.5[c]					
Over $10,000 (1965$) %				15.5[c]					

1.2 Land Use

Land Use, Densities	U.S.	MICH.	TALUS REGION	SMSA	OUTER COUNTIES	WAYNE COUNTY	CITY OF DETROIT		
Gross Area sq. mi			4,572	1,978	2,594	610	140.0		
Developed Land, 1965 sq.mi.			986	691	295	333	128.2		
Residential Land, 1965 "			535	400	135	200	84.0		
Commercial Land, 1965 "			56	42	14	22	9.2		
Industrial Land, 1965 "			85	63	21	36	13.4		
Public Land, 1965 "			126	89	37	48	11.9		
Recreational Land, 1965 "			184	96	87	28	9.7		
Vacant Land, 1965 "			3,427	1,223	2,203	267	10.3		
Net Residential Density Dwelling Units/acre 1965				2.5		5.1			

Housing	U.S.	MICH.	TALUS REGION	SMSA	OUTER COUNTIES	WAYNE COUNTY	CITY OF DETROIT		
1960 Housing Units (thous)		2,549[h]		1,153[h]		835.2[h]	553.2[h]		
Occupied Housing Units (thous)		2,239[h]		1,081[h]		784.7[h]	514.8[h]		
Vacant (thous)				72[h]		50.5[h]	38.4[h]		
Median Number of Rooms		5.2[h]		5.2[h]			5.1[h]		
Median Number of Persons		3.1[h]		3.1[h]			2.8[h]		
1965 Housing Data									
1-Family Home %				76		69[a]	59		
% Own or Buying Home				73		69[a]	61		

1.3 Open Space and Recreation

	U.S.	MICH.	TALUS REGION	SMSA	OUTER COUNTIES	WAYNE COUNTY	CITY OF DETROIT		
Open Space & Rec. Land 1965, 1,000 acres			1,273[f]	64.5[f]	62.8[f]	13.9[f]	4.1[f]		
Shorelines, 1965 miles			195	61	134	38	18		
Public Shorelines, miles			80	15	67	12	6		
%			42	25	50	33	33		

1.4 Transportation

		U.S.	MICH.	TALUS REGION	SMSA	OUTER COUNTIES	WAYNE COUNTY	CITY OF DETROIT	
Auto cars per person	1953				.285				
	1965			.353	.316				
Persons/Auto				2.83					
Car Availability: Households with - 1965									
no car	%				15		20[a]	27	
one car	%				48		48[a]	48	
two cars	%				32		27[a]	21	
3 or more cars	%				6		5[a]	4	
Average Trip Length miles, 1965				5.9					
Person Trips by Auto	1990 %			91					

2 Projections

. . . Population, Employment, Income

Population, Households		U.S. 10^6	MICH. 10^3	TALUS REGION 10^3	SMSA 10^3	OTHER COUNTIES 10^3	WAYNE COUNTY 10^3	CITY OF DETROIT 10^3
Population	1970	209.0	8,645	4,782			2,732	1,534
	1980	245.3	9,868	5,742			2,857	1,388
	1990	288.2	11,411	6,900	5,581	1,319	2,984	1,205
	2000			8,237[b]	7,113[b]	1,124[b]	3,836[b]	
Households	1970			1,273			767	465
	1980			1,557			820	449
	1990			1,869	1,536	333.8	861	397
	2000			2,233				
Persons/Household	1990			3.69	3.63	3.95	3.46	
Non-White Pop. %	1990			17.31				
%	2000			17.59				

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Employment	U.S.	MICH.	TALUS REGION	SMSA	OUTER COUNTIES	WAYNE COUNTY	CITY OF DETROIT
Employed (thous.) 1970							
Series I			1,760	1,519	240.8	1,073	
Series II			(1,772[d])				
1980							
Series I			2,165	1,888[d]	277.4[d]	1,202[d]	
Series II			(2,170[d])	(1,893[d])	(277.4[d])	(1,206[d])	
1990							
Series I			2,430	1,910	520		
Series II			(2,656[d])				
2000							
Series I			3,309				
Series II			(3,271[d])				
Empl./Pop. Ratio 1970			.368	.367[d]			
1980			.377	.375[d]			
1990			.384				
2000			.402				
Labor Force rate 1970	.575[d]			.555[d]			
1980	.583[d]			.563[d]			
1970 White Collar Worker* %			50.3				
Blue Collar Worker* %			49.7				
1980 White Collar Worker* %			54.8				
Blue Collar Worker* %			45.2				
1990 White Collar Worker* %			59.7				
Blue Collar Worker* %			40.3				

* TALUS Definition: Service Workers = blue collar, farm managers = white collar worker

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Income	U.S.	MICH.	TALUS REGION	SMSA	OUTER COUNTIES	WAYNE COUNTY	CITY OF DETROIT
Mean Income per Household 1990, (1965$)			18,565				
Median Income per Household 1990, (1965$)			14,803	14,700			
Family Income 1990							
Under $3000 (1965$) %			6.5				
3000 - 5999 %			7.0				
6000 - 7999 %			6.0				
8000 - 9999 %			6.0				
10000 -14999 %			25.5				
15000 and over %			49.0				

2.2 Land Use

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	U.S.	MICH.	TALUS REGION	SMSA	OUTER COUNTIES	WAYNE COUNTY	CITY OF DETROIT
Urbanized Land 1990, sq.mi.			1,919	1,355			
Residential Densities 1990							
0.5 - 1.0 DU/ Net Acre			1.8%				
1.1 - 2.0			24.0%				
2.1 - 4.0			28.2%				
4.1 - 6.0			21.6%				.9
6.1 -10.0			10.9%				28.6
10.1 -15.0			5.1%				27.0
15.1 -20.0			3.4%				24.7
20.1 -30.0			4.7%				13.7
30.1 -40.0			.1%				1.9
40.1 +			.2%				3.2

2.3 Open Space and Recreation

	U.S.	MICH	TALUS REGION	SMSA	OUTER COUNTIES	WAYNE COUNTY	CITY OF DETROIT
Open Space and Recreational Land, 1990 (1000 acres)			379.7[f]	163.4[f]	216.3[f]	24.4[f]	4.7[f]